

The Relevance of Hand Drawing in Architecture 2024 and Beyond



Carla Canestro
W1813722
CC3

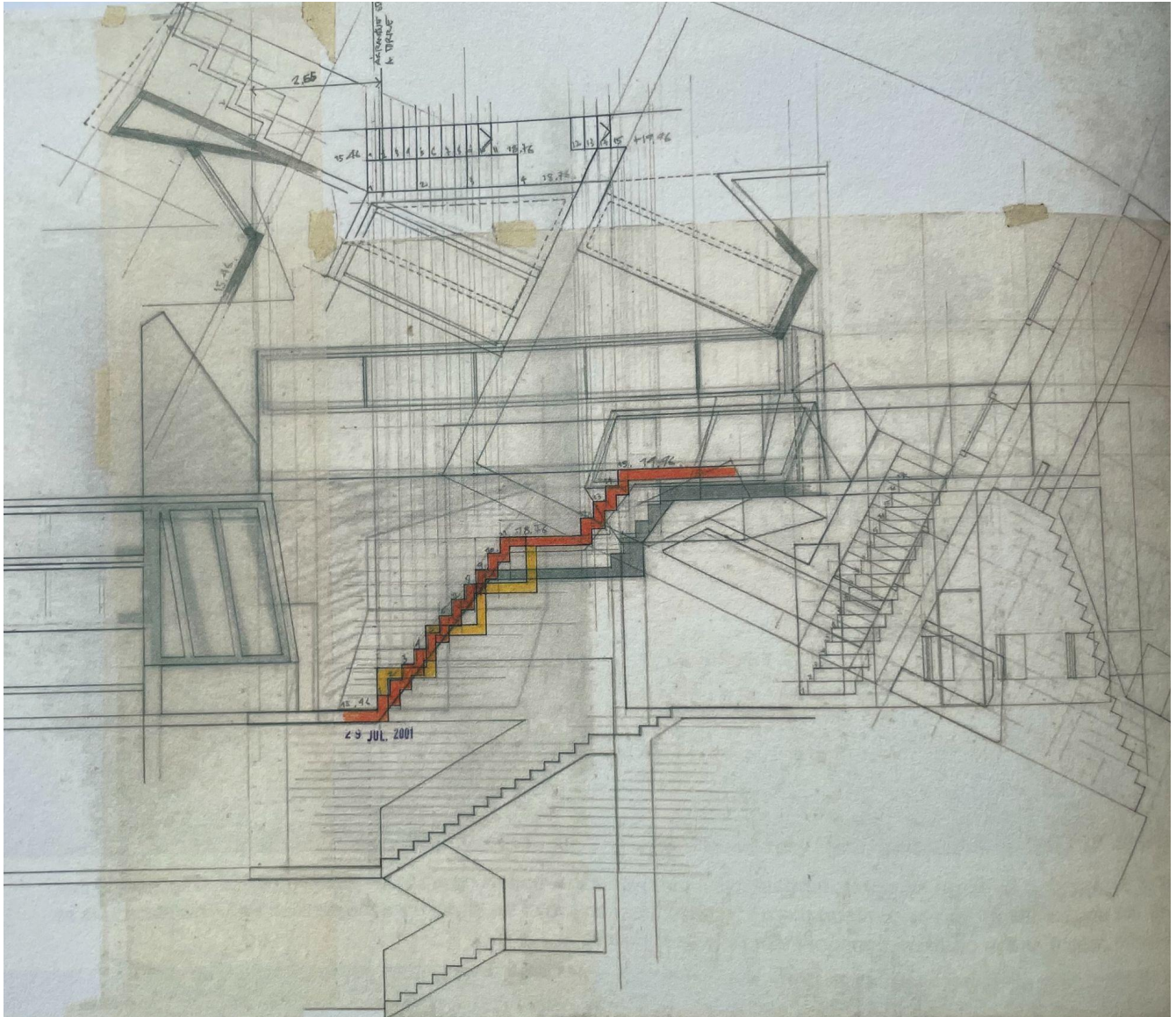


Figure 1: The thinking process of a stair design.

Ricardo Flores and Eva Prats, *Thought by Hand: The Architecture of Flores & Prats*, 1st ed, 3rd print (City of Mexico: Arquine, 2020), 138.

To be viewed in facing pages.

For your clarity of understanding this dissertation I must briefly define a few key terms. Sketching: a loose form of hand drawing, done quickly and used to communicate ideas. Gestural drawing: a loose, bold and expressive form of sketching. Hand drawing: a well thought out and refined drawing done by hand using physical materials. Physical drawing: drawn on paper using materials such as ink or graphite. Paper architecture: architectural designs which are drawn with the purpose of pushing social and political boundaries, rather than with the intention of construction.

Introduction

Hand drawing has been developed throughout human history all the way up to the 1990's as the primary design tool refined and implemented by architects. With the advent and rapid development of software, digital drawing exploded in popularity and has since transformed the practice of architecture and the way architects create and design¹. Instead of hand drafting and modelling with a variety of materials, most architects now spend their days in front of a computer screen. The expanding variety of digital software options has facilitated an accelerated efficiency and level of detail within architectural design, forcing nearly all architectural firms to use digital media as a central part of their practice. For the first time since the Renaissance, at which point the role of the architect and builder diverged, we see architects adopting a combination of both roles: with the level of detail architects are able to provide they now not only decide what a building is going to look like, but also how it is going to be constructed². Does this take the skill out of the builders' work? Is it necessary to create designs with such a high level of detail? What is wrong with drawing by hand, a design method we have relied upon for thousands of years? While digital drawing may be far more efficient and accurate for representing the final design of a project, I will argue that hand drawing remains an essential part of reaching this end product. With digital software standing so emphatically at the forefront of architectural practice today, university programmes redirect instructional focus towards software training and as a result, students are no longer taught in depth to sketch or hand draft.

I propose that there is a risk the next generation of architects may give up hand drawing altogether as “young people are often embarrassed when asked to draw something more by hand because they feel that without a computer, it is no longer possible for them to reveal their ideas on paper”³. Sketching ideas provides an essential method of visual communication. Design process and visual concepts are not illustrated with the same clarity and realism when they are represented with the distortion of digital software. There is also something to be said about the act of drawing by hand and the advantage it lends to the generation of ideas. “Recent advances in cognitive sciences support the idea that cognition is not just happening in the head, but it is an embodied activity facilitated by a person's active engagement with their material and social environment”⁴. This material engagement

¹ David R. Scheer, *The Death of Drawing: Architecture in the Age of Simulation*, 1st ed, (New York: Routledge, 2014), 9.

² David R. Scheer, 10-11.

³ Andra Ulme & Elina Elere, “The Role of Fine Art and Hand-drawing in Architecture Studies”, *Architecture and urban planning*, [Online] 19, 1 (2023): 205.

⁴ Nithikul Nimkulrat and Camilla Groth, *Craft and Design Practice from an Embodied Perspective*, 1st ed, (New York: Routledge, 2025), 1.

cannot be equalled on a computer when compared to drawing with the use of real life materials such as graphite, ink or charcoal.

In a world where artificial intelligence is becoming increasingly prominent and easy for everyone to access, many of us wonder will AI take over the future? If it does, how will that affect the human aspects of life? The digital world is quickly advancing, making information ever more accessible and allowing us to continue speeding up the pace of our lives. Undeniably technology brings infinite advantages, facilitating the speed and efficiency of our lives both at home and work, particularly as we live in a world where most of us feel very time poor. Where there is a place for efficient technology we must be careful not to lose individual creative thinking which I believe is an intrinsic and uniquely human quality. While digital drawing is more efficient, hand drawing is perhaps more human not just because it is made by hand but because it has made the maker slow down and think through deeper layers and complexity.

Of primary importance is the refinement of a clear definition of hand drawing, what it really means to the architect, and the benefits it offers designers. We will subsequently look at where hand drawing can be helpful and why in some projects or parts of the design process it provides a better tool than digital software. I will then compare and contrast the processes of practical designing with the intent of producing a building versus paper architecture, as a means of expansive conceptualisation purely for design's sake. Beginning with my own work we will firstly explore the ways in which I have used hand drawing in my designs, which are intended to have the possibility of being built. Then looking at the work of Peter Cook and Lebbeus Woods, I will explore paper architecture and the wide ranging possibilities offered when there are limitless horizons in the development of design. Finally I will look at the work of Tadao Ando who connects his work with nature by setting it into the landscape and working with minimal design which is transformed by natural light. He uses drawing throughout his design process, sketching concepts and feasibility plans, followed by a hand drawing of the building in the sunlight showing the shadows created by and interacting with the architecture.

Chapter 1: What is Hand Drawing? And Where Is It Helpful?

To begin this exploration of hand drawing we must start to understand what it truly is. Some think of it as “drawn by hand, as opposed to having been created by photography or computer software,” however, this definition does not explore the full depth or power that hand drawing can yield⁵. While to some it is just the act of drawing with one's hand, to others it is a way of physically engaging, observing, learning and representing thoughts. Hand drawing can be considered a relationship between the hand and mind, and therefore a direct translation of ideas onto paper. It can even be thought of as a means of connection with the material and a kind of embodied intelligence. For some, hand drawing is a natural way of thinking, an essential method of communicating and explaining things to others. It stands as an intrinsic and irreplaceable facet of creativity and the development of ideas, making it a uniquely powerful tool from beginning to end of the design process.

Perhaps the most basic type of hand drawing is sketching, which can be a way of interacting and translating thoughts, “when [people] sketch a designed object or at a site, they engage in a

⁵ “Hand-Drawn,” Oxford English Dictionary, accessed October 17, 2024, https://www.oed.com/dictionary/hand-drawn_adj.

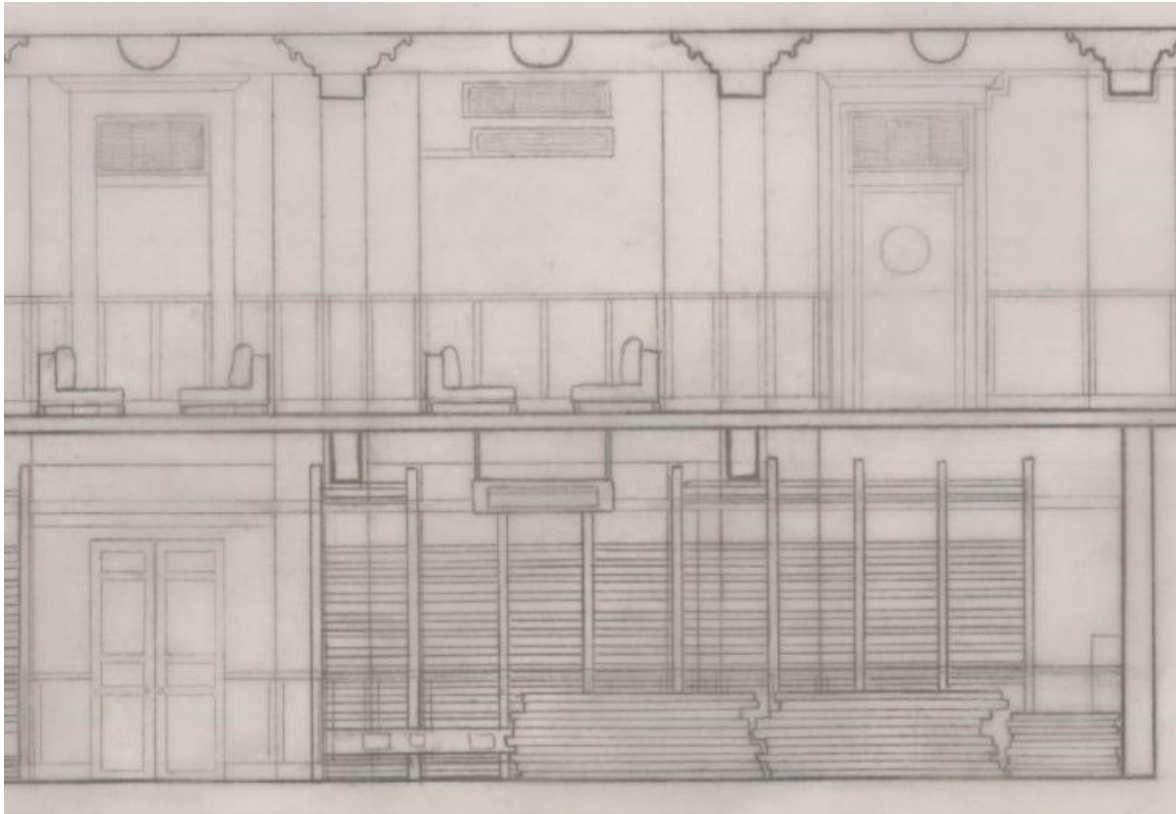


Figure 3: A hand drawn section of an existing building, showing the time spent on the work through the built up dirt and smudges. Drawn by me.

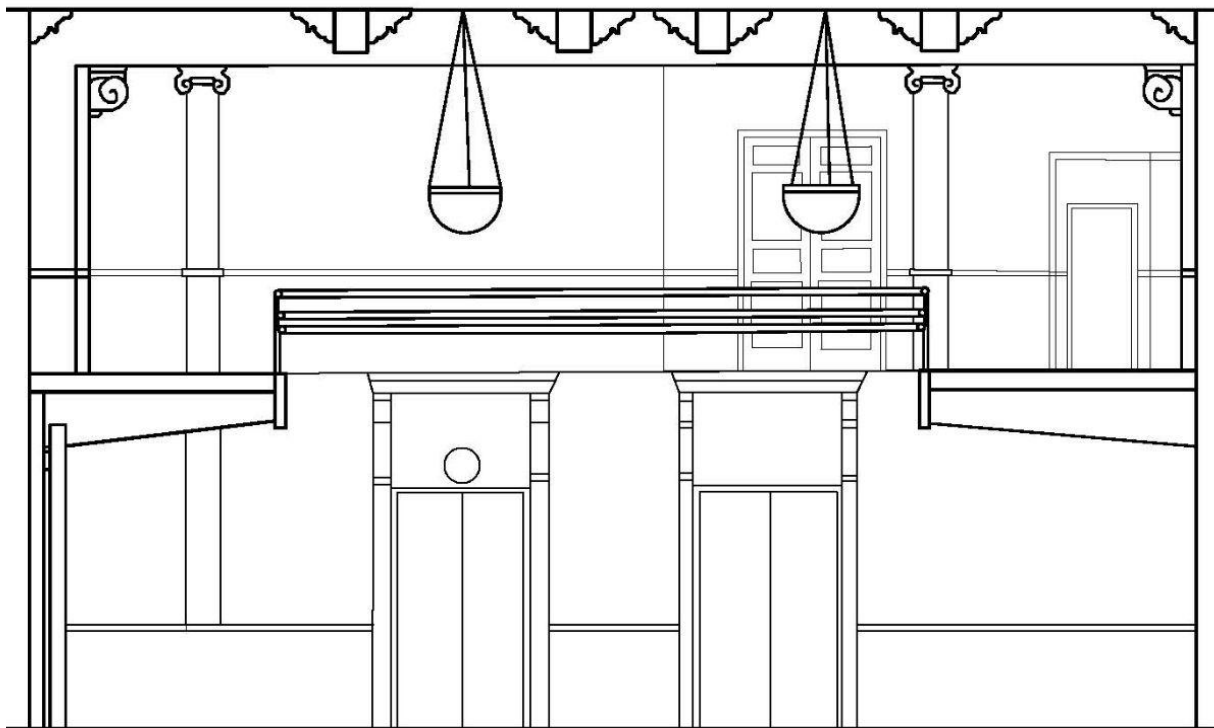


Figure 4: A section of the same building as shown in Figure 3 drawn in AutoCAD. This drawing lacks the depth of the section drawn by hand. Drawn by me

physical act - they are representing thoughts on paper and are interacting with the building or site.”⁶ This form of engagement is a very effective way of observing what is often missed. It allows for deeper thought and interaction with the subject, sparking imagination and curiosity. When the designer really takes the time to be in the present moment and closely observe, there is so much more to be gained beyond the common habit of merely snapping a quick photo to capture initial and generally superficial aspects of interest before moving on. “With sketching and thinking comes learning” and there is so much to learn right in front of our eyes but we cannot learn it unless we slow down and properly observe it⁷.

Perhaps the most powerful thing about hand drawing is the direct connection it has with the mind. For people who feel confident, sketching is a very effective way of communicating things that cannot easily or clearly be explained with words, but can be quickly sketched and convey clear and complex information. Computer software can be viewed as an additional barrier between the mind and hand. Architects at Flores and Prats adopt this perspective, mainly working through hand drawing and physical modelling, driven by the fact that “we are particularly interested in continuing to work using our hands [...] because of the direct contact between the hands and our mind”⁸. This can be seen in Figure 1 where Flores and Prats are working out a staircase design by drawing and redrawing but never erasing. They use tracing paper over the previous drawing to edit their thoughts while keeping each step of the process right there in front of them so no path of thought gets forgotten.

Flores and Prats, unlike most architects, really emphasise the process of designing, the sketches which get refined, the playful modelling which gets more detailed and finally completed designs which encapsulate this process of thinking, making and refining. We usually only see the final product, which is often beautiful and well thought out, but the architect presents it as if that's the only piece of work they have made, when in reality it reflects only the culmination of a long and complex process. When the process is exhibited alongside the final design it gives it an entirely new level of depth and purpose. When we can see the decision making and iterations laid out in front of us we begin to understand why things are designed that way in the final product. This really humanises the work by allowing insight into this process of testing and refining. When working digitally it can be challenging to show this process because editing is so easy to do without leaving any trace of the previous thought, whereas the designing can be a very beautiful thing in its own right as seen in Figure 1. Designing in a physical way is arguably more beautiful and a better way of showing this rich creative process. This design method relates to the work of Flores and Prats who celebrate the previous uses of the building, creating a space for the future, rich with stories of its past⁹. In Figure 2 we see a detailed, graphite sectional drawing of the final design of Sala Beckett. This shows the technical detail of the stairs, the light and shadows, painted signage, the imperfections and texture of the walls showing elements of the previous design (marks of old stairs and floor joists) and elements which were preserved and reused in different ways (window frame and ceiling medallion now used as

⁶ Eric J. Jenkins, *Drawn to Design: Analyzing Architecture Through Freehand Drawing*, 1st ed (Basel, Switzerland: Birkhäuser, 2013), 46.

⁷Eric J. Jenkins, 46.

⁸ Ricardo Flores and Eva Prats, *Thought by Hand: The Architecture of Flores & Prats*, 1st ed, 3rd print (City of Mexico: Arquine, 2020), 138.

⁹ Ricardo Flores and Eva Prats, *Thought by Hand: The Architecture of Flores & Prats*, 1st ed, 3rd print (City of Mexico: Arquine, 2020), 408.

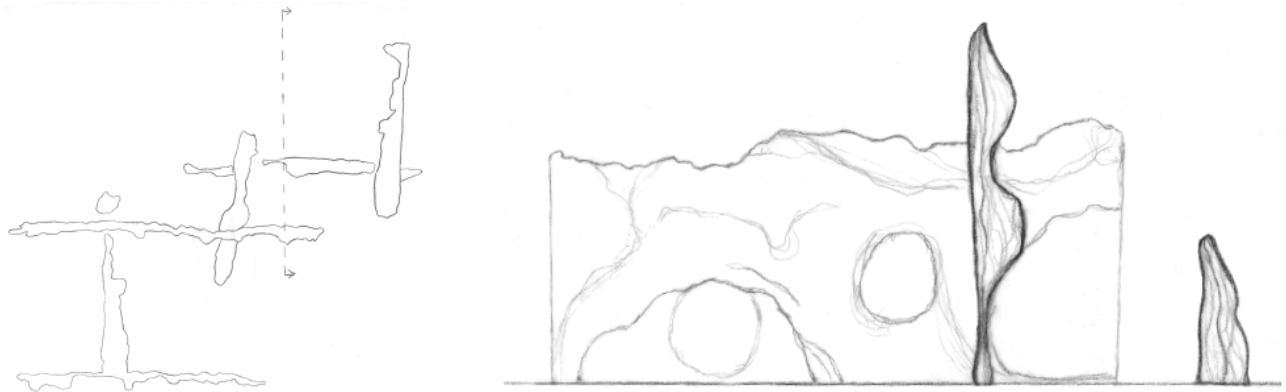


Figure 5: A pencil drawing of a concept model to study form and texture. Drawn by me.

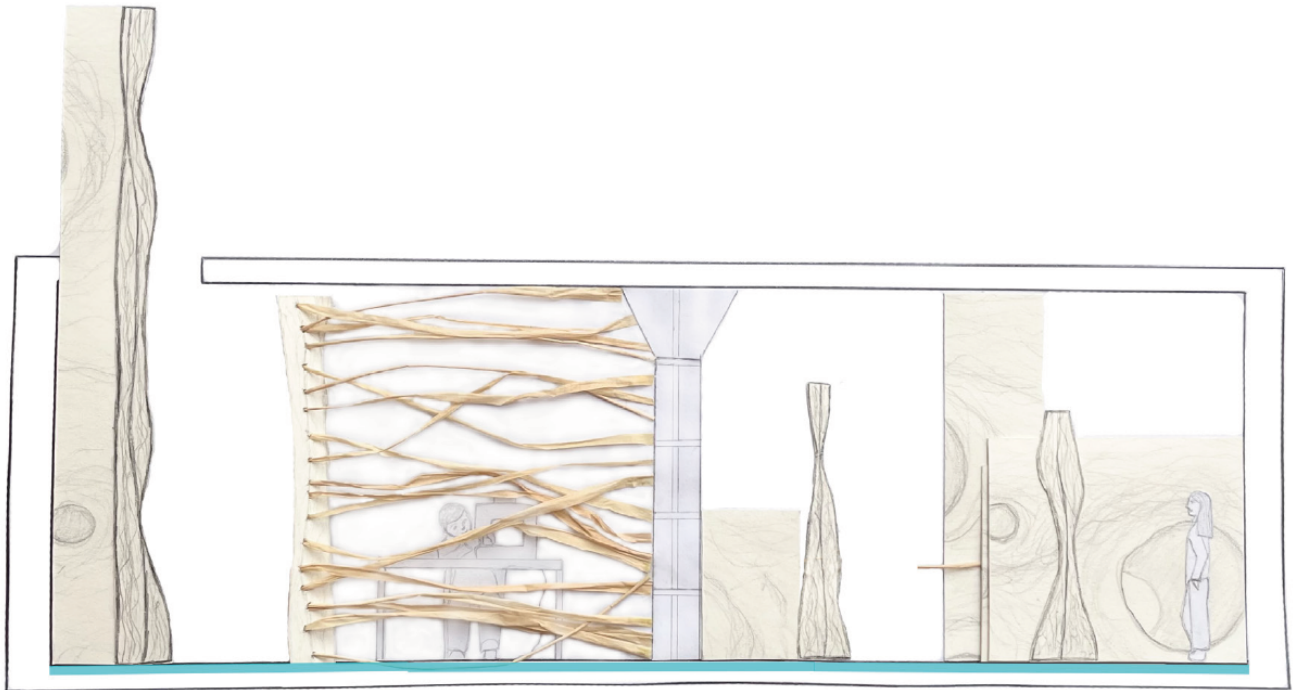


Figure 5: A sectional drawing using a collage technique to distinguish the installation from the existing building, making it 2.5 dimensional. Parts of the installation are able to move in this physical drawing as they would in the design. Drawn by me.

a wall decoration). While this drawing shows lots of technical detail of the design it also gives a sense of atmosphere with an attention to detail of the imperfections, which add to the unique character of the space). The atmosphere and detail of the existing building are so beautifully captured in this pencil drawing and could not express the same level of character and uniqueness in a digital drawing.

For those who are well practised at drawing and use it as a tool there is a built relationship between them and their chosen material. They have been through a journey of discovery together where the artist pushes boundaries, observing and learning the range and limitations of the material. This bond means that the “maker and material temporarily will function as a single agent with increased capacities for action that provisionally decrease the risk of error in the relational dynamics”¹⁰. As David Scheer says “I like the feel of a soft pencil on good sketch paper [...] I like watching and feeling my hand find a form on paper I hardly knew I had in my mind”, showing this close relationship with the material allows for intuition to take over¹¹. A kind of embodied intelligence starts producing ideas before the mind can think of them.

This topic is esoteric because not many people think about it in much depth. It is also highly subjective due to it being based on personal preference from both the viewer and the architect. The viewers, i.e. clients, need to see designs in an easy to understand way, and each client wants something different. Architects have varying processes and preferences of how they design, some are far more digital than others. There is no right or wrong way of doing things, so in this dissertation I aim to show you my point of view based on personal experience and after extensive research on the topic of hand drawing.

Chapter 2: Drawing to Create Vs Drawing to Build

2.1 My Work

This investigation into the benefits of hand drawing is inspired and informed by my own design explorations and the realisation that my creative process is greatly enhanced through hand-generated experimentation. The designs I have innovated are intended to be possible to build, however, as a student I am also encouraged to push the boundaries of what really is possible, in order to think outside the box and extend beyond the limitations we face today. I am technically drawing to create but with a strong focus on working out how the final design could actually be built.

The discovery that hand drawing encompasses the potential for a story of time to emerge and unfold has made me aware of the immense depth it can carry, as shown in Figure 2. An illustration of this quality in my own work is shown in Figure 3, a hand drawn section of an existing building, which shows the time spent on the work through the built up dirt and smudges. Imperfections such as these indicate threads of the drafting process and the human designer behind the scenes. In contrast, Figure 4 is a section of the same existing building drawn in AutoCAD, which lacks the depth and nuance of the hand drawn work. Sharp precision leaves behind the opportunity for storytelling of the process and the more subtle connections between time and space.

One project in particular the class was focusing on included the creation of sustainable materials. Once I had made a new material, I began to experiment physically modelling with it and

¹⁰ Nithikul Nimkulrat and Camilla Groth, *Craft and Design Practice from an Embodied Perspective*, 1st ed, (New York: Routledge, 2025), 36.

¹¹ David R. Scheer, *The Death of Drawing: Architecture in the Age of Simulation*, 1st ed, (New York: Routledge, 2014), 1.



Figure 6: The physical items I brought to the dissertation presentation to support my argument that hand drawing is a richer way of designing and representing architecture. Photo taken by me.



Figure 7: Kunsthaus in Graz, Austria is a design by Peter Cook which was successfully built as a museum “Peter Cook, Architect - Original Thinkers”, Artificial Intelligence, accessed October 9, 2024, <https://octobercomms.com/thinkers/peter-cook/>

drawing the most successful experimentations to study the texture and forms it created, as seen in Figure 5. This enhanced my understanding of the material and allowed me to explore the possibilities of atmospheric qualities it could bring to the space. This also made me spend time with my experimentations and think about them in a deeper way giving myself the chance to extract best qualities and think about how that might translate into a larger spatial narrative. It also gave me the opportunity to test ways of representing this material in plans and sections, which I decided would be better represented if drawn by hand as opposed to being drawn in AutoCad, where I feared the material would lose its rich, irregular texture and organic forms. In Figure 5 we can see how I decided to create the final plans and sections, using a style of collage which allowed me to capture the material and easily differentiate my proposal from the existing site. I also made the drawings interactive, so the parts of the proposal that were meant to be mobile actually did move, adding another level of depth through physical interaction with the drawing. This opened my mind to the range of possibilities that exist in the physical realm where we have the chance to interact and discover through using more than just our eyes. It's a far more powerful experience to feel and smell and open and reveal parts of the design rather than just looking at an image on a flat screen. It's like the difference between seeing images of an exhibition on the website versus going to that exhibition and interacting with it in a physical way as it was designed to be experienced. Architecture is something that entails a full sensory experience, so I find something about the physical representation that accentuates the key experiences as a challenging yet rich way of designing.

When presenting this dissertation in the early stages of its development I realised in order to really say what I wanted to I could not just present a powerpoint presentation, but I had to bring the physical drawings I was talking about. As seen in Figure 6, I included my own drawing as well as books filled with drawings and sketches which I was studying to support my argument that there is still an important place in architecture for hand drawing and sketching.

2.2 Peter Cook and Lebbeus Woods: Paper Architecture

Paper architecture includes designs that are created to address an issue or make a point rather than be built. This opens a world of design possibilities that are immediately shut off when someone is designing with the intention of building. When an architect designs primarily to make a point, the practical aspects of construction do not have to be taken into consideration. This freedom “offers an opportunity to consider how built forms impact the individual and the collective, and reflect contemporary political, social and ideological conditions, and how one person contributes to the development and mutation of the built world”¹². Paper architects such as Peter Cook and Lebbeus Woods interweave issues from a variety of different topics to project what the future could look like. This is a way of challenging our ideas through the creation of the built environment and “through architectural drawings of a certain kind, stories can also be told”¹³. These designs contain complex arguments, telling a story through the narrative of the building, attempting to get people to question the way things are now and thereby to push us into a better future.

¹² “Lebbeus Woods: Architect”, The Drawing Center, accessed November 6, 2024, <https://drawingcenter.org/exhibitions/lebbeus-woods-architect> .

¹³ Peter Cook, *Drawing: The Motive Force of Architecture*, 2nd ed, (West Sussex: John Wiley & Sons Ltd, 2014), 1.

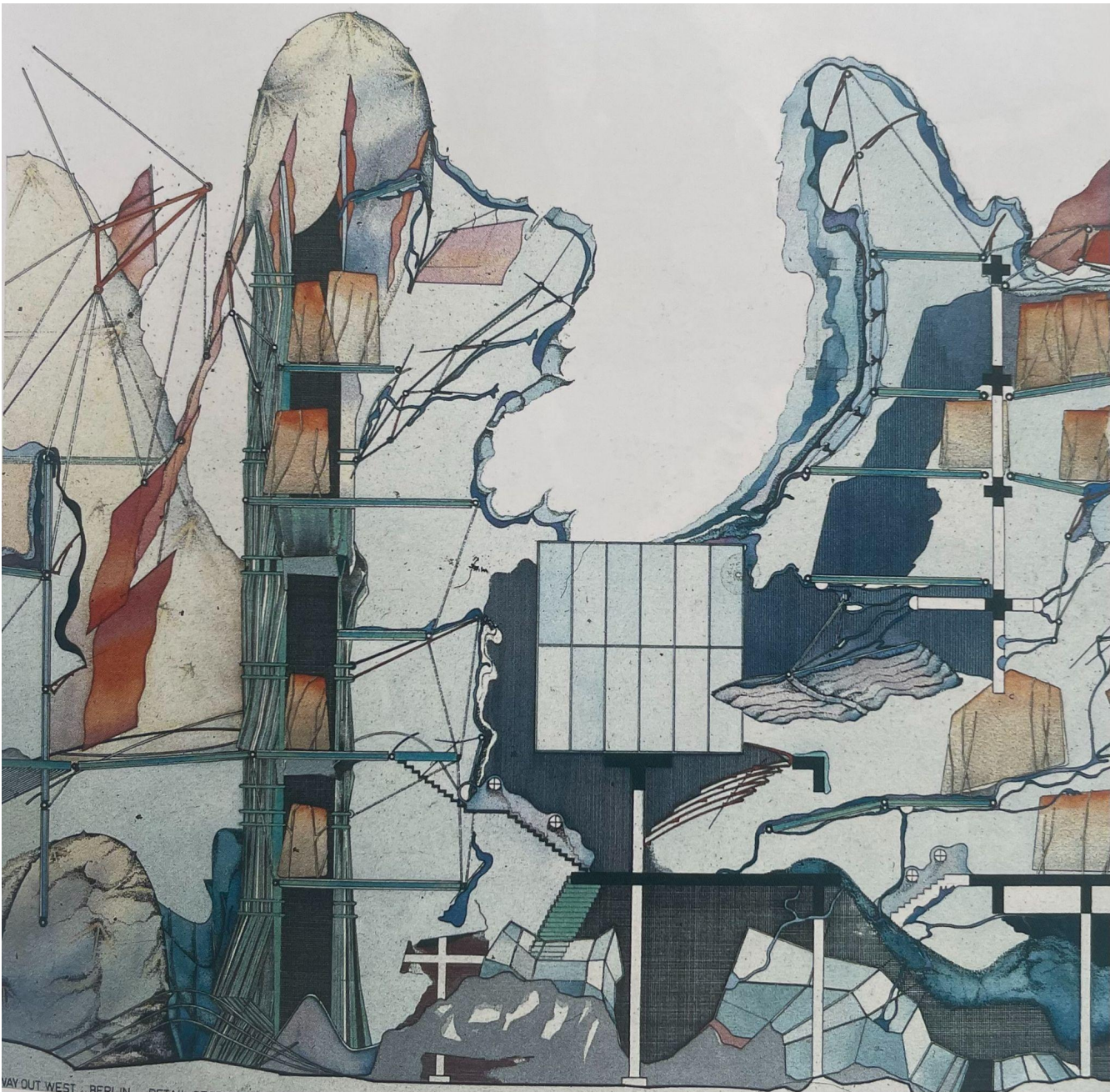


Figure 8: A drawing in a series titled, "Way Out West-Berlin, 1988" aims to question the limitations of architecture by creating these cacti in the form of skyscrapers.

Peter Cook, *Drawing: The Motive Force of Architecture*, 2nd ed, (West Sussex: John Wiley & Sons Ltd, 2014), 51.

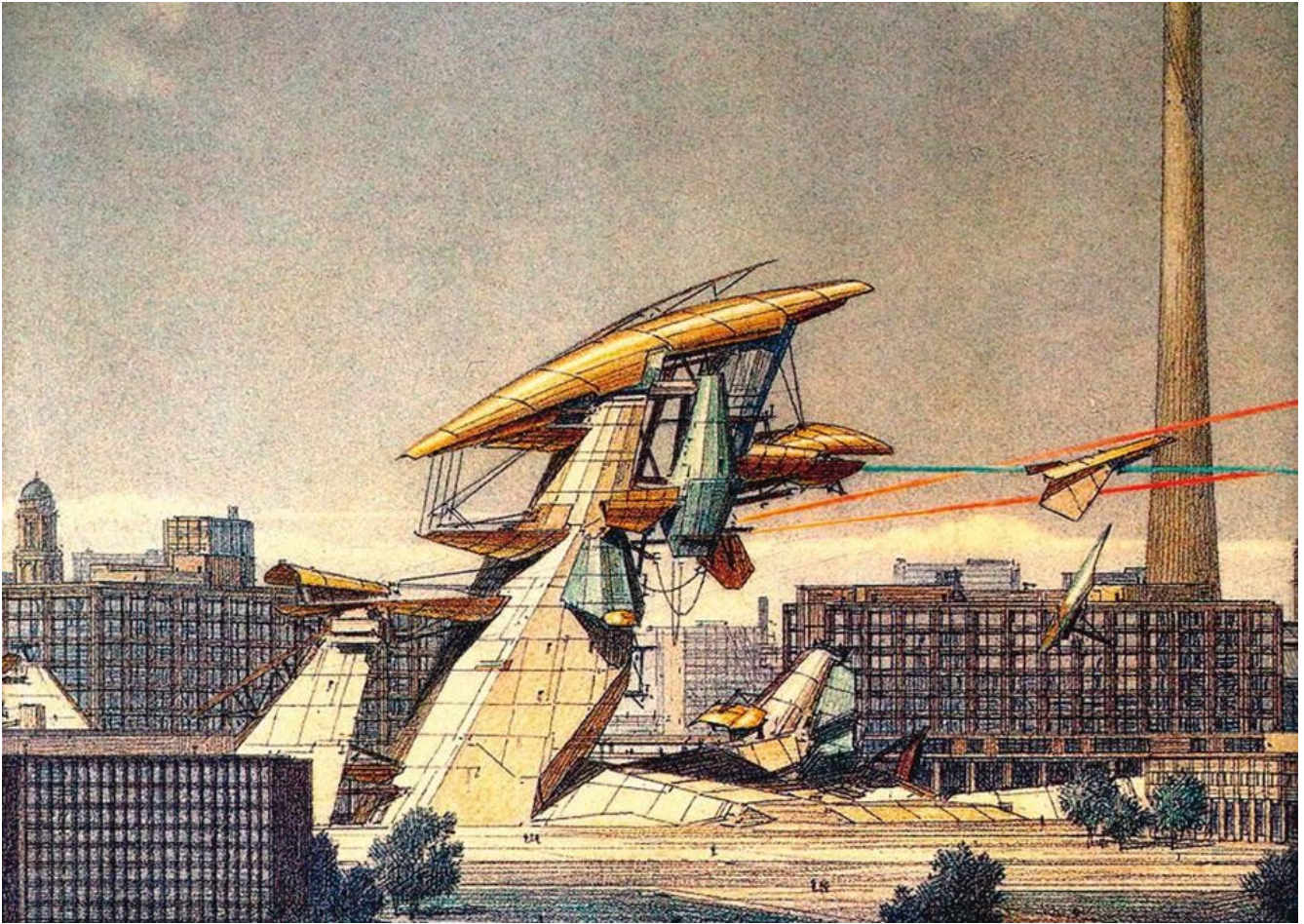


Figure 9: A part of a project called “Underground Berlin, 1988” by Lebbeus Woods which aims to create an underground city connecting east and west Berliners despite the Berlin Wall.

“Lebbeus Woods 1940—2012: Tributes to a fearless creator of worlds”, accessed October 10, 2024, <https://www.domusweb.it/en/architecture/2013/01/30/lebbeus-woods-1940-2012-tributes-to-a-fearless-creator-of-worlds.html> .

Rokko House 2 figures 10 - 15

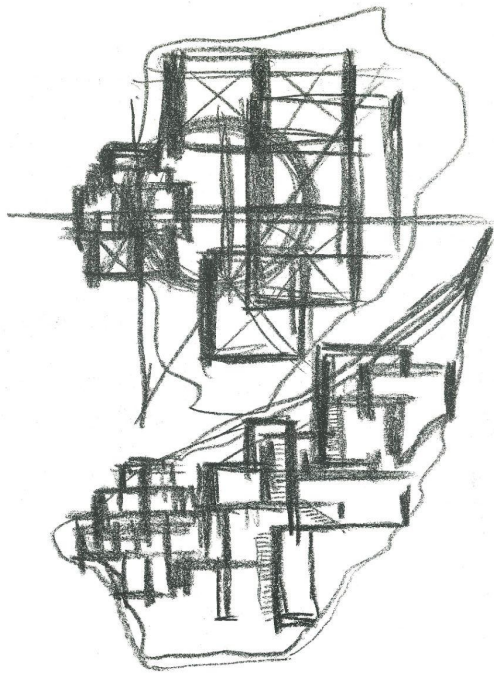


Figure 10: A concept sketch of the plan and elevation.

Werner Blaser, *Tadao Ando Sketches*, 1st ed, (Germany: Birkhauser Verlag Basel, 1990), 83.

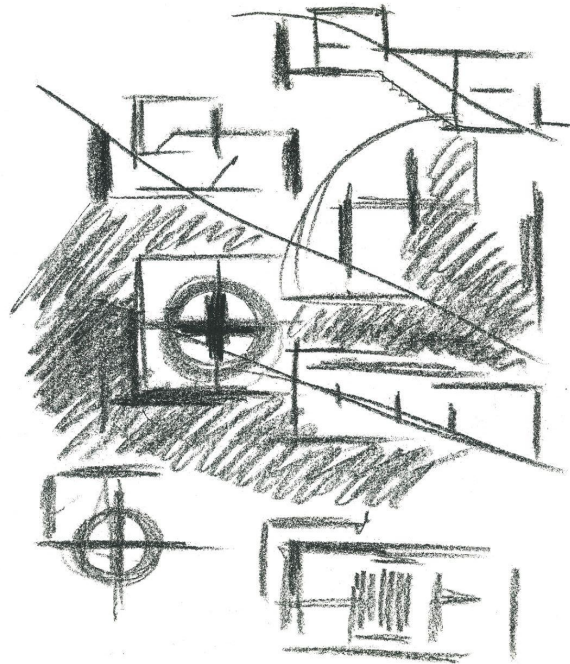


Figure 11: A working conceptual plan.

Werner Blaser, 85

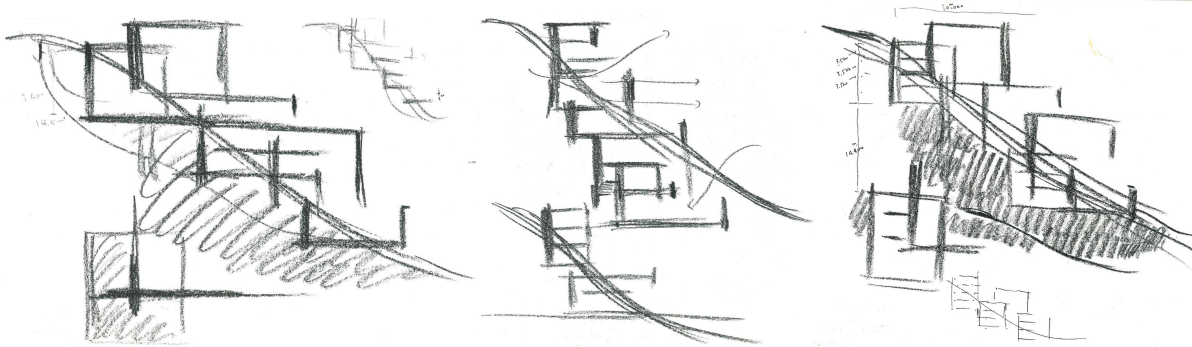


Figure 12: These three images show Ando working through different aspects of the design at different stages of the project, looking at his sketched forms in a sectional view, how light comes in and people see out and for working out the dimensions.

Werner Blaser, 81, 84, 87.

These wild designs help architects question what can realistically be constructed. With our rapidly advancing technological world the possibilities for what can be built are expanding and these designs may not lie far in the future. Peter Cook does not consider his designs to be utopian as he believes most of them could actually come to fruition¹⁴. In Figure 7 we see a Cook design which was built, proving his point that architecture can be pushed by paper architecture if taken seriously and not immediately categorised as unbuildable. The fact that these types of designs can actually be brought to reality shows that we are getting closer to this projected future.

The future is unknown and it remains easy to feel like we have no power over how it will emerge, for Woods, “the future was something to be constructed”¹⁵. Both Woods and Cook show us how we can acknowledge the issues of the present and use them as fuel to shape a better future. Most of us live in a built environment without really thinking about the impact it has on our lives, but looking at Figure 8 encourages us to question what life might be like in such a weird and wonderful space. It is Cook’s intention in this drawing to push the boundaries of architecture while questioning its limits by using the standard idea of a skyscraper combined with a cactus, playing with scale and ultimately creating postmodern architecture before its time. Similarly in Figure 9 we see a futuristic architectural mechanism placed into a normal looking city (Berlin), which pushes us to investigate the juxtaposition between what is and what could be. Woods aims to create an underground connection between east and west Berlin to unite people from both sides. Now we see this idea of facilitating human connection through architecture becoming more common especially in the aftermath of COVID 19, which left many feeling alone, taking a serious toll on their mental health.

Both Cook and Woods draw by hand using a variety of different materials such as ink, watercolour, graphite and coloured pencil. It is unusual to see something so modern drawn by hand but as Cook points out, there is an argument that “the struggle to depict something gives you time to think into it”¹⁶. In our fast paced world it can feel impossible to find the time to slow down, but in doing so it can give us the chance to create higher quality, more thought out work. AI is now able to quickly create incredible images of futuristic things, however such depictions do not have the same depth as these drawings which contain a world of nuance and inferred meaning.

¹⁴ Louisiana Channel, “Architect Peter Cook on the Benefits of Drawing by Hand”, January 26, 2022, video, 15:09, <https://www.youtube.com/watch?v=1suurGcp8BI> .

¹⁵ “Lebbeus Woods at The Drawing Center”, Joshua Johnson, accessed November 6, 2024, <http://thirdrailquarterly.org/joshua-johnson-lebbeus-woods-at-the-drawing-center/#note-1-3447> .

¹⁶ Louisiana Channel, “Architect Peter Cook on the Benefits of Drawing by Hand”, January 26, 2022, video, 15:09, <https://www.youtube.com/watch?v=1suurGcp8BI> .

2.3 Tadao Ando

Renowned Japanese architect, Tadao Ando closely relates his work to nature, playing with the interaction of space and light. According to Ando, “communication, life and architecture belong together”, and computers dehumanise communication by removing the emotion from it, which to him is perhaps the most essential part¹⁷. This continues to reflect the way he really begins to blur the lines between art and architecture, working more on the side of the artist as he ultimately puts human emotion at the centre of his work, beginning with the process which reflects in the final product. This philosophical approach begins to connect with the work of Cook and Woods in that they focus less on the appearance of the final product and more on the message that it delivers.

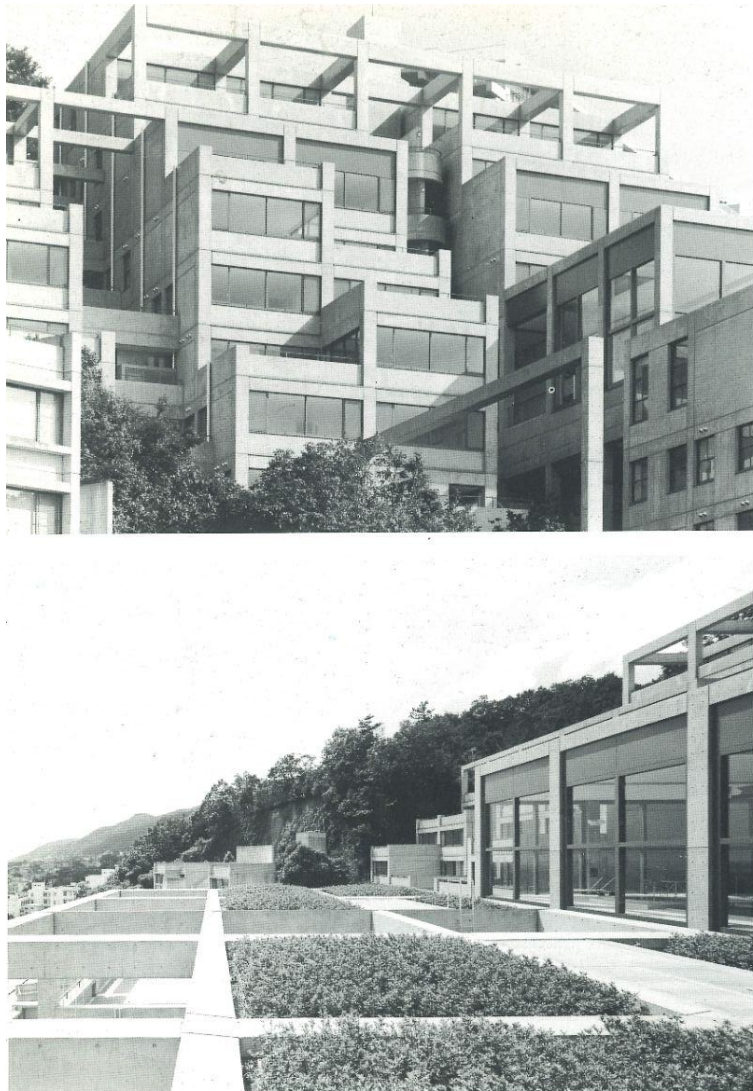


Figure 13: External images showing the building's position within the landscape.

Francesco Dal Co, *Tadao Ando Complete Works*, 1st ed, (London: Phaidon Press Limited, 1995), 280.

¹⁷ *Tadao Ando - From Emptiness to Infinity*, Directed by Mathias Frick, (2014; Singapore: Walther König, Köln, 2014), Amazon Prime Video.

He creates bold, yet minimal concrete forms with carefully thought out orientation to the sun and openings to let the light in and allow it to bring the architecture to life, both inside and out¹⁸. Natural light is an ever changing element in response to time, weather and seasons, and so the use of smooth concrete allows Ando's buildings to act as canvas for the dynamics of light. Ando utilises the interaction of sun on his walls to create his own form of art, which intends to evoke a sense of calm and peace for those experiencing it, as seen in Figure 15. His architecture is often described as artwork, comparable to an accessible sculpture which can be entered and explored in an immersive way¹⁹. He also cleverly incorporates these bold concrete structures into the surrounding landscape, as seen in Figures 13, 14 and 16, where in all cases the structure sits within the landscape and mimics its natural forms.

Ando begins his process with these powerful gestural drawings, exploring forms and geometries which often strongly relate to the final design. This can be seen when comparing Figure 10 and 14 where we see these multilevel rectangles emerging out of a hill, and again in Figures 16 and 17 where we see side by side the sketch of the elevation and the final digital drawing showing similar structural elements and form. These early sketches, Figures 10 and 16, are an exploration of shapes coming together to create an idea of the massing for the building. Ando then comes back to this style of sketching throughout his process of refinement, using this as a method to begin focusing his designs, Figures 11 and 18, to work out details, as seen in Figure 12, and to create additional aspects such as feasibility plans, Figure 19. I have studied several videos of Ando doing these sketches with a big chunky marker which he is barely holding onto as he moves his hand back and forth across the paper with such grace and confidence. It usually takes him less than a minute of sweeping the marker around the page, creating a variety of lines, which suddenly comes together as an architectural form within a landscape, Figure 16. This is such a clear way of communicating that defies all language barriers, allowing ideas to be passed seamlessly across the world. He often uses this simple, highly effective way of communicating his ideas through sketching, yet his drawing abilities are not limited to this style. We see in Figures 14 and 20 a very different way of representation through refined graphite drawings emphasising the form and its relation to light and creation of shadow. This style of drawing comes in at a much later stage in the design process, highlighting light and its interaction with the architecture which is of great importance to Ando. In a way, these images are similar to Figure 2 where Flores and Prats draw a small part of their design in detail. They focus not only on technical detail, but also on the atmospheric facets, which they have carefully designed or intentionally preserved to reveal the stories the building holds. While Ando and Flores and Prats work on different scales, focusing on different goals in their projects, they both choose to represent the most essential parts of the design through hand drawing. This shows us that hand drawing holds a high value and is considered the best way of representing the heart of the project for these architects and it gives these drawings a strong sense of personal style and an irreplaceable atmospheric quality.

¹⁸ "Tadao Ando Biography", The Pritzker Architecture Prize, accessed December 13, 2024, <https://www.pritzkerprize.com/laureates/1995>.

¹⁹ *Tadao Ando - From Emptiness to Infinity*, Directed by Mathias Frick, (2014; Singapore: Walther König, Köln, 2014), Amazon Prime Video.

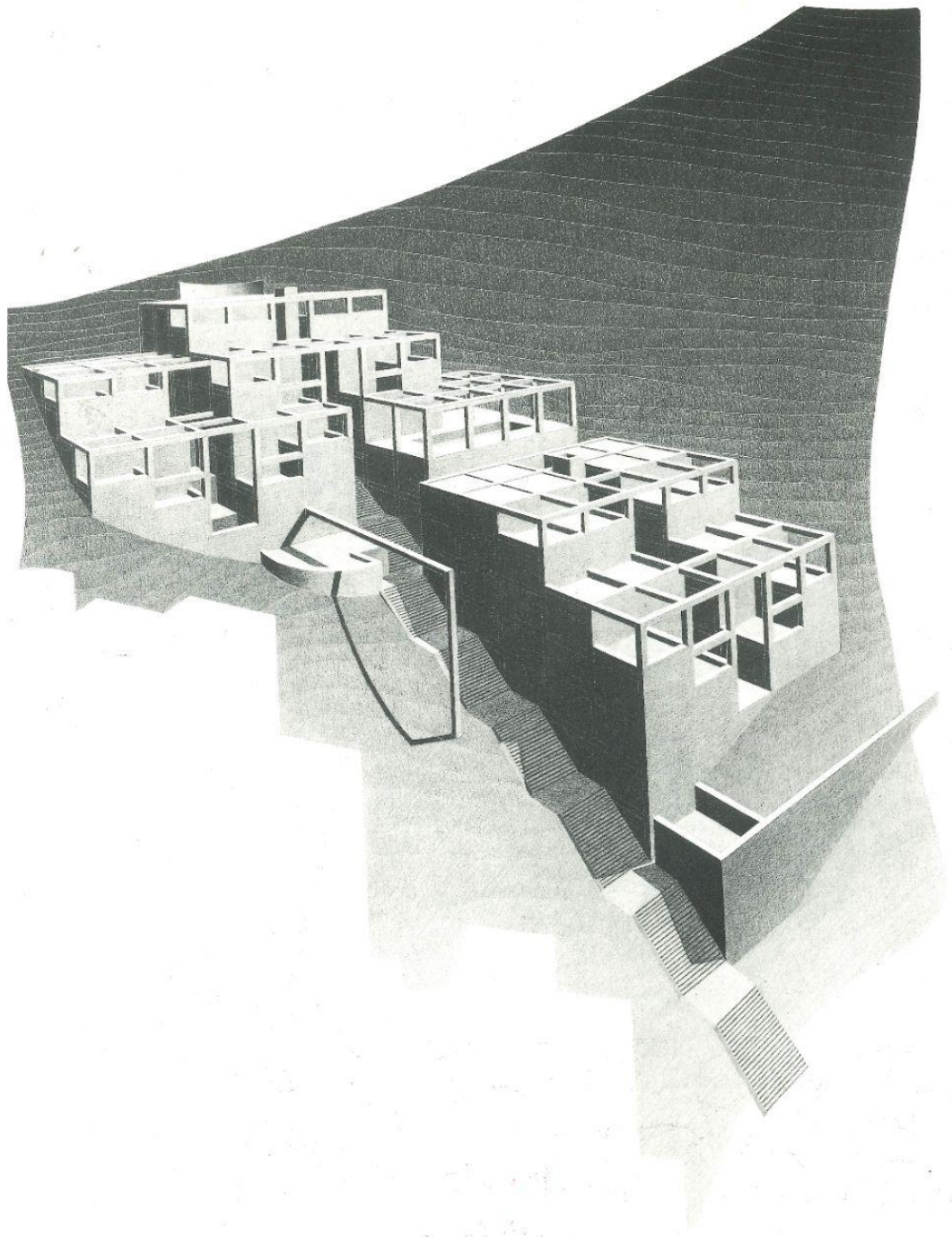


Figure 14: A graphite drawing of the final design highlighting the building's interaction with light, how it enters and the shadows it creates.

Werner Blaser, 78.

Ando explores far more in his work than just what is possible to build. He takes a much more philosophical approach stating that “the essence of architecture is to open the hearts of the people and to move them in such a way that they are glad to be on earth”²⁰. He spreads this message through his work by creating beautiful, peaceful spaces which encourage self reflection and a pause to enjoy the beauty of nature and architecture combined. He uses ordinary materials, such as concrete, steel and glass, but he creates something very unusual. He pushes the standard ideas of architecture and what these materials can do while keeping a sense of minimalism which carries a deep



Figure 15: Photos of the finished building where the simplicity of the design and play with natural light are shown.

Francesco Dal Co, 281.

²⁰ Tadao Ando - *From Emptiness to Infinity*, Mathias Frick.

Theatre on Water figures 16-20

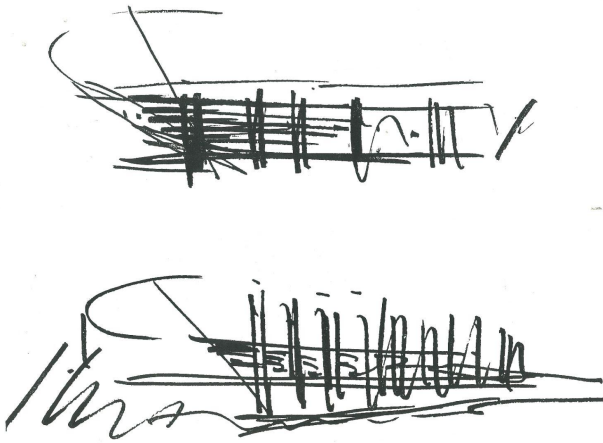


Figure 16: An early conceptual sketch of the elevation.

Werner Blaser, 141.

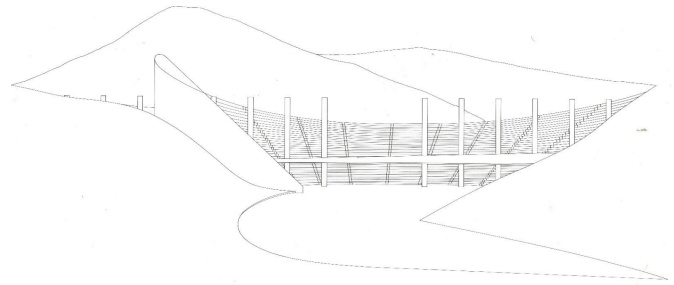


Figure 17: The final digital elevation showing similar structural elements and form to the initial sketches.

Werner Blaser, 139.

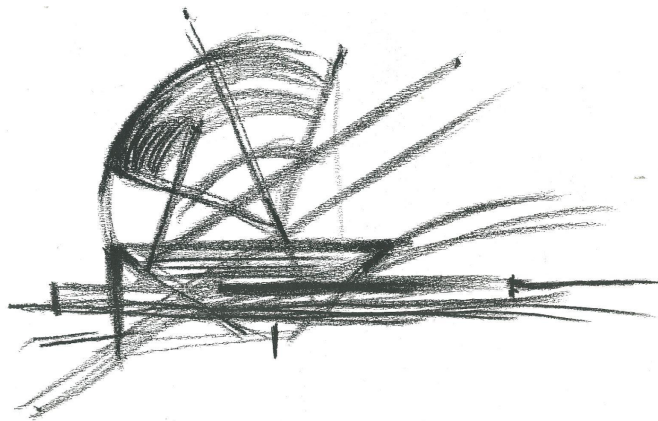


Figure 18: This is a sketch of the developing plan and elevation overlapped.

Werner Blaser, 143.

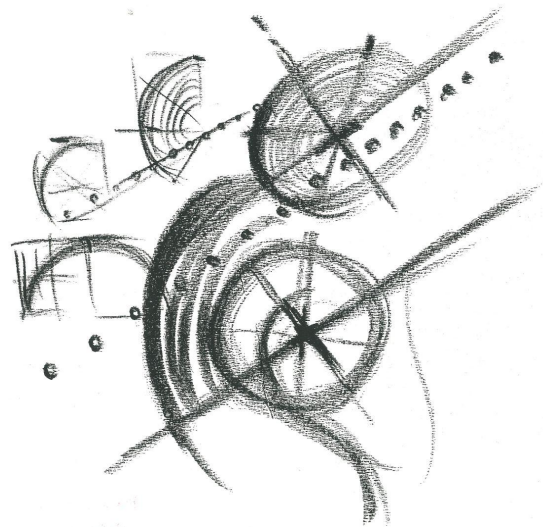


Figure 19: This is the feasibility plan.

Werner Blaser, 142.

complexity with its connection to humans and nature. Ando believes that “in architecture it is not the final building that’s important, but the process. If the process is not interesting, no valuable architecture can emerge,” and his quick and bold style of drawing is reflective of this process²¹. Watching him sketch, he begins with the basic idea then builds layers and layers of information to show a specific aspect of the design without having to get his computer or ruler out and spend the time to draw with great precision. This allows people in his studio and clients to quickly understand Ando’s ideas which can then be further discussed and developed within his team. I think this form of efficient visual communication is key for being able to visually work through things collaboratively. Ando does technically draw to build but he really draws to create something that evokes human emotion with a strong sense of peace.

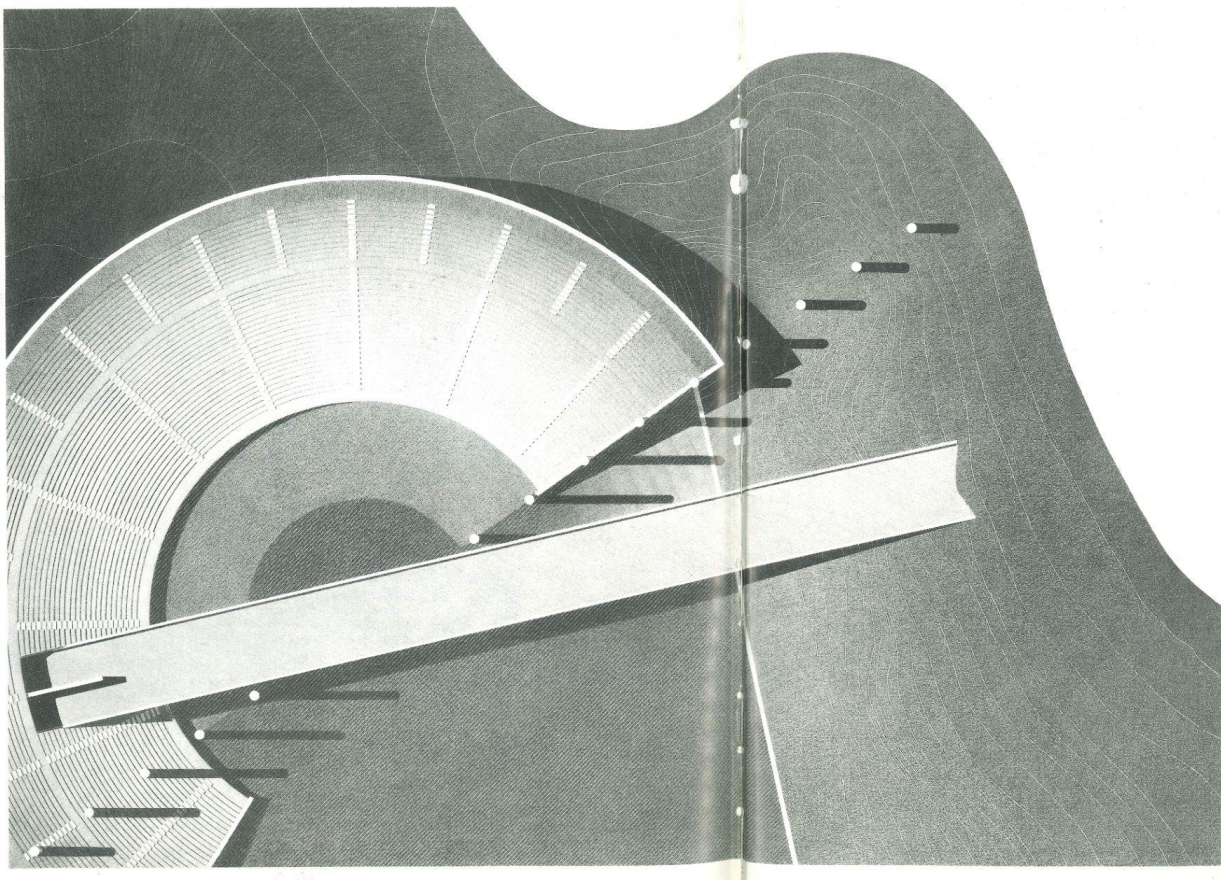


Figure 20: A final drawing of the proposal in graphite showing the light and shadows on the structure and its placement into the natural landscape.

Werner Blaser, 144-145.

²¹ *Tadao Ando - From Emptiness to Infinity*, Mathias Frick.

Conclusion

Contemplating examples in my own design work as well as the techniques employed by the established and renowned architects referenced, this study illuminates the essential ongoing role of drawing by hand. At the start of my research for this dissertation, I wanted to argue that there is a lack of humanness in computer generated drawing and that certain projects would benefit from hand drawing from start to finish in the creative process. This was based on my personal experience of drawing in both AutoCad and physically and the limited knowledge I had of a few architects who still work by hand in their practices. My initial research made me question if I even still believed these ideas because there was nothing directly supporting them. Every time I opened a new book I was excited about a new aspect of hand drawing, learning about everything from the benefits of physically making to the concept of paper architecture which is a form of designing that never goes past the drawing stage. My direction was changing weekly due to all of this intriguing information. When I finally narrowed it down and became more specific about my argument I was able to start really writing and connecting these different ideas about drawing and the architects I had selected who still value hand drawing. This is when I realised that my initial beliefs did still stand but in a much more rich and abundant way because I now understand hand drawing in the real world context of 2024. I have realised that everyone does things differently and there's no right or wrong way. In order to keep up with this world, digital software is essential, however, there is something of enormous value about slowing down to take the time to draw things by hand because it allows a greater capacity to think about the design and its context, leading to a richer project. Working on my design project alongside writing this dissertation I decided to really focus on hand drawing, using it as a way of designing and working things out and I feel really proud of my final design because I have spent so much time drawing it, understanding the space and considering many different aspects of the project. It also feels like a strong representation of me, whereas in previous projects I have held back on the weird curvy shapes, knowing how much more time consuming it is to draw that way in AutoCad or Rhino. Despite the fact that it might be broadly considered as a less efficient method, hand drawing has the indisputable advantage of slowing us down, which often results in more thoughtful work. This concept of intimacy between imagination, creativity and material is clearly illustrated and applied in the works of Flores and Prats, Cook, Woods and Ando. This reinforces my perspective that the intrinsic human quality of hand drawing holds the appeal of a direct reflection of the mind without the inevitable changes and interventions introduced with computer software. The rapid expansion of AI, into virtually all aspects of our contemporary world, heralds the unstoppable intrusion of a largely computer generated reality, leaving the human aspects of life to become increasingly sparse and therefore precious. Hand generated design reminds us of the perspective that sometimes easier and faster is not necessarily better.

In order to ensure that future architects will retain the capacity to create, think and communicate through the irreplaceable skill of sketching, it is of great importance for students to continue to learn and implement the traditional architectural design tools of drawing by hand. While the discipline of architecture evolves towards an increasingly digital practice, opening new opportunities and possibilities for built designs, the art of hand drawing holds unique advantages that should not be completely laid aside and forgotten. Although emerging technologies will continue to incorporate new tools into architectural design, by integrating both novel and long existing methods we have the capacity to push ideas into the future in new and unexpected ways. The old world of physical and the new one of digital have the ability to cross over and exist interwoven together, combining the best

aspects of both.

Paper architecture brings to light the significance of translating building design into an investigation of existing social issues, and the opportunity to innovate novel solutions. In the most realistic way, paper architecture represents a technique to imagine and shape our future. This potential has never felt so urgent than in our fast paced world in which social structures need fundamental and far reaching reform in order to address the quality of life for all humans. Although the painstaking work of hand created, imagination driven design beyond the intention for realistic construction may appear tedious, it has the distinct advantage of allowing more time and thought to go into the work, which will inevitably empower us to take the future into our own hands and examine ways to create a better world. By working together to address the issues in our world now, we have the ability to design our future and create better ways of problem solving to continue improving and resolving as society evolves. When certain things are solved other issues arise, but developing ways of collaboratively working for common goals will allow us to keep evolving and making positive changes.

Hand drawing can be a very effective way of showing the most important, non-technical parts of the design, as seen in the work of both Ando and Flores and Prats. The innate imperfections that result from physically drawing give a more real and atmospheric feel, as opposed to computer generated renders, which tend to be overly perfect, not accurately representing the human experience. There is a beauty in humanising architecture and design by revealing the messy raw process of what it really takes to get from a blank piece of paper to a finished design. I think these imperfections help us subconsciously relate to the work and the designer, as we can see that they too are just humans and the work was a process that took time and thought with failures and issues to work out.

Bibliography

Blaser, Werner. *Tadao Ando Sketches*. 1st ed. Germany: Birkhauser Verlag Basel, 1990.

Co, Francesco D. *Tadao Ando Complete Works*. 1st ed. London: Phaidon Press Limited, 1995.

Cook, Peter. *Drawing: The Motive Force of Architecture*. 2nd ed. West Sussex: John Wiley & Sons Ltd, 2014.

Flores, Ricardo and Prats, Eva. *Thought By Hand: The Architecture of Flores & Prats*. 1st ed, 3rd print release. Mexico City: Arquine, 2020.

Flores, Ricardo and Prats, Eva. *Sala Beckett: International Drama Center*. 1st ed. City of Mexico: Arquine, 2020.

Frick, Mathias, dir. *Tadao Ando - From Emptiness to Infinity*. 2014; Singapore: Walther König, Köln, 2014. Amazon Prime Video.

Jenkins, Eric J. *Drawn to Design: Analyzing Architecture Through Freehand Drawing*. 1st ed. Basel, Switzerland: Birkhäuser, 2013.

Johnson, Joshua. "Lebbeus Woods at The Drawing Center". Accessed November 6, 2024. <http://thirdrailquarterly.org/joshua-johnson-lebbeus-woods-at-the-drawing-center/#note-1-3447> .

"Lebbeus Woods 1940—2012: Tributes to a fearless creator of worlds". Accessed October 10, 2024. <https://www.domusweb.it/en/architecture/2013/01/30/lebbeus-woods-1940-2012-tributes-to-a-fearless-creator-of-worlds.html> .

Life of an Architect. "EP: 143 Architectural Drawings: Excessive or Essential". January 28, 2024, podcast, 1:00:35. <https://open.spotify.com/episode/4bWMn1SszECwDu1VyaM0iW>.

Louisiana Channel. "Architect Peter Cook on the Benefits of Drawing by Hand". January 26, 2022. Video, 15:09. <https://www.youtube.com/watch?v=1suurGcp8BI> .

Nimkulrat, Nithikul & Groth, Camilla. *Craft and Design Practice from an Embodied Perspective*. 1st ed. New York: Routledge, 2025. Ebook.

Perry, Grayson. "What is the Role and Value of Crafts Today?" *British Museum Blog*. August 16th, 2011. <https://www.britishmuseum.org/blog/what-role-and-value-crafts-today#:~:text=Sure%2C%20handmade%2C%20well%2Dmade,we%20become%20more%20responsible%20consumers>

Evans, Robin. *Translations from Drawing to Building and Other Essays*. 1st ed. London: Janet Evens and Architectural Association Publications, 1997.

Oxford English Dictionary. "Hand-Drawn". Accessed October 17, 2024. https://www.oed.com/dictionary/hand-drawn_adj .

Scheer, David R. *The Death of Drawing: Architecture in the Age of Simulation*. 1st ed. New York: Routledge, 2014.

The Drawing Center. "Lebbeus Woods: Architect". Accessed November 6, 2024. <https://drawingcenter.org/exhibitions/lebbeus-woods-architect> .

The Pritzker Architecture Prize. "Tadao Ando Biography". Accessed December 13, 2024. <https://www.pritzkerprize.com/laureates/1995> .

Ulme, Andra & Elere, Elina. "The Role of Fine Art and Hand-drawing in Architectural Studies." *Architecture and urban planning*. [Online] 19, 1 (2023): 200–208.