

The Joint of the Architect's Hand

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Abstract

In modern day architecture practice, the role of the hand in the design process has been displaced by the advent of new technology. There is an inherent desire in practice to rely fully on the computer, which within its digital parameters removes the direct connection of the architect's hand from the creative process. To create meaningful architecture, it is imperative to understand that the relationship of the architect's hand in the design process is as critical as the relationship of the architectural joint to the project. To understand the hand, I approached it architecturally and rigorously studied its form and structure. At the same time, I studied several sculptors and artists, such as Richard Serra, Eduardo Chillida, Robert Morris and Eva Hesse who concentrated on the process over the final product. I created section drawings of select pieces and analyzed them with hand motions to study their forms. With these analyses, I created a material joint that explored different ways to "hold" masses and "join" different materials. With my hand analyses and material joints, I have understood the level of the "joint" at different scales: from the hand that makes the architecture to the actual structure that holds architecture together.

The Architect: The Modern "Homo Faber"

The joint is the connection between different materials and is the foundation of the assemblage of architecture. The relationship of the joint to the physical architecture is equal to the relationship of the hand to the human body. Just as the joint is the extension of the language of an architectural project, the hand serves as an extension of the human body's actions. The dialogue between the hand and the joint is where the embodiment of all memories of the man realize themselves.

"Labor is the first manifestation of human creativity. The transformation of the primate into Homo is its first history-making result. The increasingly conscious and efficient practice of labor was the first step in the humanization of the animal raw material, in what anthropologists call the acculturation of humanity."¹

¹ George Novack, *Humanism and Socialism* (New York: Pathfinder Press, 1973), 24.

Humanity was first realized with Homo Faber which translates to “Man the Maker”²: through the acquisition of an understanding of tools, humanity was able to evolve to a greater intelligence. Homo Faber was able to understand that to satisfy his needs to live, he would need specific tools that would allow him to complete tasks efficiently.

This translates today to the role of the architect as a modern-day Homo Faber who uses his tools to realize his designs in his head. “In the design profession today, however, the construction drawing marks the limit of the designer's responsibility in the process of making.”³ Today, construction drawings are created by architects but are then passed on to a construction team to produce the designs with the architect falling into an observational role. There is a disconnect for an architect in the role of designing that comes from hand to drawing and hand to construction. Though the drawing allows one to express one’s ideas in their inner mental space, these thoughts still only live in the intangible world and cannot be fully realized. For architects, the drawing not only is a representative tool but also is a manifestation of a construction of ideas.

The Role of the Hand in Design

“The hand grasps the physicality and materiality of thought and turns it into a concrete image.”⁴ When one draws it is the mind that guides the drawing but it’s the hand that follows it into actualization. As the hand draws it scrapes away at the image inside one’s head until it is realized. The hand knows when to mark the white space of paper or when to lift itself and let the emptiness of the drawing speak for itself. However, in construction the hand leads allowing the mind to follow for “it is the hand that really imagines as it exists in the flesh of the world, the reality of space, matter and time, the very physical condition of the imagined object.”⁵

Gaston Bachelard distinguished between two types of imaginations in his book, *The Poetics of Space* where he discusses their place in the world: “in the mind, the formal imagination is found of novelty, picturesqueness, variety of unexpectedness in events, while the material imagination is attracted by the elements of permanency present in things.”⁶ As designers, architects can create a multitude of formal constructs in their hands that disobey the laws of the physical world. This formal imagination can however only live in the tangibility of drawing as it

² Giuseppe Zambonini, “Notes for a Theory of Making in a Time of Necessity,” *Perspecta*, Vol. 24, (1988), 11.

³ Ibid.

⁴ Juhani Pallasama, *The Thinking Hand: Existential and Embodied Wisdom in Architecture* (Wiley, 2011), 16.

⁵ Ibid.,17.

⁶ Gaston Bachelard, *The Poetics of Space*, trans. Maria Jolas. (Boston; Beacon, 1994), 9.

lacks the discipline to be created in the real world that the material imagination has. The hand serves as the conveyor and creator of material imagination as one constructs their ideas within the material joint. The material joint is where all our realization as humans come forth along with the nature of the architecture. The hand is with what “a man actualizes and manifests himself...the hand will express this innate inherent nature.”⁷

An Infinite Joinery System

Though there are an infinite number of joints that can be made, the material imagination has a consistency in the true nature of the materials. For architects, the “tactility” that comes with the construction of material joints allows for not only a physical understanding of space but the process of creating spaces. In his work, the architect Carlo Scarpa emphasized the “...design and building process rather than a fully realized form...The first concept addresses the issue of an infinite joinery system, the finality of which quite unknown. The second concept, on the other hand, addresses issues of unity and relationships of parts within the whole.”⁸

In Verona, Italy, Scarpa designed the Castelvecchio Museum so that the museum serves as an assembly of joints from the scale of the construction of the walls to the actual pieces that hold up the paintings itself. There is a respect for the curation of the exhibit as the design of the door handles and doors all serve to guide the voyeur through perfect views of the difference pieces within. The design intent of Scarpa with his “infinite joinery system” is present with the large-scale shell of the museum that mirrors the small-scale joints of the stands that hold up the paintings. Every joint, no matter the scale, deserved the same amount of thought in how materials came together for Scarpa that became a “celebration of connections”. With the joints that held up the paintings, Scarpa created pieces that were imbued with the same language of the artwork into the pedestals that held them up; through this, Scarpa created spaces for artwork to not only emotionally touch the voyeurs but physically exert influence over the design of the joints that held it up.

⁷ Giuseppe Zambonini, "Notes for a Theory of Making in a Time of Necessity," *Perspecta*, Vol. 24, (1988), 5.

⁸ *Ibid.*, 13.

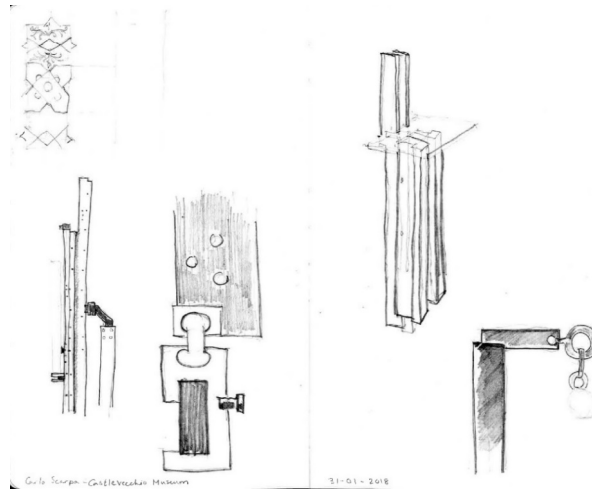


Figure 1. Joint Sketches in Castelvecchio Museum, (Vicenza UF Study Abroad Spring 2018). © Carol-Anne Rodrigues



Figure 2. Photo of Pedestal Joint in Castelvecchio Museum, (Vicenza UF Study Abroad Spring 2018). © Carol-Anne Rodrigues



Figure 3. Photo of Art Frame Joint in Castelvechio Museum, (Vicenza UF Study Abroad Spring 2018). © Carol-Anne Rodrigues



Figure 4. Photo of Pedestal in Castelvechio Museum, (Vicenza UF Study Abroad Spring 2018). © Carol-Anne Rodrigues

As Scarpa designed, the material joint was never complete but allowed for an ambiguity that could assert itself in different situations. Like architecture where there is an assemblage of different parts to make a whole, within the material joints of Scarpa, there are many relationships that create rich connections embedded with the memory of the process of building. He embraced the fact that there was no final product but enjoyed the process itself.

Inquiry of Joints through Sculpture

The idea of “building process” over a “fully realized form” was emphasized in the Process Art Movement that occurred in the U.S and Europe around the mid 1960’s. Sculptural artists such as Robert Morris, Richard Serra and Eva Hesse were not invested in the final piece of art but in the process of creation; they occupied themselves with understanding the experiences

created by materials. With Richard Serra's sculptures, "sculpture and its materials could stand for themselves, or not be forced to serve as vehicles for articulating an artist's emotional and intellectual life."⁹ He believed that space was "...a material...[and] the articulation of space has come to take precedence over other concerns."¹⁰

In the work of Robert Morris, he was concerned with the "'artist's hand'—the unique gesture that defines an individual's skill and style" along with his artwork not an "'original' object but a representation of the idea from which it was conceived."¹¹

This idea of inquiry was also embodied in the Spanish Basque artists of the 1950s, such as Eduardo Chillida & Jorge Oteiza. These artists understood how sculptures could alter space and "charge" the intangible materiality that was present in "emptiness". As said by Martin Heidegger in his piece, *Art and Space*, "...Becoming occupied by the sculptured structure, space receives its special character as closed, breach and empty volume."¹² Oteiza and Chillida realized the importance of the character of the "volume" and amplified its character through the materiality of the sculpture that held it. With his forge, Chillida tempered materials and through his "...pieces enter[ed] the unknown void to interrogate, apprehend and inhabit it"¹³ Chillida primarily worked with materials like iron, alabaster and stone to create his sculptures; these sculptures were transformed in a way where "...the material [was stripped] of its practicality...[that would] narrate new realities marked by the tension between the forms and his preoccupation of space."¹⁴ Though the sculptures took on forms dictated by Chillida, they were never "foreign to their internal nature."¹⁵

For Chillida, the creation of the sculpture held value not in its final product but in the process of creating where one could understand the language of the materiality. Chillida's sculptures became makers of public space in the same way that his interrogation of materiality held space, his pieces hold public spaces with human occupation.

⁹ "Richard Serra Biography, Art, and Analysis of Works." The Art Story, www.theartstory.org/artist-serra-richard.htm.

¹⁰ Ibid.

¹¹ "Untitled (Pink Felt)." Guggenheim, www.guggenheim.org/artwork/3016.

¹² Martin Heidegger. *Art and Space*, trans. Charles H. Seibert. (Nijhoff, 1973). 3.

¹³ Ignacio Chillida, William Jeffett, and Nausica Sanchez. *Memory, Mind, Matter: The Sculpture of Eduardo Chillida* (The Dali Museum, 2017), 12.

¹⁴ Ibid., 13.

¹⁵ Ibid., 16.



Figure 5. Photo of *Topos V* by Eduardo Chillida, (Vicenza UF Study Abroad Spring 2018). © Carol-Anne Rodrigues

In Barcelona, located in the Gothic Quarter by the Barcelona Cathedral is *Plaça del Rei* (“King’s Square” in Spanish) where Chillida had situated his sculpture *Topos V*. Surrounded by primarily gothic architecture, *Topos V* seeks to mediate with the ornate language by providing a grounding point of minimal geometry at the corner of the plaza. The cast iron sculpture forms a corner of a box that allows the voyeur to lean back and view the ancient medieval architecture from a modern point of view. Chillida uses the color and form of *Topos V* to synthesize the language of the gothic arches to create a piece of architecture that allows one to inhabit the style of architecture.

Another example of sculptures that become physical architectural pieces that influence space is *La Ola* by Jorge Oteiza located in front of the *Museu d'Art Contemporani de Barcelona* (MACBA, “Museum of Contemporary Art of Barcelona”). The black monolithic mass holds the weight down of the public space as a gravity point against the stark white and glass façade of MACBA. Its carved sides and large presence become a dividing point for the traffic in front and allow for people to gather in front.

From analyzing the Basque sculptors Oteiza and Chillida there is an innate understanding to how the hand created the sculpture. For Chillida, “the universe passes through the hand, pours into the abyss—the human hand is a cipher for our relation to time and space and the fleeting nature of experience.”¹⁶ The hand communicated to the materials what the sculptor dreamed of in his mind.

¹⁶ Ignacio Chillida, William Jeffett, and Nausica Sanchez. *Memory, Mind, Matter: The Sculpture of Eduardo Chillida* (The Dali Museum, 2017), 122.

Therefore, to understand materials and how to manipulate them one must understand the hand as an “instrument” equivalent to mechanical tool one uses.



Figure 6. Photo of La Ola by Jorge Oteiza, (Vicenza UF Study Abroad Spring 2018). © Carol-Anne Rodrigues

For a period, I analyzed my hand in several positions to break it down to the mechanics of an architectural joint. From my sketches I understood that within the hand it becomes an architectural joint between the mind of the architect or sculptor and the interactions with the tangible real world. The hand is a key player in the construction of spaces and within itself there is a structure to its composition.

The thumb is the anchor that remains constant as the hand rotates positions. Of the four fingers the index finger is the predominant joint as it controls, dictates, and generates the rest of the hand’s movement. The thumb supports the index as the anchor and they work in tandem to create space which the other three fingers follow. The thumb situates itself on its own axis apart from the four fingers. When the anchor moves forward, it generates and allows space to be brought into the hand and carved within itself. The palm responds and holds this space within its cavern.

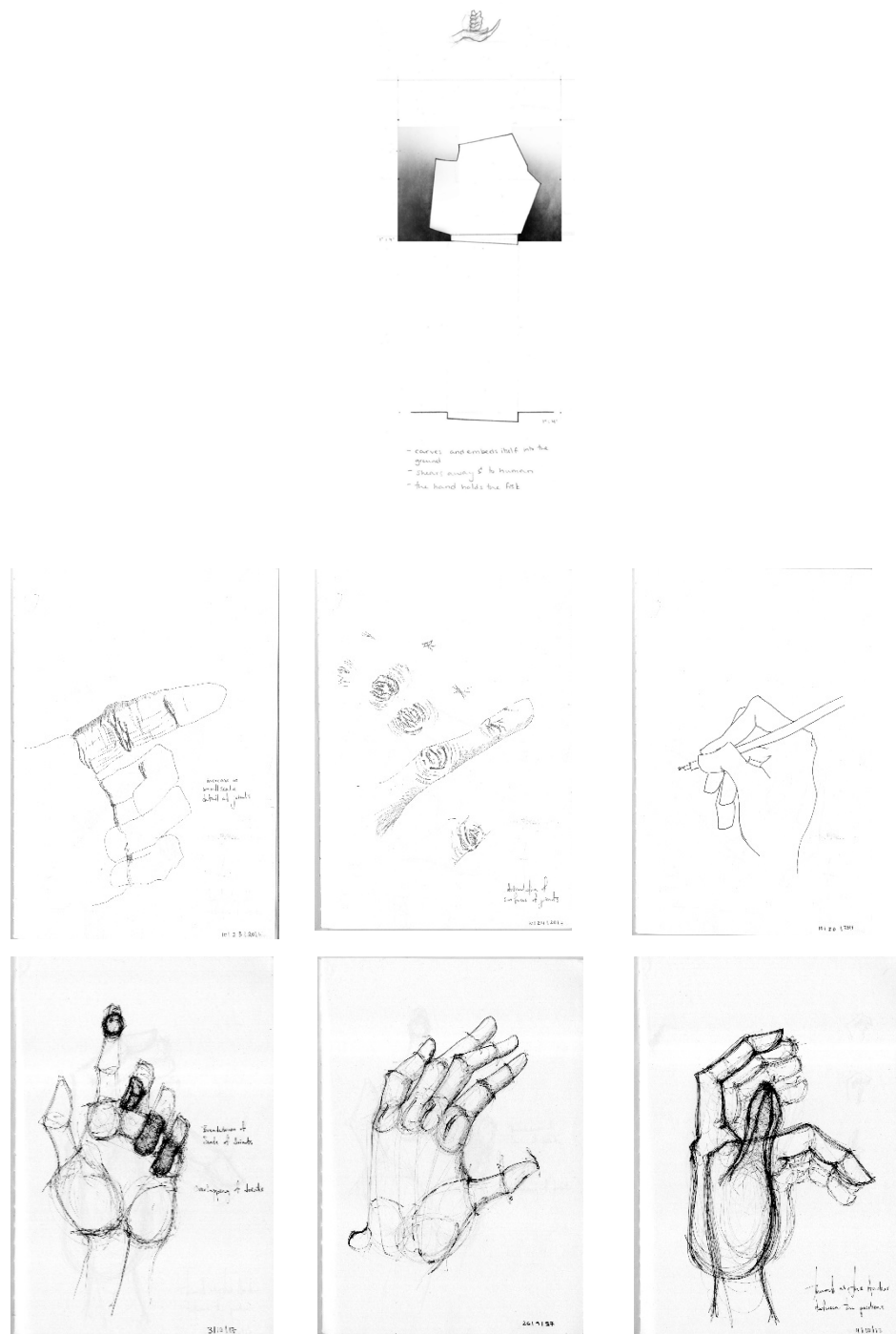


Figure 7. Study of *La Ola* by Jorge Oteiza, (Fall 2017).
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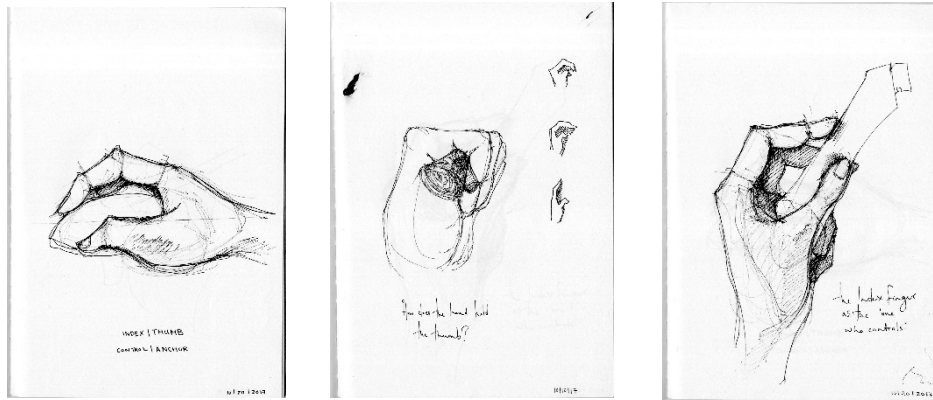


Figure 8. Hand Analyses Drawings (Fall 2017) © Carol-Anne Rodrigues

The Joint in the Modern Architectural Studio

From my analyses of hands, I was able to use the same architectural structure of the hand to create a material joint in my Design 6 Studio project. For the Design 6 Studio project, I proposed a “joint between the sky and ground” in the program for an institution of neoclassical ballet and modern dance. Ballet focuses on floating above ground and questions how one touches the sky; it also disguises the weight of the body and attempts to hide gravity. Opposite of this is modern dance, which acknowledges the pull of gravity and uses grand movements to allow the dancer to imbed themselves into the ground.

Contact with the ground is a critical connection for the dancer as all their movements stem from their foot positions. The ballet shoe serves as the joint for the ballerina to lightly support themselves on the ground and reach up to the sky. This idea of connecting the sky and ground became a key facet in my design and I sought to create the connection within a physical material joint. From there, I experimented with different materials to understand how materials can evoke the feelings of lightness and heaviness like different types of dance. Through casting concrete and plaster I was able to understand the “weight” of the material and what it takes to support such monolithic materials with a wire framework, similar to a ballerina’s shoe. After trial and error, I was able to construct a sturdy wireframe that would make plaster seem like it was weightless.

In the experimentation of ideas and process there is a true understanding of materiality, the connections that can be made between materials and inherently the architecture that can be designed. It is not the final product that is important, but the steps of inquiry that lead from the

creation of an idea to its final construction. In the “Slowness of Method” by Todd Williams and Billie Tsien they say that these steps “allows us breath and breath.”¹⁷ When one is “certain” of the final product one falls into a rut and inevitably limit themselves from learning more. Material joints allow for the capability to learn more about architecture by understanding its basic building blocks. The process of “making” itself then becomes a “joint” between the conception of design ideas to the final construction. The “process joint” is an intangible joint that brings multiple possibilities and allows one to inquire.

“As our hands move, we have the time to think and observe our actions.”¹⁸ One must understand our “hands” as design tools, like how Chillida and Oteiza did to appreciate the process of making as the Process Movement artists did. Through this understanding of a process of making one can understand how the manipulation of materials can create better joints in architecture and therefore serve as the connections for better spaces for people in architecture.



Figure 9. Process Making of Material Joint Photo Documentation, (Spring 2017) © Carol-Anne Rodrigues

¹⁷ Todd Williams and Billie Tsien. “Slowness of Method.” Todd Williams Billie Tsien Architects, www.twbta.com/3031.

¹⁸ Ibid.

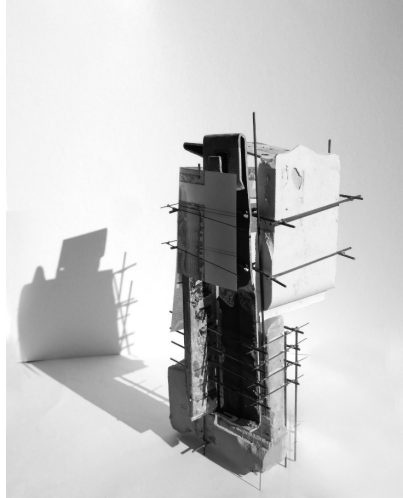


Figure 10. Material Joint, (Spring 2017) © Carol-Anne Rodrigues

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