Primitive Materiality: A Projective History of a Wall

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Primitive materiality is a scholarly exploration on building materials and the relationship with spatial concept and environment. It looks into a tectonic past where materials where not standard veneers or finishes and where integral to the conception of an architectural project. The author uses Eero Saarinen's Morse and Stiles College at Yale University as a case study.

The future of architecture will be primitive. I came to this conclusion from my experience as a practicing designer and the reflection that exterior stone walls are becoming thinner and artificial. It is possible to hire stone masons to build real stone walls made out of granite, but they come at a high cost. Instead architects are confronted with a vast array of finishes that are attached onto a wood stud or metal stud wall. These types of stone finishes come in pre-fabricated panels to decrease the amount of installation time and to make the finishes more affordable. These are produced remotely off-site and in a factory. They are divorced from the specificity of the site, from the individuals that are constructing a building, and from the spatial ideas developed by the architects. The question arises, is there a way to think about the use of materials and architectural space in a more integrated way?

There is the case of Eero Saarinen's Morse and Stiles Colleges at Yale University in New Haven, built in 1962. The walls of the colleges originated as a response to the complexity of the site, cost of construction, and the desire to create a certain spatial atmosphere. To the naked eye, these walls look ancient. The walls have a warm limestone color mortar with stones that protrude slightly. There is very little ornamentation other than concrete sculptures produced that pass as gargoyles. The roughness of the walls and the strong casted shadows suggest a simple, bare, and primitive environment.

The idea of the primitive can be traced to Book II of the Ten Books of Architecture by Vitruvius[1] . He describes a beginning where people gathered around fire for warmth and social assembly. Then people began to gather natural materials (stones, branches, leaves) around their locale to build simple constructions. Hence, we can define the "primitive" as the relationship to a specific locale, nature, access to resources, and meaning (social space around the fire and gathering of materials).

The office of Eero Saarinen was confronted in 1958 with a complex situation. They had to design two new colleges at Yale University to accommodate 500 students. The location was a corner site that faced a Neo-Gothic gymnasium with a tall tower on the north. A brick arched shaped Neo-Gothic graduate school was on the on the south east. On the south west, there was a commercial street that was not conducive to a campus environment.

The contemporary architecture of the nineteen-fifties consisted in flush prismatic boxes cladded in glass curtain walls. However, the new colleges had to respond to Yale's traditional Gothic architecture. Brick or stone was the obvious response. Saarinen and the school wanted to do a stone building that would match with the sorrounding content.

Yale, an all-male university at the time, had strong traditions. Kevin Roche, Eero Saarinen's right hand, described that tradition was of so much importance to the colleges that "parents were not going to send their kids to a college that looked like a factory."[2]

Saarinen was curious if it was possible to build a masonry building. He went to a cost estimator to see how much Branford College, the last Gothic college on the campus, would cost in 1961. As Cesar Pelli, the project architect explained, "the estimator figured out that it [Branford College] would cost about $100 per square foot. Eero's budget was $21 a square foot, about a fifth of what Branford would have cost"[3] . Incidentally, not only was it very expensive but the stone masonry industry in New Haven had practically disappeared [4]. The architect realized that it was not possible to build a Gothic building with conventional masonry because the craftsmanship was obsolete and expensive.

John Dinkeloo of the Saarinen office came up with the brilliant idea of creating the appearance and effect of Gothic construction without using much labor and high cost. Saarinen described how the wall was to be constructed:

"Conventional masonry walls require anachronist handicraft methods, so we devised an entirely new technology for the stonework. Forms will be built as for concrete: then crushed stone ranging from 3 to 8 in. will be dumped into the mold: then high-strength grout cement mortar will be pumped through hoses inserted in the form wall. After the wall has set and the outer form is removed, the wall will be washed with water under 100 lb of air pressure to remove some of the surface mortar and

Figure 1: Passageway looking to Gymnasium tower
Source: Eero Saarinen Collection (MS 593). Manuscripts and Archives, Yale University Library.

expose the stone. In character and texture, these walls will resemble the walls of old Pennsylvania houses, where worn plaster reveals the face of the stonework".[5]

Saarinen had compared the walls to old Pennsylvania houses or the Cotswolds. However, this type of wall construction can be traced back to cyclopean walls of the Mycenaean. The stones were so heavy that they were named after Cyclops, the one eyed giant in Greek mythology.

In the 3rd century BCE, the Romans used opus insertum walls which were stones inserted on a core of a Roman cement[6]. This is similar to a cyclopean concrete wall which is built through a combination of cement and stone. Cyclopean concrete has also been used to decrease the amount of concrete used in a foundation.

Frank Lloyd Wright in 1937 had built Taliesin West using Desert masonry rubble. The walls were built by placing existing desert stones into wood formwork, then a mixture of concrete was inserted into the formwork. The tint of the concrete and the color of the stones blend with the site as if it was always there. Wright's intent was to blend with the existing place.

Though the Yale and Taliesin West walls look different, the construction is fairly similar. Incidentally both architects shared a desire to anchor the building to its site.

Though Saarinen described the walls as masonry it was not actual stone masonry. The construction drawings describe the wall as "rubble concrete" or in minor occasions "typical concrete masonry bearing wall"[7]. The walls had the appearance and the visual qualities of masonry.

Saarinen, like Wright was using the rubble concrete to achieve a desired spatial effect or an atmosphere. The colleges were conceived as "citadels of earthy monolithic masonry-buildings, in which masonry would be dominant and whose interiors of stone, oak, plaster would further the spirit of strength and simplicity."[8]

Anchoring the buildings to the site was of utmost importance. The architects had arranged the colleges in one long arch forming a front courtyard and two private courtyards in the back. In the midst of the arch was a passageway that dissected the two colleges. This passageway resembles crossing through an Italian medieval town. The experience is of an architecture that has multiple scales, towers, medium buildings, small buildings, courtyards, and alleys.

The Saarinen office conducted extensive research with college students, professors, and administrators to understand what kind of rooms and spaces students really wanted. The office discovered that students preferred single rooms. Hence, the focus of the design of the colleges was on the individual than the collective. This was a departure from college dormitories as uniform double loaded corridors with standardized rooms.

Each room in the colleges had a completely different polygonal shape. The architects devised a way of clustering groups of rooms around a vertical tower, and as such, avoiding a long corridor.

The spaces are organic and there are no angles at ninety degrees. It looks like they were entirely random, but it was intentionally done to look like a medieval citadel and create spaces of diversity and individuality.

By stripping the wall bare of any ornamentation, the buildings achieve a primitive state. The colleges blend with the existing site not by mimicking the gothic architectural vocabulary but going to its essence. The colleges express an atmosphere of roughness, sobriety, texture, and chiaroscuro. Given the nature of the research conducted by the office, perhaps one is confronted by what a college really is. By making multiple courtyards, scales, rooms, and diversity of spaces, Saarinen gets to the original atmosphere of a medieval college.

PRIMITIVE MATERIALITY AND PRIMITIVE FUTURE

For the architect Sou Fujimoto, it is the same to think about a primitive origin and the design of innovative structures for the future. In his essay. Primitive Future (2008), the architect asks the reader to situate himself in an origin before architecture: "To consider innovative architecture of the future is astonishingly equivalent to reflect on primitive architecture. […] Imagine going back in time before architecture became architecture, and standing at the exact moment when architecture began. This is not to retrace the ancient history of Rome or Greece; rather it is to envision the moment architecture emerged from the fluctuations of a nebulous, protean field together with a vague and ordinary trace of human domain"[9]. By going back in time to the point that we have no recollection of historical baggage of architecture, we are confronted with an origin that reconsiders space and human habitation. Hence, opening the potential for new possibilities in architecture.

The colleges of Yale University are an example of the concept of primitive future. Saarinen could have imitated the gothic vocabulary and or produced a single loaded dormitory with a glass curtain wall. Instead, he is focused on understanding what makes a college. It is as if he travelled in time to invent what a college should be.

Figure 2: Cesar Pelli and John Buenz during full scale mock-up of stone walls Source: Eero Saarinen Collection (MS 593). Manuscripts and Archives, Yale University Library.

The Yale Colleges share a resemblance to Sou Fujimoto's Children's Center for Psychiatric rehabilitation (2008) in Hokkaido, Japan. Sou Fujimoto described this building as a "City as House – House as a City"[10] . This project was the third mental hospital that the architect had designed. Through his own experience in the other hospitals, he had learned that the nature of the program required a comfortable domestic interior and spaces that were diverse and city-like.

The building has no corridors and it is arranged as a cluster of random boxes as rooms placed at different angles. The architect aspired to achieve a diverse environment like Tokyo with its narrow alleys and dense spaces but that was comfortable and intimate like a house. It was not a house or city, but it was a new relationship.

This is similar to what was developed at the Yale Colleges. The spaces are intentionally random, not to recreate Tokyo like Fujimoto did, but to appear like a medieval village with different scales and domestic interiors. Both architects have the desire to create a spatial atmosphere.

The case of the Morse and Stiles colleges offers two readings of a primitive materiality. On the one hand, the wall appears primitive because it is built out of local stone, using minimal materials, and has a rough appearance that blends with the context of gothic buildings. The rubble concrete wall was born out of an economic necessity and materials that were readily available at the locale. It is also primitive because we can trace it historically all the way to a Cyclopean stone wall. The colleges are also primitive because they get to the essence of what college spaces should be. This I think is tied to Fujimoto's idea of a primitive future.

It would be of no surprise to realize through Saarinen's remarks that the wall was a new invention and not an historical reconstruction. Saarinen had gone so far to compare the masonry wall as a "legitimately modern a material as curtain walls of panels."[11] The modern vocabulary was ill suited to the situation. Saarinen's reaction to the complexity of the site and the building type was not to mimic history or design what was expected. It was to develop an innovative approach using "polygonal buildings, suiting site, giving variety, and a spatial sequence of courts, and allowing rooms to be as random and different as those in an old inn rather than uniform as in a modern motel."[12]

Saarinen created a new type of primitive spatial atmosphere using rubble concrete and polygonal architecture. These buildings reach a primitive state by blending so well with the site and addressing the nature of what a college really is. As a result, projecting to the future as a novel spatial experience.

The case of the Morse and Stiles colleges at Yale University offers an integral approach to the design of spaces with materials. Materials cease to be veneers or finishes and become elemental to the concept of a building. This leads to an origin or a past when architects were more involved in the construction and tectonics of a building. Perhaps we can project a future where design practices will extract from a past material culture and a tacit knowledge that is inherent in architecture.

ENDNOTES

1. Marcus Vitruvius Polio, *The Architecture of Marcus Vitruvius Polio: In Ten Books*, trans. Joseph Gwylt (London: Priestly and Weale, 1860) Chapter I, Book II, 37.
2. Kevin Roche, Phone conversation with the author, July 26, 2017.
3. Paul Makovsky, "Iconic Workplace: Eero Saarinen and Associates," *Metropolis*, November 1 ,2008, Accessed July 21, 2017, http://www.metropolismag.com/architecture/iconic-workplace-eero-saarinen-associates/
4. "He said [Cesar Pelli] that while in the 1930's New Haven had been home to over 300 registered master masons, his firm could only locate one in the 1950's. The attention to detail in the sculpting design of the older colleges is a "craft" that has disappeared." Bob Milius, "Project Designer of Morse, Stiles Colleges Stresses Environment", *Yale Daily News*, no. 80, February 19, 1988, 3.
5. ""Polygonal" Architecture: A Many-angled, Several Faceted Expression in Stonework for the Samuel F.B. Morse and Ezra Stiles Colleges", *Architectural Record*, February 1960, 163
6. Vitruvius described the different kinds of walls used by the Romans: opus incertum and opus reticulatum. See Marcus Vitruvius Polio, *The Architecture of Marcus Vitruvius Polio: In Ten Books*, trans. Joseph Gwylt (London: Priestly and Weale, 1860) Chapter VII, Book II, 56
7. 38 Sections – Typical Wall Sections, Architectural Mylars, Box 506, Eero Saarinen Collection (MS 593). Manuscripts and Archives, Yale University Library.
8. "Polygonal" Architecture: A Many-angled, Several Faceted Expression in Stonework for the Samuel F.B. Morse and Ezra Stiles Colleges. *Architectural Record*, February 1960, 163
9. Sou Fujimoto, *Primitive Future,* (Tokyo: INAX Publishing, 2008), 21
10. Idem. 48
11. Site plan clipping, Eero Saarinen Collection (MS 593), Manuscripts and Archives, Yale University Library.
12. Ibid.

Figure 3: Perspective view of passageway (Sketch attributed to Saarinen on back of photo)
Source: Eero Saarinen Collection (MS 593). Manuscripts and Archives, Yale University Library.

Figure 4: View through exterior passageway.
Source: Benjamin Pollak © 2017