Working with Paul Rudolph to Make Rudolph Work: Reclaiming, Conserving, and Adapting Sarasota High School (1958)

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I am indebted to friends, family, and my classmates for the never-ending support and much-needed comic relief throughout the course of this work.

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ABSTRACT

Sarasota High School, designed by Paul Rudolph in 1958, physically embodies the central ideas of Regional Modernism that developed in Sarasota, Florida in the 1940s and 50s. Covered breezeways, monumental sunshades, deep overhangs, and sliding glass doors promote natural ventilation and sun shading as ways to deal with Florida's hot climate. As an example of progressive architecture of the time, it is a seminal work of Rudolph's and significant to Sarasota's architectural legacy of climatically responsive, modernist buildings that captured international attention.

Sixty years later, Sarasota High School is now unoccupied and in a state of disrepair. The school board released plans in 2007 to rehabilitate it after razing Riverview High School, another nationally recognized Rudolph design. A battle between preservationists and the school board has since ensued over the recent renovation plans, which will potentially erase the most significant, character-defining elements of Rudolph's Sarasota High School.

The proposed reinvigoration of Sarasota High School exists at three scales: a re-design of the campus, a selective adaptation of the 1958 building, and a systems intervention to achieve optimal thermal comfort. A unified master plan will bring ideas of sun shading and temperature amelioration to the entire campus. In the building, a mixture of editing Rudolph's form and inserting new program will make it functional as a 21st century learning environment. To consider these spaces as living environments, Rudolph's passive environmental strategies will be paired with active, energy-efficient systems tailored to handle the extreme heat and humidity of Florida. Respecting and responding to Rudolph provides an opportunity to bring Sarasota High School into a heightened state, both critically and technically.

PREFACE



Figure 01: Demolished Paul Rudolph Houses
Source: [Online images] retrieved 2013, Chris Mottalini, “After You Left, They Took it Apart” <http://www.mottalini.com/>

Over the last 10 years, numerous works of Paul Rudolph's have been demolished, destroyed, and erased from tangible history. For an inexplicable reason, his name appears repeatedly when discussions of controversial modern designs arise. Pictured in Figure 01 are multiple examples of his abandoned residential designs photographed by Chris Mottalini.

As an architect who attracts a hotbed of controversy, the presented case of Sarasota High School becomes critical. Is it possible that respectfully and successfully altering Sarasota High School (1958) could bring positive light to Rudolph's oeuvre?

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PART 1 | ***FRAMING***

Mid-Century Modernism Threatened

Aging buildings that are generally valued in today's society seem to reference a bygone period in history. What can be openly perceived as old is assigned a certain cultural value. There tends to be a nostalgic pride and natural sense of comfort in the Victorian, Beaux Arts, Gothic, and various other "styles" that occurred before Modernism. A certain cultural sentimentality for times past emerges in the form of these specific aging buildings. However, when it comes to buildings that were designed post WWII, there is an inherent sense of questioning of worth. These buildings adopt a different model than their ornamented predecessors. This departure from the past produced designs that tend to generate varying reactions and opinions from the public. Today, misconceptions about Mid-Century Modernism translates into buildings that are undervalued.

Currently, buildings that were constructed during the 1950s are facing serious alteration and even demolition. They have aged at least 50 years, have outdated, often quick-retrofit systems, and due to their unadorned frames, are deemed "ugly." The general public tends to disregard them as irrelevant and useless. Demolition and reckless renovation of these aging Mid-Century Modernist buildings is often driven by economic factors, lack of sentiment, and lack of appreciation for the Modern movement.

Mid-Century Modernist designs are purposefully devoid of ornamentation that overtly reference historical manners of building. The International Style developed out of the ideal that architecture should represent the times. A new machine-aesthetic could transcend place and unite the world. A modern architectural approach could provide the answer to the role of the architect and the role of architecture in society.

However, it seems that the International Style did not effec-

tively unite anyone. Conversely, it widened the gap between architecture and the public. John Howey writes, “the buildings with their ‘openness,’ the so-called ‘free plan,’ the combination of spaces and walls of glass, all indicated that a different style of life was expected of the inhabitants” (Howey, ix). With changing times and the development of new technologies, a new architectural approach seemed appropriate. However, at the end of WWII, the progressive nature



Figure 02. Neutra’s Cyclorama and Miami Marine Stadium
Source: [Online images] retrieved 2013, From top left: <thecuratorofshit.com> top right: photograph by lcm1863/Flickr user bottom left: <http://www.dbmc.us/archives/3668> bottom right: Robby Campbell <theatlanticcities.com>

of the new architectural developments may have seemed too dominating and forceful.

The American public generally has no sense of urgency to save Modernist buildings. However, since the respective buildings are beginning to be demolished, now is the time to consider re-purposing, renovating, and preserving them. Regardless of the current popular opinion related to Modernist buildings, should a case be made to save our recent past?

In the cases related to “saving” modernist buildings, time itself is the most critical aspect. In his book, *Preservation of Modern Architecture*, Prudon discusses the complex nature of preserving a Modern building in a series of steps. In a society that has no sense of urgency due to the ubiquitous nature of Modern architecture and the proximity of the time frame, time is indeed critical. Because of the relative closeness of the time period, there is ample primary source information that must be documented. These sources must be analyzed before the building in question is at risk, or has become too dilapidated to be considered valuable. The physical integrity must be evaluated, and authenticity to the original design intent must be proved despite a history of alterations and retrofits. (Prudon,156-179)

In addition to its physicality, the uniqueness of the design and its larger significance to a thematic study and survey must be proved. However, Prudon wisely states that the intricate “relationship among integrity, design intent, and authenticity as it relates to Modern architecture is yet largely unexplored” (Prudon, 166). Prudon raises the fascinating point that it may take too long to establish a clear path that leads to Modern architecture appreciation before significant buildings are destroyed. Most relevantly, Prudon notes that

the key to establishing uniqueness of a modern school is how the plan relates to the prevailing educational theory of the time. Often times, modern schools are critically at risk due to poor maintenance and the need for more space due to growing student populations.

Even in the instance that public support does not exist for the preservation of Modern buildings, they mark a significant era in the United States' architectural legacy and heritage.

Like in the case of Pennsylvania Station, whose demolition is considered one of New York City's greatest architectural losses, will we risk losing American Modernism before we recognize its significance?



Figure 03. Penn Station
Source: [Online image] retrieved 2013 <nyc-architecture.com>



Figure 04. Penn Station Demolition
Source:[Online image] retrieved 2013 <nyc-architecture.com>

Extreme Demolition and Extreme Preservation

Two extremes are working at odds. American cities are experiencing radical change and at the same time, radical stasis (OMA, 17-32). On the one hand, demolition of aging structures occurs as society's needs morph over time. Conversely, nostalgia for times past encourages the preservation of buildings that reference history.



Figure 05. Ruskin versus Viollet le Duc
Source: OMA. "Extreme Demolition and Extreme Preservation." *Monu #14*, p. 20-21

Architect's today are faced with a dilemma of how to address demolition, preservation, and renovation. How do you decide what stays and what goes? How do you embrace change with respect to the passage of time? How do you restore a building with respect to contemporary times? Are American cities becoming placeless and devoid of meaning as we continually erase our recent past in order to embrace

historicized buildings?

The classic debate between the theories of John Ruskin and Viollet le Duc identifies a key split between ideologies related to preservation and demolition.

Ruskin makes the clear point that no building can ever be restored to its original condition. In fact, it is unclear what date a building should be restored to represent. Should it emulate the day its construction was finished? Alternatively, should it allow for the physical remnants of time to be showcased through decay? In any sense, Ruskin's argument cannot indefinitely be linked to the support or call for demolition.

Viollet le Duc takes a more open look at the idea of restoration. He conveys that restoration is not limited to a sterile reproduction of a snapshot in history. Rather, giving new life to an old building can bring it into a distinguished, and even a heightened state.

These ideologies capture the endless questions, contradictions and complexities that envelop the issues related to aging buildings.

SHS SOS

In 2009, internationally acclaimed Riverview High School (Figure 06), designed by Paul Rudolph in Sarasota, Florida in 1956, was demolished (Figure 07). Now, the site of Rudolph's building is a parking lot that serves a newly constructed Riverview High School. This situation sparked international attention from the World's Monument Fund, the National Trust for Historic Preservation, as well as noted architects such as Norman Foster, Charles Gwathmey, and Robert A.M. Stern (Hylton, 39). It also generated a huge public battle between preservationists, architects, the school board, students, and parents of students.

As part of the proposed demolition of Riverview, the Sarasota County School Board released plans in 2007 to appropri-



Figure 06. Riverview High School
Source: *Site Specific, The Legacy of Regional Modernism* on Vimeo [Video Still]



Figure 07. Riverview High School Demolition
Source: World Monuments Fund/The Greg Wilson Group 2009 [Online photo] retrieved 2013 <http://info.uff.ufl.edu/DCP/Newsletters/200908.htm>

ately rehabilitate Rudolph's Sarasota High School addition, the other Sarasota school designed by Rudolph. At that time, Rudolph's addition to historic Sarasota High School had been vacant for one year.

The addition, like Riverview, was designed in 1958 and is an icon not only to Rudolph's legacy in Sarasota but also to the greater architectural history of the region. It's significance can be outlined in three major ways. First, it was com-

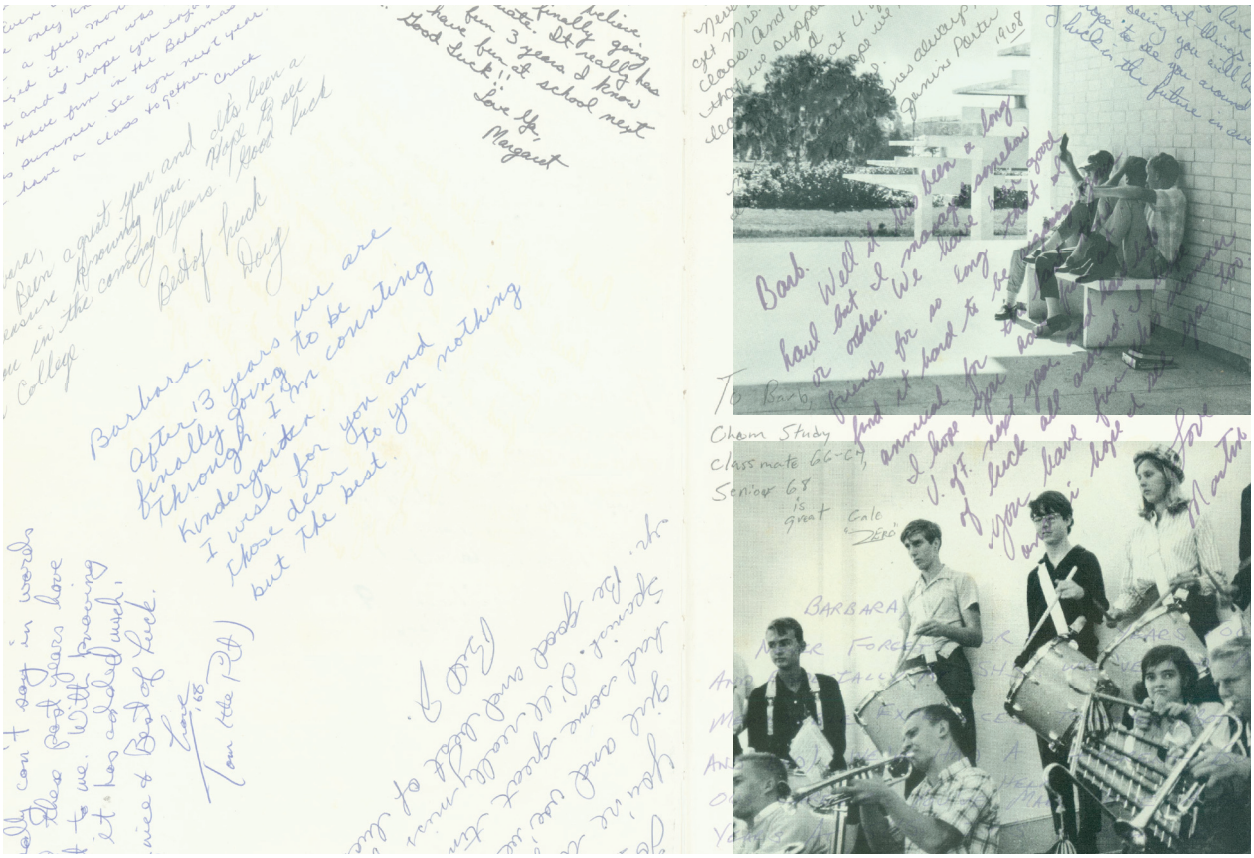


Figure 08. SHS Memories
Source: Photo Underlay from *SHS Sailor's Log* 1966

missioned during a progressive school board initiative program established by Philip Hiss in the 1950s. The program awarded the best local architects with large school commissions with the idea that modern educational theory should be demonstrated through design. Secondly, the addition physically embodies Rudolph's ideas about adapting Modern design to regional constraints. And lastly, it is a seminal work of Rudolph's, marking a significant departure from his previous works. The school shows a clear interest in designing volumetrically, which breaks from Rudolph's previous, planar explorations.

In 2012, after being vacant for 11 years, conversations about Rudolph's place in Sarasota began again as the School Board released plans to renovate Rudolph's SHS building. The initial plans called for the demolition of Rudolph's gym and locker room building as well as a closing in of the cen-



Figure 09. Glassed in Breezeway
Source: Rendering from Harvard Jolly, courtesy Sarasota County School Board [Online Image] retrieved 2013 <http://sarasotanewsleader.com/first-sarasota-high-design-charrette-likely-in-june/>



Figure 10. Existing Breezeway Entrance
Source: On-site photo by author.

tral entrance breezeway (seen in Figure 9). This time, local preservationist group SAF, Sarasota Architectural Foundation, was quick to act. SAF began immediate conversations with the School Board about their proposal. The School Board was very receptive to SAF and even hosted a public design charette to accommodate a re-thinking of the renovation plans. The winning charette plan was signed by members of SAF, the School Board, students and various other

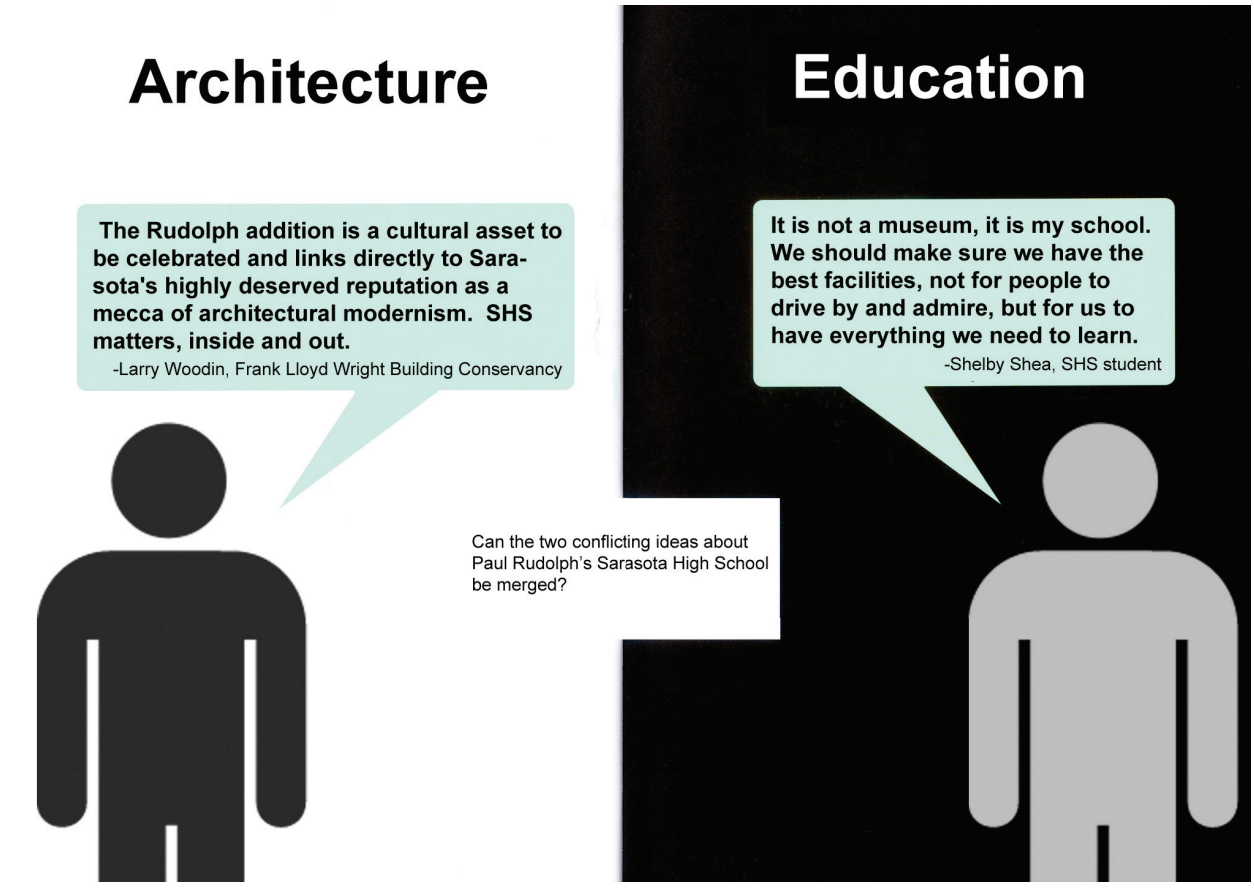


Figure 11. Architecture versus Education
Source: Diagram by Author based on Figure 05 (see source)

interested members of the community.

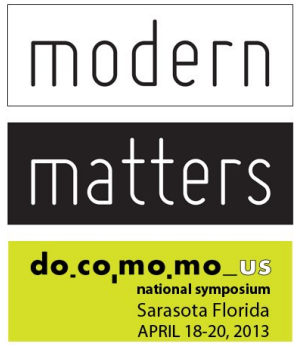


Figure 12. This Place Matters
Source: SAF Facebook page, DOCOMOMO symposium [Online image] retrieved 2013 <https://www.facebook.com/photo.php?fbid=10151854551889196&set=a.10150108193309196.321016.108727374195&type=1&theater>

After a cost reassessment, the current School Board plans are to move forward with a complete restoration of the exterior of Rudolph's buildings. But, plans are rapidly moving forward to demolish and completely gut the interior. New programmatic needs, tight spatial education specification requirements, and mold and mildewing issues in the existing interior all led to the decision to erase everything inside of Rudolph's Sarasota High School Addition.

SAF has tried relentlessly and publicly to denounce the current plans and to once again steer the School Board in another direction (Figure 12). However, after time spent re-assessing the design after the public charette, the School Board is no longer in a position to reconsider their current path.

The battle between architecture and education seems to be happening all over again (Figure 11). The heart and significance of Rudolph's building all lies in the interior. In fact, the integration of mechanical and electrical systems into the building through ingenious "thermal channels" and the integration of artificial and natural light were the true generators of the form and organization of the entire building. Without maintaining the integrity of the thermal channel and celebrating Rudolph's attempts to naturally light, ventilate and integrate systems into every detail of the building, the true value of the design will be lost. It's shell will remain, but Rudolph's true exploration in innovative climatic strategies will be erased.

At a key moment in the history of Sarasota High School, this thesis examines the possibilities of both accommodating a

feasible plan for Sarasota High School as well as engaging with Rudolph's building as a living, 21st century learning environment.

How can we work with our recent past to ensure the continuance of important architectural legacies? How can we engage Mid-Century Modernist buildings as living environments versus artifacts?

Is Sarasota High School saveable in a real, tangible sense?

In a time when discussions of demolition are the only motivation for action, it must be showcased that the conversation continues past just "saving" iconic buildings from the wrecking ball. We must demonstrate that we have the creativity and capability to inhabit significant, historical buildings in a way that invigorates the past without compromising the future.



Figure 13. SHS in Formaldehyde
Source: Author.

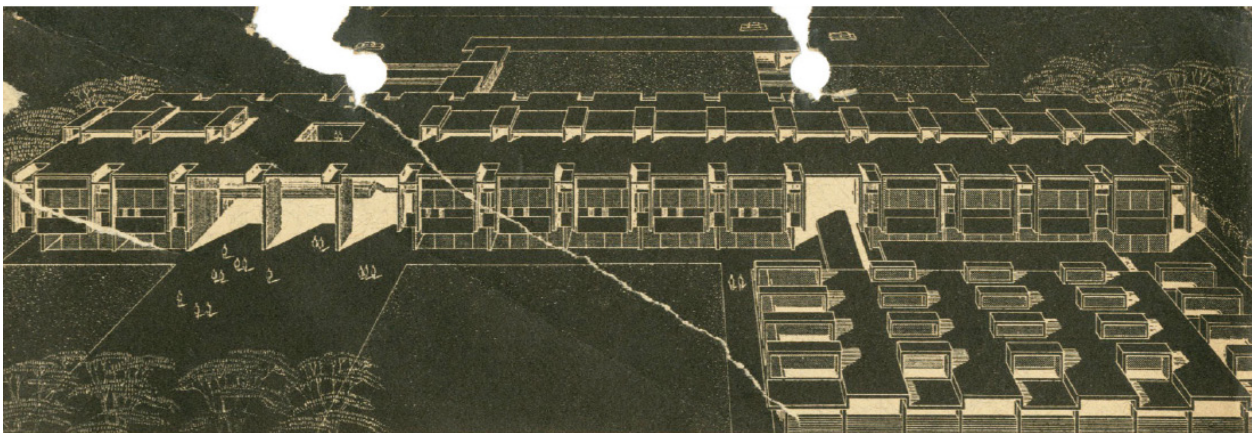


Figure 14. SHS Aerial View
Source: Rendering by Paul Rudolph, Included in "Architectural Forum" May 1959 [Online image] retrieved 2013 <http://gatorpreservationist.wordpress.com/page/2/>

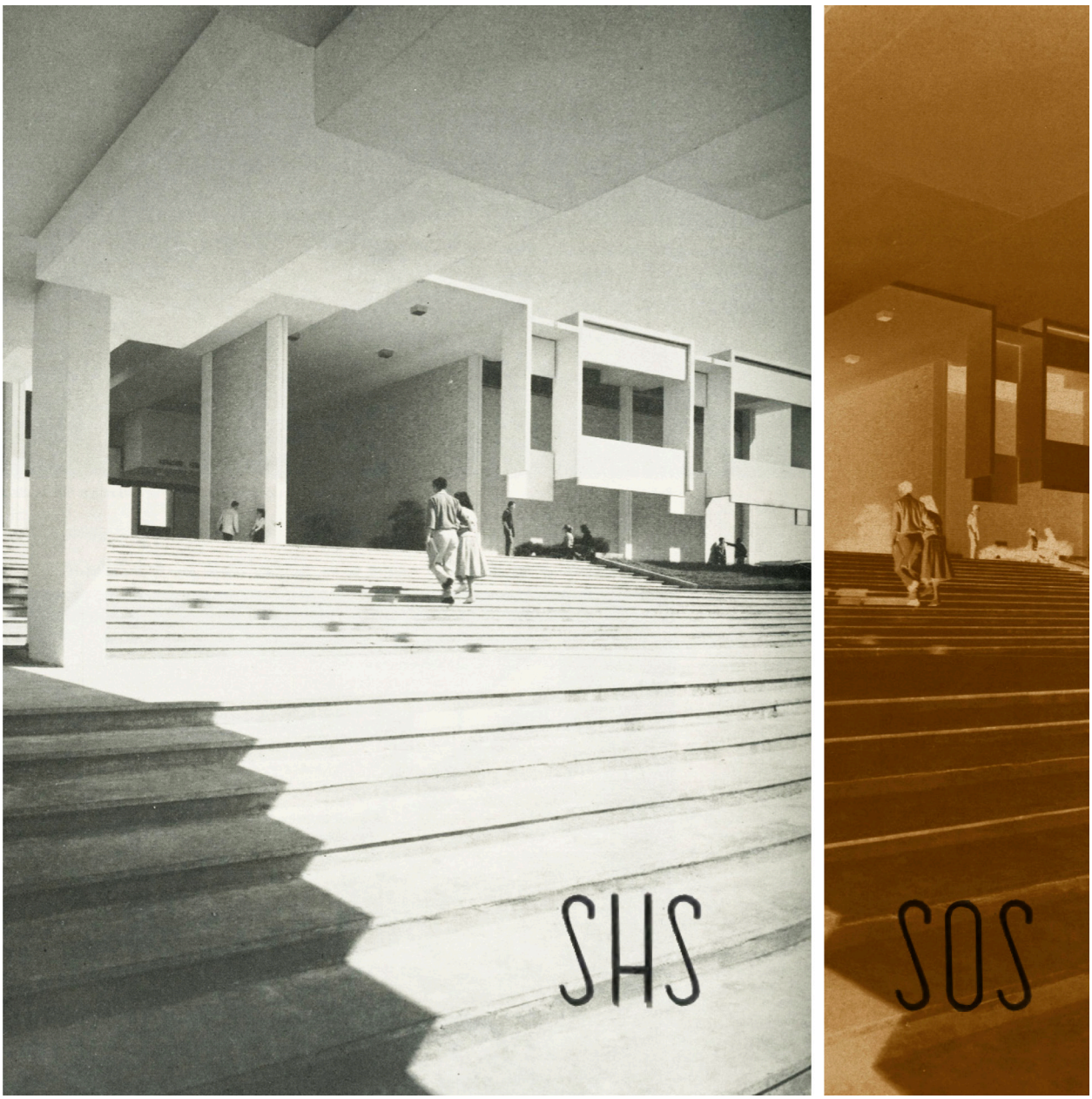


Figure 15. SHS SOS
Source: Photo Underlay: by Ezra Stoller included in Architectural Forum, May 1960 [Online image] retrieved 2013 <http://gatorpreservationist.wordpress.com/>

PART 2 | ***SUPPORTING***

1940s, 1950s Boom Time in Sarasota, Florida

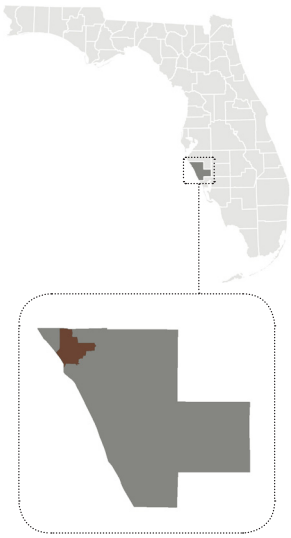


Figure 16. City of Sarasota, Sarasota County, Florida
Source: Author.

Sarasota, Florida has a rich cultural history in art and design. The area attracted attention from the Ringling Brothers in the 1910s, and by 1927 the Ringling Art Museum was established ("Sarasota History Timeline," n.p.).

In 1935, the Ringling School of Art opened ("Sarasota History Timeline," n.p.). The Ringling Brothers also brought fame and pop culture to Sarasota through the Ringling Brother's Circus. The area became increasingly popular throughout the early 1900s and was a natural retreat from Northern winters. Snowbirds flocked to Sarasota during the winter months, creating an increasingly interesting dialogue of residents and visitors.

Sarasota is not only known for the circus and for the beach, it is also the site of an architecturally significant phenom-



Figure 17. Beach Club, designed by Paul Rudolph
Source: Photo by Adam Friedberg via Architizer [Online photo] retrieved 2013 <http://www.architizer.com/en_us/projects/view/paul-rudolph/7923/#.UZq8drW1GSo>

enon. From the 1940s through the 60s, a group of architects captured international attention by designing climatically responsive, Modernist buildings. Later collected under the name the Sarasota School of Architecture, these architects experimented with explorative ways of shading the sun, ventilating, and using local materials to deal with Florida's hot climate.

The arts culture and unique sense of place allowed for this architectural experimentation to occur. Beginning in the 1940s, this openness to architectural experimentation was matched with a booming population. A huge need arose for more school space and more civic and institutional buildings.



Figure 18. Trampoline
Source: State Archives of Florida, Florida Memory [Online photo] retrieved 2013 <http://floridamemory.com/items/show/70907>



Figure 19. Sarasota's First Shopping Center, Ringling Shopping Center
Source: Sarasota City-Data [Online photo] retrieved 2013 <http://www.city-data.com/forum/sarasota-bradenton-venice-area/1237515-some-old-pictures-sarasota-area.html>

Philip Hiss and the Progressive School Board Initiative

Philip Hiss played a crucial role in the development of the Sarasota School of Architecture. At the beginning of Hiss's tenure as Chairman of Sarasota's Board of Public Instruction (later the Sarasota County School Board), he established an innovative county school building program to respond to the growing need for school space amidst growing student populations (Howey, 83).

This ground breaking program helped give local, talented architects a chance to break into the public sector. At early points in their careers, this opportunity was rare as most young architects were restricted to designing guest houses only. The way Hiss described this idea is as follows, "[...] it is well to remember that even such talented school specialists as Caudill, Rowlett & Scott and Perkins & Will at one time designed their first school, and it is a fortunate thing someone gave them the opportunity" (*Progressive Architecture* 1960, 75). At the time, most school buildings were improperly ventilated and didn't utilize site orientation as a way of dealing with the sun. Schools were made poorly, were overly institutional, and were considered obsolete shortly after their construction (Howey, 83). Hiss wanted a fresh start and fresh minds to tackle the huge need for not just more school space, but better designed school spaces.

As a result of his efforts, schools commissioned from 1954 through 1958 were open-plan and experimental in terms of structure, material, and environmental strategies. The open-plan allowed for flexible learning spaces that reflected progressive, modern educational theories.

Interestingly, based on Hiss's assessment of existing schools alone, most of the architects commissioned to design new school buildings were more interested in how to deal with the climate than how to showcase modern education. Spatial

relationships were secondary to the primary relationship to the sun and to the surrounding region.

This is extremely apparent in both of Rudolph's commissions, Riverview High School and Sarasota High School, two of the largest and most sought after projects.

Approaching Regionalism, Paul Rudolph

Paul Rudolph was a highly acclaimed and influential architect who began his career by working under Sarasota architect Ralph Twitchell in 1941. He first studied architecture at Alabama Polytechnic Institute, but later out of curiosity applied to the Harvard Graduate School of Design (Spade, 11). He earned a Master of Architecture after studying under Walter Gropius. WWII interrupted his study, during which time he worked in a naval yard constructing ships.

Three instances in Paul Rudolph's career changed the nature of his work: studying under Walter Gropius, working in the naval yard, and traveling through Europe (Rudolph 1952, 19). Under Gropius, Rudolph found direction that he was missing from his architectural practice. He was searching for a certain grounding, or a way to give architecture greater meaning and significance. Gropius was able to instill in Rudolph a theoretical criticality that taught him to design according to concept and theory. It wasn't until Rudolph's experience with naval construction that he became extremely curious with structural innovation and construction. The economic use of materials and practical use of new technologies in the naval yard made him excited for the architectural potentials that lied ahead. Lastly, Rudolph's experience abroad gave him an invaluable position on context that shaped his work for the rest of his career (Rudolph 1952, 21).

He decided to return to work with Twitchell in 1948 (Spade, 11). The Florida houses that the two became known for embody their curious nature as they experimented with planes of glass, naturally ventilated spaces, and forward thinking design. The two were renowned for their large impact, if not direct founding, of the Sarasota School of Architecture, a group of architects who experimented with a unique regional adaptation of modernism (Bowen, 1).

Modernism is usually criticized for being ubiquitous, however, this group was able to distinguish themselves by integrating structural experimentation, new technology, and a precise sensitivity to place and climate that were specific to Sarasota. Because of the Sarasota School of Architecture's fascination with pushing the boundaries of a new regional modernism, Sarasota became a architectural place of international interest (Woodin and Halstead, n.p.).

Rudolph's work in Florida is not limited to the residential



Figure 20. He Designs for Florida
Source: *St. Petersburg Times Magazine* September 26, 1954

buildings that he designed with Twitchell. As the two began to gain success and public attention, Rudolph decided to leave Twitchell to branch out on his own.

Paul Rudolph was no stranger to conflict and dispute. Not only were his partnerships and practice constantly questioned, but his designs were also met with both hugely positive and shockingly negative reactions. When commenting on his decision to dissolve his partnership with Twitchell, he said, “Let’s face it, architects were never meant to design together…” (Spade, 12).

Rudolph was a strong willed designer, and he was not timid about expressing his opinions. This is evident not only in his bold design work, but also in his theory of architectural education. Rudolph experienced great success in his career past his time in Sarasota and was elected as chair of the Yale School of Architecture in 1957 for seven years. He then opened a firm in New York and continued to design multiple, famed international works. After serving his time as the Chair of the School of Architecture, “the quality of his academic contribution during his seven years at Yale is still in dispute […]” (Spade, Introduction 13-16).

Perhaps the controversy of Paul Rudolph’s career is best explained in the case of the Art and Architecture Building he designed for Yale University. A Yale alumni writes, “certainly no building better reflected his own dramatic rise and fall. Just as the A&A was soon rejected by students and faculty, Rudolph himself began to fall from grace a few years after the building’s completion” (Branch, n.p.). When it was built, it was nothing short of a sensation. However, it soon endured attacks of merit in terms of its architectural integrity and physical construction. It is rumored that students of architecture were so enraged with the building; they attempted to

burn it to the ground (Branch, n.p.). The Art and Architecture Building at Yale is merely one instance of a Paul Rudolph building threatened with demolition and outrage.

Paul Rudolph was ultimately an opportunist. He saw potentials and areas for advancement with every project, but truly sought to develop projects that responded appropriately in scale and context to their surroundings. He had an overwhelmingly “environmental” agenda.

Rudolph responded to the anonymous nature of Modernism by concentrating on context. Reacting and pulling cues from the surrounding region, the environment, the climate, and the topography were his strategies to ground his work in the larger architectural conversation and critique of Modernism. He attempted to solve the problems of Modern architecture through a keen interest in environmentalism.

PART 3 | ***REFERENCING***

The Worst Cast Scenario: Riverview High School

On June 13, 2009, a devastating blow to the ideals of preserving Modernism and our recent past occurred when Riverview High School, designed by Paul Rudolph in Sarasota, Florida in 1958, was demolished. Amidst an intriguing scene of both outcry and apathy spurred by three years of debate, a failed design competition, and multitudes of opinions and letters from architects and preservationists around the world, the school board of Sarasota County decided in a final vote of 3-2 not to re-purpose the iconic school. The site of Rudolph's building would become a parking lot to serve the new Riverview High School.

The historical and architectural context of the Rudolph building is significant. In the design, Rudolph expresses sensitivity to the local Florida climate condition while using Modern spatial ideas. The school is also significant in terms of its



Figure 21. Demolition of Riverview
Source: *5 Case Studies: Modernism at Risk,* WMF, 2010



Figure 22. Riverview High School
Source: Esto, © Ezra Stoller, Courtesy SAF [Online image] retrieved 2013 <http://archpaper.com/news/articles.asp?id=1817>

relation to current educational theory of the time. In relation to the program, the concept for the physical form is related to a student exploring different educational pathways. The school's openness and dedication to air movement may

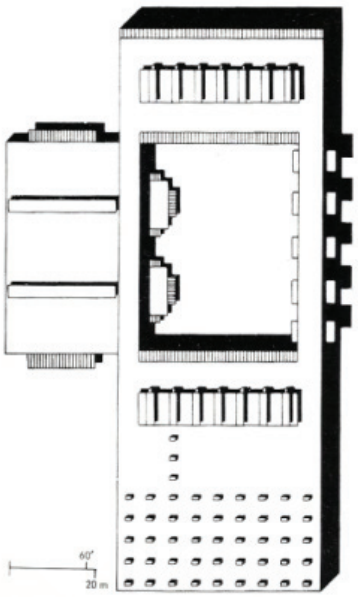


Figure 23. Riverview Site Plan
Source: *The Architecture of Paul Rudolph* p.58

have been an attempt by Rudolph to manifest this concept. However, in the end, largely due to unavailable funding and spatial issues, the school board opted to demolish it. Poorly kept grounds, unsightly retrofits, a desperate need for more classroom space, and a lack of funding and time led the school board to make their fateful decision. Architects and preservationists failed to communicate the significance of Sarasota's unique legacy of regional Modernism.

The demolition of Riverview High School is tragic. The true loss is the potential richness of the new design that could have developed from the integration of the old and new buildings. The new high school is now sited differently than Rudolph's. In order to make the school appear more urban, its front door was adjacent to the street with the parking hidden in the back. The new design flips this ordering, using Riverview's old site as a parking lot and placing the buildings towards the rear. This model follows a more suburban approach.

Even though a model of Rudolph's design is displayed inside the new school, the chance to experience the significant work is lost, and lessons to be learned from it are restricted to photographs and drawings.

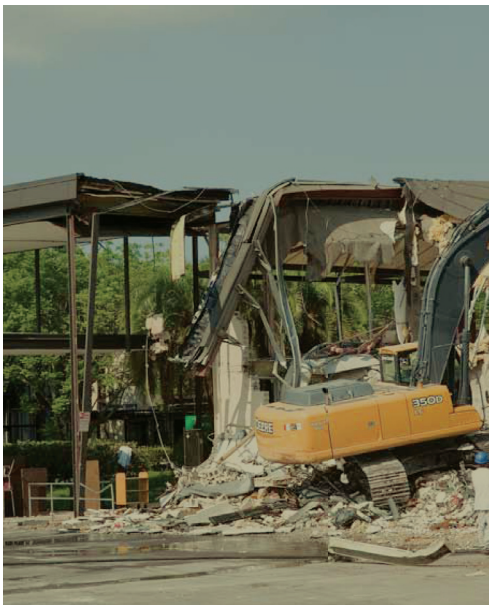


Figure 24. Riverview Memories
Source: Underlays from *The Architecture of Paul Rudolph* and *5 Case Studies, Modernism at Risk*, WMF, 2010

Insensitive Renovation: McDonough No. 36 Elementary School

Intriguingly, in New Orleans, Louisiana, a shockingly similar development of regional modernism occurred around the same time it emerged in Sarasota, Florida. A progressive school board chair influenced the commissions of new schools so that their modern designs would reflect current educational theory.

Since 2007 in New Orleans, three out of four threatened Mid-Century Modernist school buildings have been demolished. However, one instance of success is noteworthy. McDonough No. 36 Elementary School was stripped to its structural supports in 2010, and re-purposed as an Early Childhood Family Leaning Center.



Figure 25. McDonough No. 36
Source: © Francine Stock [Online Image] retrieved 2013 regional. modernism/Flickr user



Figure 26. McDonough No. 36 / Mahalia Jackson Elementary School 1954
Source: By Frank Lotz Miller [Online Image] retrieved 2013 regional.modernism/Flickr user

The adaptive reuse called for the stripping of years of alterations and systems. The new program was envisioned to be reflective of a double galleried plantation house. Re-using the structure only is a sustainably minded approach that earned the project positive feedback from DOCOMOMO Louisiana (Stock, n.p.).

Because the elementary school could be saved from demolition, the case is considered a success and something to be commended. However, simply maintaining the physical appearance of the school does not elevate, respect, or comment on the quality of the original design. Stripping the school to its structure is hardly a sensitive renovation approach. The sanitized new design takes no critical stance on the passage of time or the original intent of the architect. The new design effectively erases its progression through history.



Figure 27. Renovated McDonough No. 36
Source: Mahalia Jackson Early Childhood Family Learning Center (originally McDonough No. 36 Elementary School) © Francine Stock [Online Image] retrieved 2013 regional.modernism/Flickr user

Critical Continuum: St. Edwards University Doyle Hall

In 2009, St. Edwards University in Austin, Texas commissioned Specht Harpman to demolish an existing boy's dormitory, Doyle Hall, and rebuild an office building. Doyle Hall was among the original dormitories constructed for the University in 1960. Opposite of Doyle Hall is another dormitory, Premont Hall. The two buildings frame a courtyard programmed with basketball and volleyball courts (Figure 30).

Initially, the campus master plan called for the demolition of Doyle Hall, as the beige-brick building had "fallen out of aesthetic favor" (Kristal, n.p.). However, Specht Harpman recognized the potential in the Modern building, and proposed its reuse to highlight and assert the University's architectural heritage. Through careful assessment and successful communication, the architects were able to convince the school



Figure 28. Doyle Hall Exterior
Source: [Online image] retrieved 2013 <spechtharpman.com>



Figure 29. Doyle Hall Interior
Source: [Online image] retrieved 2013 <spechtharpman.com>

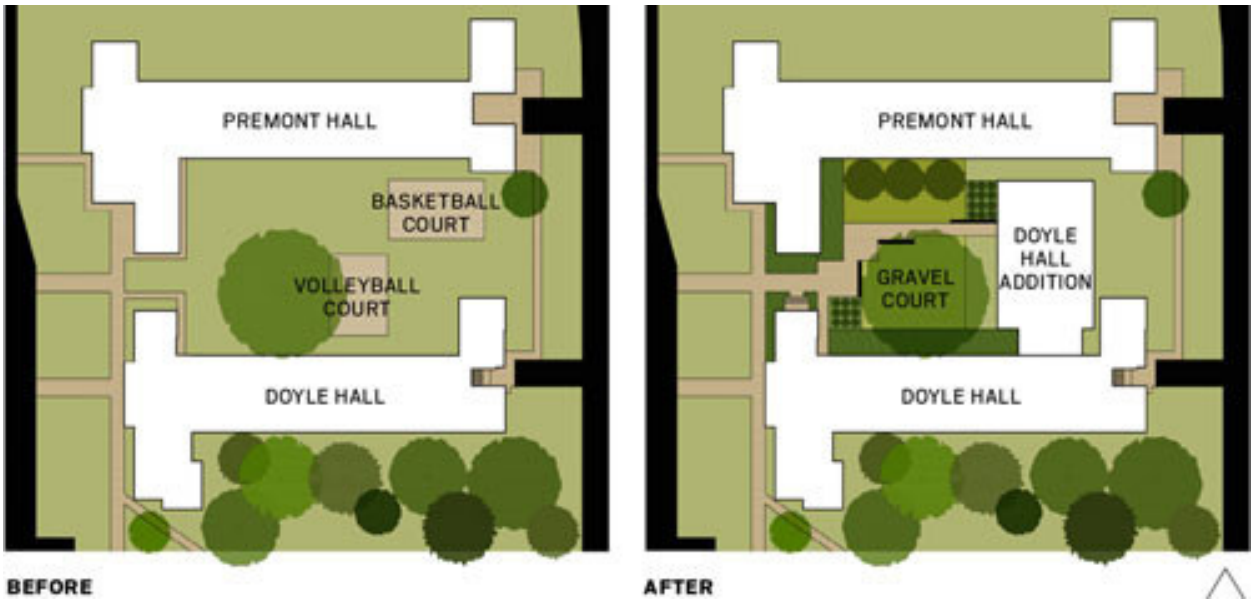


Figure 30. Doyle Hall Site Plan
Source: Courtesy Spect Harpman, "Hidden Potential" [Online image] retrieved 2013 <http://www.metropolismag.com/March-2010/Hidden-Potential/>

to renovate the building. The project evolved into the reuse of Doyle Hall as a classroom and office building. Specht Harpman took an environmentally conscious approach to the renovation by attempting to re-use the existing exterior shell and interior partition walls. The systems in the existing structure were updated, and some of the building's structure was exposed to reveal the evidence of its making (Kristal, n.p.). A two-story addition to the building prevented new construction from claiming all existing green space around the building.

One wing was added to the dorm, creating a smaller, more intimate courtyard (Figure 30). The existing trees were celebrated and kept. The new addition was built using recast elements of the old building (Kristal, n.p.). The structural

bays related to the column rhythm established by the dorm. Textures were harvested from older campus structures and used on the interior of the new wing, effectively knitting together the campus's past and present.

The project demonstrates the capability of architects to make a successful and meaningful case to renovate existing, relevant buildings to preserve architectural heritage and the passage of time. The architect's critical practice was recognized in *Metropolis Magazine*, by the Texas Society of Architects, and by Austin AIA.

Critical Continuum: IIT Crown Hall

Crown Hall, considered a Modern architectural icon, was designed by Mies Van der Rohe in 1950. In the 1970s, changing conceptions about thermal comfort and mechanical systems facilitated a central air retrofit in the building. The downstairs, with a low overhead clearance, could not effectively tolerate the large ductwork that was installed The retrofit was handled considering economic and ease of access as the sole deciding factors. Sensitivity to the design was put aside in favor of thermal comfort. (Moe, 230-232)

In 2001, the building was listed under the National Register of Historic Places. Accordingly, the retrofits made in the 1970s needed to be reconsidered to restore value to the "basement" area. It was deemed the "basement" due to the cacophony of ductwork, conduit and water pipes that dominated the rooms. (Moe, 230)

Tom Brock, the architect, was dedicated to finding a solu-
tion that allowed for the desired thermal comfort as well as



Figure 31. Crown Hall 2010
Source: On-site photo by author.



Figure 32. Crown Hall
Source: © Hagen Stier - Crown Hall, Arch Daily [Online image] retrieved 2013 <http://www.archdaily.com/59816/ad-classics-iit-master-plan-and-buildings-mies-van-der-rohe/crownhall/>

sensitivity to the low ceiling height in the downstairs and an overall clean aesthetic. Brock decided that a radiant cooling system utilized within a suspended, gypsum ceiling could mix the need for a clean look with lighting and cooling needs of the space. A diagram of ceiling panel construction can be seen in Figure 35. The chilled ceiling panels accommodate the functional and aesthetic needs of the space with the constraints of the sensitive historic design.

This study is extremely significant. Not only did Brock show that a complex issue can be solved creatively and effectively using technology that is widely available today, he also proved that integration with the original design and with 21st century constraints can be solved in one architectural move.

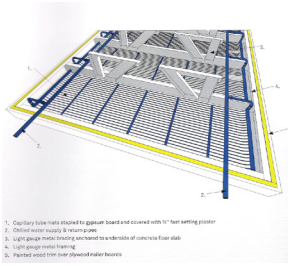


Figure 33. Ceiling Panel Diagram
Source: *Thermally Active Surfaces in Architecture,* Kiel Moe, p.235



Figure 34. Crown Hall "Basement"
Source: *Thermally Active Surfaces in Architecture,* Kiel Moe, p.231

By expanding Mies van der Rohe's original idea of thermally active surfaces (Mies van der Rohe used radiant heating in the floor of the entry level), Brock tied together past strategies with today's technologies to create an integrated and effective solution.

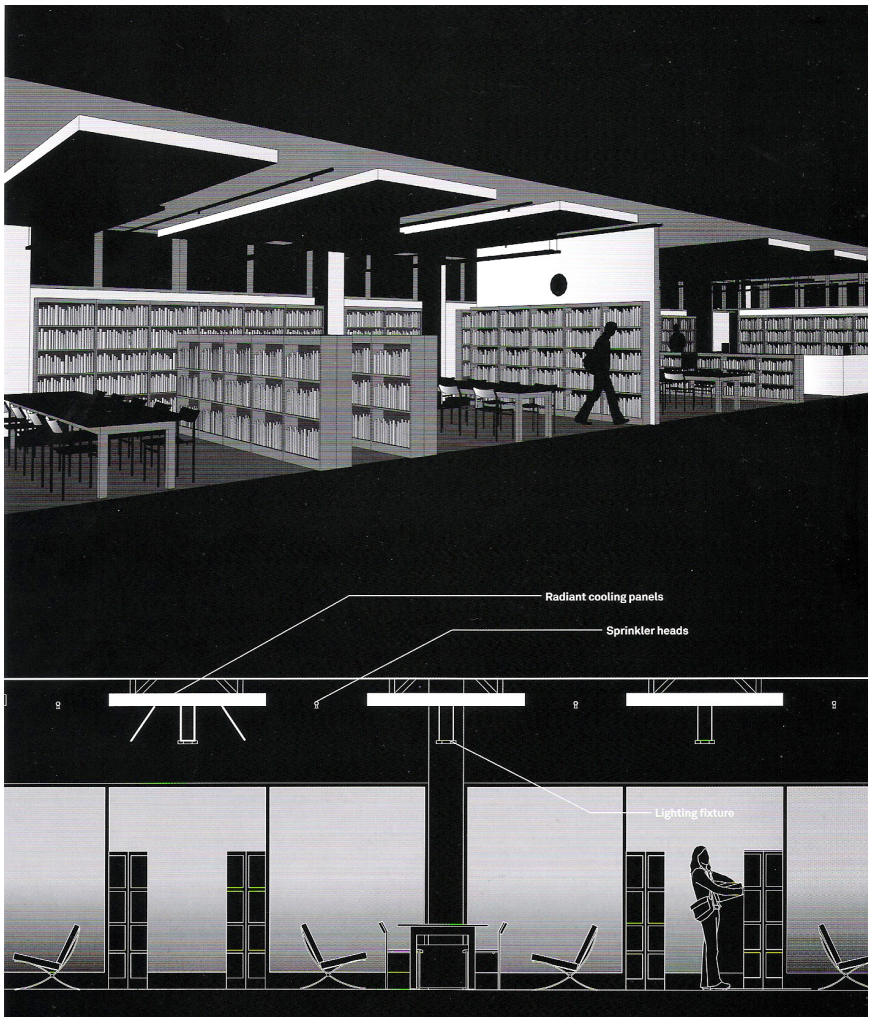


Figure 35. Crown Hall "Basement" Design Drawings
Source: *Thermally Active Surfaces in Architecture,* Kiel Moe, p. 233

PART 4 | ***SITUATING***

New Sarasota High School in Sarasota, Florida



Figure 36. Original SHS building
Source: The State of History [Online image] retrieved 2013 <http://history.ncsu.edu/projects/ncsuhistory/items/show/7>

The original Sarasota High School building was designed by M. Leo Elliot in 1927. The Gothic revival building proudly sits on Tamiami Trail, the major connecting road of Sarasota, giving SHS a strong presence in the city of Sarasota. The high school campus sits just down the road from the central downtown area (Figure 39), planned by John Nolen in the 1920s.

Because of growing student populations, Rudolph was commissioned to design an addition to the original building in 1958. Rudolph designed classrooms, a new cafeteria, a gym, and band and chorus practice rooms. This commission was one of the largest in size of Hiss's progressive school board program and was considered the most high-profile (Domin, 235). Rudolph was given the freedom to design a Modern school that reflected the times, and was

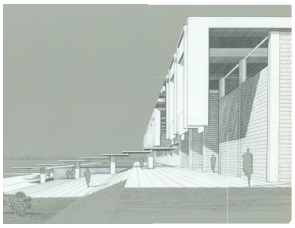


Figure 37. SHS Rendering
Source: *Paul Rudolph: Architectural Drawings*. Ed. Yukio Futagawa. New York: Architectural Book Publishing Company, 1981. p.97

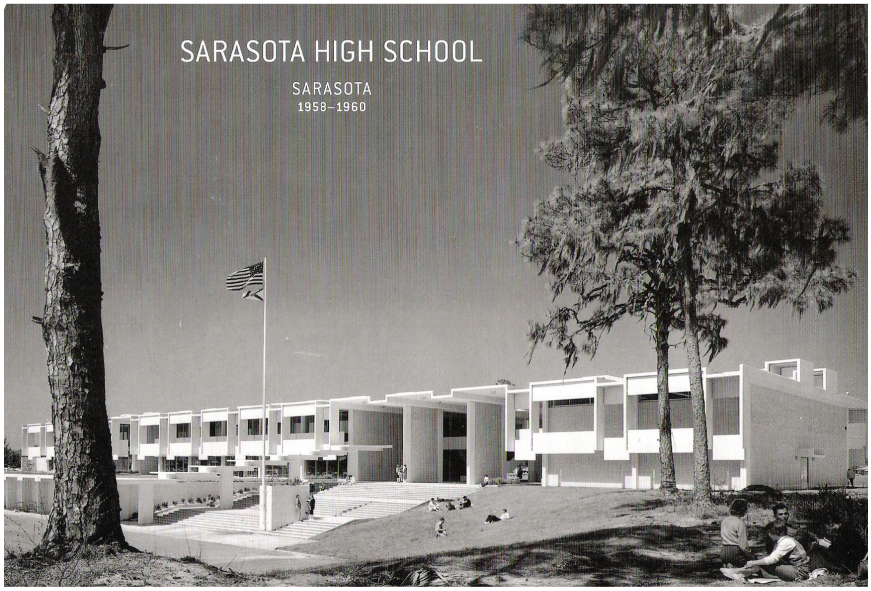


Figure 38. Sarasota High School in Sarasota, Florida
Source: *Paul Rudolph: The Florida Houses* p.235

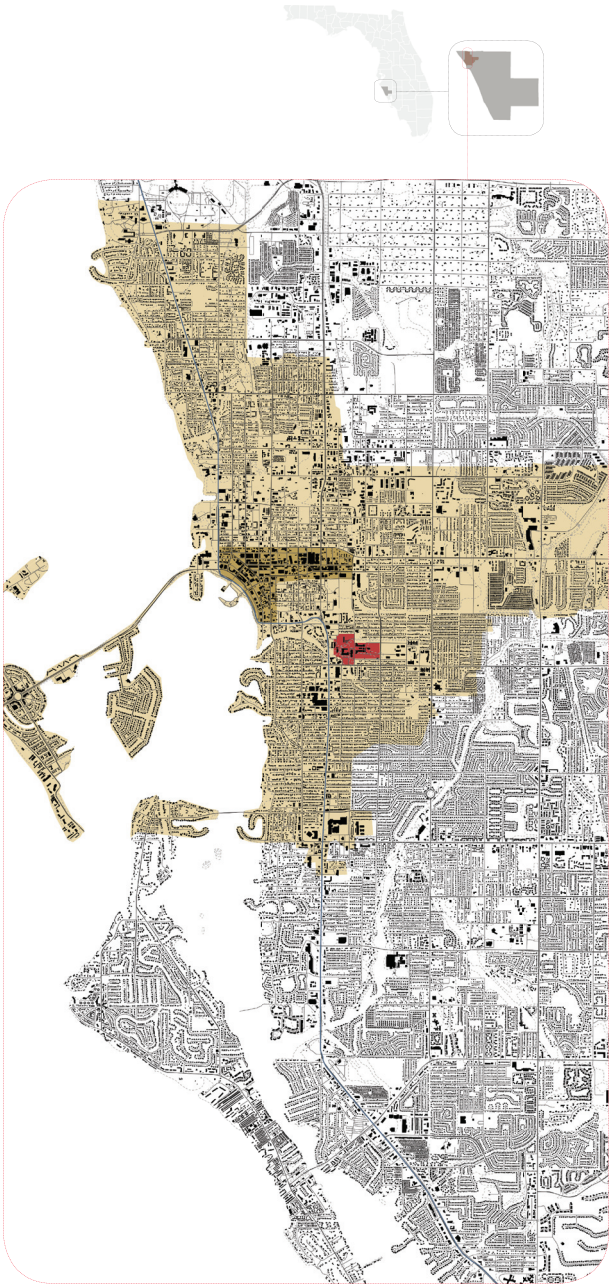


Figure 39. Sarasota High School site (red) in Sarasota, Florida (city limits in sepia)
Source: Author.

encouraged to consider new ways to deal with ventilation and cooling. The flexibility of Hiss as the client, and the encouragement by the school board to design progressive architecture would have been a dream project for any architect. Rudolph had the opportunity to push the boundaries, and had a second chance to perfect the climatic strategies that he tested in Riverview High School. All of these factors combined to form the perfect architectural storm. Rudolph created his first architectural masterpiece in the Sarasota High School addition.

When writing about Riverview, Rudolph stated that the forms he used were a return to what was familiar to him. He utilized planar organizations of sunshades with simple geometries. Direct sunlight was diverted so that it entered the building indirectly. He seemed dissatisfied with the design, even stating, “but alas, it has no sense of the particular uniqueness of the Florida climate” (Moholy-Nagy, 58).

In Sarasota High School, he was given a second chance. Rudolph states, “my work in Florida has centered on developing some of its regional characteristics [...] use of locally available materials such as lime block and cypress, have produced an effect which some might term regional; true regionalism, however, comes principally through form” (Rudolph 1952, 22). In Sarasota High School, Rudolph achieved his vision. He states:

> This building is intended to suggest the uniqueness of the Florida climate through carefully arranged sun shields and interior ventilating and lighting scopes. Its concrete structural frame is bent in such a way as to create hollow boxes at every bay, thereby accommodating an integral mechanical system. Planes in space, which allow the building to be understood from great distances, are utilized rather

than the linear organizations of earlier buildings. The open-ended aspect of the building allows it to grow: thus the notion that no building is ever fixed and complete within itself is made clear (Moholy-Nagy, 62).

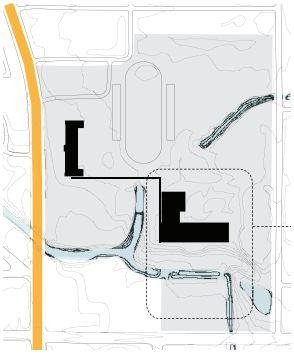


Figure 40. Site Plan
Source: Author.



Figure 41. Site Circulation
Source: Diagram by Author

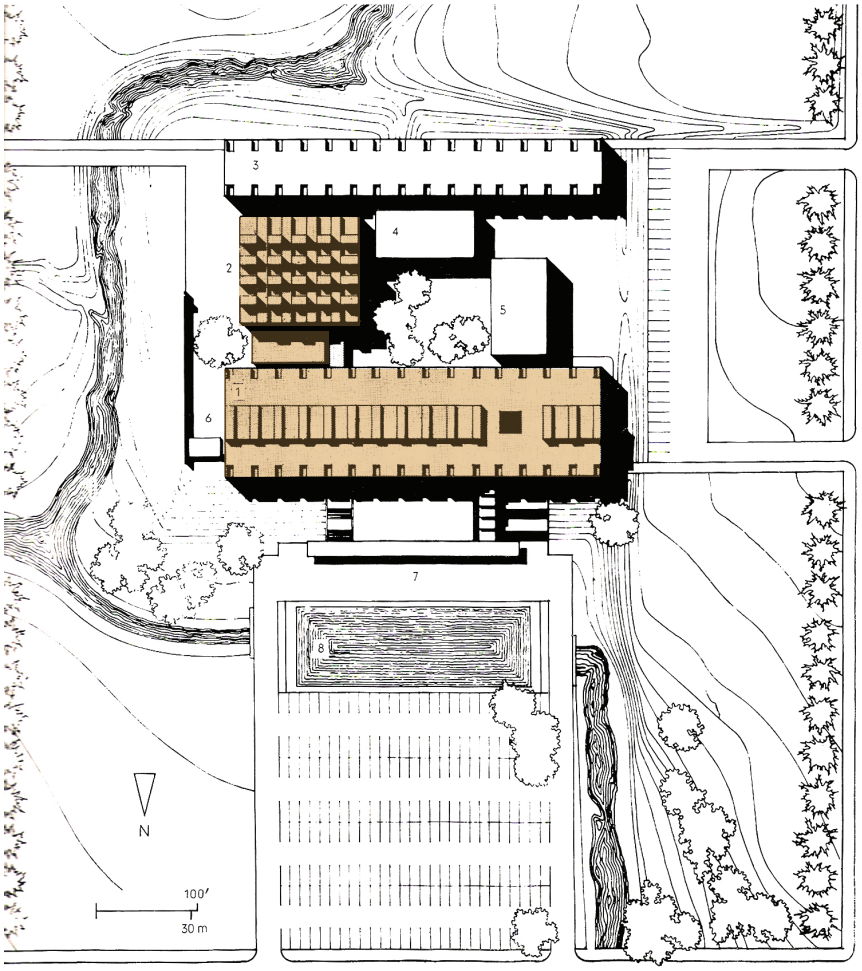


Figure 42. Rudolph's Proposed Site Plan
Source: *The Architecture of Paul Rudolph* p.63

The addition to Sarasota High School is significant not only to the work of Paul Rudolph and the Sarasota School of Architecture, but also to the progression of regional Modernism in Florida and throughout the United States.

The L-shaped addition is oriented north-south, with the shorter ends of the building facing east and west (Figure 42).



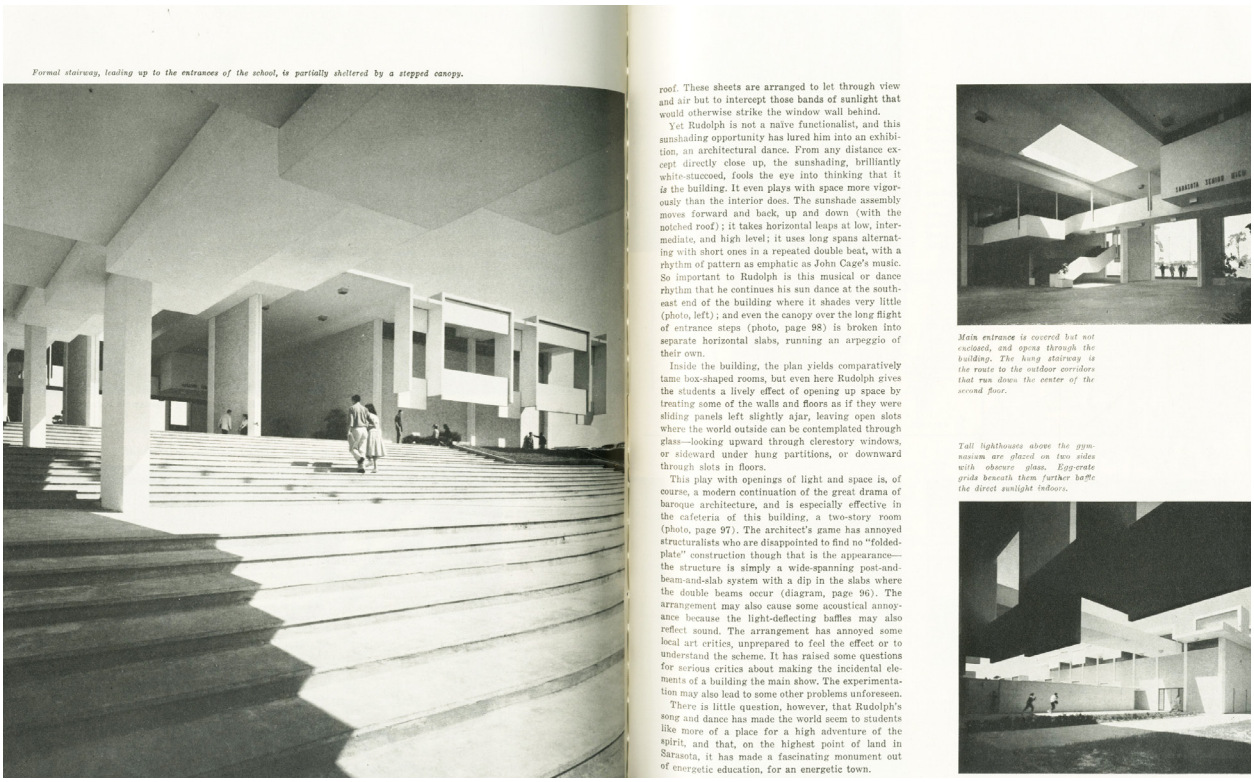
Figure 43. Walkway Connection
Source: © 2008 Mary Ann Sullivan [Online image] retrieved 2013 <http://www.bluffton.edu/~sullivanm/florida/sarasota/rudolph/

The gym is located in the smaller square shaped building, and the major classrooms are located in the larger, linear building. It is set back carefully from the original building, acting as a respectful neighbor (Figure 40). A covered walkway, designed by Rudolph connects the two buildings (Figure 43). Rudolph designed a new entryway that faced Bahia Vista Street with a new parking lot and reflecting pool. Also included in Rudolph's plan was the proposal for another classroom wing, a future auditorium and a library (see Figure 42). These projections show that Rudolph was concerned with creating not just a functional building, but also a functional campus. The massing of the site plan creates density on the open site, facilitating shade and pleasant walkways.

Two small creeks run through the campus, joining together on-site to become the Hudson Bayou before emptying into the Gulf.

When construction was completed in 1960, it was a tremendous accomplishment for Rudolph and the School Board. It received national attention from publications like *Architectural Forum* (Figure 44), *Progressive Architecture* (Figure 45), and the *AIA Journal*.

Student and teachers seemed excited to experience Rudolph's new school (Figure 45). It was referred to as New Sarasota High School, and later just the "new school."



Formal stairway, leading up to the entrances of the school, is partially sheltered by a stepped canopy.

roof. These sheets are arranged to let through view and air but to intercept those bands of sunlight that would otherwise strike the window wall behind.

Yet Rudolph is not a naïve functionalist, and this sunshading opportunity has lured him into an exhibition, an architectural dance. From any distance except directly close up, the sunshading, brilliantly white-stuccoed, fools the eye into thinking that it *is* the building. It even plays with space more vigorously than the interior does. The sunshade assembly moves forward and back, up and down (with the notched roof); it takes horizontal leaps at low, intermediate, and high level; it uses long spans alternating with short ones in a repeated double beat, with a rhythm of pattern as emphatic as John Cage's music. So important to Rudolph is this musical or dance rhythm that he continues his sun dance at the southeast end of the building where it shades very little (photo, left); and even the canopy over the long flight of entrance steps (photo, page 98) is broken into separate horizontal slabs, running an arpeggio of their own.

Inside the building, the plan yields comparatively tame box-shaped rooms, but even here Rudolph gives the students a lively effect of opening up space by treating some of the walls and floors as if they were sliding panels left slightly ajar, leaving open slots where the world outside can be contemplated through glass—looking upward through clerestory windows, or sideward under hung partitions, or downward through slots in floors.

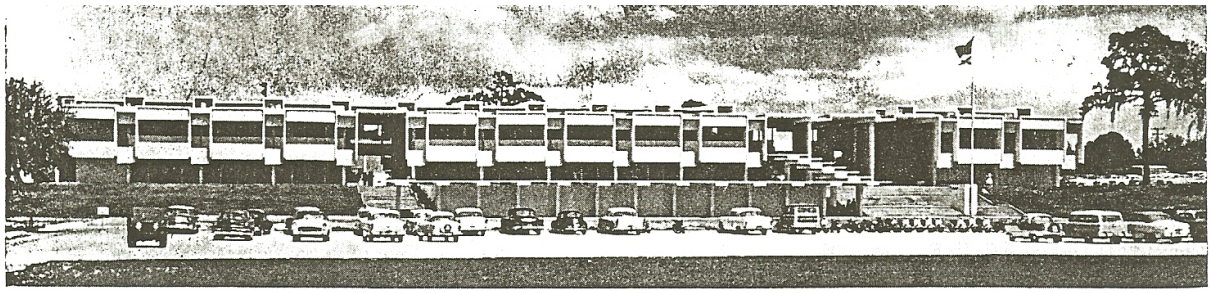
This play with openings of light and space is, of course, a modern continuation of the great drama of baroque architecture, and is especially effective in the cafeteria of this building, a two-story room (photo, page 97). The architect's game has annoyed structuralists who are disappointed to find no "folded-plate" construction though that is the appearance—the structure is simply a wide-spanning post-and-beam-and-slab system with a dip in the slabs where the double beams occur (diagram, page 96). The arrangement may also cause some acoustical annoyance because the light-deflecting baffles may also reflect sound. The arrangement has annoyed some local art critics, unprepared to feel the effect or to understand the scheme. It has raised some questions for serious critics about making the incidental elements of a building the main show. The experimentation may also lead to some other problems unforeseen.

There is little question, however, that Rudolph's song and dance has made the world seem to students like more of a place for a high adventure of the spirit, and that, on the highest point of land in Sarasota, it has made a fascinating monument out of energetic education, for an energetic town.

Main entrance is covered but not enclosed, and opens through the building. The hung stairway is the route to the outdoor corridors that run down the center of the second floor.

Tall lighthouses above the gymnasium are glazed on two sides with obscure glass. Egg-crate grids beneath them further baffle the direct sunlight indoors.

Figure 44. SHS Entryway, Architectural Forum 1960
Source: Gator Preservationist Blog, "Architectural Forum" May 1960 [Online image] retrieved 2013 <http://gatorpreservationist.wordpress.com/category/paul-rudolph/>

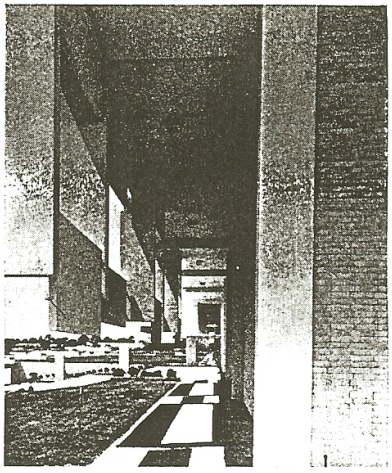


Rudolph's Sun-Shaded School Ends First Semester

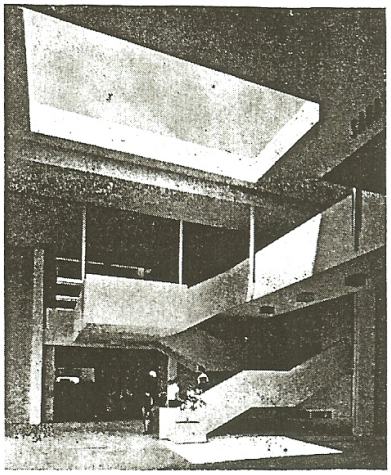
Visual Excitement of New School Pleases Students

SARASOTA, FLA. Paul Rudolph's major addition to Sarasota High School has opened here and, like most fine architecture, has created camps of praise and smaller cliques of disapproval. A reporter called it "a factory-like structure with fantastic excrescences," to which Philip H. Hiss, Chairman of Sarasota's Board of Public Instruction, replied that the writer was architecturally ignorant and had a "17th Century mind." Students—the *real* clients—are reported to be enjoying the building tremendously.

Sarasota High School is the latest in one of the country's most significant public-school building programs, begun when Hiss was elected seven years ago. When he took office, Sarasota was building—when it did—schools which became obsolescent before they were finished. He instituted a program of using the amazingly untapped resource of fine architects in the Sarasota-Tampa area (Rudolph, Mark Hampton, the Zimmermans). Lack of experience in school design was not regarded as disqualifying—on the contrary. Hiss remarks that "... it is well to remmember that even such talented school specialists as Caudill, Rowlett & Scott and Perkins & Will at one time designed their first school, and it is a forunate thing someone gave them the opportunity." Innovation, not for its own sake, but to provide better-functioning, more beautiful educational environment, has been the hallmark of his program. "One of the greatest stumbling blocks in the way of better school construction is the unwillingness of school boards, school adminisrators, architects, and engineers to stick their necks out, personally or professionally." Before a line is drawn in Sarasota, architects educate educators and teachers have a chance to explain their needs to architects. Hiss says it all boils down to two ingredients: "hard work and inetgrity of purpose."

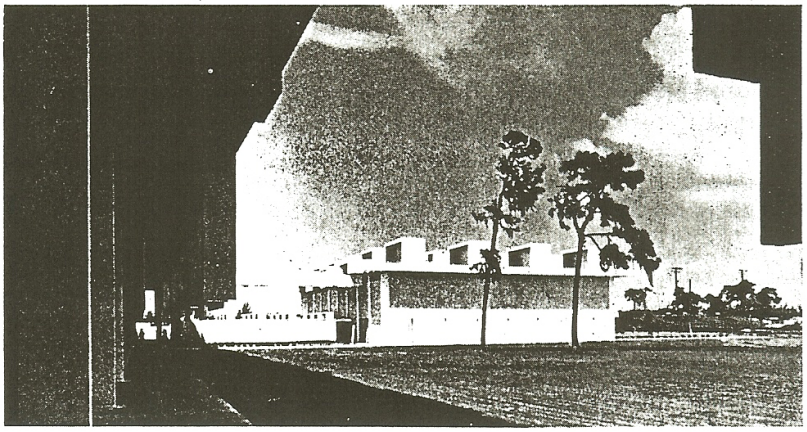


Precast concrete sunshades permit filtered sunlight to enter school.

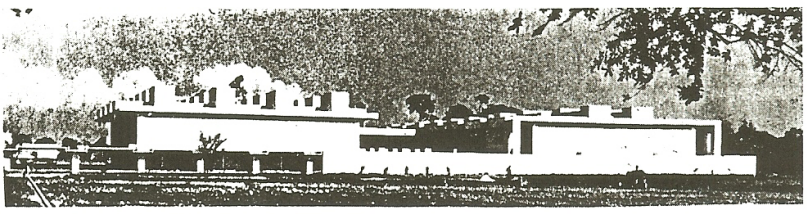


Entrance court has stairs to second floor, bridge to music practice rooms.

Photos: Philip H. Hiss



East view of gym from classroom wing; low link of locker rooms between.



West elevation shows gym on left, classroom wing on right.

Figure 45. Progressive Architecture, May 1960
Source: Gator Preservationist Blog, "Progressive Architecture" 1960 [Online image] retrieved 2013 <http://gatorpreservationist.wordpress.com/category/paul-rudolph/>

Light, Mass, and Air

In an interview with John Cook and Heinrich Klotz, Rudolph was asked to identify the moment in which he broke with previous forms to begin a new, personal approach to Modernism. He replied that Sarasota High School, designed in 1958-1959, marked the beginning of his personal investigation into the organization of planes and volumes in space (Cook and Klotz, 94). He said:

> It did not begin with the Art and Architecture building, from my point of view […] the second Sarasota High School was a move from clear form, from clear structure, from linear structural elements defining space, to the organizations of planes in space. It depends much more on the space and handling of light, which really meant planes rather than linear elements, which in turn commenced my investigations of scale […] therefore, that building, for me, was more important" (Cook and Klotz, 94).

As outlined above, the Sarasota High School building is a seminal work of Rudolph's. The addition is actually made up of five individual buildings. Four of those buildings are collected under a single monumental roof. The gaps between the buildings therefore become open, shaded walkways and

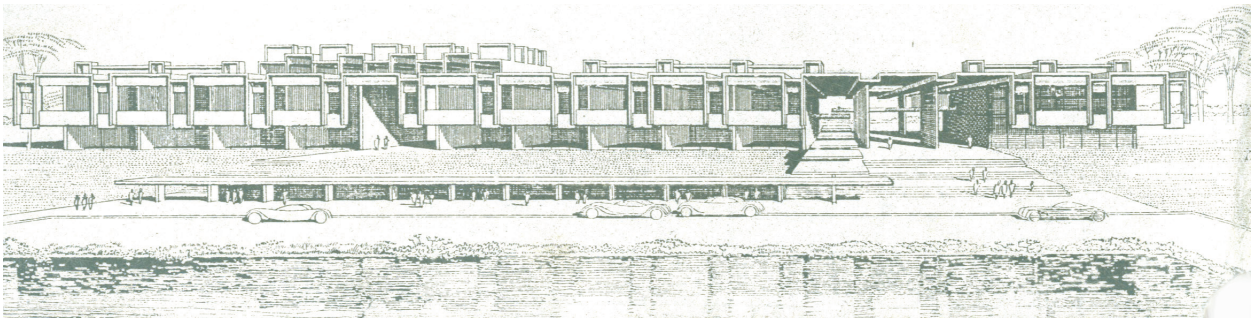


Figure 46. South Facade Perspective
Source: "Architectural Forum," May 1959 via Gator Preservationist Blog [Online image] retrieved 2013 <http://gatorpreservationist.wordpress.com/category/paul-rudolph/>

breezeways (Figure 47). The undulating roof provides an active plane that encompasses climate sensitivity, adaptability, light, space, and mass.

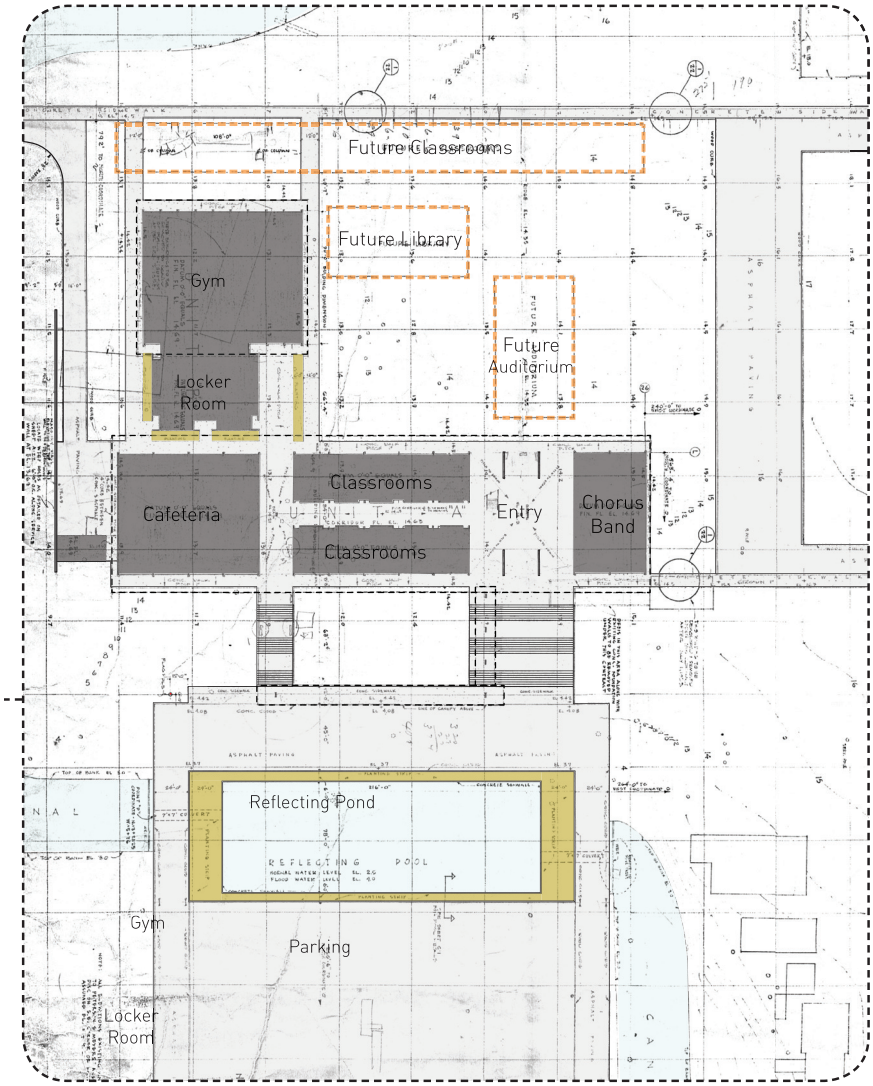


Figure 47. Paul Rudolph Original Site Plan
Source: Author. Underlay Original Paul Rudolph Site plan courtesy Sarasota County School Board



Figure 48. Second Floor Corridor
Source: Esto, © Ezra Stoller

The folds in the roof allow indirect light to reach the interior spaces below. The folds also allow hot air to escape through the roof, facilitating convective air movement. Also embedded in the roof is a plenum space that was considered for future mechanical system requirements. The blanket of the roof provides shade and comfort for interior and exterior conditions.

The building form comes to life in the section represented below. Connecting the two classroom wings is a floating

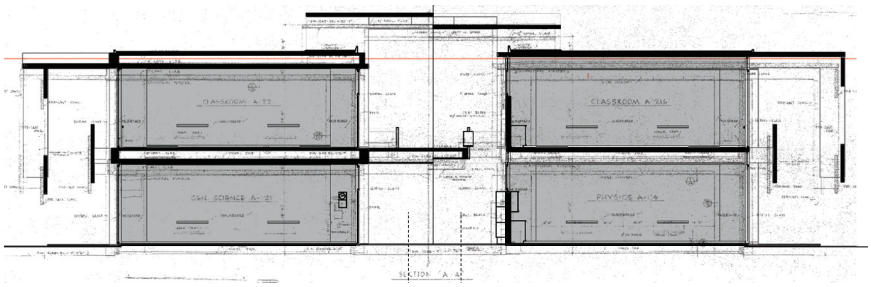


Figure 49. Transverse Section, Classroom Corridor
Source: Author. Underlay Original Paul Rudolph Section courtesy Sarasota County School Board

corridor (Figure 49) that bridges over to allow entry into the classrooms. The openings in the walkway were designed to allow for air movement, views, and for light to reach the ground floor (Figure 48).

At each level of detail, Rudolph was careful to integrate light, mass, and air. At the level of the site, the building orientation was chosen to maximize breezes and to control the harsh Florida sun. At the level of the building, the folded concrete form integrates natural lighting, natural air movement, and



Figure 50. Interior of Gym
Source: Esto, © Ezra Stoller

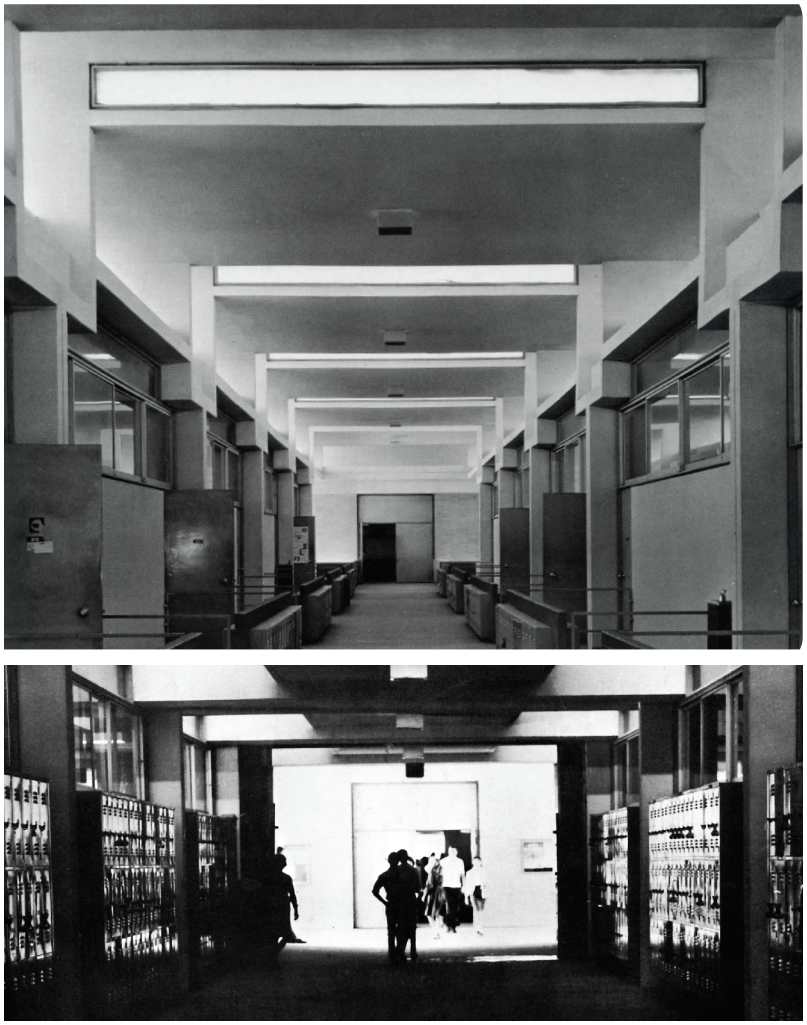


Figure 51. Corridor Images
Source: Top: Esto, © Ezra Stoller Bottom: *SHS Sailor's Log* 1966

organizes the building into repeating modules. Each module is 24' which then translates into the sizes of the classrooms. The play of light and air and the dedication to integration in the addition verifies Rudolph's primary environmental interests in the new school.

The Thermal Channel

Rudolph designed the building to facilitate natural ventilation through sliding glass doors and openings in the roof and corridors. However, additional mechanical ventilation was needed to properly ventilate interior spaces. Rudolph's approach to integrating mechanical ventilation into the structure and form of the building is incredibly intriguing. Upon closer study, it is apparent that this integration guided the overall form and organization of the entire building.

Mechanical ventilation air was supplied from the west end of the building (Figure 54) and cleverly integrated into the open floating walkways. The major supply spine that runs from east to west (seen as the floating walkway in Figure 55) supplies channels that project north-south, bringing fresh air to the classrooms from the floor and ceiling (Figure 52). These channels are simply non-structural folds in the floor slab (Figure 52) that accommodate ventilation ductwork, conduit, and water supply lines (to serve radiant heaters for heating in the winter). Just as the roof passively integrates light,

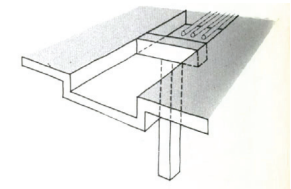


Figure 52. Rudolph's Thermal Channel
Source: "Architectural Forum" May 1960 via Gator Preservationist Blog [Online image] retrieved 2013 <http://gatorpreservationist.wordpress.com/category/paul-rudolph/>

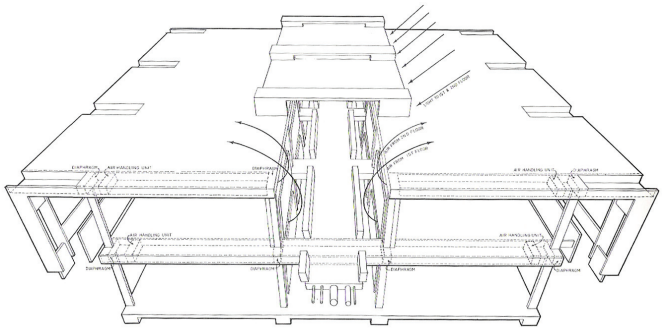


Figure 53. Transverse Sectional Perspective
Source: *The Architecture of Paul Rudolph* p.67

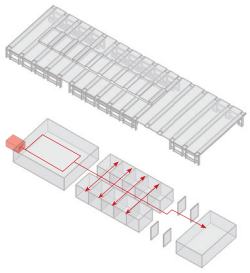
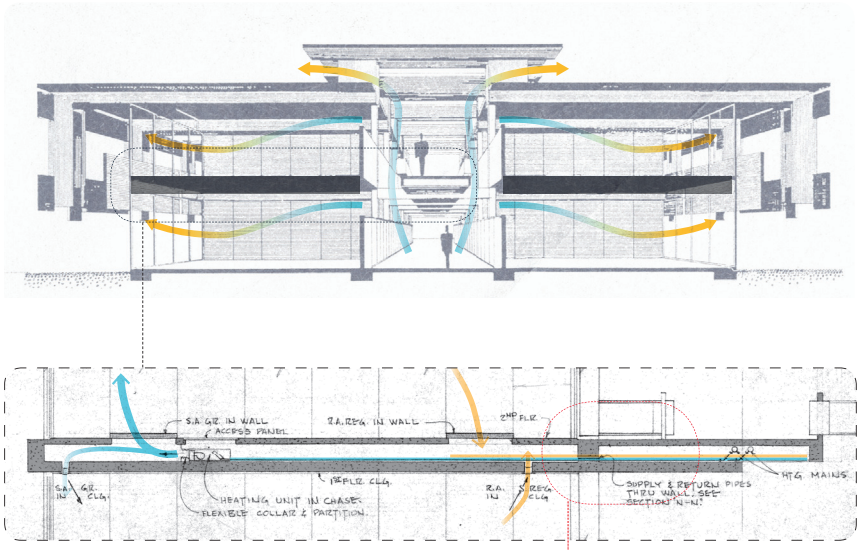


Figure 54. Designed Ventilation
Source: Author.



mass and air, these thermal channels actively integrate the electrical and mechanical systems needed in the building. Artificial lights are suspended from the fold inside the classroom. This fold is the same form that appears in the roof that allows for light and air movement. The question becomes, what came first, the roof fold or the thermal channel? This question may never be answered, but the key to it is, Rudolph was able to solve passive

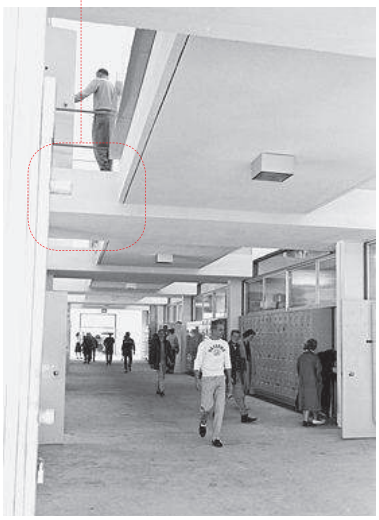


Figure 55. Thermal Channel Integration
Source: Top underlay: "Architectural Forum", May 1959 Middle underlay: Original Paul Rudolph mechanical detail courtesy The Sarasota County School Board Photo Underlay: Esto © Ezra Stoller

and active needs of the building in one architectural move.

This attempt by Rudolph is extremely significant, however, in Florida's heat, natural and mechanical ventilation just isn't enough. Interior classrooms were extremely hot. Teachers used electric fans plugged into the wall to promote air flow to deal with the stagnant, hot, humid air (Figure 56).

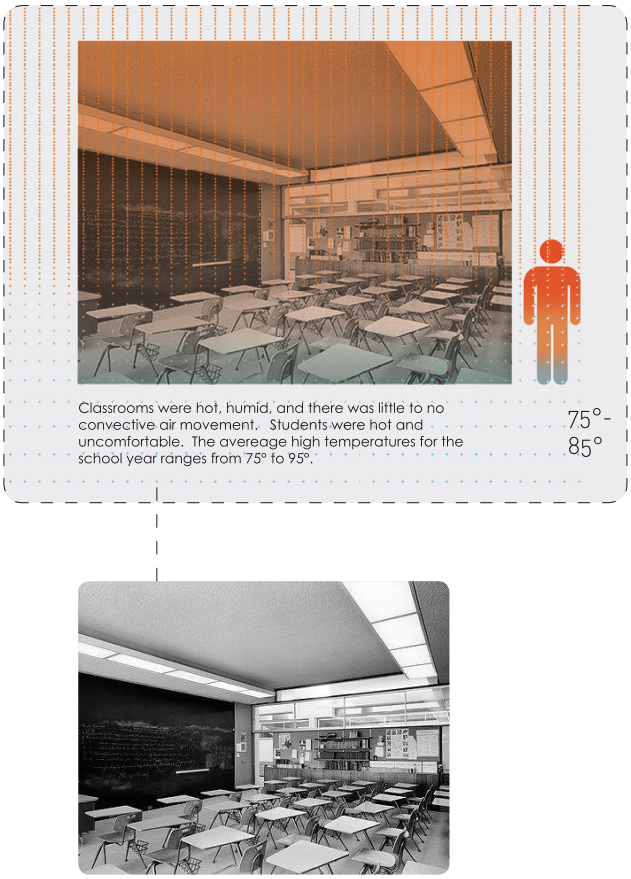


Figure 56. Comfort of Classrooms
Source: Author. Photo underlay from Esto, © Ezra Stoller

SHS Changes Over Time

1927 SHS Newly Constructed on S. Tamiami



1958-1959 Addition by Paul Rudolph



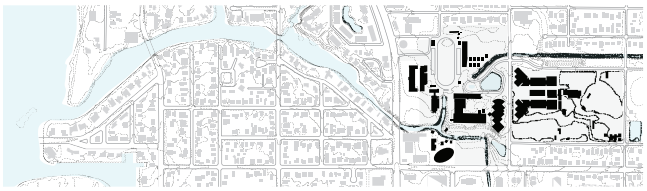
1969 Sailor Circus moves to Bahia Vista Street



1970s – 1980s Campus Growth



1996 Campus Expansion across School Avenue



2004 Old School to be used by Ringling School of Art, Sailor Circus no longer subsidiary of Sarasota County School Board

Figure 57. Evolution of Site
Source: Author.

Over the past fifty years, Sarasota High School's campus has undergone major growth and changes (Figure 57). Growth in the 70s and 80s led to a major shift on campus across School Avenue in the mid-90s. Later in the 90s, the original SHS building on Tamiami Trail was abandoned by the school. Finally in 2006, Rudolph's addition was abandoned. Multiple portables have been brought in to accommodate ever-growing classroom spatial needs. The major campus circulation shifted to the east with the new classroom wings and an added parking lot (Figure 58). The historical connection between the original school building and Rudolph's addition was lost.

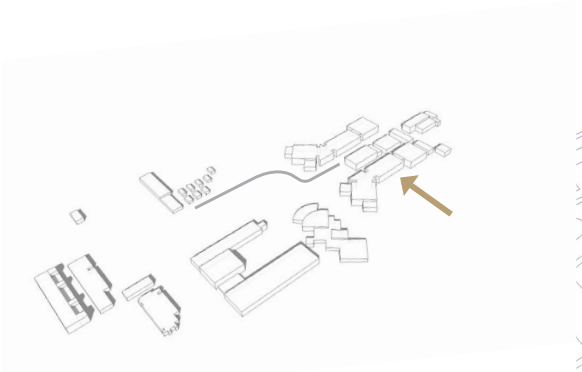


Figure 58. Existing SHS Circulation
Source: Author.

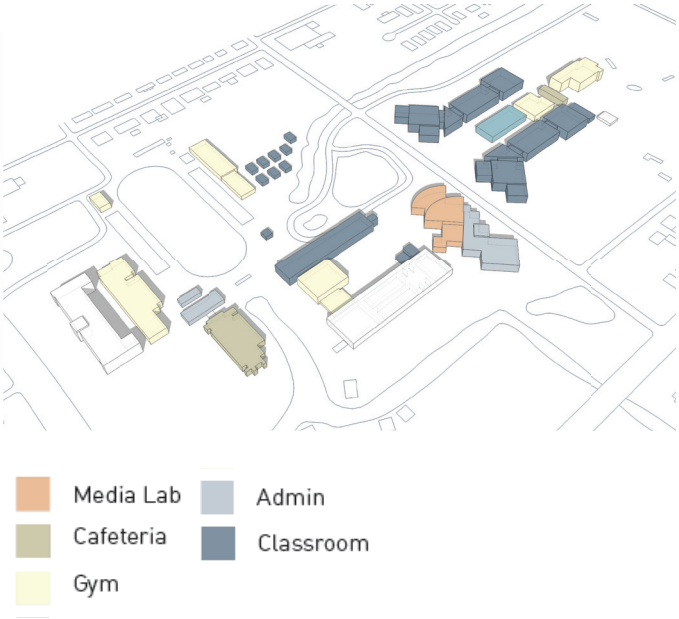


Figure 59. Existing SHS Massing and Program
Source: Author.

Before the Rudolph addition was abandoned, it was modified and retrofitted with air conditioning in the 70s in an attempt to bring it into the thermal comfort standards of the time. The question of how to retrofit forced air into a modern building was a difficult challenge. The chilled water air supply system that was implemented does not use or follow Rudolph's original space allowances for mechanical systems. Instead, water pipes and ductwork were installed along the walls of the corridor where they can be easily accessed for maintenance (Figure 60). Lighting also became an issue for Rudolph's building. Clerestory windows and skylights were closed and painted to achieve the correct standard for interior illumination (Figure 61). The corridors became dark and damp and consequently, unpleasant to walk through.



Figure 60. Ductwork in Corridor Openings
Source: On-site photo by author



Figure 61. Second Floor Corridor
Source: Sarasota Herald Tribune Staff photo by Harold Bubil,1-4-2013 [Online image] retrieved 2013 <http://realestate.heraldtribune.com/2013/02/10/sarasota-high-letters-from-saf-members/>



Figure 62. Air Handler
Source: On-site photo by author

Another negative consequence of running the ductwork and water pipes through the corridors is the problem of getting the chilled water into each classroom to an air handler unit. Rudolph's original intent was to have conduit and ductwork hidden beneath your feet. The retrofits did not follow his method and instead, ran the ductwork and pipes directly through clerestory windows (Figure 62).

Running chilled water pipes through clerestory windows causes a number of issues. In a climate where controlling humidity is a primary environmental concern, condensation on glass is inevitable. The glass that is found in Rudolph's building is all single pane, non-insulated glass. The classrooms quickly succumbed to mold and mildew issues. The chilled water pipes in direct proximity to glass did not help. Besides mold and mildewing issues caused by condensa-

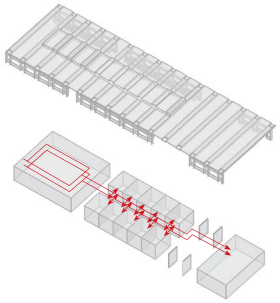


Figure 63. Retrofit Ductwork and Pipes
Source: Diagram by Author.

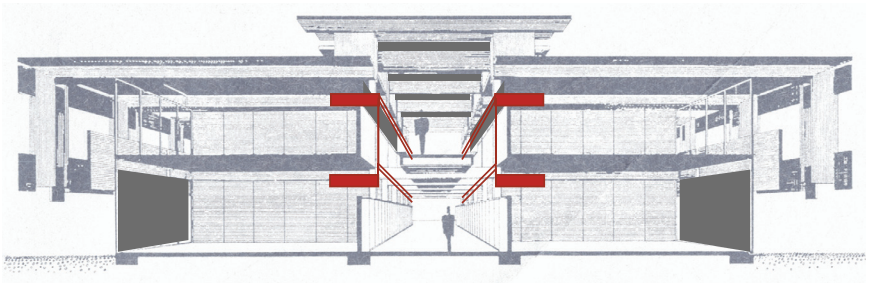


Figure 64. Section Perspective Diagram
Source: Author. Underlay: "Architectural Forum," May 1969

tion, air handler units like the ones used in the Rudolph building are usually all controlled by one system. Even though each classroom had one dedicated air handler, it is likely that individual classroom temperatures could not be set. Air handlers constantly blow cold air into conditioned spaces, creating a large temperature differential when traveling from exterior to interior. As a result, classrooms were cold and noisy, and therefore uncomfortable (Figure 65).

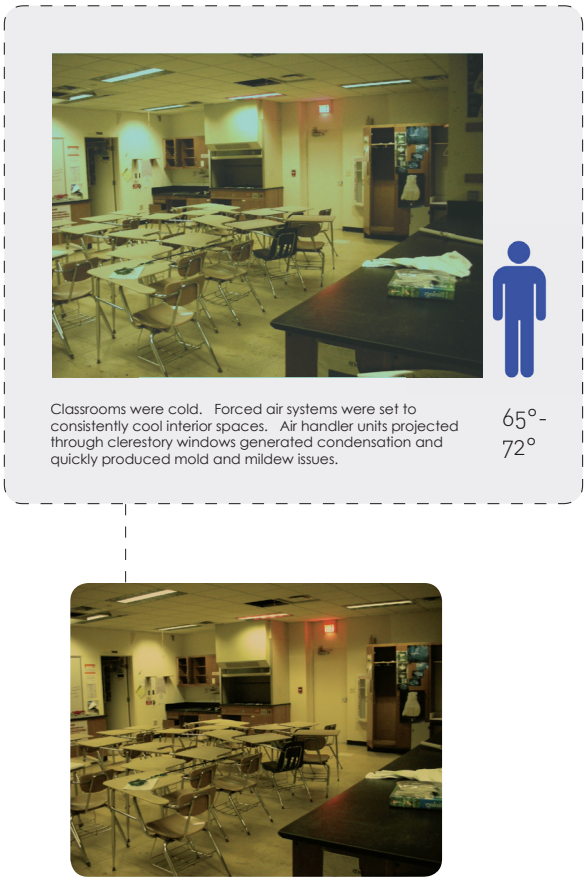


Figure 65. Existing Classroom Conditions
Source: Author. Photo Underlay: On-site photo by author.

Currently, the School Board has released huge plans for the campus of SHS including Rudolph's addition. Following the statements released after the demolition of Riverview High School, the school board plans to rehabilitate the addition and re-incorporate it back into the SHS campus.

About 40 percent of the buildings located on the SHS campus are slated for demolition (Figure 65). These buildings include portables, two cafeterias, a classroom wing, and two gyms. The issues with such a large campus are security, identity, maintenance, and entry. The School Board is moving forward with a plan to decrease the number of buildings on campus, to re-configure the Rudolph addition and one other building on the east side of School Avenue, and to newly construct a gymnasium. A new, central cafeteria and

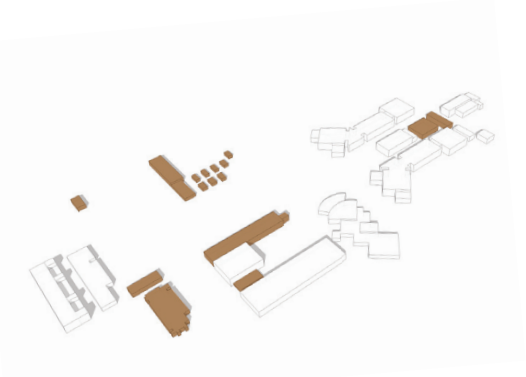


Figure 66. Demolition Plan
Source: Author.

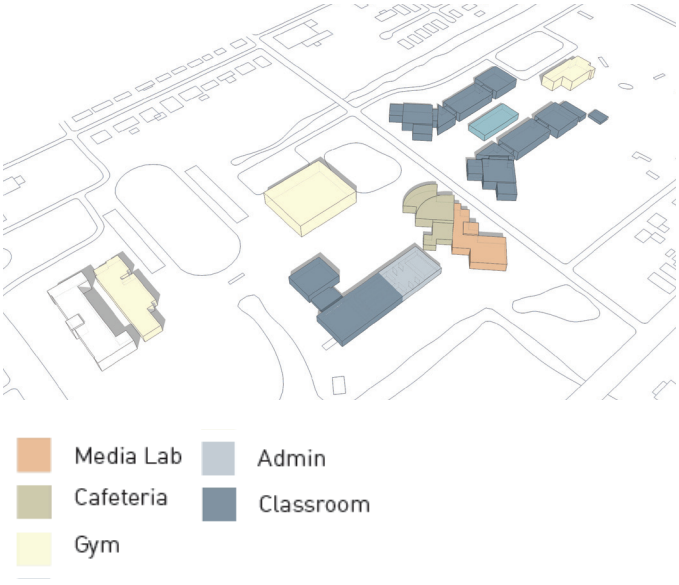


Figure 67. SHS Future Campus Plan
Source: Author.

new, central media lab will help unite the two sides of the campus. The new entry to the campus is designated through Rudolph's grand central breezeway. However, due to the openness of the breezeway, an aluminum fence will be constructed to prevent visitors from directly entering the campus at will.

The plans for Rudolph's addition are to completely restore the exterior and to completely demolish the interior (Figure 68). It will be re-configured to accommodate classrooms that meet the education specification and all administration spaces. No double height spaces or views between floors are allowable or feasible in a corridor that meets today's needs. The interior corridors will be enclosed to prevent air infiltration and to allow for mechanical cooling. Standard HVAC will heat and cool classrooms.

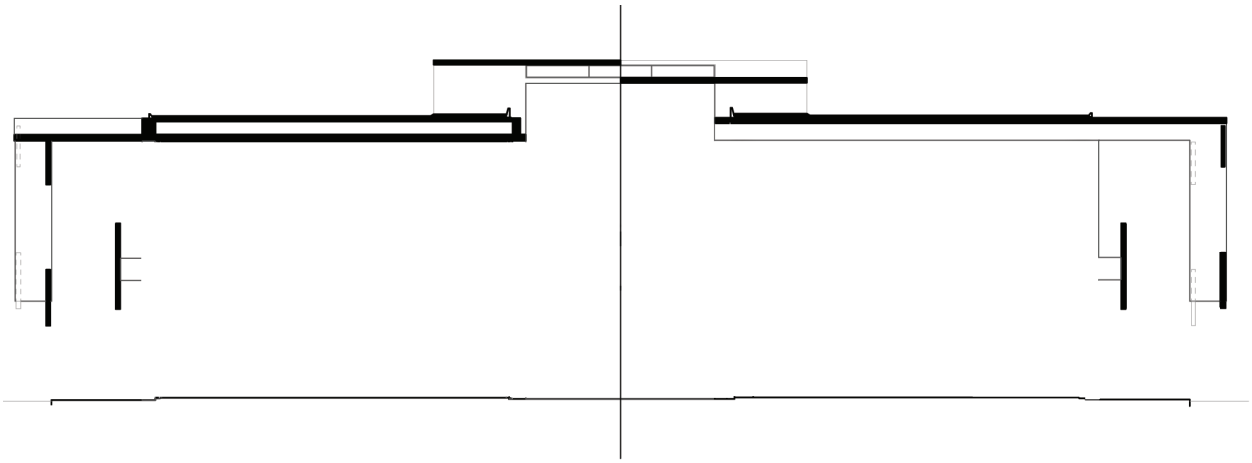


Figure 68. Current Plan for Rudolph Addition
Source: Author.

Sadly, Rudolph's roof is hardly the most significant piece of his design. It is the integration of the structure, the mechanical and electrical systems, and the dedication to natural light and air that generated the folded concrete form that in turn generated the entire organization of the building. Without these key pieces, Rudolph's roof become's just a oversized, half-functioning sunshade.

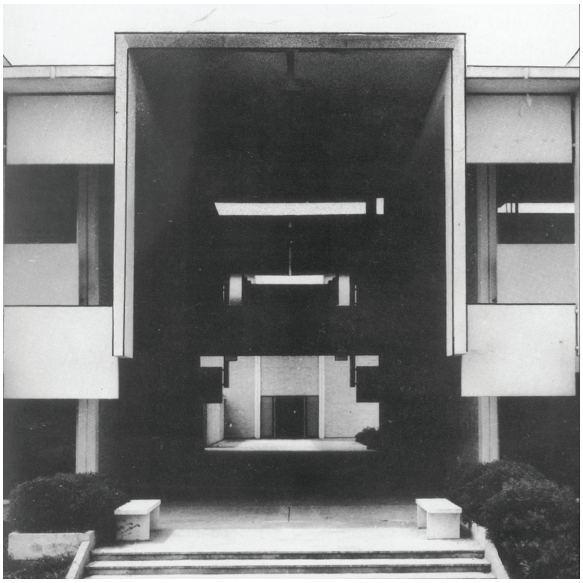


Figure 69. 1966 Breezeway
Source: *SHS Sailor's Log* 1966



Figure 70. Current Breezeway
Source: On-site photo by author

PART 5 | ***FORMING***

Regenerating Rudolph's Ideas: 3 Strategies

Instead of erasing what once was, my proposal addresses the regeneration of Rudolph's addition at three scales. The success of altering Sarasota High School depends on the school functioning properly all the way from the scale of the site down to the human scale.

First, a new ***master plan*** will address the campus's issues with programmatic placement, clear and orderly circulation, exterior space, and identity.

Secondly, the four ***key moments of insertion and deletion*** in the building will critically edit or add that which is architecturally and functionally necessary in order for the building to be used today.

Finally, a new proposal for ventilation and air conditioning will address ***thermal comfort*** at the human scale.

All three scales utilize, critique, and expand Rudolph's strategies that were designed specifically for SHS and Sarasota.

Connecting SHS Through Master Planning

There is an interesting on-site condition at SHS. After the original high school building was abandoned in 1996, the School Board came to a decision to demolish or sell the Gothic-Revival building. An outraged community immediately mobilized and rallied against demolition. Ringling College of Art and Design stepped forward as an interested tenant to occupy the building, but did not have the funds to purchase it. The School Board, with no funds to restore the building, decided to lease the building to Ringling for 99 years at $1 per year. The solution reached by Ringling and the School Board is applaudable and an exciting re-use for the old SHS building.

Now, Ringling College of Art and Design has raised over fifteen million dollars (with plans to raise around 20 million) in a capital campaign to turn the building into Sarasota's first Museum of Modern Art. In addition to becoming a museum of Modern art, Ringling plans to use the museum for a community art-outreach program. Art classes will be offered to adults in the community. To support this program, an addition to the Gothic building will be constructed.

My proposal is to use this existing condition and to merge the needs of the high school with the needs of SMOA (Sarasota Museum of Modern Art - Figure 71). If SMOA could utilize the Paul Rudolph Addition for a special collections library, extra gallery space, and classroom spaces during off-school time hours, then SHS could use the building as the high school media lab during the day. A mixed use between SMOA and SHS could help "loosen-up" the tight school board education space requirements and allow some of the character defining internal spatial elements of Rudolph's design to remain.



Figure 71. SMOA
Source: Nick O'Brien [Online image] retrieved 2013 <http://nickob.me/SMOA-Sarasota-Museum-of-Art>

The mixed use will re-establish the historic connection between the Gothic, original school building and Rudolph's building (Figure 72). Because of the potential "loosening up" of the program designated to fill Rudolph's addition, that program and money could be used to re-densify the campus in a clear and organized manner.

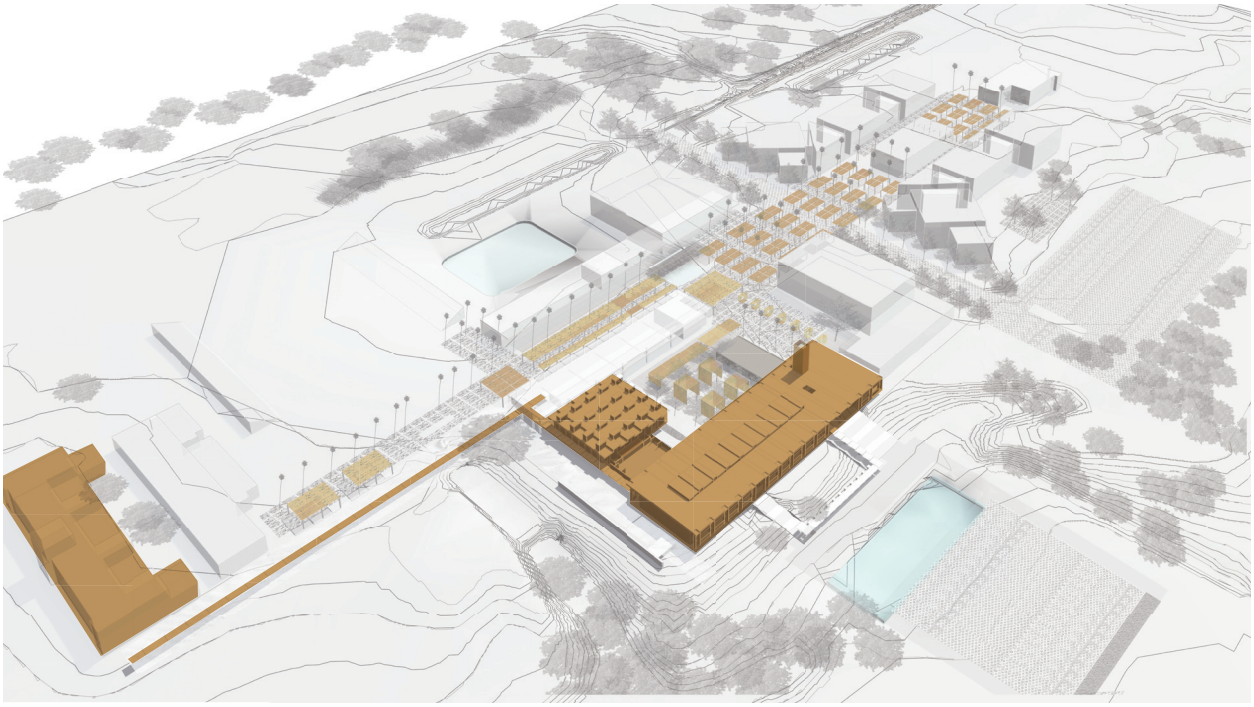


Figure 72. Connection Restored
Source: Author.

The newly proposed buidlings will help create density around the Rudolph addition and will give the west side of campus more funcitonality. A new classroom wing will sit across from an existing bar shaped classroom wing (currently slated for demolition, but saved in this proposal). A new gym will be placed across from a new cafeteria in the heart of campus just to the west of School Avenue (Figure 73). The two buidlings will face each other, and will relate in massing to create a continuance of the massing on the east side of campus. Administration will be placed just behind the breezeway entrance (see Figure 75).

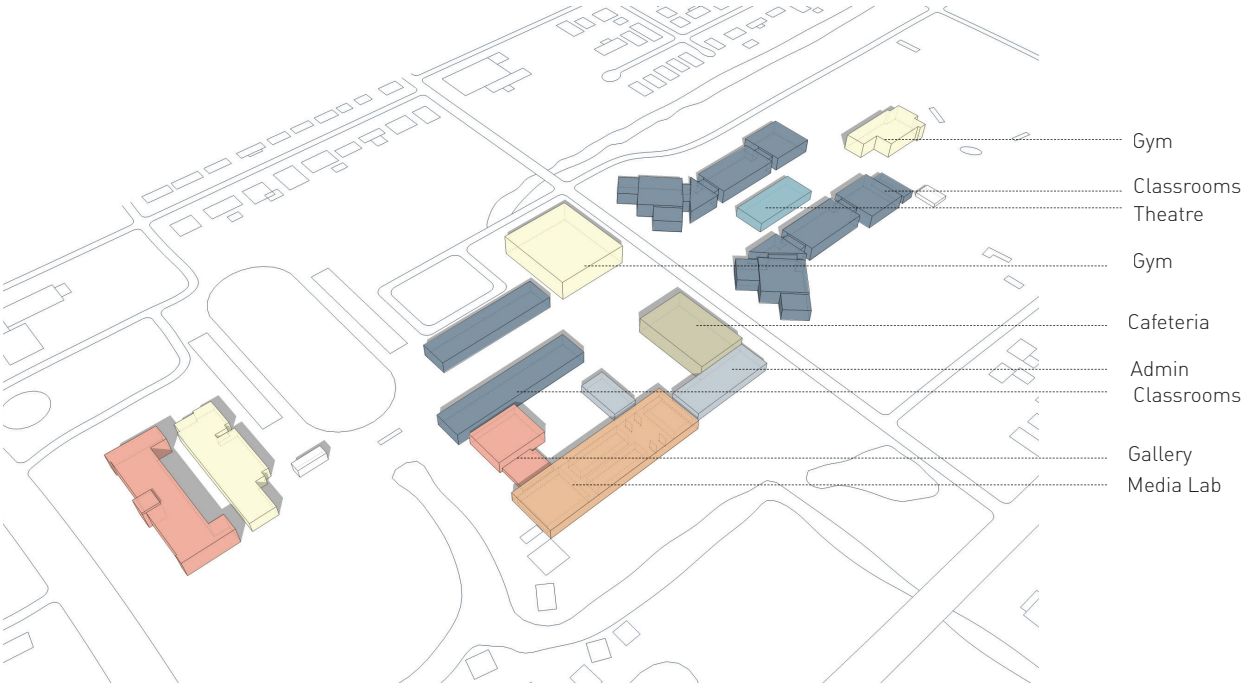


Figure 73. Proposed SHS Massing and Program Placement
Source: Author.

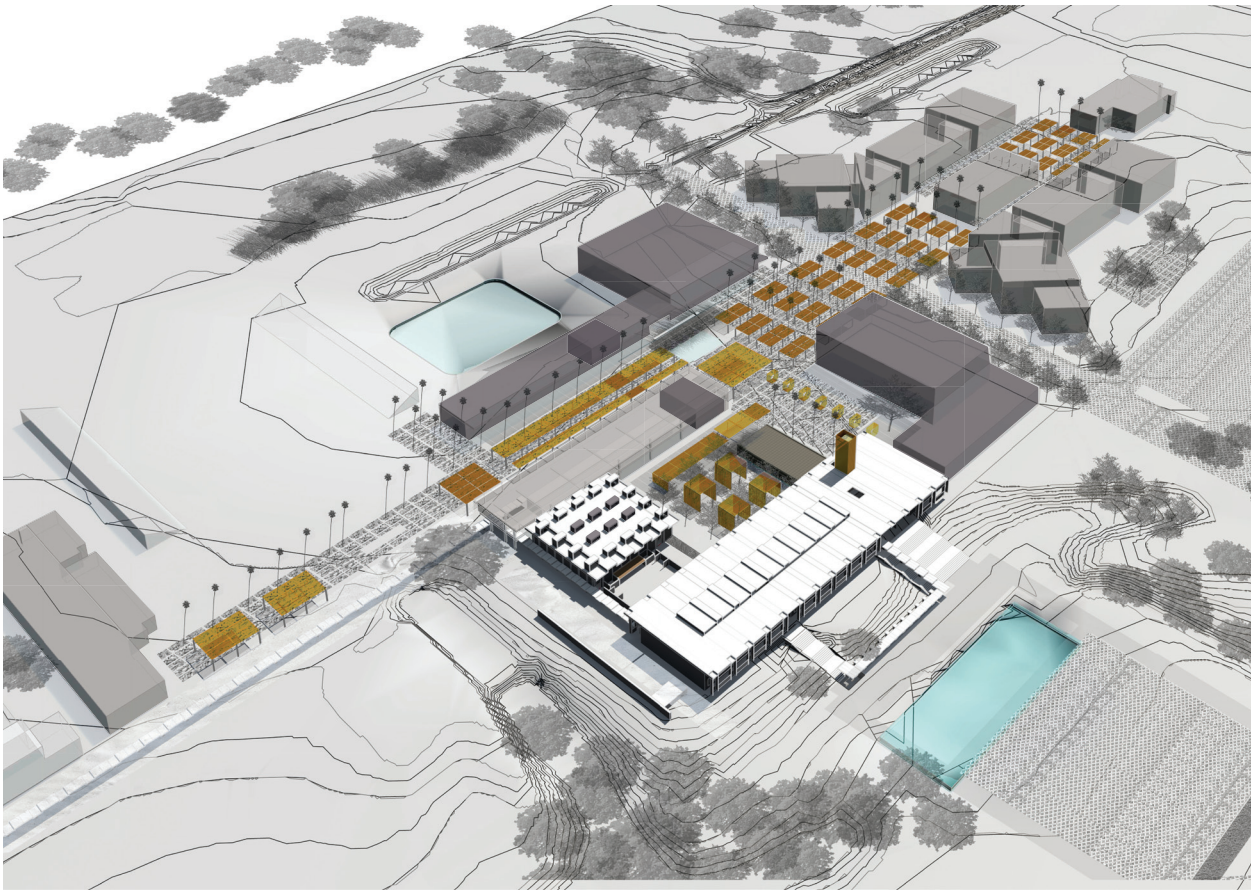


Figure 74. Proposed SHS Master Plan
Source: Author.

Shown in Figure 74 above is the proposed, comprehensive Master Plan. The dark grey buildings represent the proposed new buildings. The buildings shown in light grey are existing. The L-shape white building is Rudolph's addition, and is proposed to be shared between the high school and SMOA to benefit the surrounding community and Sarasota as a whole.



Figure 75. New SHS Entry
Source: Rendering by Author.

Entry and circulation on campus is controlled by two separate strategies. By placing administration directly behind the entrance breezeway, the building itself can serve as a barrier, eliminating the need for an aluminum fence. The second organizing strategy is a connective, linear space. At present, the school is separated by School Avenue that is closed off during school hours. If new buildings are constructed along a linear promenade (Figure 76), it could effectively knit together the two disparate sides of campus.

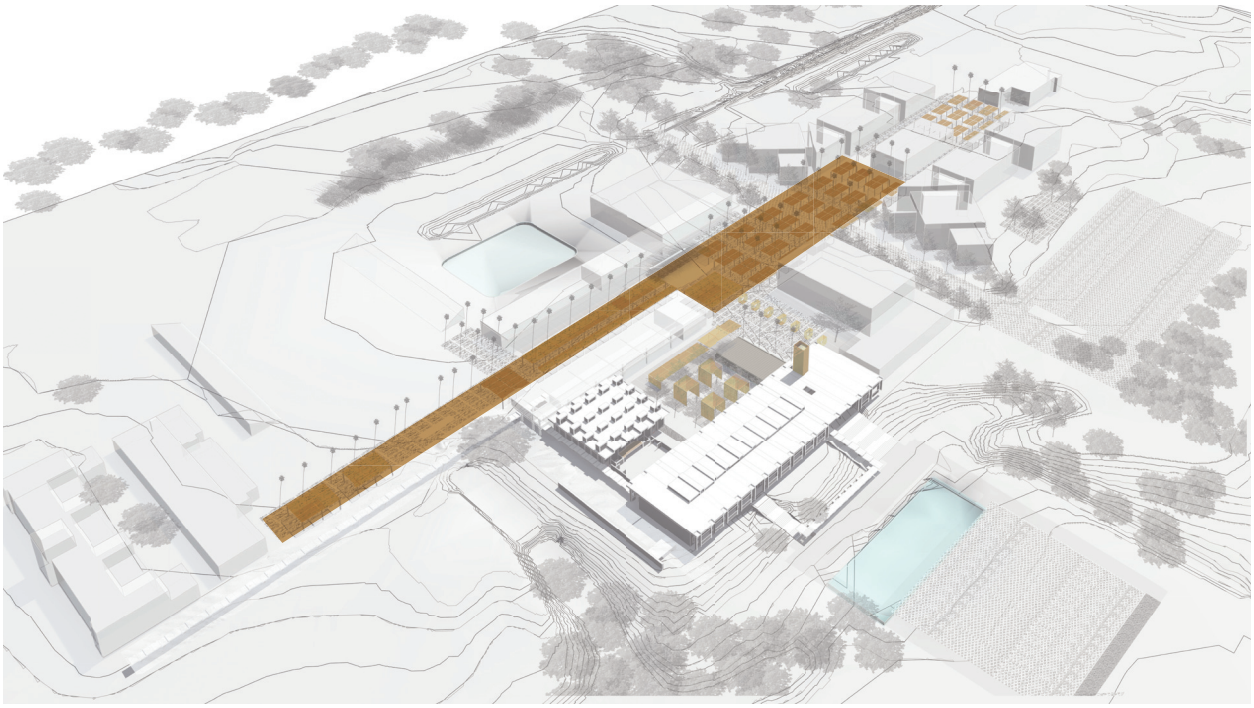


Figure 76. Proposed Promenade, SHS Campus Organizing Strategy
Source: Author.

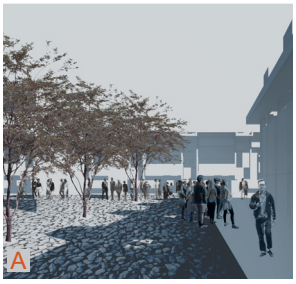


Figure 77. Courtyard
Source: Rendering by Author.

The density created by adding new buildings to the campus will help create more desirable walking conditions for students. To provide additional protection from the sun, a series of overhead, wooden canopies will populate the exterior spaces. The canopies will vary in size and form to create a variety of public versus private spaces on campus.

Just as an overhead canopy deals with the suns rays, an underfoot strategy is also examined. The water moving across the site joins together to form the Hudson Bayou. For generations after Rudolph's addition was constructed, this waterway was referred to as a ditch. In an attempt to utilize and also to celebrate this on-site resource, water from the creeks is filtered and directed underneath raised concrete pavers to provide a thin stream of water along the promenade (Figure 80).

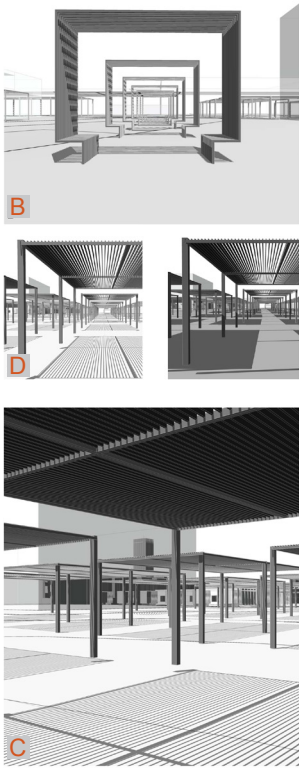


Figure 78. Views on Campus
Source: Author.

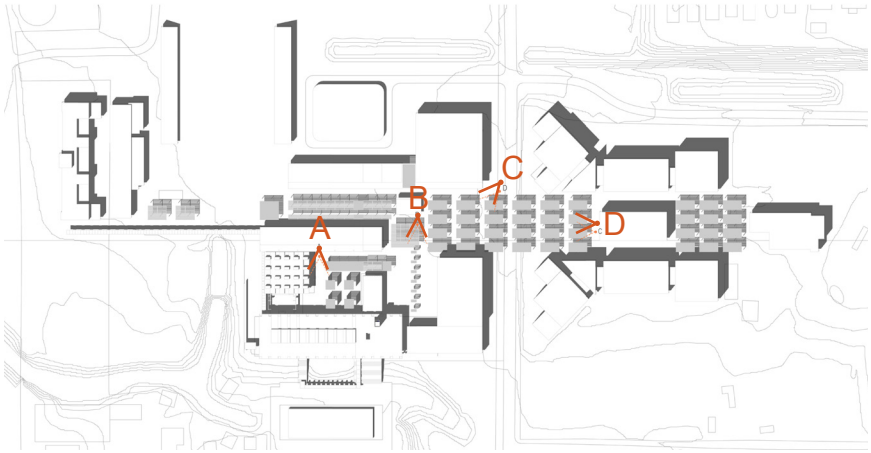


Figure 79. Views Key Plan
Source: Author.



Figure 80. Layering of Environmental Controls
Source: Author.

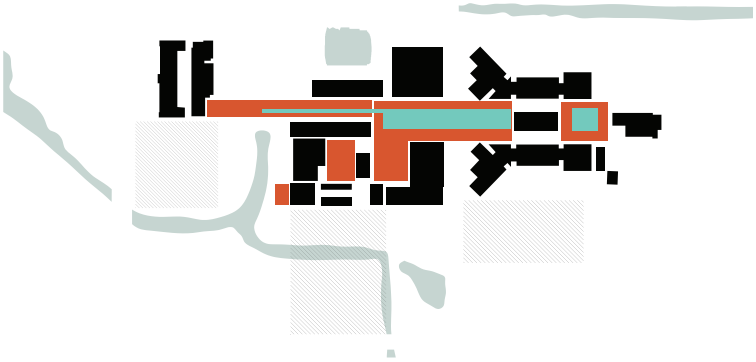


Figure 81. Exterior Spaces and on-site water
Source: Author.

This water acts as an environmental strategy to help offset high temperatures during the hottest months (Figure 77).

In this campus plan, a shift in the interior culture of schools to a more balanced relationship with the surrounding environment could benefit generations of students. Using simple climatic strategies to offset harsh temperatures will promote outdoor activities and occupation.

Key Interventions: Insertion and Deletion

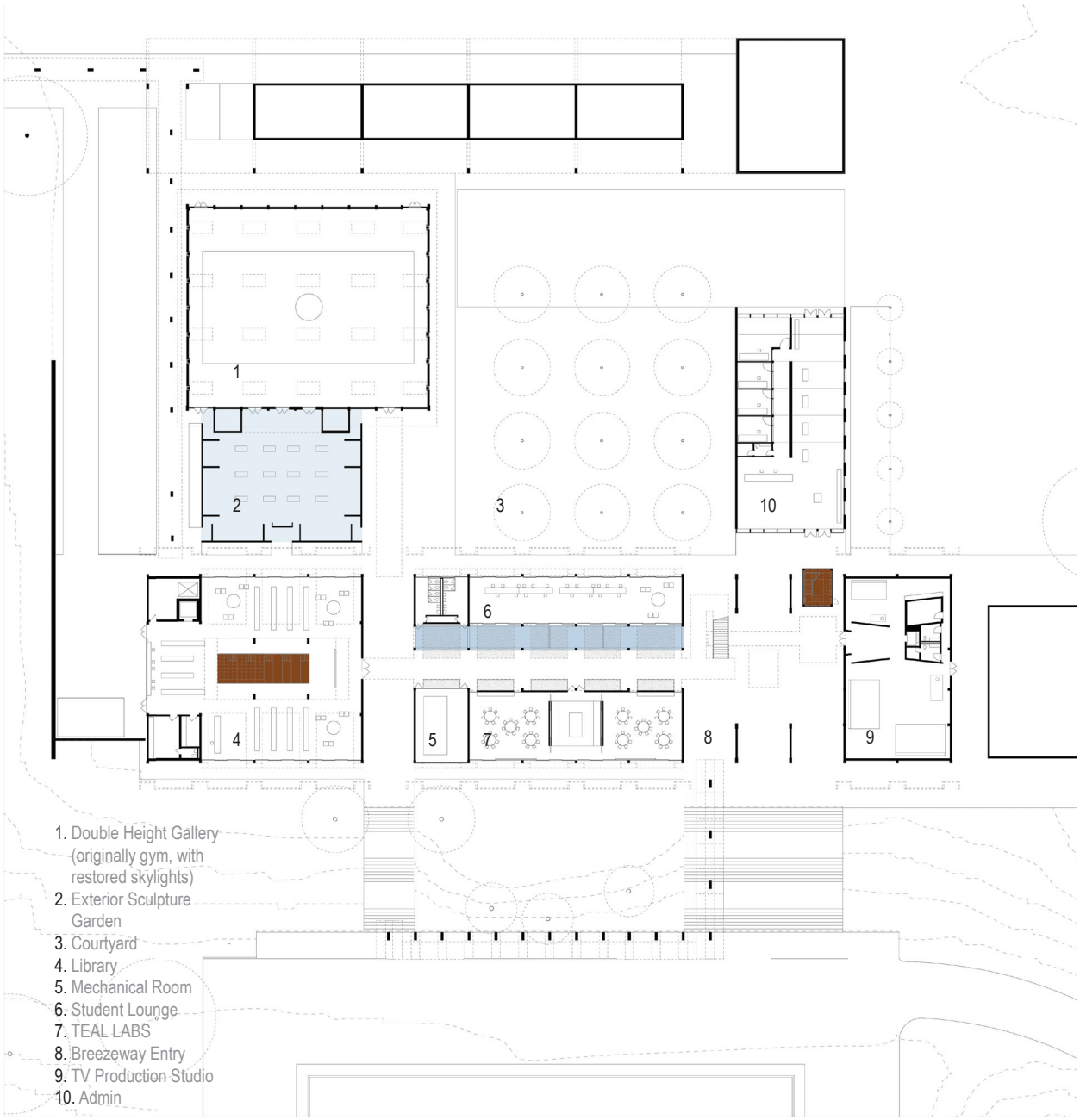


Figure 82. Proposed Ground Floor Plan (Blue = Deletion, Dark Sepia = Insertion)
Source: Author.

Based on the idea that SMOA and SHS could share occupancy and use of the Rudolph addition, four key building interventions are proposed to transform Rudolph's design into livable spaces suited for today's needs.

First, because the addition will become the new entryway and face of SHS, it is critical to consider how the breezeway was designed to function, how it does function in its current condition, and how it should works as a re-invigorated and re-couperated entry into campus.

Rudolph was interested in sculptural composition, light, and movement when designing the breezeway. The columns holding up the roof are connected with masonry in-filled walls, reinforcing the movement across the east-west axis that the linear building creates. However, the floating stair, the elevated walkway, and an oculus cut into the center of the roof of the breezeway, all work to help turn you onto the correct axis.

Over the years, this simple, sculptural organization has remained intact but for many years since it was abandoned, it was unused. The designated entry to SHS that currently exists is somewhat confusing, and hard to find for first time visitors. Now, moving the entry back to the once abandoned



Figure 83. Breezeway Time Progression: Designed, Constructed, Existing
Source: From Left: Rendering by Paul Rudolph, "Architectural Forum," May 1959 Middle: *The Art and Architecture of Paul Rudolph*, p. 34 Right: [Online image] c-monster/

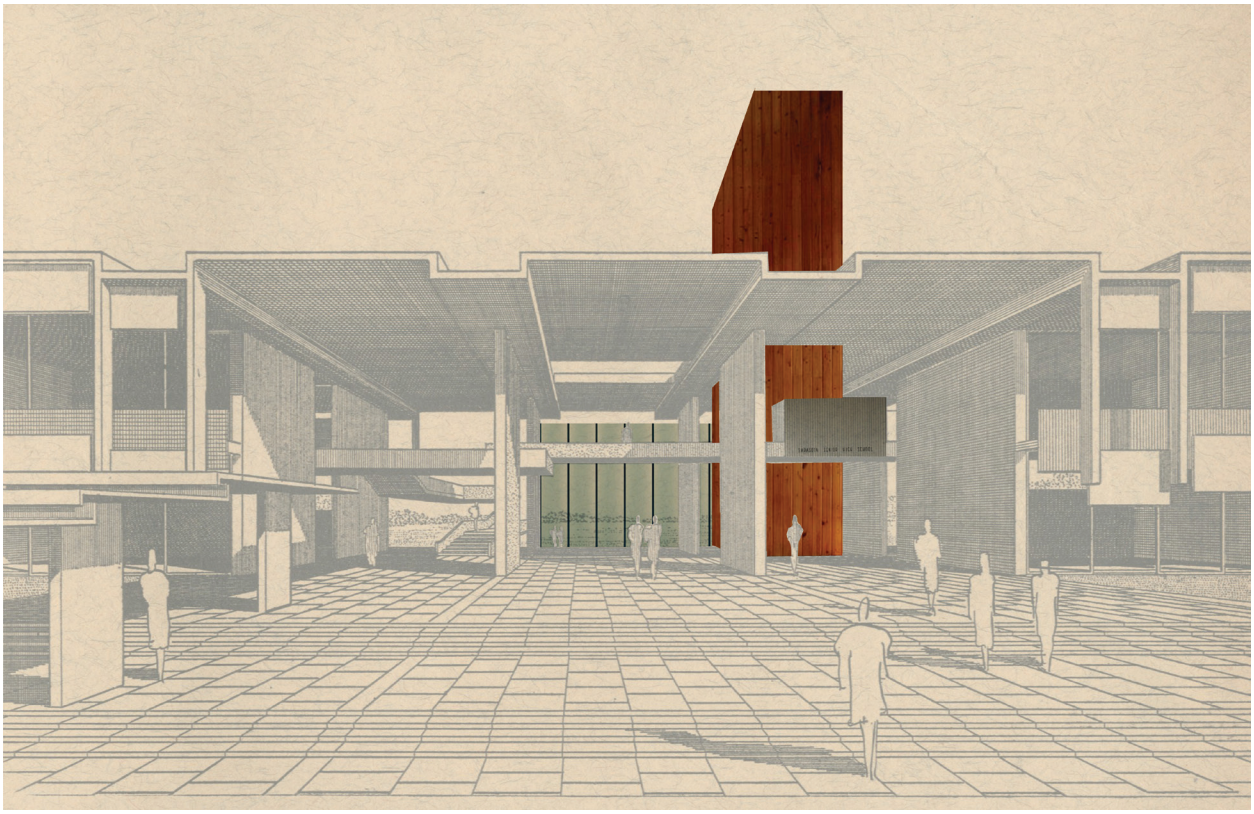


Figure 84. Proposed Entry View
Source: Author. Underlay: Paul Rudolph, “Architectural Forum,” May 1959

breezeway raises questions about its immediate functionality as the entry. It is questionable whether the breezeway needs something new to designate it once again as the major entry. The potential of a cypress wood look-out tower is examined as a designator of the SHS campus, and a marker of the new entry point. The tower is an act of insertion, and will puncture Rudolph’s roof, showcasing intervention in the building in an attempt to bring it back to life.

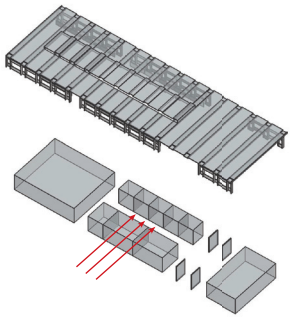


Figure 85. Proposed Building Massing
Source: Author.

The second area that demands an intervention is the corridor between the original classroom wings. While the corridor is extremely significant because it physically embodies Rudolph's attempts to deal with Florida's climate through openings in the walkway and in the roof, the convective air flow just didn't work.

As a major form of editing, the north classroom wing will be pushed back to create a primary classroom wing and a secondary classroom wing. The larger wing will be comprised of more formal classroom configurations. The smaller wing will house a student lounge and computer workstations on the ground floor, and small private study rooms on the second floor.

The idea behind pushing the building back is to give more space to the corridor so that it can become occupiable. White rocks will be placed on the ground floor where the buidling is pushed back to mark the edge of the original

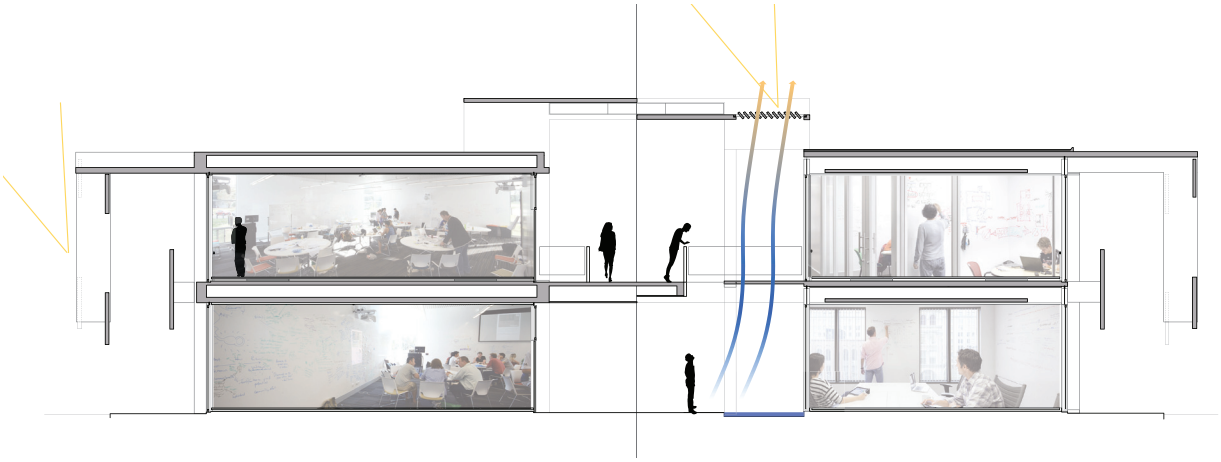


Figure 86. Proposed Transverse Section and Corridor
Source: Author.



Figure 87. Proposed Corridor
Source: Rendering by Author.

building and to bounce light into the space (Figure 87). The smaller wing will become a transparent bar with sliding glass doors to open up views to a quiet, study courtyard.

Pushing the building back will also reveal evidence of the original building's making by revealing more of the folded structure. The contrast between the right and left sides of the corridor will help generate a better understanding of the purpose of the openings in the walkways.

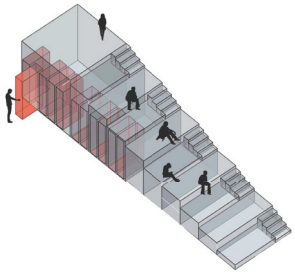


Figure 88. Library Stairs Massing
Source: Author.

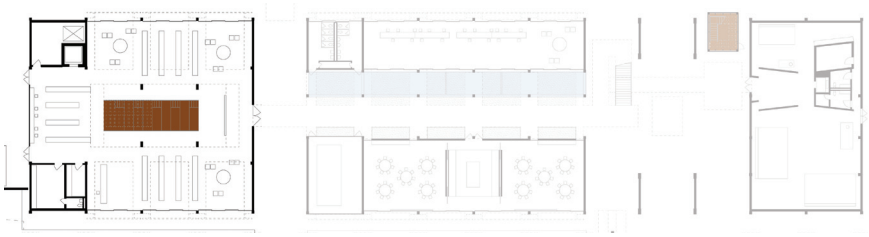


Figure 89. Proposed Library Plan
Source: Author.

The original cafeteria in the addition was designed in a nine-square configuration. The center was left open as a double height space. The ground floor was unencumbered by dividing walls and allowed long tables to be placed in rows so that students could gather for lunch or for study hall (Figure 90). The second floor was composed of four classroom spaces centered around the double height space of the cafeteria.

This spatial configuration could translate very well to a library. By opening up the classrooms on the second floor, stacks can begin to fill the north and south sides of the space allowing for the center to remain a double height.

As a library, the old cafeteria, while well suited for stacks, is limited in space. By inserting a wooden amphitheater stair in the center of the space, more storage can be incorporated into the library (by placing sliding shelves underneath) while also providing an informal study area that can also be used as an auditorium for lectures, or as a screening area for movies (Figure 88). The stair also provides a grand connection between the ground floor and second floor of the library.

The cypress wood material would be distinguished from the original materials used in Rudolph's building and would create tangible warmth and scale for seating (Figure 91).



Figure 90. Cafeteria in 1960
Source: Gator Preservationist Blog, "Architectural Forum," May 1960 [Online image] retrieved 2013 <http://gatorpreservationist.wordpress.com/category/paul-rudolph/>



Figure 91. Proposed Library, View from Second Floor
Source: Rendering by Author.

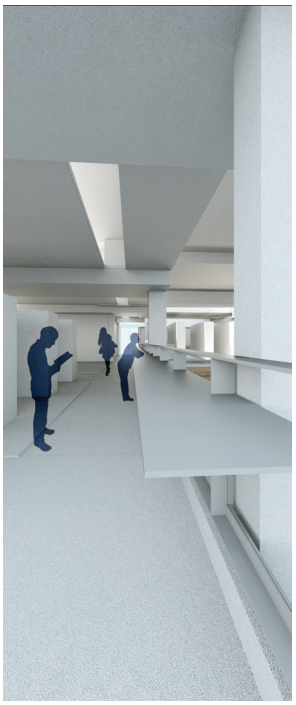


Figure 92. Library Workstation
Source: Rendering by Author.

Lastly, a gym and locker room are no longer functional or necessary for SMOA or for the SHS Media Lab. The gym has an exceptional lighting quality due to the oversized skylights that are designed to only let indirect light enter the space. The entire square room is two story, double height space, and is unlike any space that exists in the original SHS Gothic building. The gym and the locker room have the potential to become a usable gallery and sculpture garden.

The locker rooms were designed with a ceiling height of just under eight feet. When HVAC was retrofitted into them, the ceiling height was lowered even more and Rudolph's skylights were removed. Now that the lighting from above has been erased, the most interesting thing remaining about the locker rooms is their entry. A series of masonry walls are pulled back and forth to ensure private entry. This relationship would be well suited for an exterior sculpture garden that has direct access to the double height gallery.

A major edit of the locker rooms is to completely remove the roof. But, in doing so, the original massing of the three buidings, Classroom Wing, Locker Rooms, and Gym will remain.

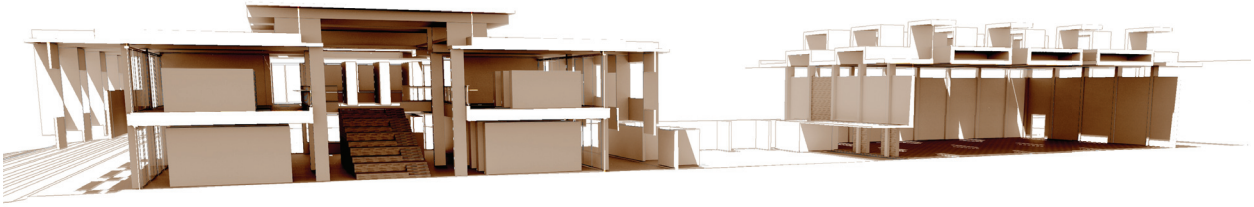


Figure 93. Library, Sculpture Garden, and Gallery Sectional Perspective
Source: Author.



Figure 94. Sculpture Garden Entry
Source: Rendering by Author.

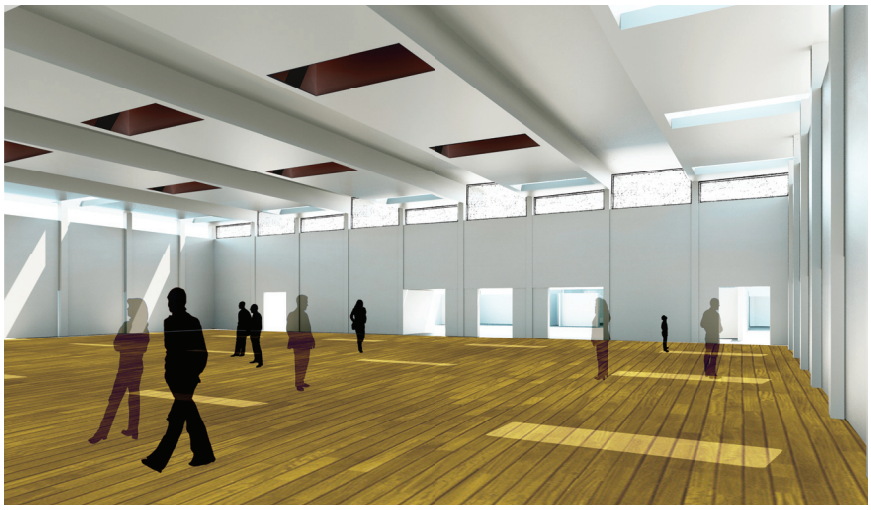


Figure 95. Proposed Gallery Space with Restored Central Skylights and Wood Floor (Former Gym)
Source: Rendering by Author.

Addressing Thermal Comfort

It has become apparent through the retrofitted system currently installed in the Rudolph addition that cooling with forced air does not work. The extreme heat and humidity of Florida as well as the clean lines of Rudolph's design do not support the typical HVAC system. This is proven through the development of mold, mildew and sick building syndrome in the addition. It is critical to re-consider thermal comfort as a key component of a successful regeneration of Rudolph's addition by re-thinking standard HVAC.

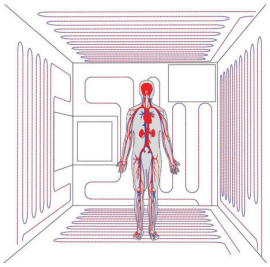


Figure 96. Hydronic Circulatory Systems
Source: T*hermally Active Surfaces in Architecture*, Kiel Moe, p. 7

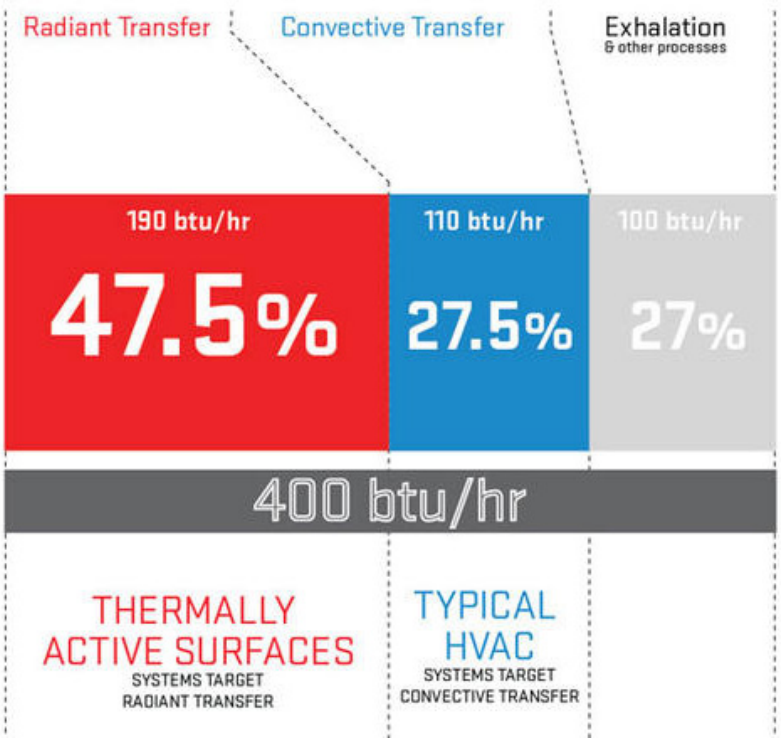


Figure 97. Radiant and Convective Heat Transfer
Source: *Thermally Active Surfaces in Architecture*, Kiel Moe, p. 8

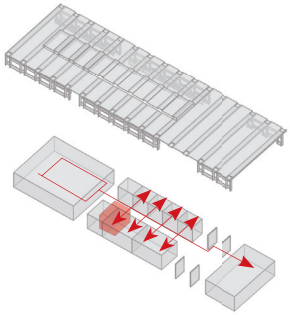


Figure 98. Proposed Ventilation Strategy
Source: Author.

Kiel Moe outlines interesting statistics about the differences between typical HVAC convective heat transfer and radiant heat transfer. According to his diagram (Figure 97), radiant heat transfer through thermally active surfaces is at least 20% more efficient than convective heat transfer.

For Rudolph's addition, the shift in reliance on inefficient convective heat transfer to radiant heat transfer is critical. A new cooling system will be decoupled from ventilation air altogether. Chilled ceiling panels will provide radiant cooling while an active desiccant energy recovery ventilator will provide dehumidified and "pre-cooled" fresh air to the interior spaces.

It is a well known fact that water is a much better medium for transferring energy than air. Metal, suspended, chilled ceiling panels (Figure 99) allow for energy savings, better thermal gradients, and a reduction in ductwork.

Desiccant dehumidification technology can now be added into an ERV via a solid silica wheel. An energy recovery ventilator passes supply air past return air to transfer heat

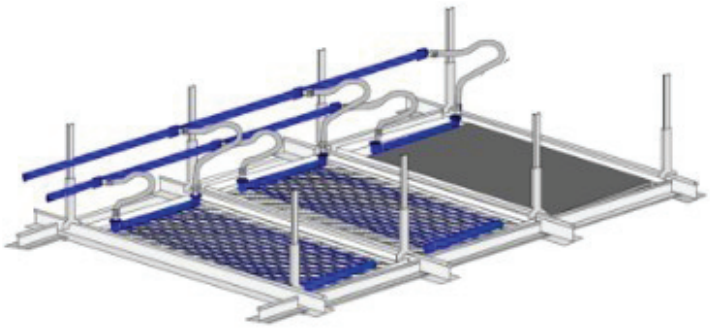


Figure 99. Suspended Metal Ceiling with Radiant Cooling Capillary Water Mats
Source: [Online image] retrieved 2013 <www.dismy.cn>

and humidity before it is further cooled or dehumidified with an active system. A desiccant wheel can be added into this cycle to further “pre-cool” air before it reaches conditioned spaces. In fact, a desiccant ERV is considered capable of completely and effectively handling latent cooling loads before delivering fresh air to the interior. Another benefit to



Figure 100. TEAL Lab Wall Section Perspective
Source: Author.

using ventilation air separated from cooling systems is the reduction of duct sizes. Rudolph's thermal channels can be reincorporated into the heating and cooling of the addition because of smaller duct sizes and reduced air flow requirements. The ERV will be moved to a more central location in Rudolph's addition (Figure 98) to better serve the entire building.

Rudolph's designed details were carefully considered when examining ways to install the chilled ceiling panels. Figure 101 shows Rudolph's lighting detail that is suspended from the thermal channel. To respect this detail, the metal panels are suspended from the thermal channel and designate the line where the lights once projected. Lighting is now integrated into the dropped ceiling panel, utilizing reflected light versus direct light.

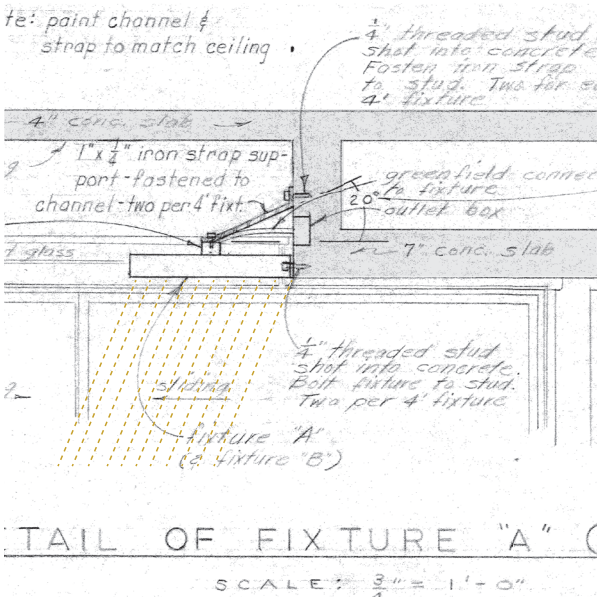
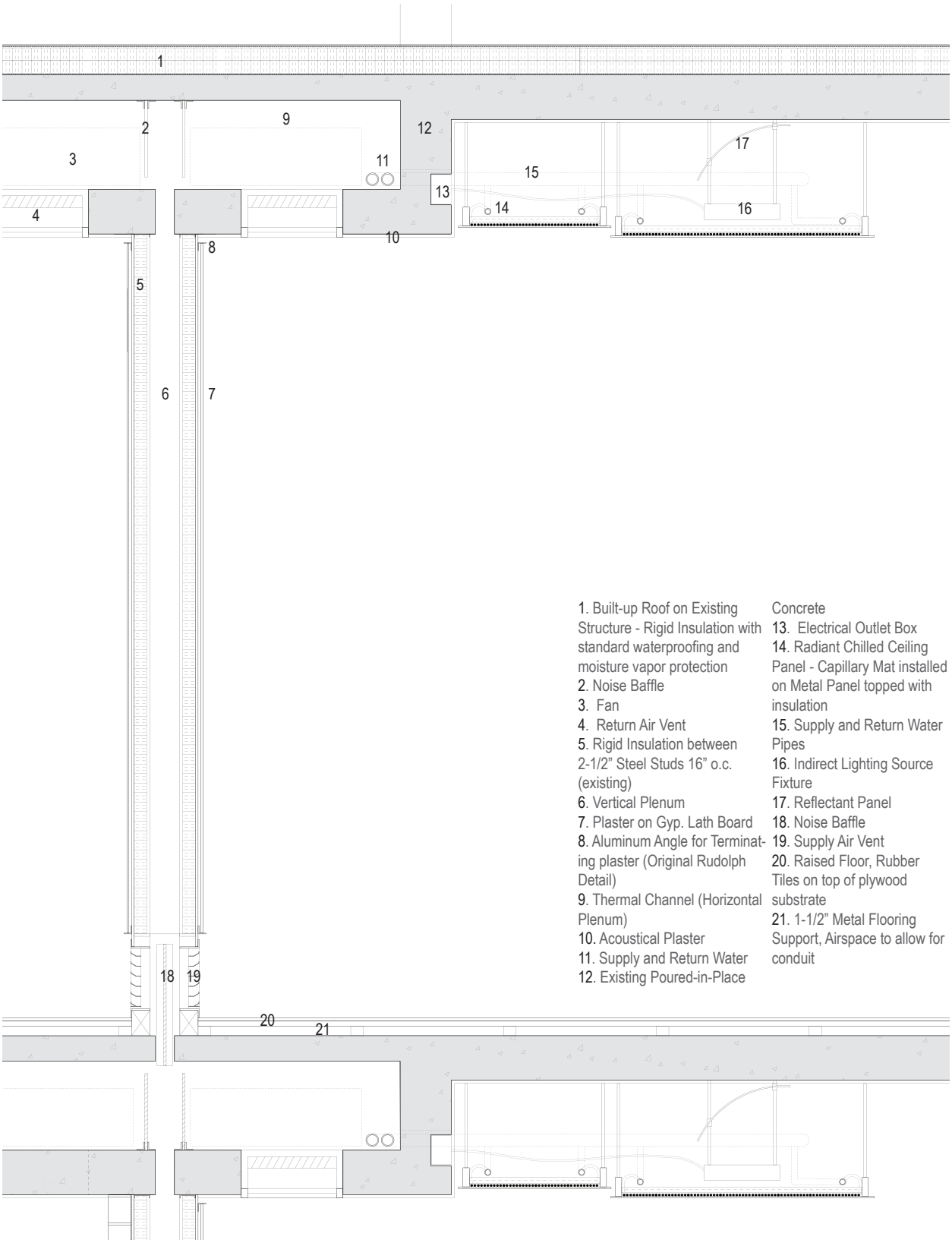


Figure 101. Original Paul Rudolph Lighting Detail
Source: Original Paul Rudolph Construction Detail courtesy The Sarasota County School Board



1. Built-up Roof on Existing Structure - Rigid Insulation with standard waterproofing and moisture vapor protection
2. Noise Baffle
3. Fan
4. Return Air Vent
5. Rigid Insulation between 2-1/2" Steel Studs 16" o.c. (existing)
6. Vertical Plenum
7. Plaster on Gyp. Lath Board
8. Aluminum Angle for Terminating plaster (Original Rudolph Detail)
9. Thermal Channel (Horizontal Plenum)
10. Acoustical Plaster
11. Supply and Return Water
12. Existing Poured-in-Place Concrete
13. Electrical Outlet Box
14. Radiant Chilled Ceiling Panel - Capillary Mat installed on Metal Panel topped with insulation
15. Supply and Return Water Pipes
16. Indirect Lighting Source Fixture
17. Reflectant Panel
18. Noise Baffle
19. Supply Air Vent
20. Raised Floor, Rubber Tiles on top of plywood substrate
21. 1-1/2" Metal Flooring Support, Airspace to allow for conduit

Figure 102. Proposed Wall Section Detailing
Source: Author

A key component of SHS's new media lab is the integration of technology and learning. A new program that is spreading throughout Sarasota County Schools is Technology Enabled Active Learning (TEAL) classrooms. Called "TEAL labs," the organization of the room challenges the standard way classes are taught. Instead of the typical lecture format, class is based off of active engagement methods. Students are instructed in shorter intervals that shift between lecture, collaboration, and problem solving. High-tech visualization methods allows for large groups of students to be instructed at one time, eliminating the "back of the classroom" problem.

An example of the room set up can be seen below in Figure

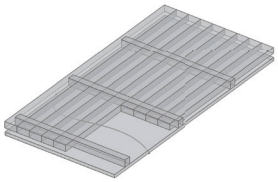


Figure 103. Raised Floor
Source: Author.

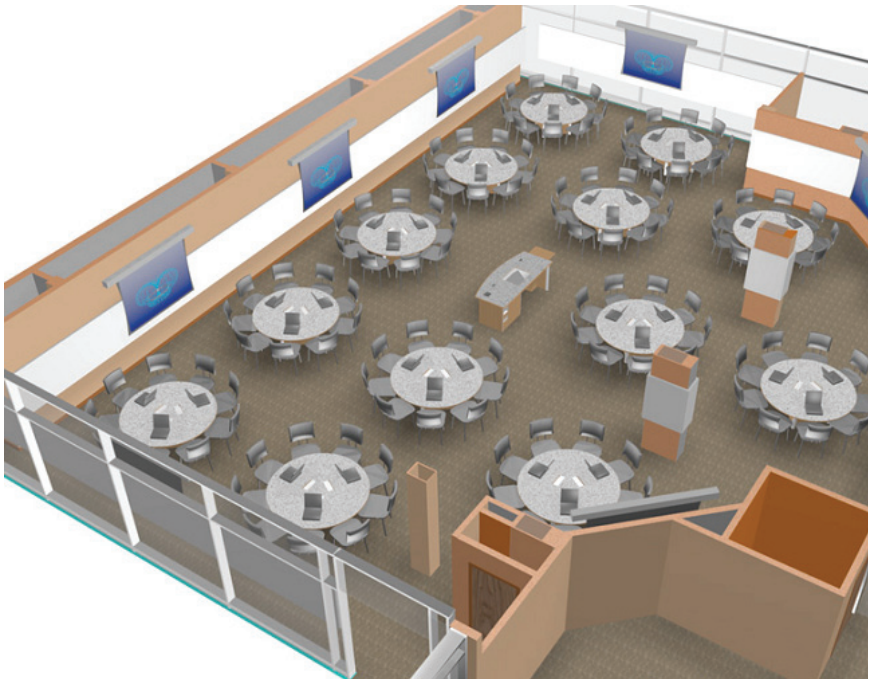


Figure 104. TEAL Lab Classroom Arrangement
Source: [Online image] retrieved 2013 <http://web.mit.edu/8.02t/www/802TEAL3D/teal_tour.htm>

104. Round tables facilitate discussion and collaboration. Walls coated with writable, whiteboard paint can double as brainstorming surfaces or projection surfaces. A slightly raised floor allows for electrical outlets in any point in the room.

The TEAL labs are not designated to one subject, and are separated from typical classrooms. Their location in the Media lab will ensure shared use from the entire campus, SMOA, and the entire surrounding community. The community will have the opportunity to use the classrooms and to experience 21st century learning in an iconic Sarasota, Paul Rudolph building.



Figure 105. Proposed TEAL Lab Classroom Configuration
Source: Author.

PART 6 | ***CONCLUDING***

Ruining Rudolph?

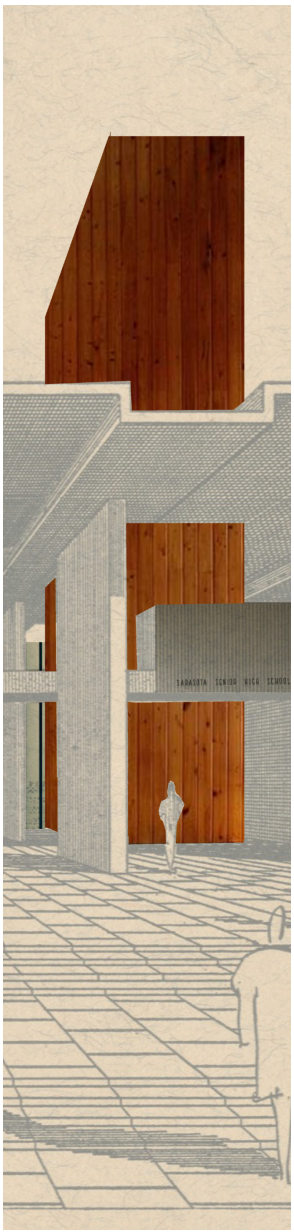


Figure 106. Cypress Entry Tower
Source: Author. Underlay: Paul Rudolph, "Architectural Forum," May 1959

The alteration and conservation of Rudolph's 1958 Sarasota High School is architecturally and functionally necessary. An attempt to both respect and, most importantly, respond to Rudolph's ideas enlivens spaces deadened by abandonment and time.

By working with Rudolph's design and allowing the strategies set in place to dictate changes to the building, SHS can work in a way that it never has before. The potential for change is the key. Rudolph himself stated, " The open-ended aspect of the building allows it to grow: thus the notion that no building is ever fixed and complete within itself is made clear" (Moholy-Nagy, 62).

The reinvigoration of Sarasota High School is regenerative and gives new life to Rudolph. His ideas can be better understood through spaces that are usable today. Rudolph states, "I'm all for buildings that work. It's a question of *what* works" (Cook and Klotz, 96). In Florida, thermal comfort including temperature and humidity control is central to the success of the building. Rudolph was no stranger to this notion. He experimented with ways to allow for air movement and climate amelioration. His attempts were noble and significant, but non-functional by today's standards. He did not have advanced technological strategies that are available to us today to truly make his design work. By establishing a decoupled HVAC strategy that expands on Rudolph's environmental ideas, SHS can become a showpiece once again for energy efficiency and progressive, climatically-responsive design.

PR: I want buildings to move people.

JC: How do you intend to “move” people with your buildings?

PR: [...] What I really mean is that I regard architecture as important. It changes our lives or modifies them. I feel that one should be aware of where one is. [...] What defines a space, of course, varies. Sometimes it is a mass; sometimes it’s a plane. Sometimes it’s transparent...
(Cook and Klotz, 97-98).

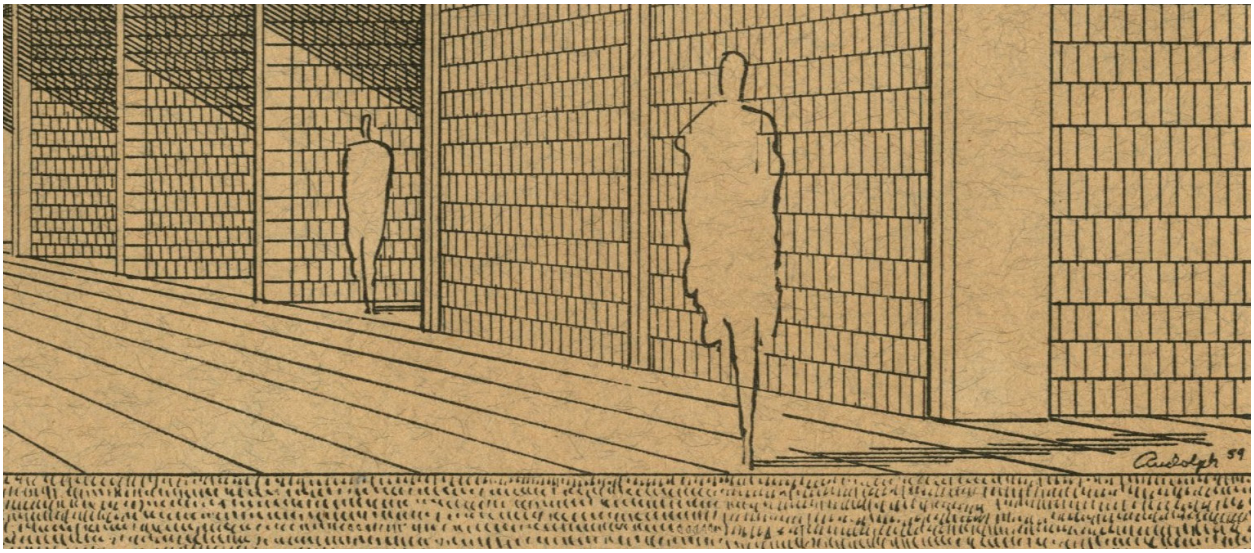


Figure 107. Detail of Design Perspective, Signed lower right: “Rudolph 59”
Source: Author. Underlay: Paul Rudolph, “Architectural Forum,” May 1959

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APPENDIX

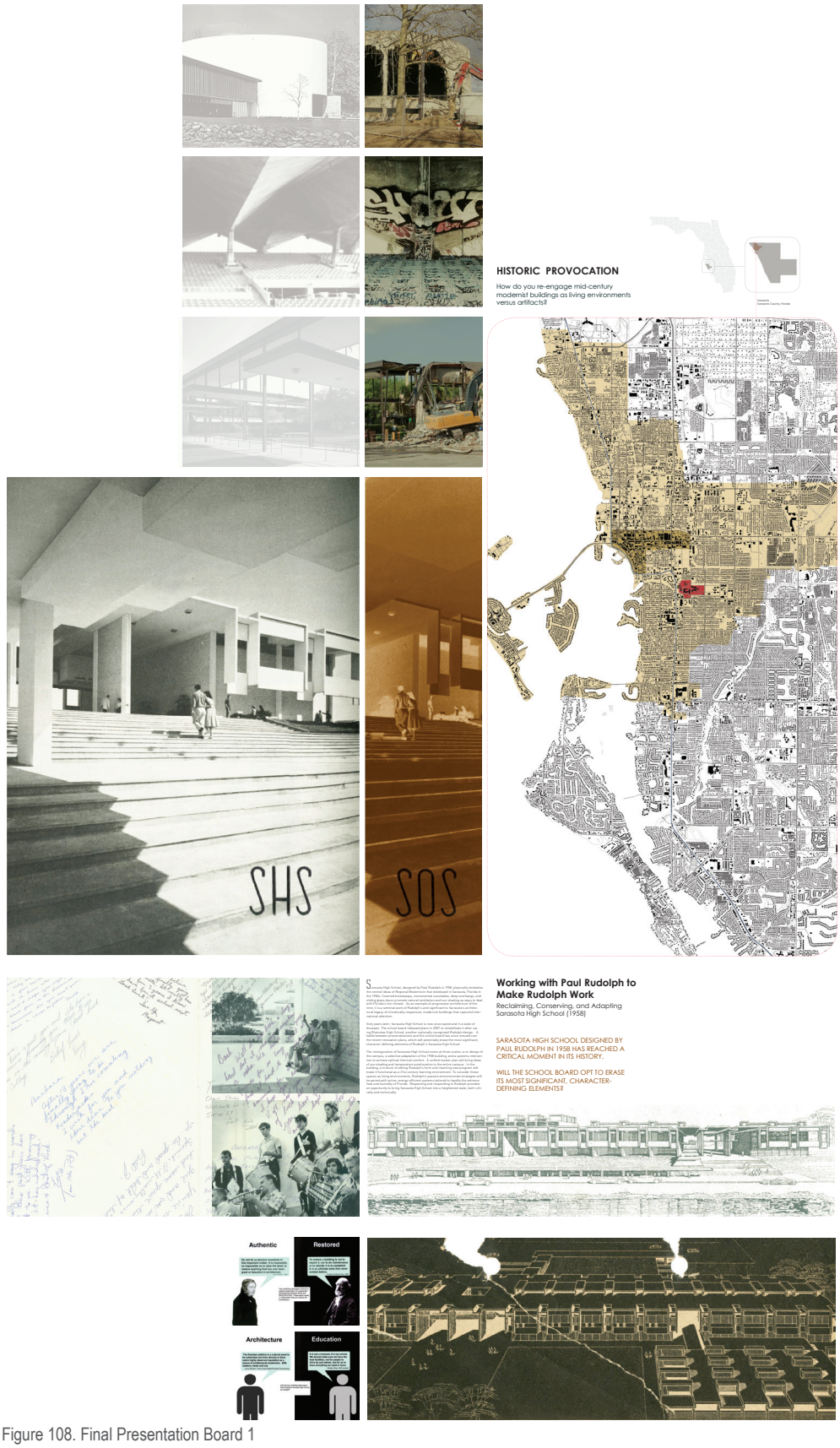


Figure 108. Final Presentation Board 1
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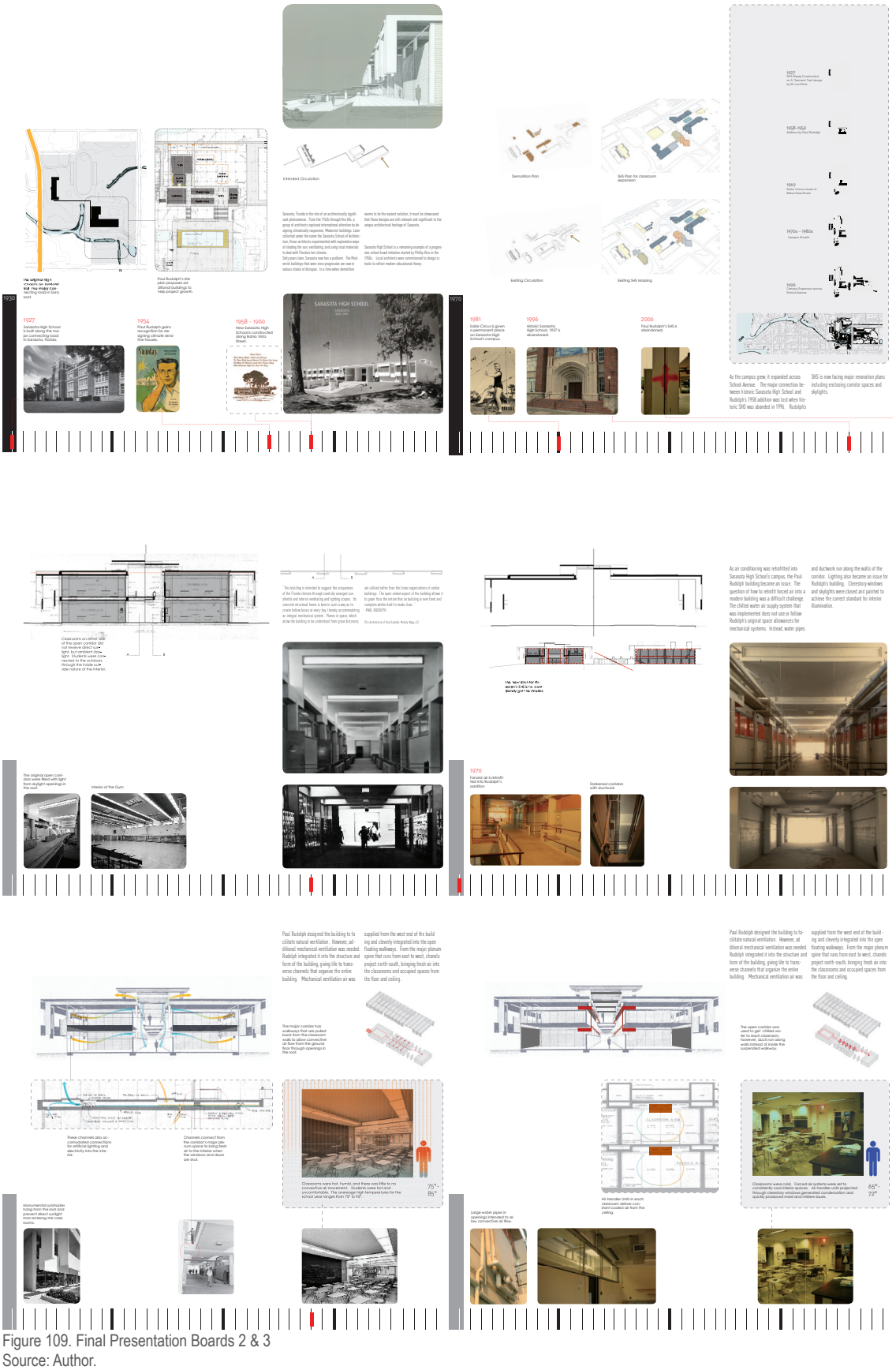
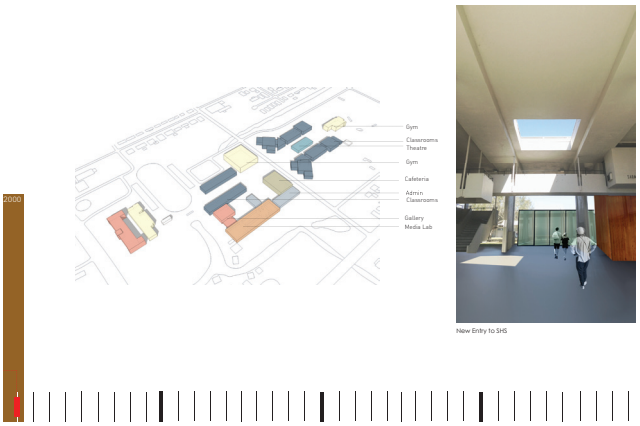
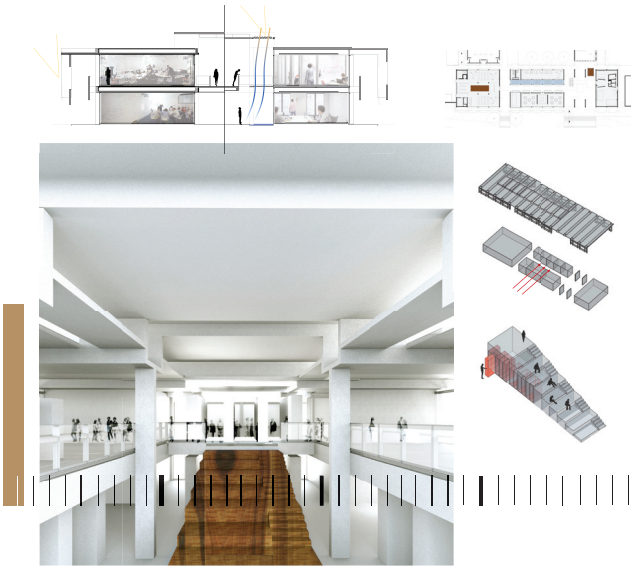


Figure 109. Final Presentation Boards 2 & 3
Source: Author.





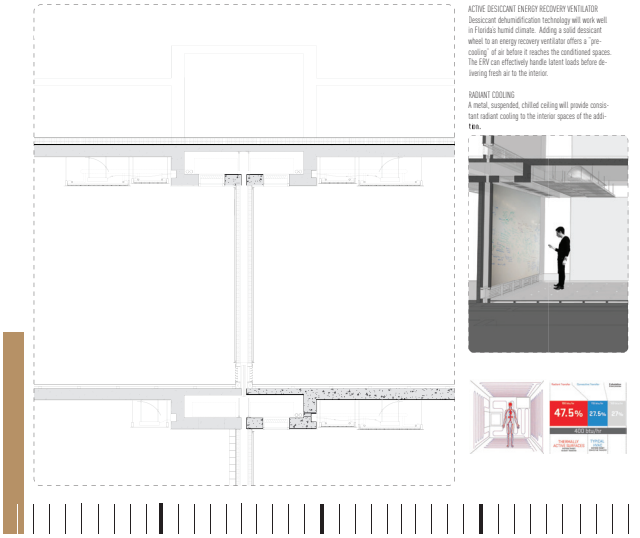
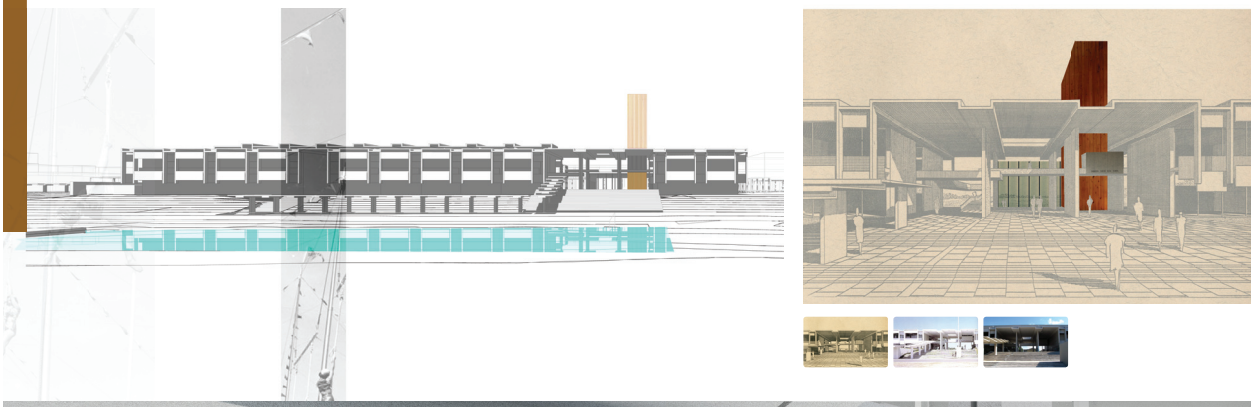


Figure 110. Final Presentation Board 4
Source: Author.





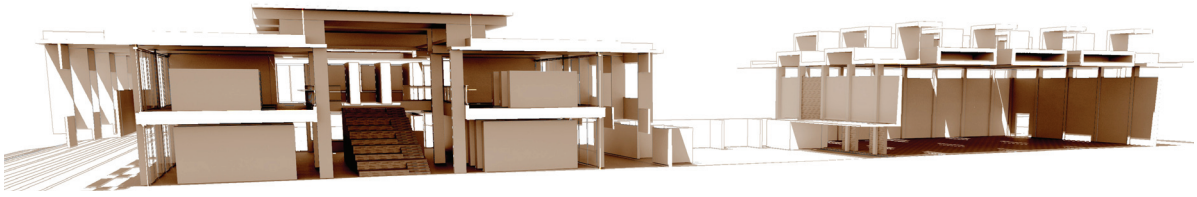


Figure 111. Final Presentation Board 5
Source: Author.

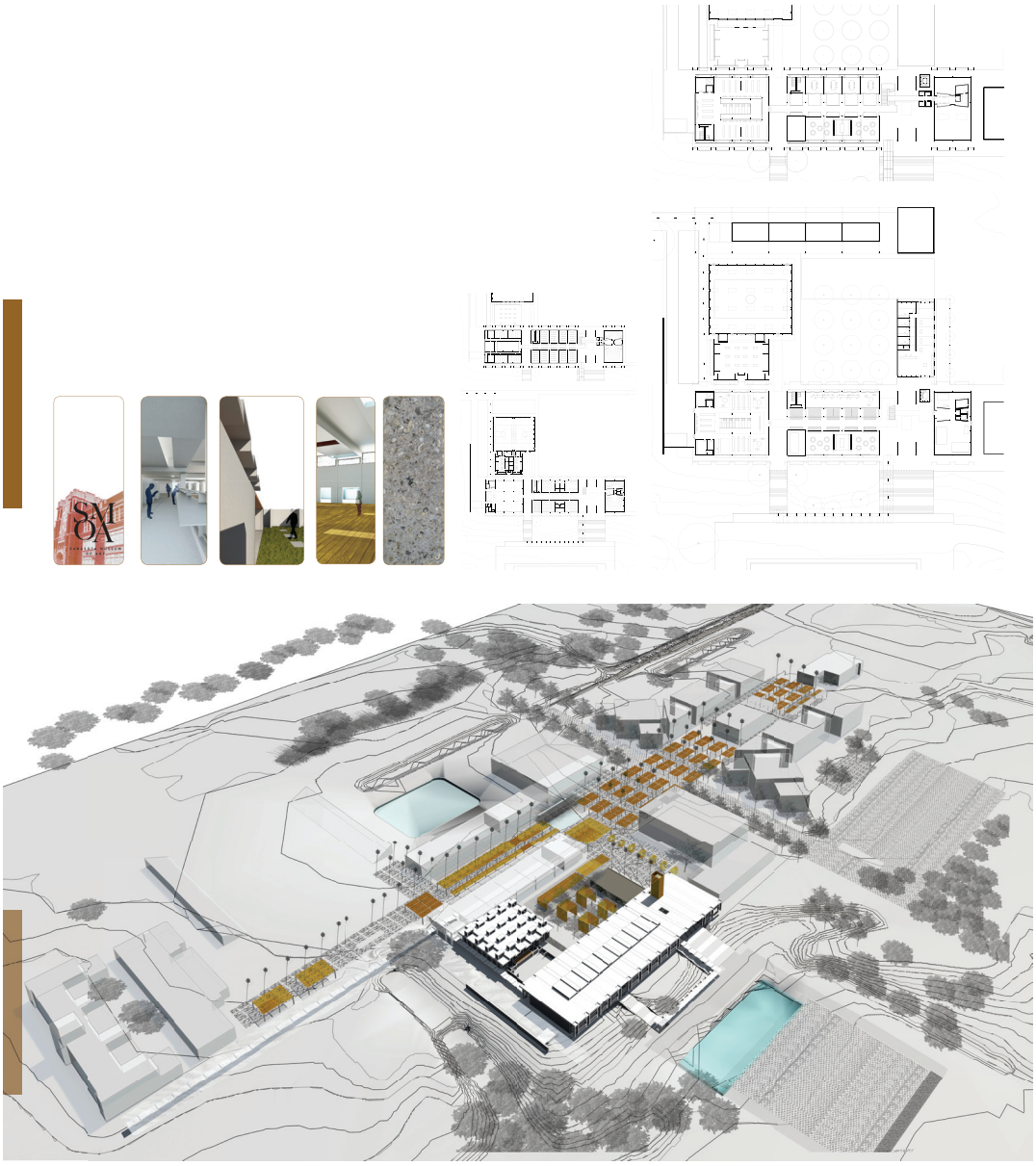


Figure 112. Final Presentation Board 6
Source: Author.

VITA

Kate Armstrong grew up in Germantown, Tennessee with a sincere appreciation of color and drawing. She studied Interior Design at the University of Georgia and received a BFA in 2009. Shortly after graduating, her attention shifted to architecture. It seemed necessary to know more about how architecture and interior design speak to each other. She returned to school in her home state at the University of Tennessee, Knoxville to earn a Master of Architecture degree. She plans to start her architectural career in Nashville, Tennessee.