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Reawakening Quality in Architecture: A Contemporary Idiom of Pattern Language

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Reawakening Quality in Architecture

A Contemporary Idiom of Pattern Language

Request for Approval of Thesis Research
Project Book Presented to:

Edwin Akins

and to the
Faculty of the Department of Architecture
College of Architecture and Construction Management

by

Christopher D. Richardson

In partial fulfillment of the requirements for the Degree

Bachelor of Architecture

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Thesis Statement

Using the foundational work of the Pattern Language, by Christopher Alexander, primary organizational steps within the practical realm of programming architecture will be tested to bridge the act of production and the realities of experience to explore the practical art of design. The exploration of this contemporary idiom...Will bring forth the qualities that have remained dormant within a majority of Architectural practice. Through my study of Phenomenology, the senses, and Virtual Reality I aim to explore the design process once experience is introduced as an immediate feedback loop to tease out the parameters in which architecture can be controlled within the phenomena of the senses. Architecture is a practical art. Art is something that is meant to evoke, an architect's job is to create that which protects, functions, and preforms evocation. I believe that we are at the cusp of reintroducing the concept of this evocation within the process of architectural design as opposed to only understanding the quality evoked within built environments once construction is completed. .

01

THE SITE OF INQUIRY

01.1

CHRISTOPHER ALEXANDER

Pattern Language



Fig.1:

Alexander is a widely known influential architect and design theorist. His work focuses on the nature of human-centered design. His most famous contribution to the highly contested design theory is his book *A Pattern Language*.

This Thesis seeks to determine the reason and context of the writing of *A Pattern Language*. Did it spring from a common issue seen within contemporary practice? Did it provide an answer to this issue? If so, can we use this work as an artifact of the discourse to enhance, (or possibly find a new way of using) current tools, methods, and processes that are becoming available to us in the current shift to new technologies. How do we do this?

The Series

Pattern Language was part of a series of books that were meant to serve as a new method and theory of architecture. If, we look closely at the first book in the series, "*The Timeless Way*" we can get both an overarching understanding of the methodology behind Pattern Language and its intended use. In this book, the base reasoning of Pattern Language was in search of what Alexander coined, "The Quality Without A Name." - this is expounded upon in CH.03. Alexander sought to bring this back into architecture because he saw a problem with what was being built.

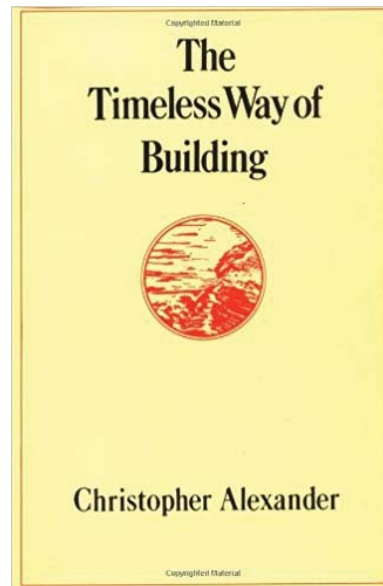


Fig.2:

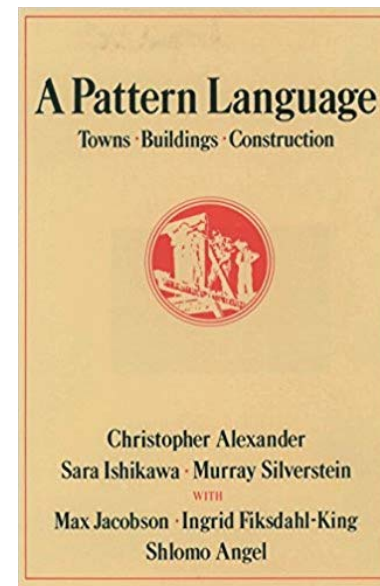


Fig.3:

This thesis would like to put forth that there are problems with the interpretations of Alexander's position of the problem in Architecture that leave out two key components of his work.

1. The tools of architectural production in portrayal of experience to inform the author in process.
2. The role of the Author and their subjective experience

I will delve into these components as now is the right time to invest research into these with the shift that is about to occur within the production of architecture with newly available tools. These tools allow us to finally bring these components forward in the process.

First, however, we must understand What caused Alexander to create this work? What made him try and bring this Quality Without A Name into architecture? What was the problem he was seeing within the production of architecture? What was his reasoning? How does it relate to what is happening today? Why is this work important and relevant?

The Interest and Problem

"I am interested in creating living architecture, cities, towns, streets, gardens. For the most part of the last 50 years or so or at least since WWII has virtually no ability to produce that kind of living structure in the world. As inhabitants, in our daily life, the living structure which is meant to substance us and nurture us, which did exist in traditional society and rural communities has disappeared drastically."
Alexander, 1996

This quote comes from a lecture rather than the *The Timeless Way* but it drives home what is at the heart of Alexander's work and the initial idea that ultimately resulted in *Pattern Language*. Alexander was interested in these "*living nurturing spaces*", primarily because he believed that certain things in architecture were disappearing and that the current architects were not able to currently provide these elements, he believed that we are lacking something in architecture. This thesis accepts this position as Alexander is not the only person within the architectural discourse to notice and discuss this idea.

Reactions To Architecture

Architects, Theorists, and Critics, all have commented that we are lacking something architecture. These thoughts can be traced back over 30 years and can be seen within the formation of the different architectural movements such as modernism, post modernism, post structuralism and so forth. These thoughts of the profession always questioning itself to be relevant and to maintain currency within the ever changing landscape of design approaches and technologies. If we have this so called problem how are people all coming to the conclusion that there is a problem? These movements look at their place within the profession as well as the links to society to inform appropriate and responses of design that advance the quality of the built environment. Many have seen that society seems to not hold Architecture at the same value it once did. Why is this? Alexander chalks this up as architecture not providing nurturing environments in which society enjoys. W. G. Clark supports this and goes further by discussing the base of the problem in his writing *Replacement*. In this writing he discusses man's instinctive nature to want architecture to be something good. He writes,

"The idea here is that humans want civilization to be a good thing in which the places built are worthy of the destruction of the natural location, and that "architecture can be the ameliorative act by which, in thoughtfulness and carefulness, we counter the destructive effect of construction. Nothing else is architecture; all the rest is merely building."
Alexander, 1996

The American Landscape

Alexander also states that the problem is one that,

"Affects every man woman and child on earth. It is lamentable, the population of the earth is growing and most of the habitable environment has been built in the last 50 years. We can feel that these environments are not nurturing." Alexander, 1996

Once again W.G. Clark discusses this same idea, that in Architecture there is a problem in the built environment and it is one that we can feel especially in the American Landscape.

"The American landscape is being sacrificed to building. The result is dismal, adding up to nothing satisfactory or even significant except as an accurate self-portrait of our cultural and ethical dissolution. This is an observation neither rare nor subtle. The condition is one that we all see and feel daily, one that we abhor yet perpetuate, a senseless spread of profit-motivated building that has none of the good characteristics of settlement, and looks remarkably more like a midway, unrooted and designed to be put up anywhere. The comparison becomes more apt with the realization that most of the things built are unnecessary."

Clark, Pg. 3

The Historical Disconnect (man and artifact)

This is a thought line that can be traced back as an underlying thought that peeks through most architectural discourse following the World Wars. It was just not just Alexander seeing that there is a problem but there was an underlying theme in the discourse that architecture itself has a problem, that it loses something in the way it is produced. We can trace this thought line easily if we look at the writings through the time line. Take for instance, Norberg Schulz's Genius Loci "The Spirit of Place" which was written in the 70's, in it he wrote,

"Identification and Orientation are primary aspects of mans being-in-the-world. Whereas identification is the basis for mans sense of belonging, orientation is the function which enables him to be that homo viator, which is part of his nature.Today we start to realize that true freedom presupposes belonging, and that "dwelling" means belonging to a concrete place.Man dwells when he is able to concretize the world in buildings and things... "concretization" is the function of the work of art, as opposed to the "abstraction" of science. Works of art concretize what remains "between" the pure objects of science. Our everyday life-world consists of such "intermediary objects and we understand the function of art is to gather the contradictions and complexities of the life world. In Modern society, attention has almost exclusively been concentrated on the "practical" function of orientation, where as identification has been left to chance. As a result true dwelling, in a psychological sense has been substituted by alienation."

Schulz, Pg.21



What this means is architecture has lost the identification portion which has led to alienation of the individual, this is a part of the problem. At the time this idea helped to orient architects more towards post-modernism yet come along about 30 years and as with all things history has a way of revealing mistakes and connecting things on a larger scale as it is documented. In the 2000s we have Alexander and Micheal Benedikt whose work states that the problem did not get much better and may in fact have gotten progressively worse. Why is this? What changed in the discourse from before the World Wars till today?

What Changed?

Derived from The Timeless Way of Being Alexander states that what has changed is architects can no longer design in what he calls The Timeless Way.

"There is one timeless way of building. It is thousands of years old, and the same today as it has always been. The great traditional buildings of the past, the villages and tents and temples in which man feels at home, have always been made by people who were very close to the center of this way. It is not possible to make great buildings, or great towns, beautiful places, places where you feel yourself, places where you feel alive, except by following this way. we currently are ignorant in how to do this."

Alexander, 1996

Alexander however elaborates on the idea of our ignorance of designing in this Way during a lecture at Berkeley 2011 in which he discusses the methods of architectural production, the tools we use, and the standardization for production as preventing the majority of architects in creating architecture with The Quality Without A Name.

"Currently architecture is a discipline of making drawings that are transmitted to construction companies. The idea that one could inject profound feeling into such a process would be quite impossible. Yet its the most common sense thing to start with.If you set out to placing pencil to paper, or cad line to print, there is no possibility of creating the feeling that happened in any one single building of the whole lot. It is not conceivable to make use of a cad drawing in order to make the size, shape, and position of the building. The reason being you can only do that kind of work by doing it with your own body own heart. The communication of the building crews."

Alexander, 1996

What Changed? -Cont.

Micheal Benedikt goes into further elaboration of Alexander's ideas and draws a circle around the problem in his writing *Less for Less Yet 2003*, even going so far as decrying modernism's thoughts as being part of the problem. Benedikt starts off by expressing a running theme in architectural discourse, that the old ways of building are enjoyable, and the current methods produce an environment that is not. Benedikt, along with Alexander and so many others, enjoys old buildings and discusses the idea and statement that, building the old way (traditional methods of building, not the Timeless Way) would not serve the problems of modern society, as only benefiting those who would stand to profit from the new techniques. This idea of profit has caused the environment of architectural design and production to become commodified. The process has been corrupted and turned into a way to make money rather than, "life-long dwelling or long-term city making." This idea of making money transformed the thought of building in the old way as not being affordable yet we can not blame the market as the reason as it has not really changed.

"What has changed is the national will to direct attention, labor, and resources to architecture specifically and the built environment generally, be it through markets or governments. And one reason for this change has been the relinquishment by architects of their role—indeed duty—in upholding standards and modes of discourses about design that ordinary people can understand and that produce buildings that people want to live and work in for reasons other than the fact that they are new. No wonder people go to the movies, where they can see what happens when someone takes days to get the light right."
Benedikt, Pg. 3

Benedikt states the same thing Alexander was talking about and that W.G. Clark is saying, that architecture has a problem upholding the standards of design excellence in that architecture must have a value culturally, for the society, not just valued for proficiency or economy to serve those who stand to profit. Benedict states the major proponent in this problem is the economy leading design to be profit driven. This prioritization of production within the architectural profession via the automation and introduction of computer aided design (CAD). Ultimately who benefits from the efficient production of architecture? Benedikt argues that it is not the Architect and not society, but to the contrary, both suffer. As architecture continues to evolve with new technological methods, how then can critical evaluation of the profession elucidate what has been lost in the rush of production and begin to find opportunities within technology as well?

Relinquishing Elements

If we look at *Less for Less Yet* once more we see Benedikt referencing the loss of mastery over all elements of architecture due to the Architectural divesting itself of particular expertise, primarily to engineers. *"Acoustics, lighting, air quality and air movement, heating, cooling . . . what engineers know and do about these things (I exempt structural engineers from this critique) has become so narrow and formulaic that their expertises together can be said to form a chain of islands separated from each other, and from the mainland of design, by oceans of ignorance about architectural phenomena. These phenomena were once the chief source of architecture's value and were attended to "automatically," with, as it were, the DNA of traditional models. Today few architects know about such things."* Benedikt, Pg. 6

Benedikt is saying that through the call of production two things have happened to architecture.

- First it has become more of a commodity and as such it has transformed from architects having the total control and understanding of all the elements of the building, being masterful of several disciplines, to outsourcing services to several engineers that do not understand phenomena.
- The second thing is that thanks to the separation of elements the architect can control we have lost the "Phenomena." Benedict refers to these phenomena as creating the joy-in-inhabitation.

This joy-in-inhabitation is the related to what Alexander is discussing when he talks about nurturing spaces. If the spaces are nurturing we can feel it, we have joy-in-inhabitation. It is also the thing W.G. Clark is calling for, a phenomena, something that brings value to architecture, creating something worth existing. Places are created from such Phenomena as places are a resonance of character with a person which would create this so called.... joy-in-inhabitation.

The Problem

Through these connections of thought we can see a basic outline of the problem as discussed by Alexander and elaborated upon by other theorists. We can see its origins- we have a disconnection between society and architecture as the way society views architecture and values it has changed. How this relates to the ideas of production that became part of culture after the rush to rebuild after the World Wars. How in the rush to production architects relinquished control of portions of their own disciplines in order to increase the efficiency of design. By relinquishing these elements architects had less to worry about but because engineers do not understand architectural phenomena we have lost the control of phenomena, and focus on architectural use.

The problem with a majority of architectural practice that Alexander was seeing, therefore, we can now see was a loss of focus on phenomena within production and processes that can help the designer "pre-inhabit" our built environments.

The Problem Today and Shift

If we fast forward to today, we can see that the time line of these thoughts in architecture have spanned from at least 1962 all the way to current practice in 2018. We never seemed to have fixed the problem that was being discussed. This thesis would like to state that the primary reason for this is we did not have a change in the methods of producing architecture that fundamentally changed how we designed towards qualitative properties of design. Instead the new technologies were focused on the production aspects of design and the quantitative elements. This could potentially change now.

In current practice we have two technologies emerging that are changing the way architecture is being produced. These technologies offer an opportunity to bring the focus towards phenomena within architecture. These tools are elaborated on in Chapter 02 but now that we have a shift about to occur in Architecture the question within we must face is can we solve this problem in Architecture? How do we bring back the focus of architecture to the phenomena that gives it value and have processes that help us pre-inhabit our environments? I believe that by using Pattern Language as an Artifact of the discourse to learn from with current tools and processes we can explore a potential way in which to do this. The reason for this belief is based on what the Theorists writing on this problem were calling for and how Pattern Language relates to what is called to address the problem.

We must "pre-inhabit" our built environments.

Without preinhabitation it becomes onerous to embed subjective experience within the formation of architectural design.

01.2 ADDRESSING THE PROBLEM

What Should Architecture Do?

Reflecting upon the writing *Replacement* by W. G. Clark he never specifically gives a missing piece to be returned to practice rather he makes reference to a guideline in which designers must keep in mind. He states that architecture must

1. Give something back
2. Must have a call to being, it must be thoughtful in providing something of value.

This value has to be more than pure functional/quantitative it must be a qualitative valued experience. It must have soul, reverence, atmosphere, it must evoke. It must provide its function while producing an effect on the inhabitants in order to make it a place, a dwelling, and make it worthy of being less it be a dismal attempt. These are things that architecture is not doing in all contemporary practice leaving the fragmentation of buildings rather than true architecture.

Where to start?

Norberg Schulz work *Genius Loci: Towards a Phenomenology of Architecture* was created in 1979, in it he was infatuated with the idea of "Places" and bringing back the *Genius Loci*, the idea of *Spirit of Place*. *"Being qualitative totalities of a complex nature, places cannot be described by means of analytic, "scientific" concepts. As a matter of principle science "abstracts" from the given to arrive at neutral, "objective" knowledge. What is lost, however, is the everyday life-world, which ought to be the real concern of man in general and planners and architects in particular. Fortunately a way out of the impasse exists, that is, the method known as phenomenology."* (Schulz, Pg.21) Phenomenology is the Study of Essences and Schulz thinks of the essence of architecture as the "character of a place" so what Schulz is really calling for is a phenomenology of architecture in which the character of a place is emphasized so that we can have true, "Places" in order to bring the focus back to the individuals life-world. Schulz expresses that this focus of the life-world that is lacking in architecture.

Bringing back Place

Schulz ideas are underlined by the theory of phenomenology that **protrudes** during this time period yet we can see a connection to W.G. Clark in that "places" give back to society. The want of the architecture being worthy of existence is fulfilled by Places providing for the life-world. Schulz discusses Places as being created by phenomena.

"Place is given as such character or Atmosphere. A place is therefore a qualitative, "total" phenomenon, which we cannot reduce to any of its properties, such as spatial relationships, without losing its concrete nature out of sight. Places are a totality made up of concrete things having material substance, shape, texture, and colour. Together these things determine an "environmental character", which is the essence of a place."

Schulz, Pg.8

Look At What Was Lost

Here Schulz makes a important point that helps form a connection between these authors when he talks about Places being created out of Phenomena made up of concrete things, Material, Shape, Texture, and Color. These are the things that Benedikt says, in *Less for Less Yet*, are missing thanks to divulging the command of certain areas of architecture to engineers. *"These phenomena were once the chief source of architecture's value and were attended to "automatically," with, as it were, the DNA of traditional models. Today few architects know about such things. Evaluating the glare from a window, assessing the resilience of a floor, modeling the coherence of interior air flow or the balance of radiant to ambient heat, simulating the pattern of sound reflections down the halls and in the rooms of an ordinary building (not a concert hall or auditorium), analyzing patterns of privacy and exposure, and understanding how these factors work together to create good quality in a place, value in architecture: these are activities that do not currently form the stuff of architectural practice."*

(Benedikt, pg. 6)

Call For A Survey and Theory

Since we have lost control of these things what then does Benedikt ask for us to do? Create a new theory of architecture that "makes detailed surveys of what architecture has discarded." Benedikt is really calling for a return to understanding the qualitative elements within architecture and,"how these factors work together to create good quality in a place." He calls for this survey in order to create a new theory of architecture from it. This idea of a new theory from a survey of architecture is not necessarily new as each new Architectural movement was triggered by a search of new theory or new method in the design process yet this call for theory by Benedikt is really close to what Charles Moore calls for in *Towards Making Places* back in 1962,

"Lacking experience of the old sort, and the basis for achieving any, we need a body of theory, a formulation of a way of working which will let us consider how, and for whom, our structures are to function, what they are and how they figure in the lives of the people who use them. The forms which the famous "form givers" give, and even the spaces which some of those forms enclose, become far less important than the places which we establish and of which we establish possession."
(Moore, Pg. 90)

Charles Moore extensively talks about Places within his writings which resonates with what Schultz himself wrote on the matter. These writings reference topics discussed by Benedikt as well as W.G. Clark and instead of continuously repeating the same topics I will instead list out what Moore calls for.

Of the things we hold possession over in the discipline of Architecture Moore and his associates write about roughly 10 areas in which we should focus.

1. Boundaries
2. Inside and Outside
3. The Frame
4. Participation
5. The Search for Order
6. A Need for Testing
7. An Economic Standard
8. The Symbolic Function
9. Dispelling The Mystique
10. Our Obligation

This is yet another call for a solution to bringing back these phenomena in the architecture process yet even today we have not integrated these. This brings forth the question how do we do this? How do we bring together all these elements being discussed with the architectural production in contemporary practice?

Summary Of Whats Called For

Before we try and answer this question lets summarize what is being asked for by these authors.

As an outgrowth of the thoughts of W.G. Clark

Architecture Must:

1. Give Something Back
2. Must have a call to being, it must be thoughtful in providing something of value.

As an outgrowth of the thoughts of Norberg Schulz

Start with a:

phenomenology of architecture in which the character of a place is emphasized so that we can have true, "Places" in order to bring the focus back to the individuals life-world. Everyday life-world ought to be the real concern of man in general and planners and architects in particular

As an outgrowth of the thoughts of Benedikt and Moore

Take survey of:

what architects have given up in the pursuit of production-the phenomena that were once the chief source of architecture's value.

As an outgrowth of the thoughts of Charles Moore and Benedikt

A New Theory That

will let us consider how, and for whom, our structures are to function, what they are and how they figure in the lives of the people who use them.

Missed Opportunity

It is the position of this thesis that in the pursuit of new theories and in the broader pursuit of new technologies that we have potentially overlooked a valiant effort in bringing these elements forth - A Pattern Language. It was dismissed as an attempt to make an architect out of anyone rather than an attempt to bring forth the phenomena in architecture once again to the forefront of practice- this is expounded upon in Chapter 04. In doing so we have missed the two elements:

1. The tools of architectural production in portrayal of experience to inform the author in process.
2. The role of the Author and their subjective experience

What is Missing

Of the elements that theorists were calling for Pattern Language combined most of them it however left out one of the key portions the Survey

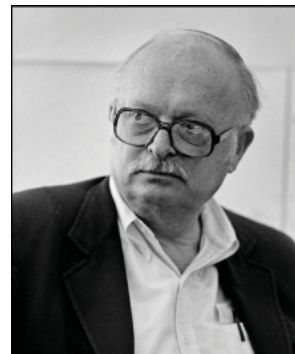
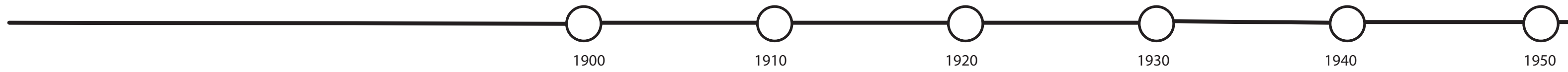
The survey is a call to review the tools we are using and how they are geared to production . To critically access our tools and see where phenomena has dropped out or where it is within the processes currently.

01.3 Challenge

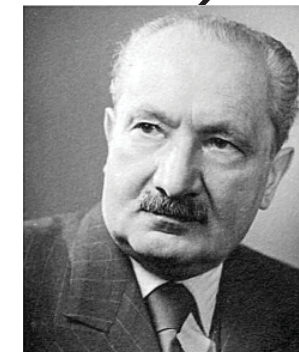
The process before us is to critically analysis the tools, and then explore the architects experience and how it relates to using the tools themselves. I accept that new theory can come out of processes being updated but what I have done is take up the challenge of creating a survey of our current contemporary practice. I am creating a new method and survey of practice that engages the tools that we now have and I see that there is an opportunity for phenomena to be our chief source of value, and see that we can potentially instill these elements into the production of architecture rather than needing a new theory.

From this survey I seek, to use the new tools of production that are causing a shift in architectures focus during process, to create ,in a more contemporary idiom, the patterns from Pattern Language. In doing so the aim is to show the engagement of new senses with the new tools and the opportunity to reintroduce the phenomena that were once the chief source of architectures value from these.

The use of contemporary tools to integrate historic, thought, embedded processes, and greater focus on the role of phenomena.



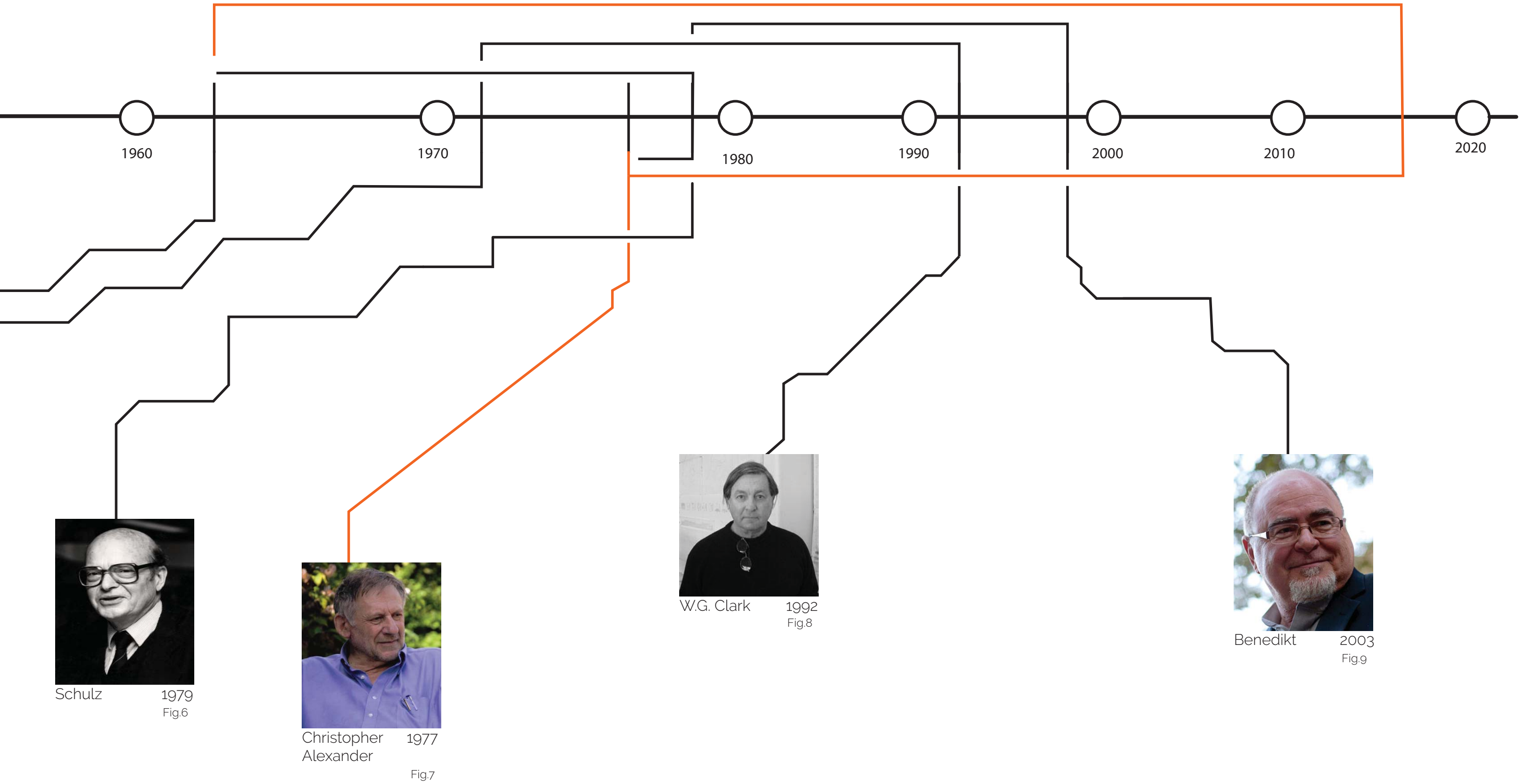
Charles Moore 1962
Fig.4



Heidegger 1972
Fig.5

01.2 TIMELINE OF THOUGHT ON THE PROBLEM

This time line shows when the various authors wrote or discussed this problem in architecture. It links those with similar thoughts with the lines above the time line and exposes the missed opportunity in A Pattern Language by Christopher Alexander, with the orange line, which encompasses much of what the others have discussed.



02

SURVEY

02.1

THE AUTHOR (ARCHITECTS) SUBJECTIVE EXPERIENCE

It is of importance to understand that I accept that the individuals that go through the training of an architect must experience architecture physically, in relation to their academic experience and internship. This is something that is not going to go away within the process of training. The real world experience itself has the most meaning as it engages all of our senses and is where we live life. What I am interested in, is pointing out how the subjective experience influences architectural design decisions by the architect and how this is an integrated part of the design process. To do this we must explore the role of subjective experience.

What is Subjective Experience in Architecture?

When we say the authors subjective experience we are really discussing their foundational knowledge of the use and assembly of architectural space. Their design knowledge of built environments, the human tendencies of use within these spaces, and the knowledge of construction/assembly of these spaces.. To understand how this knowledge is formed, and why it leads to subjectiveness in making decisions and discussing what good design is, we must ask how does one experience architecture?

How does one experience architecture?

Before we can answer this question we first must look to human existence itself and how one experiences this existence or in other words life.

Human existence is defined first by the primitive idea of being and second the experience through life. There are two portions to being, the mind and the body. The mind holds our consciousness and tells us who we are, what we are, and where we are. It tells us the context of our existence. This context is made up of memories that are created from the experience of life. We do not start off knowing anything, we learn and create memories which inform us. These memories give us the standpoint of which we know we exist. How

How do we learn and create memories? Through the body. The body is the vessel in which we receive sensory data and experience life and as we experience life we experience architecture.

“Man articulates the world through his body. Man is not a dualistic being in whom spirit and the flesh are essentially distinct, but a living corporeal being active in the world. The “here and now” in which this distinct body is placed is what is first taken as granted, subsequently a “there” appears. Through a perception of that distance, or rather the living of that distance, the surrounding space becomes manifest as a thing endowed with various meanings and values. Since man has an asymmetrical physical structure with a top and a bottom, a left and a right, and a front and a back, the articulated word, in turn, naturally becomes a heterogeneous space. The world that appears to man’s senses and the state of man’s body become in this way interdependent. The world articulated by the body is a vivid, lived-in space.” *Frampton, Pg. 21*

The body allows man to articulate the world. It provides the vessel in which man can perceive. To better understand how man experiences architecture we must now look towards the Phenomena of Perception in which we will explore how the body perceives the life-world, and in turn perceives architecture.

What is it to PERCEIVE?

The definition of perceive is: to become aware or conscious of (something); come to realize or understand. This becoming aware is depicted through our senses. In the usual context perception is thought of as dealing with sight yet the definition does not depict only our vision. Maurice Merleau-Ponty put it best,

“The visible is what is seized upon with the eyes, the sensible is what is seized on by the senses.”

Ponty, Pg. 7

The process of sensing is by definition perceiving. We become aware of things by our sensing of them. We must now question what are the ways in which we sense?

The Senses

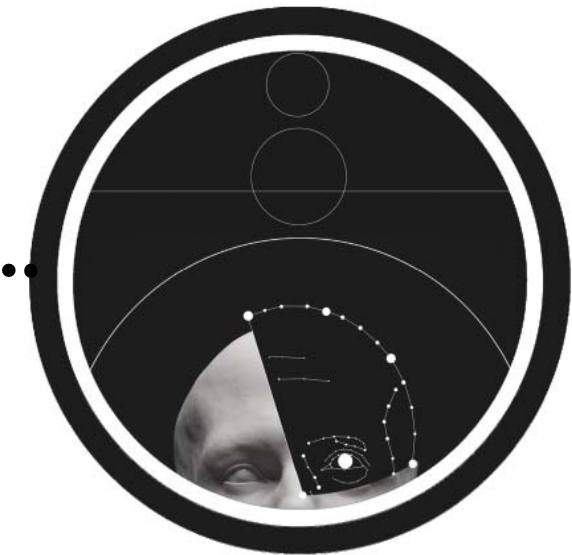
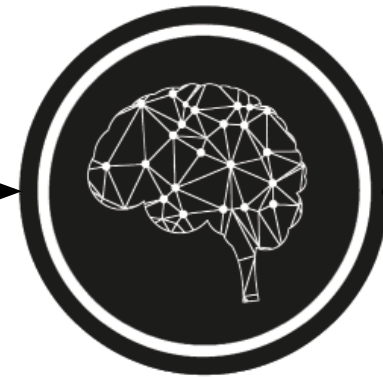
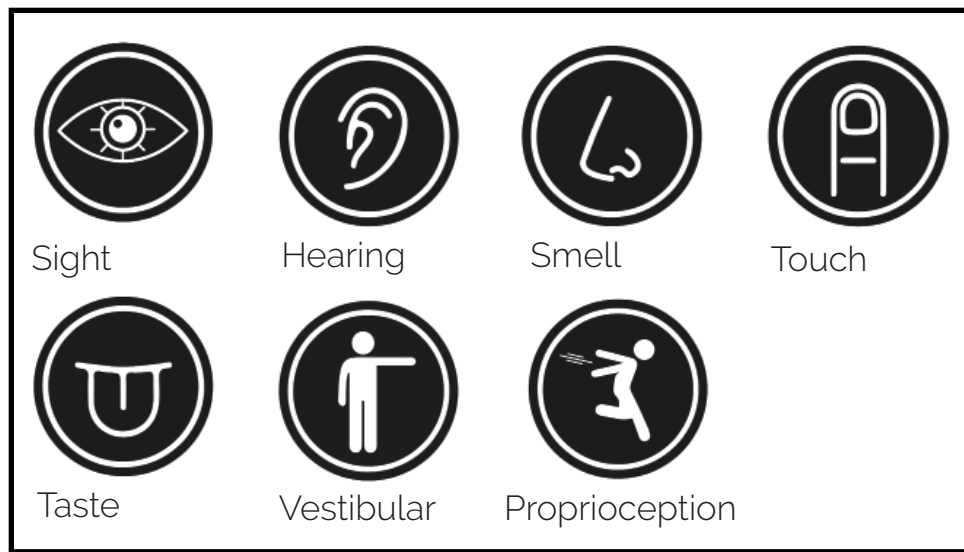
The senses are currently defined into 7 types which can be roughly classified into Spatial Sensing, Object Sensing, and Internal Sensing

The Senses and Memory

The senses are normally not independent but instead correspond to each other. They each receive different stimuli in which they receive and give information to the mind to appeal to memory.

Resonance of Self - Spirit

Besides the 7 senses defined by science we also have what I would like to refer to as an 8th sense - Spirit. It is best defined as a combination of memory and the senses through which a significance is formed that causes a resonance within our selves.



Senses

Body

Memory

Mind

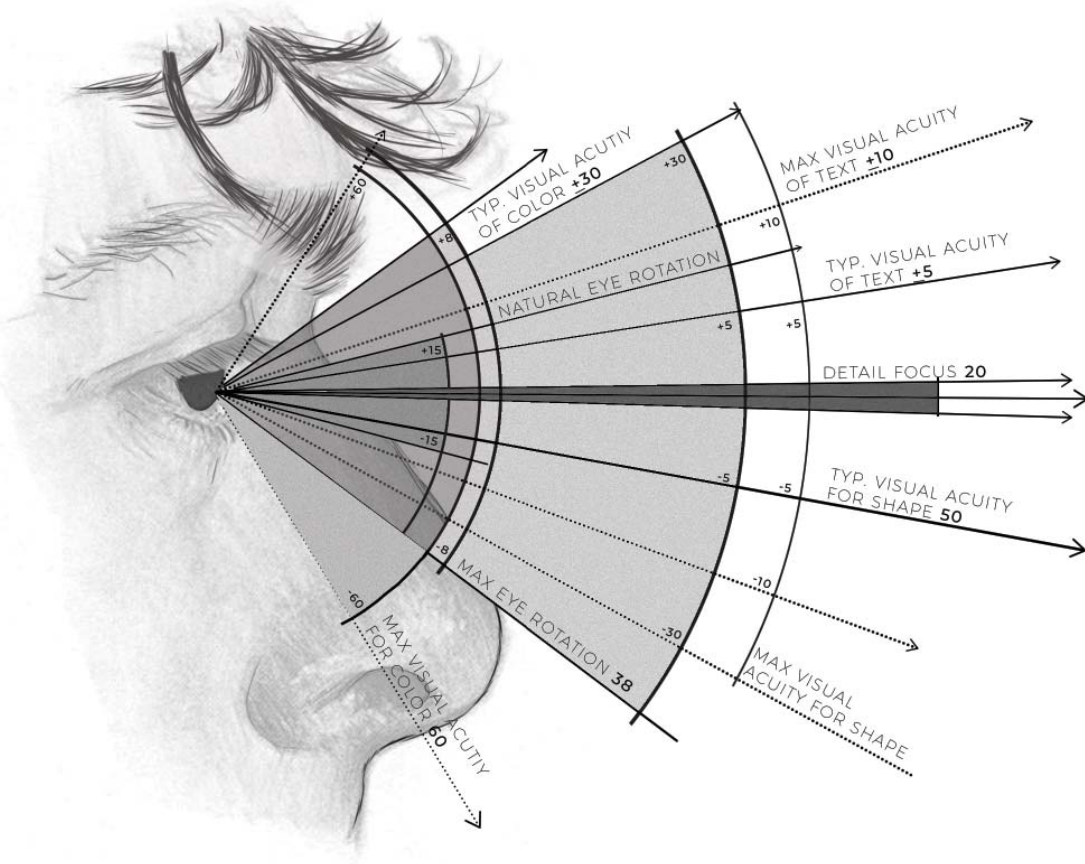
Spirit

Resonance

The following analysis explore two things. First how each sense corresponds with other senses to form an appeal to memory which the mind uses to comprehend what is happening in that instance. Second it explains how this process forms memory over time that becomes the foundation of an individuals understandings of architectural space.

SIGHT

Realm of the visual field



What Is Gained

Sight is one of the most dominant senses as it can provide the most information to the brain and appeal the most to memory. Sight brings forth the following information as an appeal to memory.

Color, distance, depth, shape, form, path, boundaries, texture, light, material properties, movement, lines, tone, pattern, if other entities are in the space, spatial awareness.

Corresponded to Memory

Once the eyes receive the visual stimuli this information is portrayed to the mind and referenced to the memory of the individual. What sets sight apart from the other senses is it can provide a reference to the other senses before any appeal of stimuli can be made to them. The reason for this is the senses are not independent but work in tandem together. The other senses create memory based off the stimuli they receive and these are then correlated with the other senses when a memory is formed.

Sight is able to supersede other senses in most cases as the eyes can receive stimuli before the other senses can.

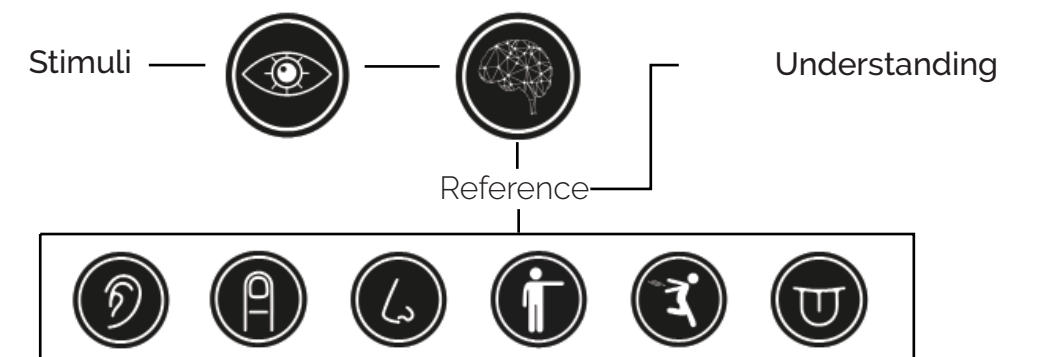
By normally being the first sense to receive stimuli, an appeal to memory can be made that references the information provided. This allows one to have a foundational understanding/assumption of what the other senses will tell the individuals mind.

This understanding/assumption is based off of the individuals experience of life and the memories created from their experience thus far in life. This understanding can be wrong in certain cases but over time we have a conformation bias of how things will be based off our individual experience. This bias helps lead individuals to form their own subjective tastes of what they like and dislike in dealing with stimuli.

If the stimuli has a certain resonance this will then appeals to memory. Once the stimuli appeals to memory an individuals mind references what their bias is according to their experience (memory) and they use this bias as a foundational understanding of what they are perceiving. This then helps determine if they enjoy or dislike what they are perceiving with the sense of sight.

This process forms a subjective understanding of the world and the individuals experience of architecture within it.

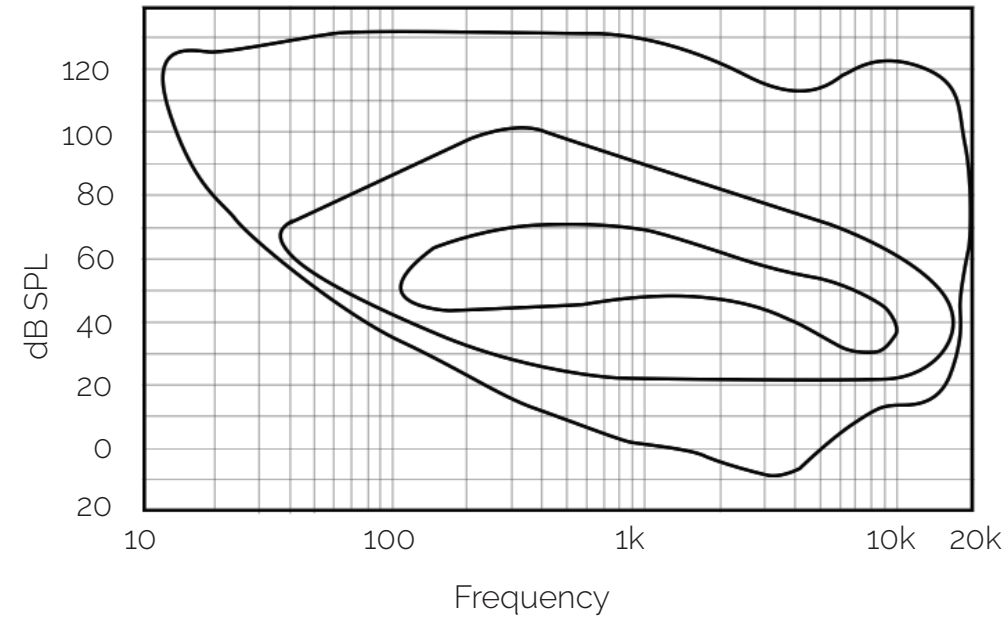
Diagram of Connection To the Mind and Memory



Architectural Elements

- Pathways
- Form
- Boundaries
- Color
- Materiality
- Lighting
- Scale
- Location of Program
- Views
- Objects Space

HEARING



What Is Gained

Hearing is one of the senses that allow us to humans to understand space in ways we currently do not have a lot of research in. For instance, people can traverse obstacles based only on sound. The following are elements of information we have discovered hearing gives us

Movement, Location, Material Properties (reverberation), verbal communication cues, spatial size, if other entities are in the space communicating verbally.

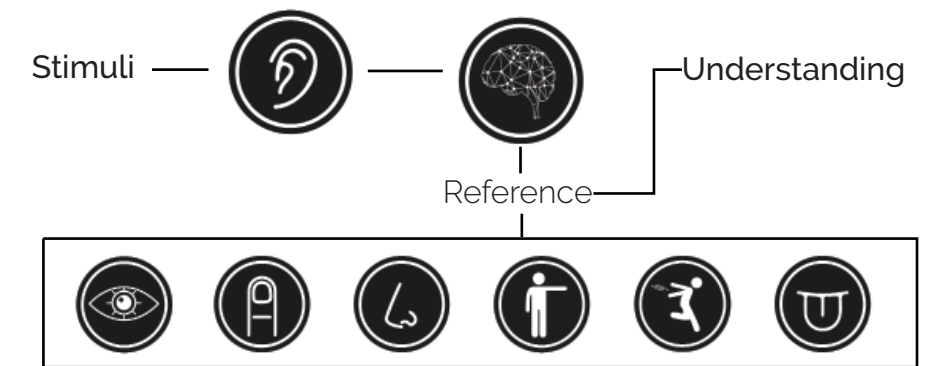
Corresponded to Memory

Hearing like sight can receive stimuli before the other senses can. It can even provide information before sight in some situations. Once the stimuli is received sound is interpreted by the mind. The mind then takes the information and corresponds it with memory to get an understanding based on past experiences with the particular kind of sound stimuli that was received.

If the person has experience with the sound stimuli the mind can bring forth an assumption of understanding based upon stimuli the other senses received during that previous moment. Once the appeal to memory is done, the mind has a basic assumption of what the thing they heard was, where it was, what the material it was made out of is, and if it was a communication attempt based upon memory.

Hearing is a sense that requires time and association to develop into memory and allow the mind to understand the various variety of stimuli given. This leads to subjectiveness in what sounds an individual likes as they learn over time.

Diagram of Connection To the Mind and Memory



Architectural Elements

- Pathways
- Materiality
- Scale of Rooms
- Location of Program
- Object Arrangement
- Spatial Arrangement
- Movement through Space



What Is Gained

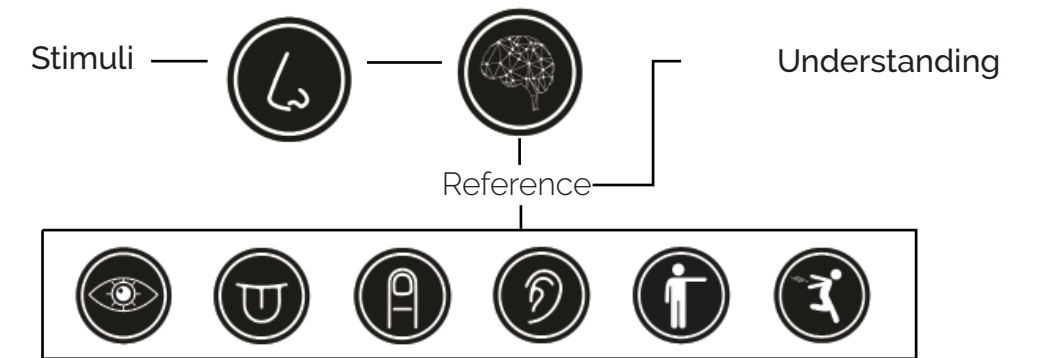
Smell as a sense provides information that is distinctively object based for humans and provides only the odorant information. The quantity and type of odorant stimuli provide distance from the body, direction, and what an object is if the stimuli has been experienced previously.

Corresponded to Memory

Smell references the memory of the other senses to form an understanding of what object is producing that odorant. The mind references the senses that primarily interact with the object creating the odorant rather than all of them when identifying the source object because some things that create odorants can not create certain sensory stimuli.

When the mind is determining location of the smell or distance it works with the bodies movement in space to determine where more stimuli is received which based on past experience determines direction of the source.

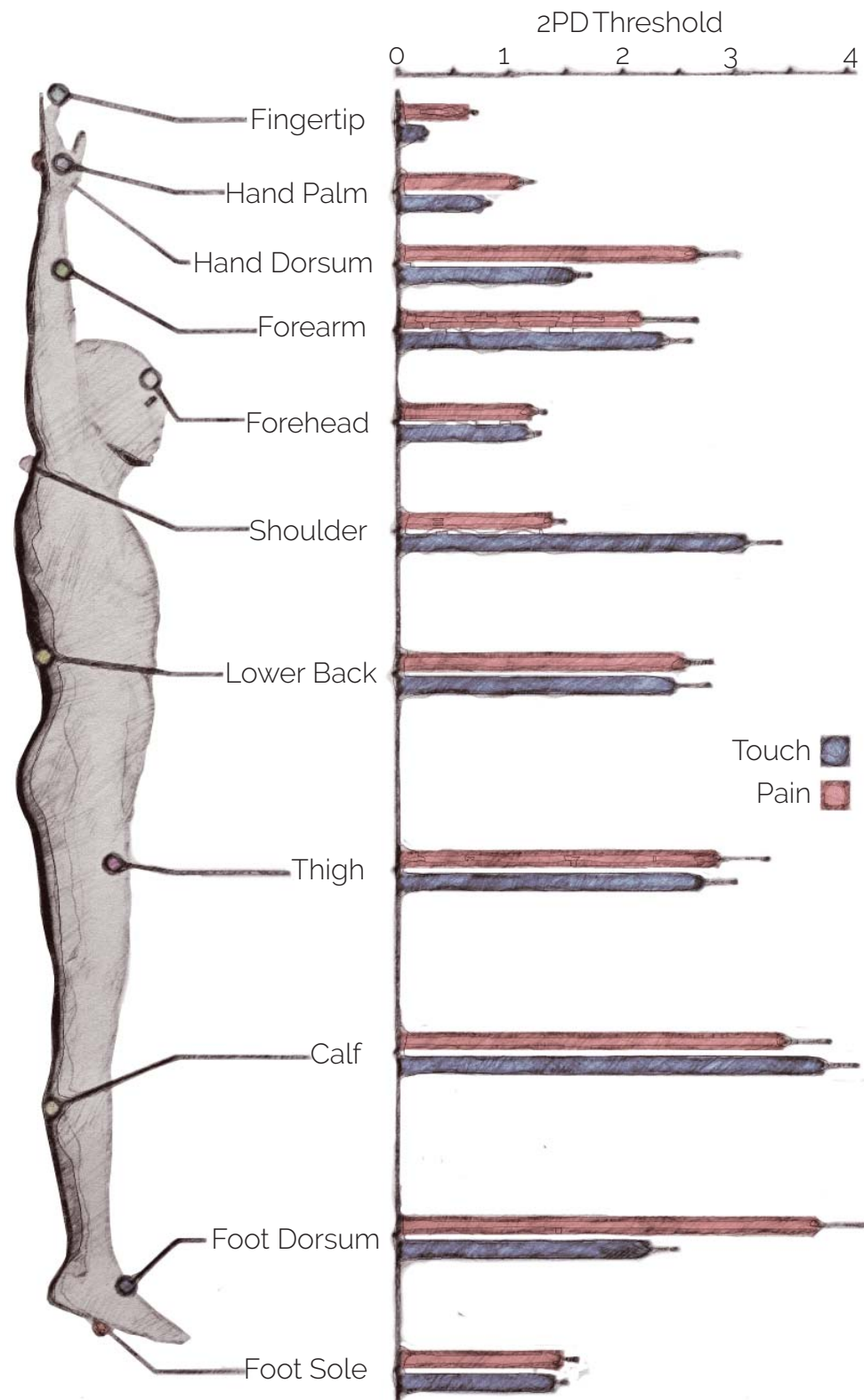
Diagram of Connection To the Mind and Memory



Architectural Elements

- Location of Olfactory producing elements.

TOUCH



What Is Gained

Touch is an extremely personal and individual characteristic as it is based off of the human body itself not external information our brain processes and references. This makes it have a higher appeal to memory and gain unique understanding of the following elements

Movement, texture, material, warmth/coldness, hardness and softness, stability, vibration, Shape/form, location, size

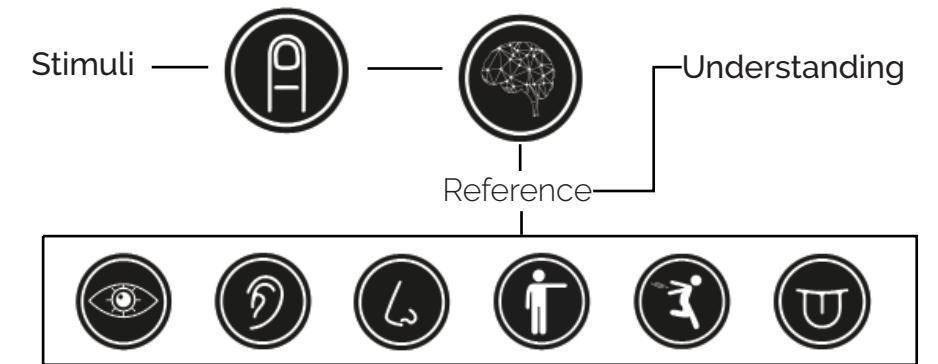
Corresponded to Memory

Before receiving touch stimuli an individual most likely has already received the visual stimuli and has an assumption of the touch sensations the thing will provide. If the object is not seen the mind still references visual memory.

The body receives stimuli directly and instantly once the body is in contact with objects, or spatial elements such as air, light, heat. Once received the body sends the information to the mind and it references its understanding of touch to characteristics that are primarily visual. The information is referenced to what the persons memory associates visually with that sensation.

Every individual perceives touch stimuli different thus providing for different subjective likes and dislikes when it comes to the elements one can feel with touch, such as temperature, material properties, and texture.

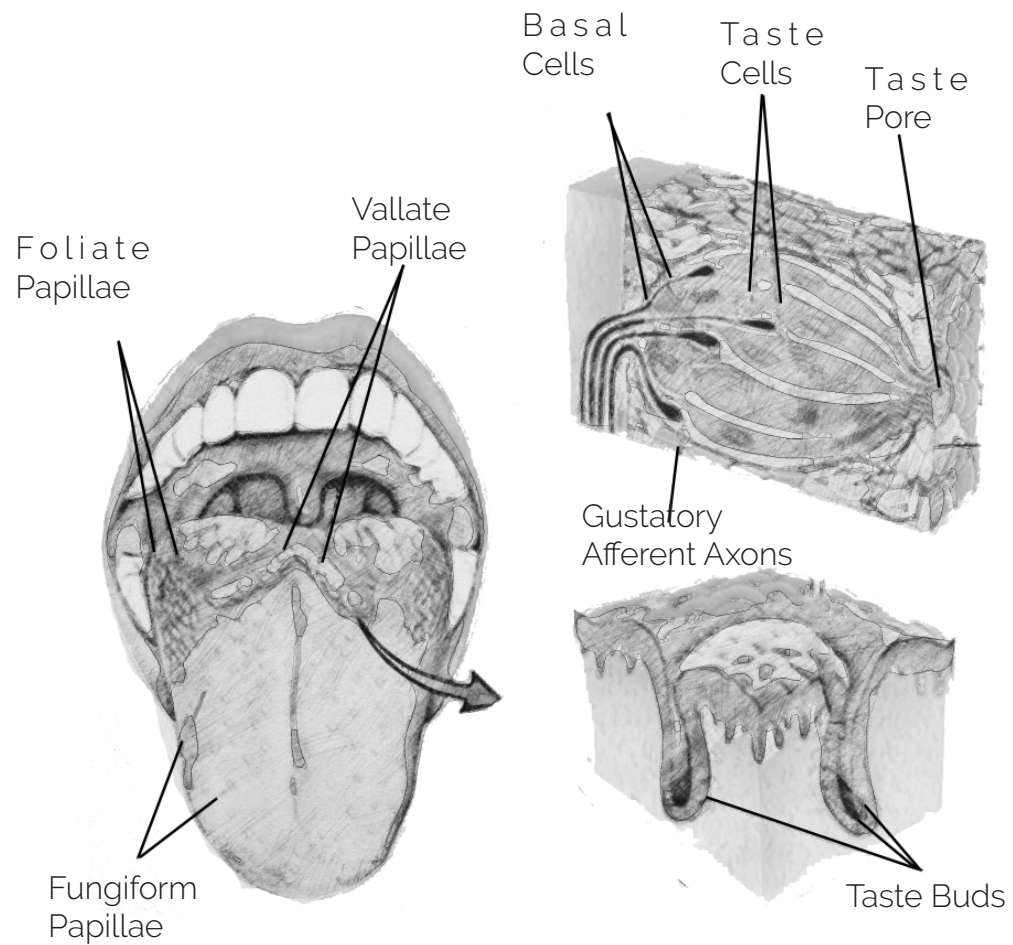
Diagram of Connection To the Mind and Memory



Architectural Elements

- Materiality
- Texture
- Comfort of Space
- Light
- Heating and Cooling
- Window Amounts/ Wind flow
- Passive Air
- Ergonomics or interactive elements
- Program Distance
- Movement

TASTE



What Is Gained

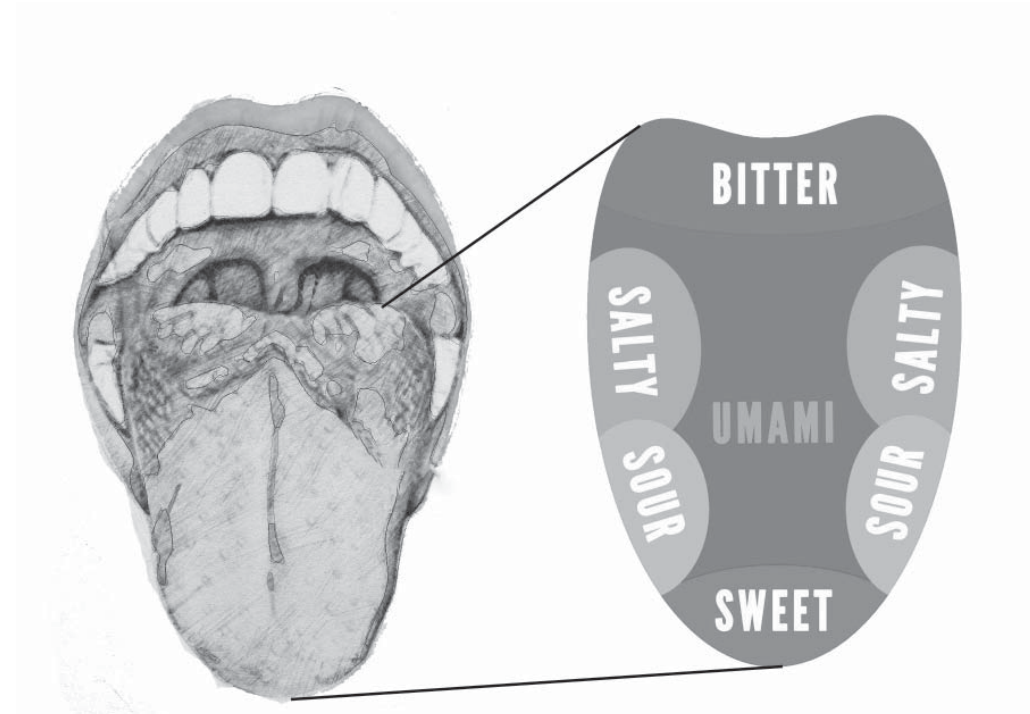
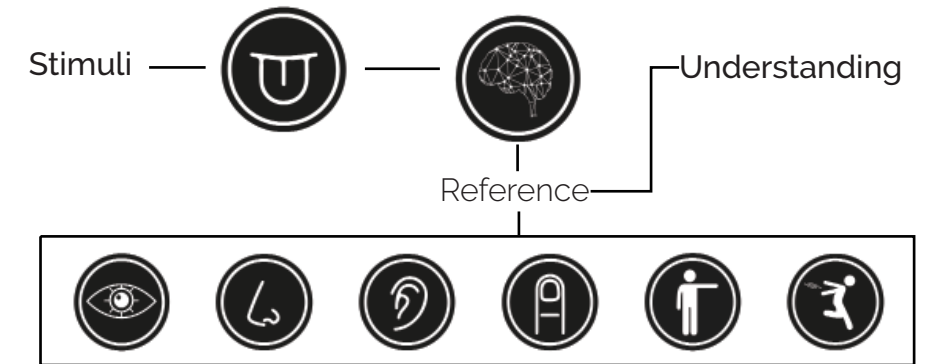
Taste is another sense that give based off the human body's interpretation of the senses rather than external stimuli the body accepts and then interprets. The information is distinctively object based for humans and provide the following

Texture, Material, shape* Temperature

Corresponded to Memory

Once the body receives the taste stimuli it references memory to determine what the object is, its visual characteristics primarily as well as what it feels like with the sense of touch.

Diagram of Connection To the Mind and Memory



Architectural Elements

- Texture of edible elements
- Taste of Objects and Air within Space

VESTIBULAR



What Is Gained

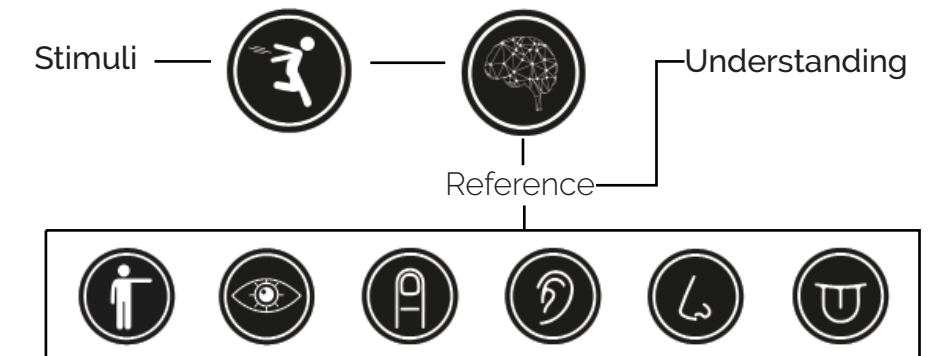
The vestibular sense is correlated to only the body. It provides unique information based off mainly movement. Through this we can understand

Balance, Movement speed and direction, gravitational orientation, stability of self.

Corresponded to Memory

Vestibular is unique in that it works with the memory to inform the body how to move and react. Vestibular deals primarily with balancing. When we start an action our Vestibular sense works with memory to know how to balance ourselves best or how to stop ourselves from falling.

Diagram of Connection To the Mind and Memory



Architectural Elements

- Circulation
- Plane Orientation
- Scopes of surfaces
- Movement systems (elevators, escalators, stairs)
- Program
- Arrangement of Objects
- Arrangement of Spaces
- Memory association with other senses to understand Place



Fig.10

What Is Gained

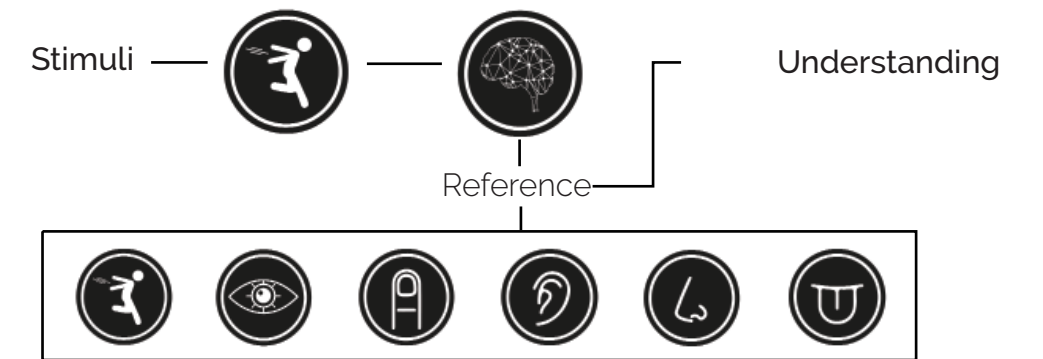
Proprioception is the sense in which a person can understand the position of their own body parts. It allows us to know the following about ourselves

The size and extent of our own limbs, Position and distance of our limbs from our body, Movement

Corresponded to Memory

The mind uses this information and its memory of the movement to understand position and distance. It creates a memory as reference to use when recreating the bodily movement. Once an action is done with the body the mind makes it a memory and corresponds these actions with the other senses. If we have received stimuli during a body movement we can recall that moment and how our body felt, where our limbs were, and what other stimuli occurred at that moment.

Diagram of Connection To the Mind and Memory



Architectural Elements

- Object Location
- Interactive Elements
- Size of Spaces
- Program
- Arrangement of Objects
- Arrangement of Spaces



Fig.11

A hierarchy currently exists towards the quantitative elements of design rather than qualitative. Can the immersive process of pre-inhabitation level the planning field?

02.2 TOOL SURVEY

Within Architecture there are various tools of design production. The primary use of the tools are the development, representation, and communication of ideas. Though they all have the same use, the information they are able to portray varies between them. The communicated information can be broken down into, 2D, Dynamic 3D, and Visualization outputs. This thesis accepts the current processes of project delivery are translated into 2d and Dynamic 3d documentation for construction purposes and does not aim to disrupt that, (although I believe this will change in the future). It is however, focusing on getting the maximum quality/value in architecture through the tools of production and giving the author ultimate control over the thousands subtleties.....

"Architecture becomes relevant and real only as it involves its users, imparts meaning to their experiences and elicits response. This essential reality is most often ignored in current practice with the current test of successful architecture seems to be the number of pages of architectural garnish garnered in the trade press." (Moore, Pg. 99)

The primary goal of this tool analysis is looking for the following elements and critiquing the limitations and benefits of each tool within the

Involvement with human interaction of design intent

Ability to express experiential understanding of design.

The involvement with human interaction of design intent analysis the way the author uses the tool. The limitations and benefits are focused on if the tool increases opportunities of design development or limits design development intent of the user.

The ability to express experiential understanding of design focuses on limitations and benefits of what is expressed by the tool to form an understanding of the phenomena, of being in space, using it, how it feels, how it connects to the people in space, their comfort, and the ability of the space to provide for human tendencies of use.

The following are the common current tools of production we will

Pencil- Sketching
Photoshop
Auto-Cad
Sketchup

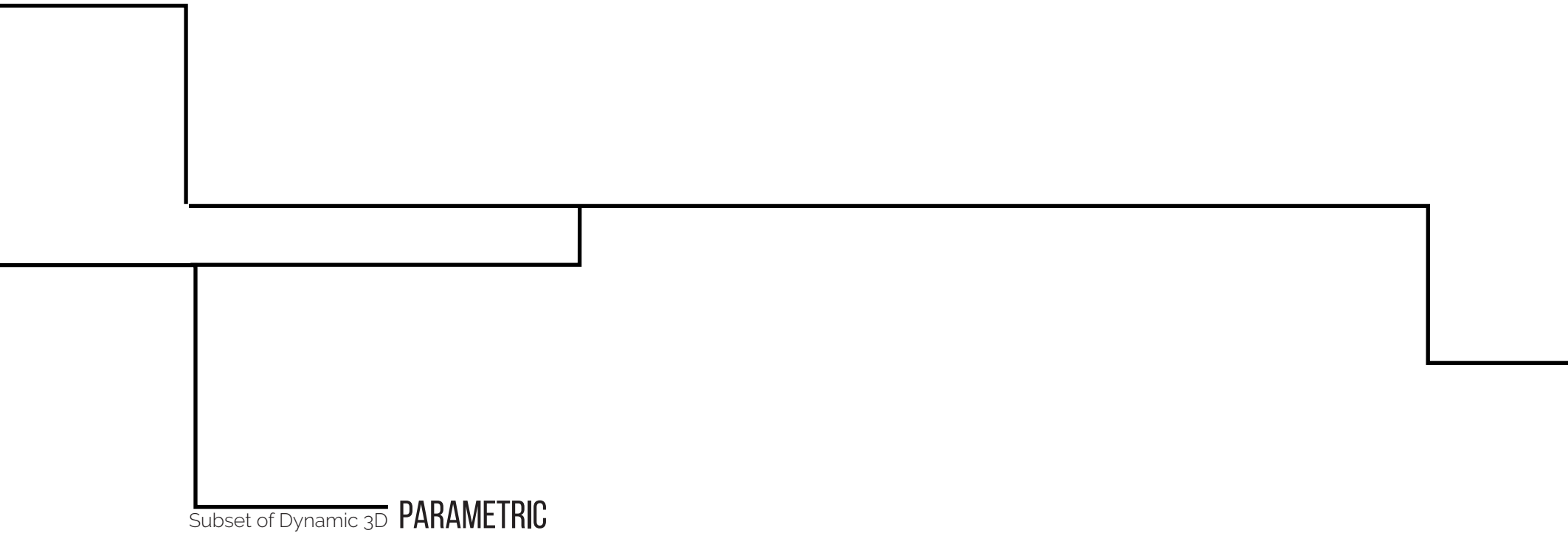
Revit
Rhino and Grasshopper

2D

2D production tools primarily result in the creation of floor plans, elevations, axonometric, perspectives, and a variation of other static images. These outputs are meant to document the dimensional aspects of design for construction or communication. The below are the more popular contemporary tools/programs that will be analyzed for 2d design processes.

DYNAMIC 3D

Dynamic 3D tools allow for another level of understanding spatially. These tools create a virtual model of the design. With this virtual model comes the same 2d information as well as a new level of design communication through manipulations of scale within 3 dimensions. It allows for simultaneous creation of perspectives, complete overviews, simulations, and as a subset these programs offer various levels of parametric control.



There are two ways of parametric thinking within architecture. First the parametric constraints implemented as a computational element. These are constraints set that the tool uses as reference for design. The second way of parametrics is computational constraint thinking in which the constraints set are computed into a series of outputs by the computer program tool itself rather than as reference for the designer.

Each of the 2d and dynamic 3d tools can be used as visualization tools inherently. They are used to produce visualization techniques such as rendered images and perspectives with the 2D and dynamic 3d tools. Where they differ is the dynamic 3d realm can create time and movement as an additional layer of understanding. This allows a communication of information that is not shown easily in traditional documentation use of tools.

What do we loose and what is gained through the biases of our tools?

SKETCHING - PENCIL/PEN

The most prominent tool within architecture is the pencil/pen and sketches the pencil is able to produce. These sketches are primarily used to demonstrate design ideas quickly and are able to explore vague notions of experience with the subtleties the sketches are able to show. The biggest limitations are within the efficiency of documentation and lack of inherent scale in the process as shown within the analysis.

Outputs

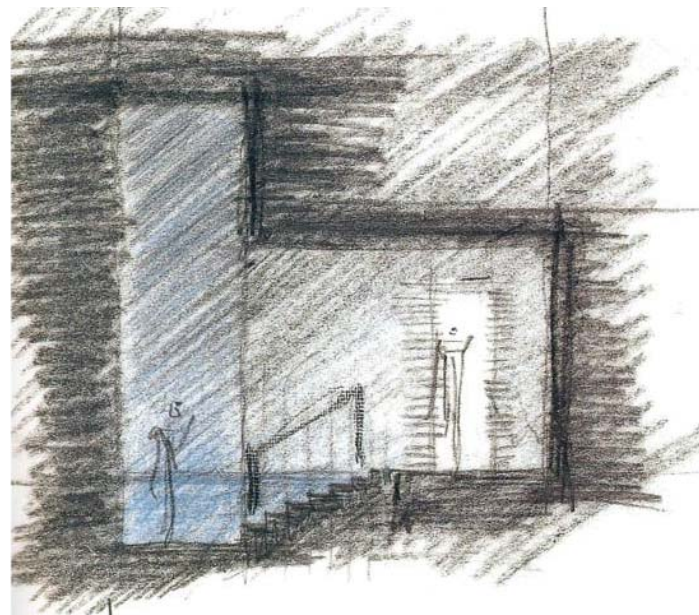


Fig.12

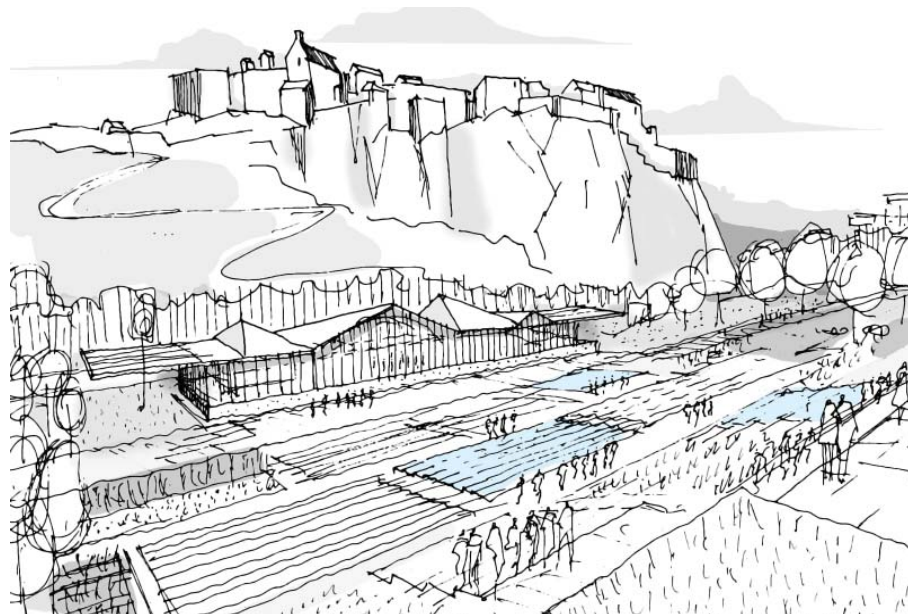


Fig.13

2D

Limitation

Involvement with human interaction of design intent

Lack of inherent scale. The architect has to imply a scale, or use another tool to add this.

Speed is based upon the amount of information and skill at which it can be produced.

Begins with blank canvas every time or layering information that is only manipulatable within layering. Revisions.

Lack of manipulation abilities of a sketch. Artifacts of the process add as well as take away from the output.

In order to show different ideas/views of a design the architect must create it with primarily the references in their own mind.

Requires unique skills that take time to develop in order to produce work well.

Ability to express/communicate experience

Color information requires different pencils/tools to portray

Can not express accurate realism within the sketch without additional time spent in visualization area of documentation

Limited on what the mind of others can understand

Benefits

Involvement with human interaction of design intent

The lack of restriction on what can be expressed is only time. There is no computational limit besides the mind of the creator.

The human body physically moves and connects with the tool grounding the thinking in the physical world rather than the infinite.

The speed at which a sketch can convey can vary drastically depending on the intent but quick sketches can convey broad ideas such as parti quickly.

Variations can be made quickly as sketching does not require one to think about scale or details until they are ready so broad idea generation is extremely quick.

Ability to express/communicate experience

The pencil can express abstract notions with gestures that the human mind can fill in allowing a broad connection with various people.

DYNAMIC 3D PARAMETRICS

The production tool of sketching does not create dynamic 3d opportunities as its grounded within the static realm. One could argue the possibility of parameters within sketching but this would require additional tools for referential parameters which are outside the scope of this inquiry.

Outputs



Fig.14

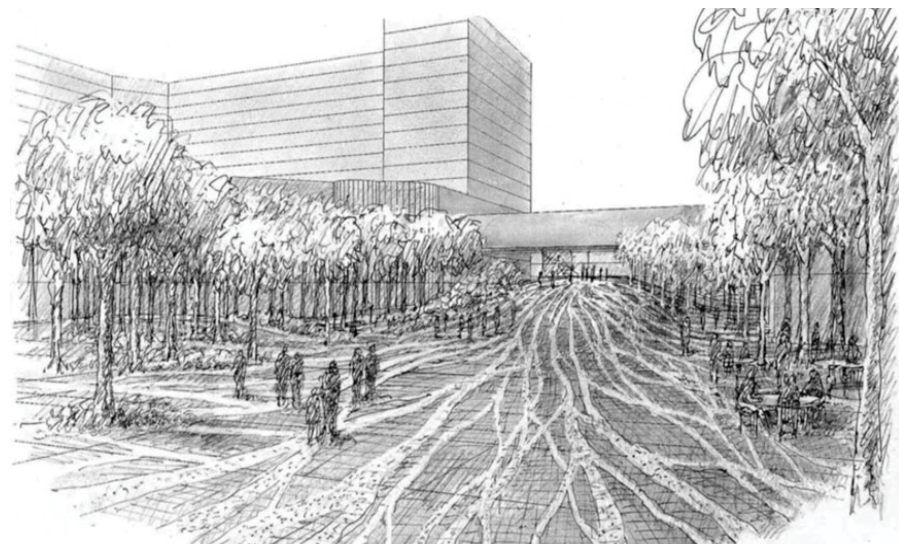


Fig.15

VISUALIZATION

Limitation

Involvement with human interaction of design intent

The style/realism in which sketching visualization can be achieved is based entirely off skill.

The use of color requires the use of another tool or particular type of tool in which to add otherwise its always monotone.

The realistic intentions of the design visualization is only grounded in reality as far as the persons mind is.

The time required to create a drawing of quality in this production method is usually immense.

The visualization techniques produced are limited by the amount of information of the original drawing, if something is not there it is up to the author to remember.

No mistakes can be made or it ruins the output.

Ability to express/communicate experience

Lack of material reality.

Limitation on showing reflections.

Hard to show transparency or vague notions light emittance.

Benefits

Involvement with human interaction of design intent

The final outcome is based off the user of the tool entirely meaning the speed and amount of information portrayed also relies entirely on the user not the tool.*

The area of current production within the output, area of drawing being worked on, is defined to a small section.

The area of current production within the output, area of drawing being worked on, is defined to a small section.

Can be created anywhere as-long as you have a pencil/

Ability to express/communicate experience

Easy to look at or experience within the physical world. Gives a presence to the output.

PHOTOSHOP

Photoshop as a production tool within the field of architecture is primarily used for visualization. It provides multiple tools within itself for the creation and manipulation of static images. It is mostly associated with the creation of renderings and diagrams within practice.

2D

Outputs



Fig.16

Limitation

Involvement with human interaction of design intent

Scale is based off paper size and grid creation. Requires extra steps in order to create

Creating curves require prior knowledge of various radii to create.

Line creation requires prior knowledge of ending and is a much more involved process step wise in order to create.

The tool requires prior knowledge intent in order to create things. Exploration within detail drawing, primarily design documentation, output is possible but requires additional setup.

Primarily used to fix outputs from other programs rather than create within.

Less efficient than other tools in creating the same output.

No mistakes can be made or it ruins the output.

Ability to express/communicate experience

The tool only portrays what it is told to based off other input images and the manipulation of them.

Benefits

Involvement with human interaction of design intent

Line weights are easily controlled with the program line size.

Ability to add perfect text and edit this for notes or pointing out certain information.

There is easy control of angle of lines to control consistency and accuracy within the outputs.

Requires some skill but more heavily requires knowledge of the tool rather than skill to produce outputs.

Instantaneous creation, deletion, and manipulation of objects within the output.

Mistakes in the process are easily remedied.

Color is instantly controlled and manipulated.

Ability to express/communicate experience

Easily able to use color, and create more realistic information on outputs as it is meant to create static images and manipulate them.



Fig.17

DYNAMIC 3D PARAMETRICS

Photoshop has a 3d portion but is not used for architectural production normally. The program can use rules that a user makes themselves with guides so it can be considered slightly parametric but it is normally not used in such a way thus will not be discussed within this inquiry.

Outputs



Fig.18

VISUALIZATION

Limitation

Involvement with human interaction of design intent

The style/realism of output is based off the initial images that are being manipulated.

To create certain effects requires a process in order to accomplish, the tool controls what is outputted and the designer must work around this to get the expected output.

No mistakes can be made or it ruins the output.

Benefits

Involvement with human interaction of design intent

The designer is allowed to input and manipulate previous creations to portray information rather than just imagine or create they are given a starting point of exploration.

Scale can be inferred thanks to images of people bringing a realism to the output and use of space.

Easy manipulation of color and transparency. Layering of information becomes simple.



Fig.19

Ability to express/communicate experience

Outputs are easily turned into Aesthetic/idealistic visually pleasing images rather than accurate portrayals grounded in reality.

Using images to portray realism inherently is not accurate to real life.

Ability to express/communicate experience

Thanks to starting from other images and creations it is possible to show realism within the output.

The computational element allows for transparency, light emittance and more realistic items to be realistically reproduced.

SKETCHUP

Sketchup serves as a 3D Modeling software on the more artistic side of production tools. It is used primarily for concept modeling and production of schematic design. As this program creates 3d models to work from primarily the resulting 2d information is extracted from the dynamic 3d. For visualization analysis we will look at the VRAY plug-in as the source renderer.

Outputs

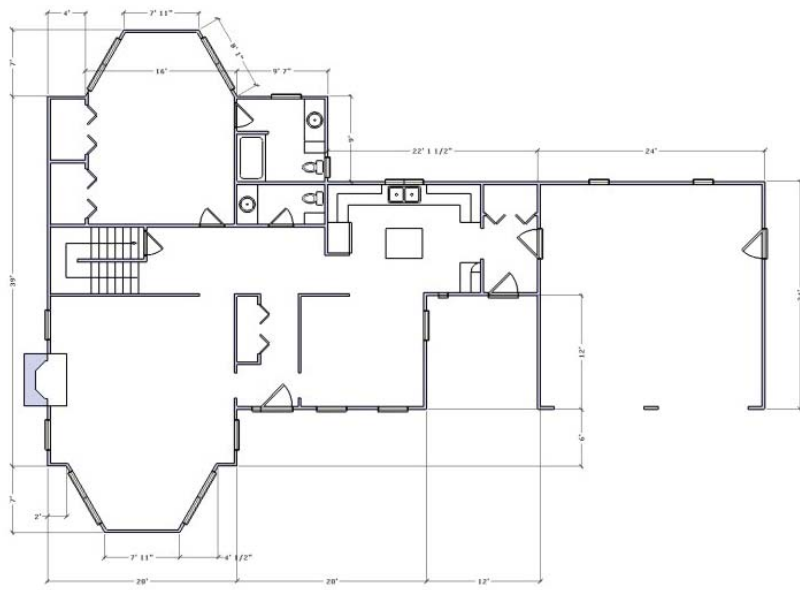


Fig.20

2D

Limitation

Involvement with human interaction of design intent

Unless added the context is infinite.

The tool makes lines into planes when they connect. Leading to an additional thinking barrier of how to add details within closed planes.

Creation of 2d elements are usually extracted from the dynamic 3d information meaning a simple line is not easily added without being referenced by something else in another view.

Line thickness is difficult to maintain and control within the process.

Benefits

Involvement with human interaction of design intent

Instantaneous creation, deletion, and manipulation of lines and planes in this instance.

As its a 2d and dynamic 3d program it allows errors in thought to be exposed as it can be checked .

Manipulation of information happens in several 2d outputs at once as they are usually connected.

Copying information for variation is instantaneous.

Ability to express/communicate experience

The designer is not able to finely control many aspects of the pieces that control what output looks like.

Ability to express/communicate experience

Materiality/color is easily added meaning realism can be portrayed efficiently.

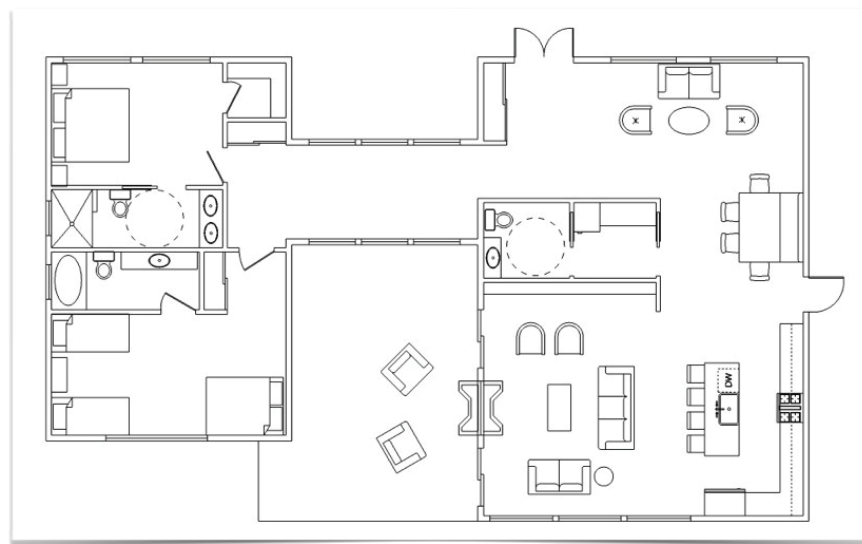


Fig.21

DYNAMIC 3D

Outputs



Fig.22

Limitation

Involvement with human interaction of design intent

Complex forms are not easily created at all. These forms are difficult or near impossible to create limiting output.

As this output is based on modeling the design it creates more of an object development than spatial development.

Infinite plane within multiple dimensions leads to errors in output sometimes.

Benefits

Involvement with human interaction of design intent

Basic massing operations are extremely quick allowing collision issues or sizing issues to be explored and corrected in the process.

Exploration of resultant spatiality is easily seen.

Lighting can be added easily and explored as an element of design intent.

Scale is inherent in the process. To create lines and model designs the scale must be known.

The tool is able to section the building at any point instantly within itself.

Items can be added in to populate spaces for more realistic understanding of space.



Fig.23

Ability to express/communicate experience

The program defines how the model is portrayed. The user can define the color and image of materiality but it is not grounded with physics.

Ability to express/communicate experience

Realistic lighting can be shown and different views explored instantly.

Materiality and items can be shown within space to explore the use.

PARAMETRICS

Outputs

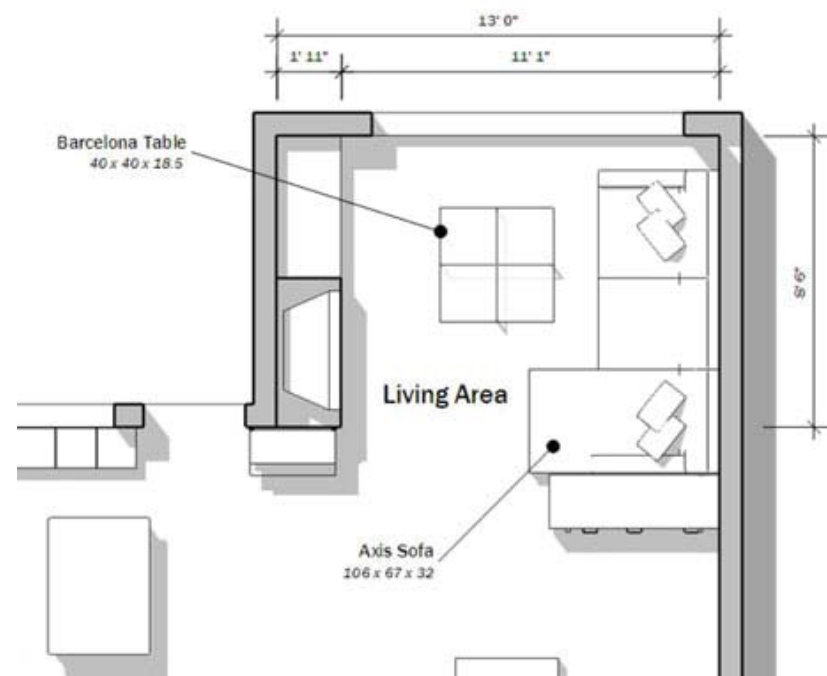


Fig.24

Limitation

Involvement with human interaction of design intent

Constraints only as reference for rule based decisions by the user only.

Parametric constraints are based within dimensional constraints set. The dimensions do not control other inputs easily without referencing.

Not meant for parametric design. The user must use another tool plug-ins for anything further within this realm.

Benefits

Involvement with human interaction of design intent

Constraints allow constant reference to rules the architect inputs.

Allows the architect to focus on the process without constant reference to other drawings but rather within the same file.

Ability to express/communicate experience

Not grounded within user spatial understanding rather dimensional aspects only

Ability to express/communicate experience

Provides dimensional reference in which the rules are visibly seen and referenced.

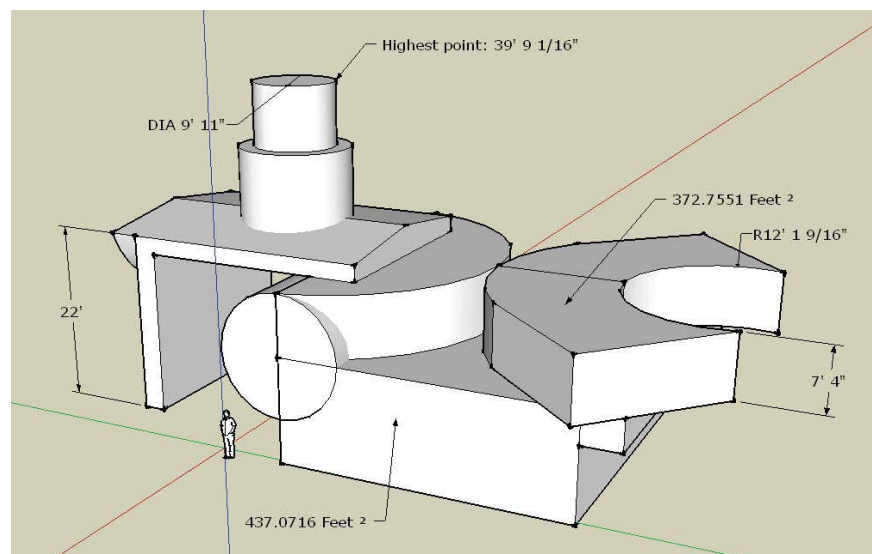


Fig.25

VISUALIZATION

Outputs



Fig.26

Limitation

Involvement with human interaction of design intent

The visualization outputs are controlled by the program within how they look. The user can only select presets or make their own which is limited within their options.

There is no weather controls during outputs in the visualization realm so you are limited to time of day only, not season and weather.

Benefits

Involvement with human interaction of design intent

The tool itself computes the angles, perspectives, and any other view the designer wants to show within seconds or minutes.

The tool is able to hide objects instantly to show background information.



Fig.27

Ability to express/communicate experience

The computation of material application is represented only within 2d with no physical representation.

Ability to express/communicate experience

The tool is able to portray color and light within seconds and the output is able to be manipulated to show additional information such as show another side within seconds.

AUTOCAD

Autocad is unique tool as it posses 2d and dynamic 3d elements but is primarily focused on the 2d aspects as it is based off of line creation.

2D

Outputs

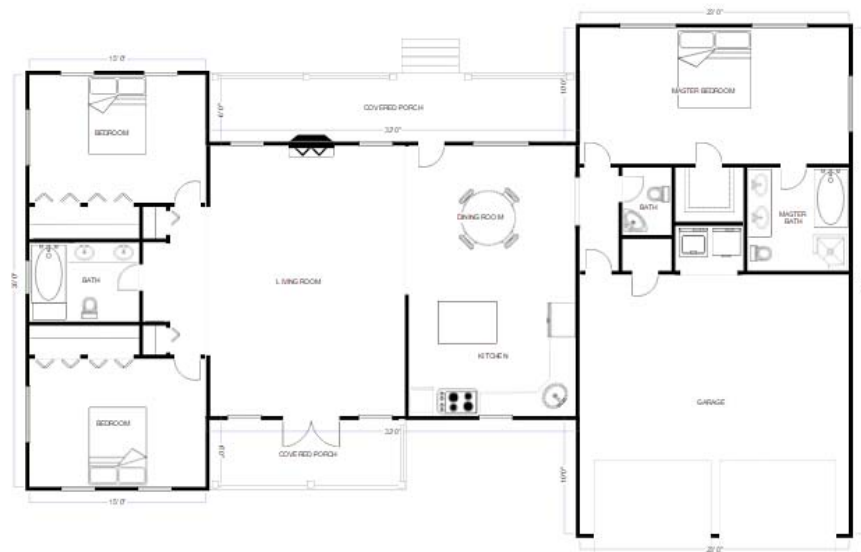


Fig.28

Limitation

Involvement with human interaction of design intent

Starting point of drawings are based in the infinite without any real world context unless it is added specifically by the user.

Only has the ability to create lines, demonstration limited to line work?

There are various tools within the program meant for specific processes rather than multiple uses meaning an understanding of these must happen before the process can even begin.

Meant to create construction documents more so than speed up architectural design.

Benefits

Involvement with human interaction of design intent

Manipulation of design is faster than hand manipulation based off instantaneous deletion and creation of lines as well as thickness manipulation.

Provides quick dimensional scale to represent space within a dimensionable and 2d manipulatable creation.

Instant deletion and creation of lines allows for fast production output without remnants of errors.

Lineweight, line straightness, and angles are controlled via selection rather than skill.

Multiple Revisions possible in short time period

Dimensions are inherent in the creation process.

Ability to express/communicate experience

Only shows what the designer draws or creates, requires additional research, information, and analysis before being added.

Ability to express/communicate experience

Dimensioned drawings produce an idea of spatial area.

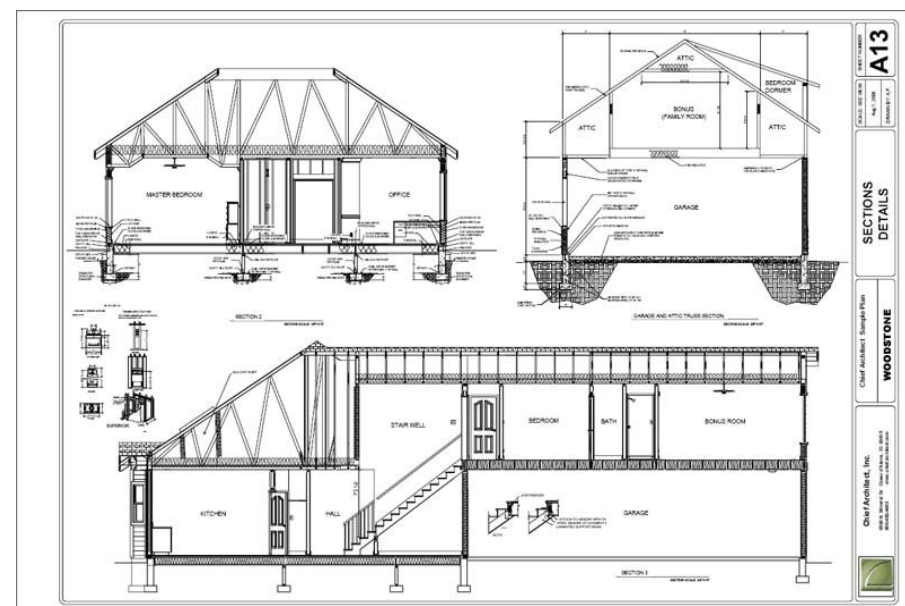


Fig.29

DYNAMIC 3D

Outputs

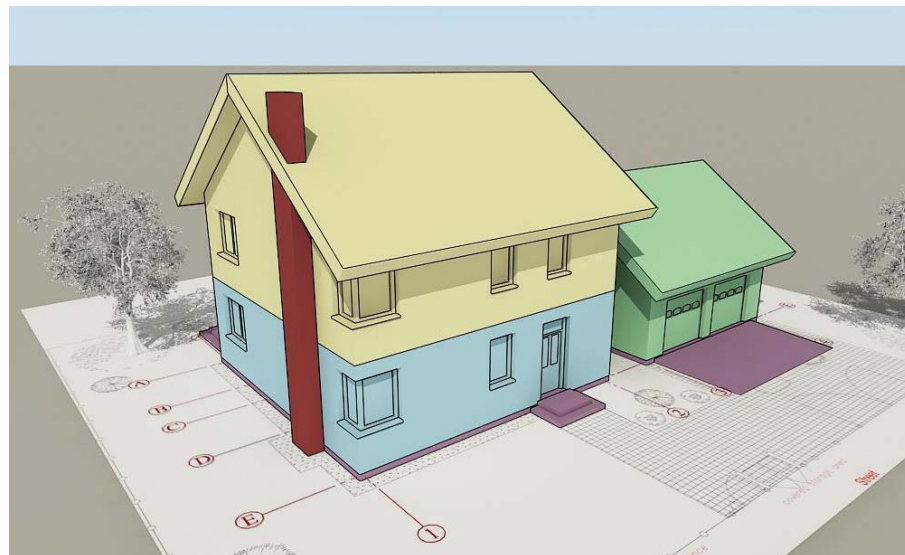


Fig.30



Fig.31

Limitation

Involvement with human interaction of design intent

Starting point of drawings are based in the infinite without any real world context unless it is added specifically by the user.

3d creation is based off line work and regular geometries only, other geometries require mathematical calculations.

Every line must be drawn rather than only what is seen or to be communicated.

Benefits

Involvement with human interaction of design intent

Manipulation of design is faster than hand manipulation based off instantaneous computation of rotation of project within 3 dimensions.

The dimensional references within allows larger understanding rather than only what is meant to communicate other information can be inferred from the overall output.

Ability to express/communicate experience

Creates a 3d simulated object to explore at size.

Does not show reality based textures, light, or human scale without specific input of these elements?

Ability to express/communicate experience

Provides dimensional representation to make decisions based off the dimensional understanding of space.

PARAMETRICS

Outputs

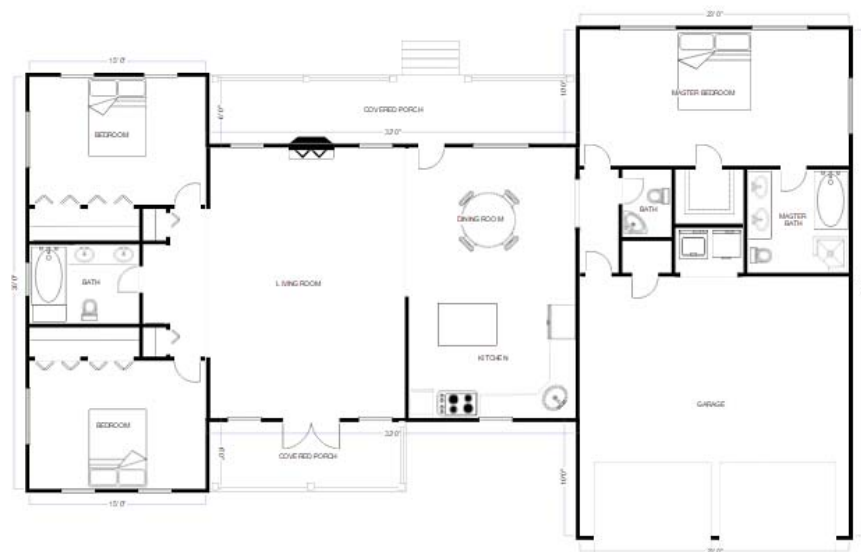


Fig.32

Limitation

Involvement with human interaction of design intent

Constraints only as reference within 2d creation without external plug-in

Not useful within the 3d environment to create things efficiently without certain extra tools added into which are based on specific outputs.

Benefits

Involvement with human interaction of design intent

Constraints allow constant reference to rules the architect inputs.

Allows the architect to focus on the process without constant reference to other drawings?

Ability to express/communicate experience

Not grounded within user spatial understanding rather dimensional aspects only

Constraints only as reference within 2d creation without external plug-in

Not useful within the 3d environment to create things efficiently without certain extra tools added into which are based on specific outputs.

Ability to express/communicate experience

Provides dimensional reference in which the rules are visibly seen and referenced.

Constraints allow constant reference to rules the architect inputs.

Allows the architect to focus on the process without constant reference to other drawings?

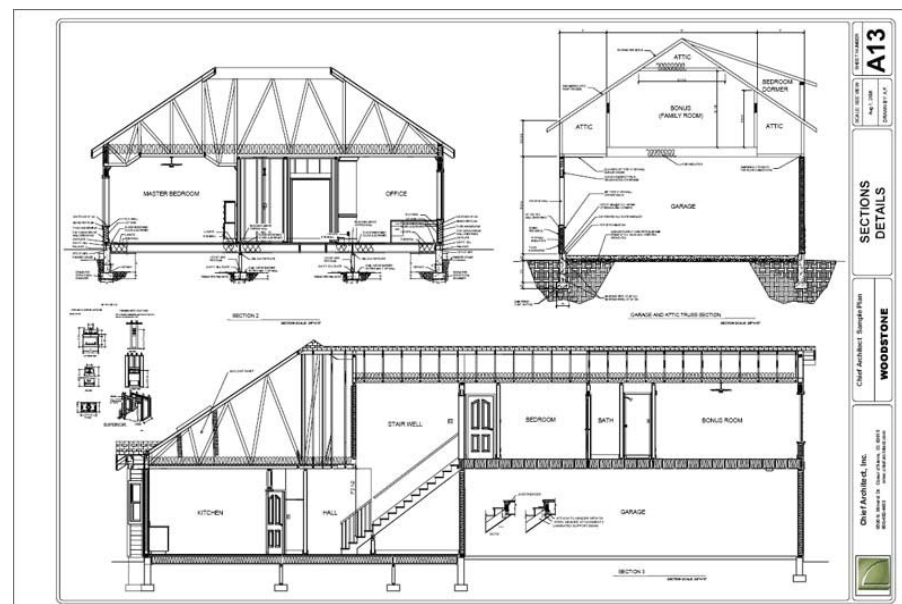


Fig.33

VISUALIZATION

Outputs



Fig.34



Fig.35

Limitation

Involvement with human interaction of design intent

User must control light information in order to create accurate illumination.

The material library which applies textures requires additional time and input in order to create accurate portrayal of materiality.

The programs determines parameter limits on what the controls of what materials will look like.

Benefits

Involvement with human interaction of design intent

Provides a slight realism in which the architect can determine changes of space.

Allows instantaneous output of different views and exploration of the project without the user recreating the whole thing.

Ability to express/communicate experience

Material Library limits the renders ability to portray realism.

User must control light information in order to create accurate illumination.

The material library which applies textures requires additional time and input in order to create accurate portals of materiality.

The programs determines parameter limits on what the controls of what materials will look like.

Ability to express/communicate experience

Adds a layer of realism that other tools lack.

Provides a slight realism in which the architect can determine changes of space.

Allows instantaneous output of different views and exploration of the project without the user recreating the whole thing.

REVIT

Revit is a BIM documentation output program. It is primarily a dynamic 3d output system which also shows 2d information. The process within is meant to create the 2d static information from the dynamic 3d outputs.

2D

Outputs

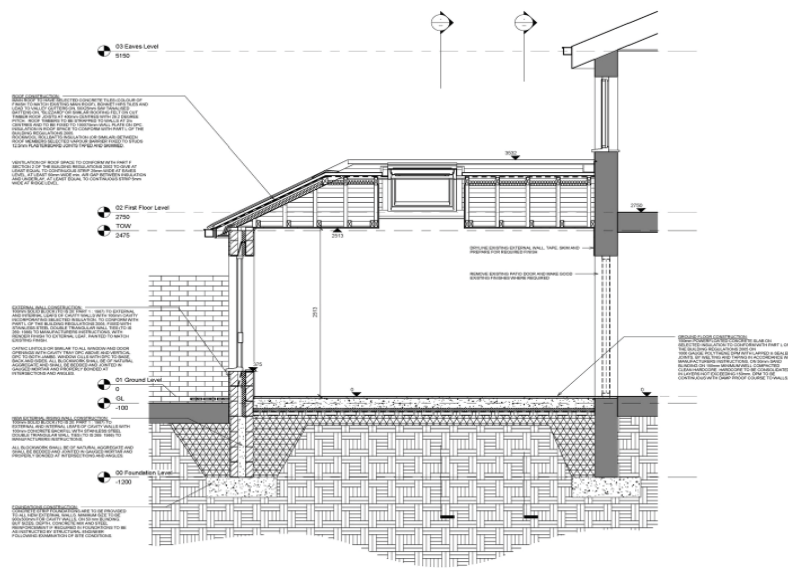


Fig.36

Limitation

Involvement with human interaction of design intent

The context is infinite unless specifically added by the user.

The tool limits what it considers "WALLS" to only traditional forms. It can portray non traditional forms but requires a much more involved process and understanding of the tool.

Control of lineweight is fairly complicated if not controlled from the beginning.

The representation of hidden lines of things above and below the section cut in Plan Views is not accurate.

The tool requires correction within different views in order to properly show items. They can not be added in just one in some cases.

Benefits

Involvement with human interaction of design intent

Scale is inherent within the process leading to dimensional control throughout every step.

Any changes within a output drawing are changed in corresponding drawings allowing less work and referencing.

The output scale is controlled by the computer and can be changed at any moment.

The tool computes angles and distances itself and relates that information to the user.

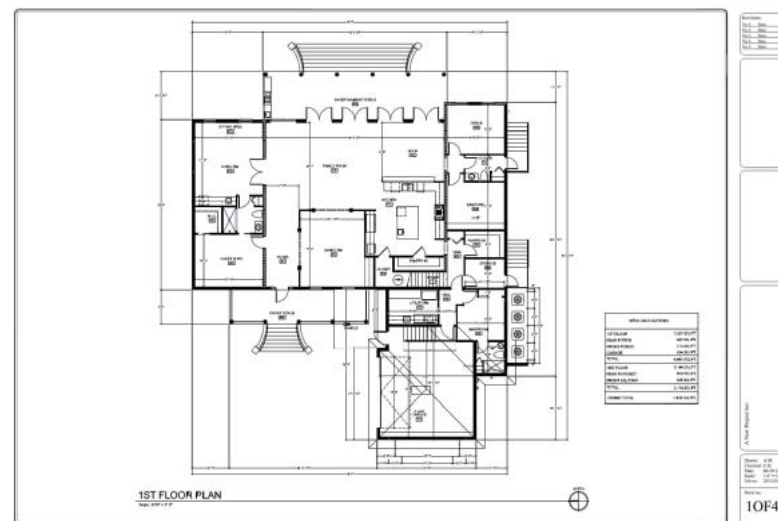


Fig.37

Ability to express/communicate experience

If a material is not well documented it can be difficult to simulate that within the tool.

Dimensional values are not able to be shown through all static image outputs only some.

Ability to express/communicate experience

Materiality and color can be changed and shown instantly on the static images.

The tool can render out the static images with realistic looking textures that have physics.

DYNAMIC 3D

Outputs



Fig.38



Fig.39

Limitation

Involvement with human interaction of design intent

The context is infinite unless specifically added by the user. Starting point of drawings are based in the infinite without any real world context unless it is added specifically by the user.

3d creation is based off line work and regular geometries only, other geometries require mathematical calculations.

Every line must be drawn rather than only what is seen or to be communicated.

Objects such as doors or windows that are not factory standard have to be created on their own not just represented within the output.

The roof creation is based off standard designs anything else requires a massive effort to document and output.

Ability to express/communicate experience

The output within the dynamic 3d is the virtual model which is usually viewed from outside more so as an object than a spatial view.

Benefits

Involvement with human interaction of design intent

Manipulation of design is faster than hand manipulation based off instantaneous computation of rotation of project within 3 dimensions.

The dimensional references within allows larger understanding rather than only what is meant to communicate other information can be inferred from the overall output.

The program can add human scale to help the designer understand visual scale.

Dimensions can be shown in 3Dimensional space to allow information about the space to be seen instantly.

Objects can be added based off standards which creates efficiency.

Ability to express/communicate experience

Materiality and color can be changed and shown instantly on the static images.

The tool can render out the static images with realistic looking textures that have physics.

Perspectives can be computed to show information and particular views.

PARAMETRICS

Outputs

Parameter	Value	Formula	Lo
Constraints			
Top of Leg Size	0' 2"	= Table Frame Edge - Legs From Edge	<input type="checkbox"/>
Bottom of Leg Size	0' 1"	= Top of Leg Size / 2	<input type="checkbox"/>
Leg Height	1' 10 1/2"	= Height - Table Thickness	<input type="checkbox"/>
Panel Length	4' 8"	= Length - (2 * Table Frame Edge)	<input type="checkbox"/>
Panel Width	1' 8"	= Width - (2 * Table Frame Edge)	<input type="checkbox"/>
Materials and Finishes			
Table Leg Material	Teak	=	
Table Top Material	Teak	=	
Dimensions			
Length	5' 0"	=	<input type="checkbox"/>
Height	2' 0"	=	<input type="checkbox"/>
Width	2' 0"	=	<input type="checkbox"/>
Table Thickness	0' 1 1/2"	=	<input type="checkbox"/>
Panel Thickness	0' 0 3/8"	=	<input type="checkbox"/>
Legs From Edge	0' 0"	=	<input type="checkbox"/>
Table Frame Edge	0' 2"	=	<input type="checkbox"/>
Reveal Size	0' 0 3/16"	= (0.125 * Table Thickness)	<input type="checkbox"/>
Identity Data			
Assembly Code		=	
Cost		=	
Description		=	

Fig.40

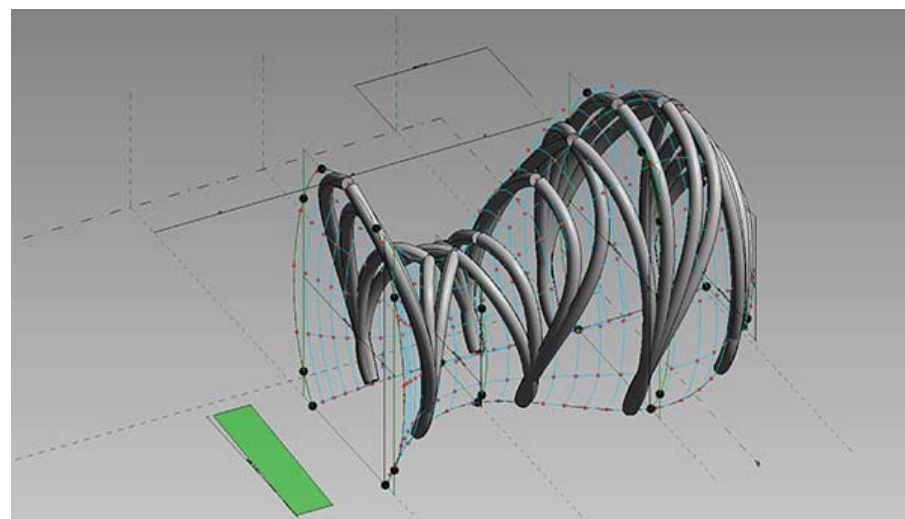


Fig.41

Limitation

Involvement with human interaction of design intent

The parametric constraints are based off dimensions and relationships rather than conventional rules. For design it speeds up the efficiency of layout and communication but does not work for rule based design intent.

The way the tool interprets dimensions is based off of its own rules so setting constraints is limited to its own ruling not the users.

Benefits

Involvement with human interaction of design intent

The use of parameters allows the user to change dimensions with a simple number change for items that are constrained by parameters the user sets.

The parameter based objects will move with the elements the user determines as hosts quickening design changes.

Revit has plug-ins for parameters that make it more parametric for form creation.

Ability to express/communicate experience

Ability to express/communicate experience

VISUALIZATION

Outputs



Fig.42



Fig.43

Limitation

Involvement with human interaction of design intent

The context is infinite unless specifically added by the user.

The outputs are easily recreated if any changes occur.

The time for the tool to compute the output.

No weather or season control to show time manipulation in another form other than sun position.

Involvement with human interaction of design intent

Provides a slight realism in which the architect can determine changes of space.

The ability to copy and manipulate images to show different changes without effecting the original provides quick revisions.

Location based lighting allow for true understanding of natural daylighting effect on the interior spaces.

Ability to express/communicate experience

This is the last step in the process and requires a significant amount of time to tweak and express all the information.

The experience is more of a resultant thought but can be used as a feed back in order to help design intent.

Ability to express/communicate experience

This tool has the ability to create video through space providing a virtual walk through of space and a better understanding of the connection in design.

The perspective outputs allow the user to see what a space will look like with a realistic output based off of height to better show space.

RHINO

Rhino is a free form 3d modeling program. It is used for all design outputs. It is useful for drafting, modeling, rendering, and parametric computations. As subsets for parametric analysis we will refer to Grasshopper which is now integrated within Rhino.

Outputs

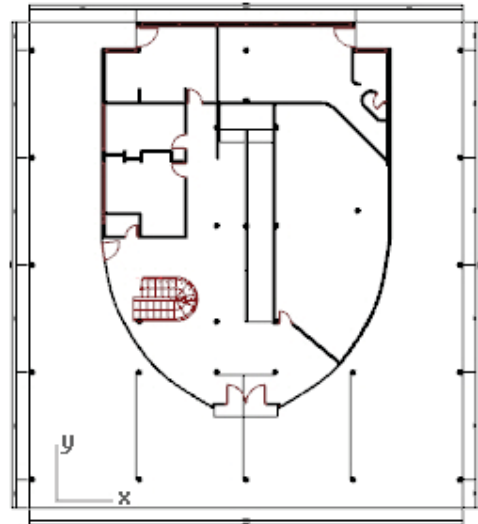


Fig.44

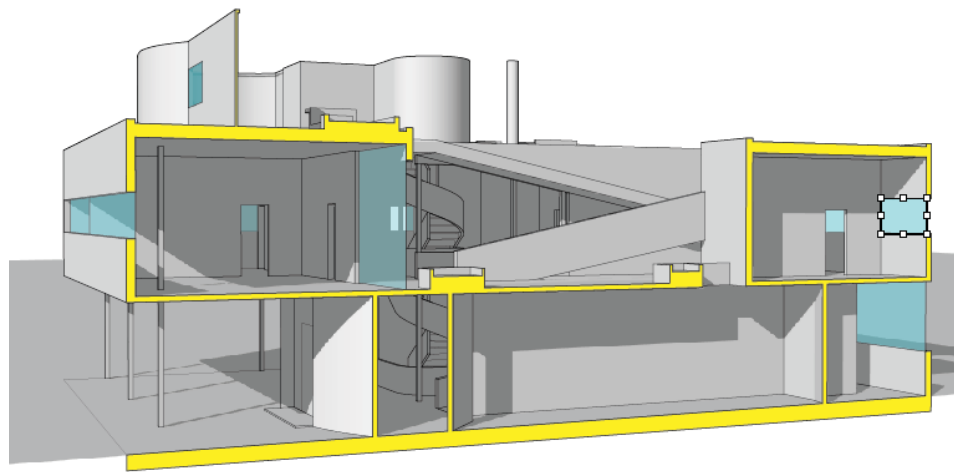


Fig.45

2D

Limitation

Involvement with human interaction of design intent

The context is infinite unless specifically added by the user.

Lineweight manipulation is difficult.

Artifacts of deletions remain within the 2d realm.

No preset starts from blank templates every time unless specifically made.

Ability to express/communicate experience

Set standard way of expressing line information in an aesthetic experience.

Benefits

Involvement with human interaction of design intent

Scale is inherent in the process. Also able to be changed whenever the user wants.

Lines and modeling are separated.

Static images can come from the dynamic 3d portion with ease to scale if wanted.

Ability to express/communicate experience

DYNAMIC 3D

Outputs



Fig.46

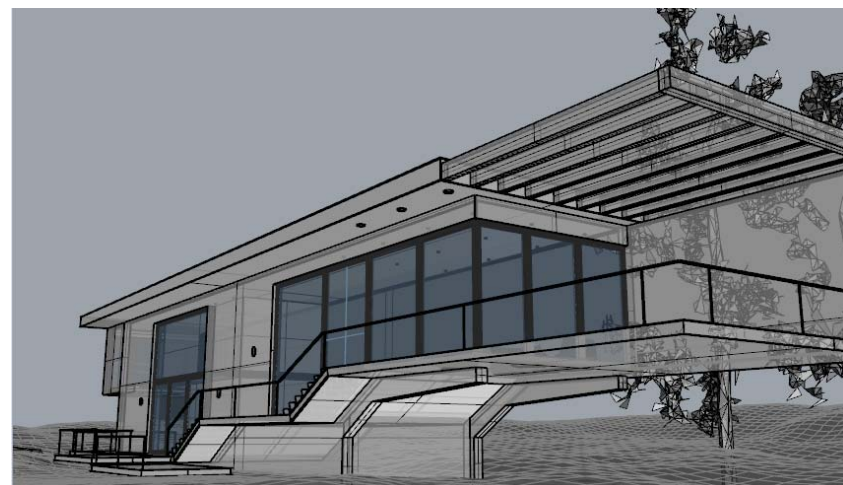


Fig.47

Limitation

Involvement with human interaction of design intent

The context is infinite unless specifically added by the user.

Once you create an object errors can be created within the process thanks to the insanely accurate modeling parameter.

Lighting has to be accurately added later it is not location based.

Ability to express/communicate experience

Materiality is not physically based if

Benefits

Involvement with human interaction of design intent

You are not limited by preset shapes. The program contains every known way of modeling processes from algorithmic to basic extrusions, sweeps. Etc... Etc..

Editing of surfaces is possible as it creates nurbs and meshes.

Working with non traditional forms such as complex curves is easier than any other program to date.

Ability to capture and manipulate different views outside of the initial created one.

Ability to express/communicate experience

PARAMETRICS

Outputs

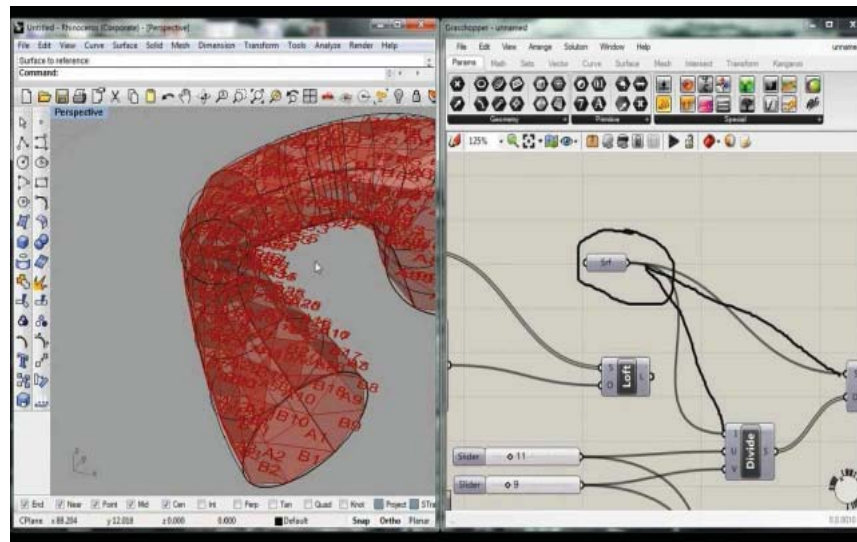


Fig.48

Limitation

Involvement with human interaction of design intent

The context is infinite unless specifically added by the user.

The inputs into parameters are meant for experimentation rather than intended consequences as to truly understand every output is not possible when the computer computes multiple outputs and choices it based off set rules.

Outcomes are determined by rules not the design intent in most cases.

Benefits

Involvement with human interaction of design intent

The computational parametric portion can compute thousands of variations and output the most efficient ones based off the users input of rules.

Input of rules is limited only within the constraints of what we currently understand within the mathematics and form creation.

Various plug-ins can add more parameters in which to control a project and understand it.

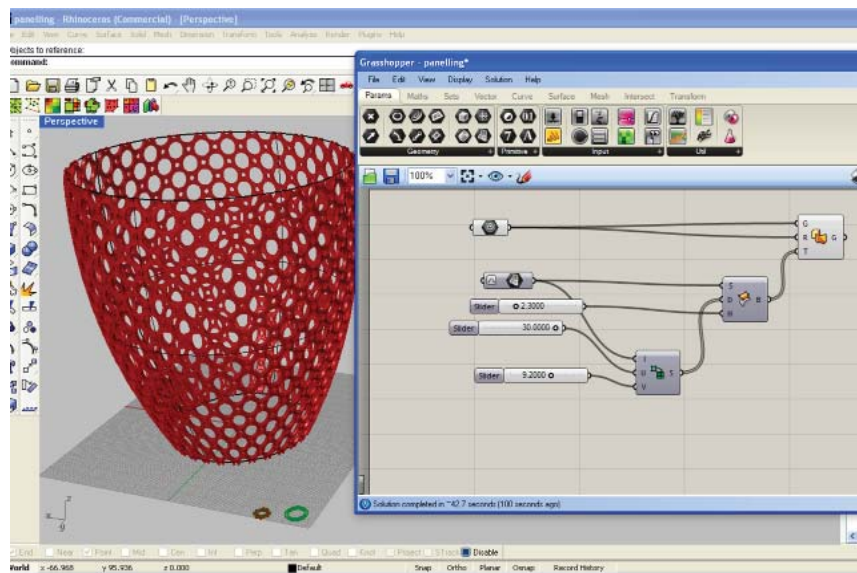


Fig.49

Ability to express/communicate experience

The idea of human comfort gets exchanged for formula based off of a range in which the program determines is most efficient.

The parametric rules do not take into account human use it is rather the formula it bases its computation off of.

Ability to express/communicate experience

VISUALIZATION

Outputs



Fig.50



Fig.51

Limitation

Involvement with human interaction of design intent

The program itself limits the style in which the program visualizes and what it can show without additional plug-ins.

Benefits

Involvement with human interaction of design intent

Various plug-ins are available to add more information for simulations to visualize additional information.

The computer can show an output within seconds to minutes of multiple views that are able to be manipulated before a final output is produced.

Ability to express/communicate experience

Material are not based within physical material properties but rather textures unless plug-ins are used.

Ability to express/communicate experience

Each of the tools analyzed in the previous pages appeal primarily to one of the bodies senses, sight. The tools allow the user to receive information visually and then make an appeal to memory, that is only referential, to form and understanding space. These tools are visual representations and referential to the authors foundation of experiential knowledge. This foundation is based on how we experience and understand the experience of architecture. The following pages dig into the two of the new technologies that introduce more senses are primary elements upon which we can receive stimuli within the design process.

02.3 THE POTENTIAL TOOLS

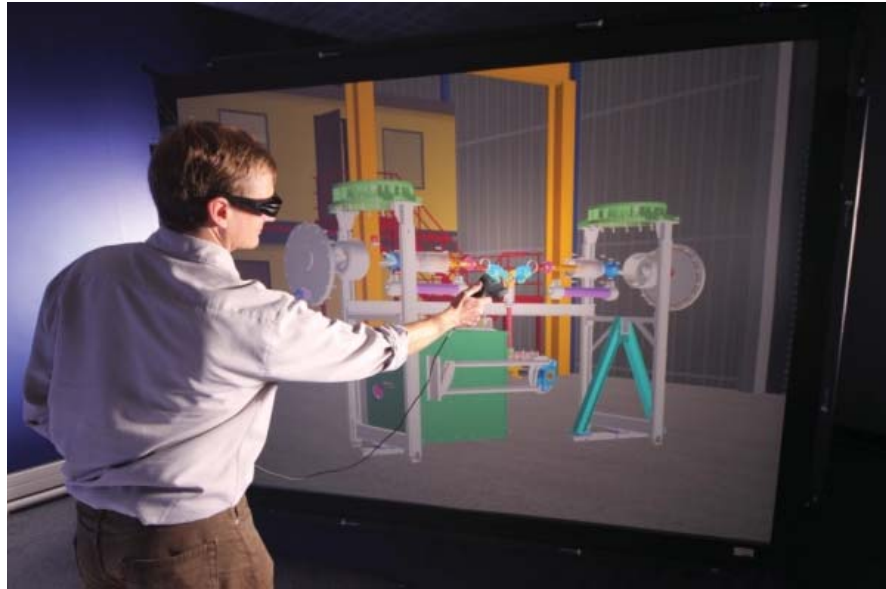


Fig.52



Fig.53



Fig.54

Virtual Reality

The last tool in which offers a solution to this problem would be Virtual Reality. Virtual Reality much like augmented reality tries to blur the line between the physical world and digital world. The difference here is that the Virtual Reality does not usually overlay with the physical world it actually creates its own world in which the designer experiences. There are several properties to this tool that would lend itself to being part of the solution though.

Immersion

One of the major traits of Virtual Reality is that it is experienced by its immersion. It is not a tool that creates an object, a documentation, nor a 2d thing. It actually makes a space in which has an experience the person that is in virtual reality interacts with. As a tool it is meant to create an experience, and as an architecture tool it has the potential to design within the space as an experience devoid of distraction.

The idea of being immersed in the space fundamentally changes the way design works. It brings forth the actual life-world into the

base of making a decision. Until now the experience of a design was based off research and experience of other designs after the artifact of design was built. The artifact gave proof whether something worked or did not work, it was these spaces that architects took lessons from and integrated into practice. Now however virtual reality offers the ability of physically walking through space and focusing on what it feels like to be within the design. They are forced to face the resultant of a decision and are now able to have the feedback loop be immediate in which they can tell something works or does not work. No longer will they have to wait for an artifact of design be made to learn from and improve. A simple example of this is instead of focusing on how efficient a facade is one can now understand how the facade changes being in the space and can adjust design accordingly.

The Use Of The Body

The second trait that lends this tool to be beneficial would be the interaction of the body within the digital space being portrayed. In architecture it has always been difficult to coordinate the body

in space with design. We wound up turning to dimensions and research to explore these ideas. With virtual reality the human body can be represented in the space and interact with it at the same time. It has actually become possible thanks to advances in virtual reality engines to use the body to change the spacial experience itself to design with the body as a tool. Using the body decisions are made and executed based off an individual's judgment as they are in the design rather than looking at the design from afar they are integrated into it. This brings upfront the life-world offering the possibility to now focus on this and change spaces to have phenomena at the base of design thought.

Empathy

One important aspect that is just beginning to be explored through Virtual Reality is being able to experience things that user groups that have not been understood fully experience. For instance, you can simulate Cataracts in the eyes, color blindness, far sightedness, nearsightedness, being in a wheel chair/seeing the world from



Fig.55

the view point of someone in a wheel chair. These areas of study are based off emphatic models of experience. It provides a unique way to understand someone else's experience of space. The benefit to this is a whole new world of opportunities to better the user experience within buildings for those that are visually impaired, or handicapped. Another benefit is the understanding of experience once again pushes forward thinking of the user and the connection to architecture within everyday life meaning this connection becomes an integral part of design and not just an after thought as much of the accessibility portions have become.

The empathy does not just help with those that are handicapped or impaired but rather can be applied to different clients as well. With virtual reality it is possible to walk the space with the client and see with them the design and understand better what they think and feel about the design and how they experience architecture, leading to better design outcomes.

Senses Appealed To

Virtual Reality currently appeals to vision, hearing, proprioception, and the vestibular senses. The appeal to memory by these senses with the tool is unique in Virtual Reality replaces the visual environment of a person and tricking the brain into understanding a virtual environment instead. The brain then corresponds its memory of the space based off the senses the space has appealed to provide an understanding of the virtual space.



Fig.56



Fig.57



Fig.58

Augmented Reality

Augmented Reality is a new technology that works by overlaying digital information in the physical world through a lens one can see with their eyes. The ultimate goal of this technology is to interact/experience digital creations in the real world, through the body. This element is what makes it one of the 2 contemporary tools that offer the best solutions to the lack of phenomena in architecture. The second being Virtual Reality which will be discussed next.

Advantages

With the digital overlaying in the real world designs are directly correlated with the physical world and are able to be interacted with through the lens. This means one can experience closer to reality an architectural space and have a better grasp of the correspondence with the life-world. The understanding is achievable by having a full scale augmented model. This augmentation allows the author/architect to physically walk spaces and use their body to correspond to space. This is revolutionary technology for design as so far design has been offset by the boundaries of physics making instantaneous changes of space based off thought neigh impossible. Thus most

Changes to design were based off informed thought. Ultimately this became a method of making decisions based off informed conjecture as there is no artifact of creation to prove the hypothesis of what the space will be. By being able to physically walk and interact with a design, albeit a mix of digital interface, it gives the architect a better understanding of design as well more control over the process. The author is now forced to understand how a decision impacts space by first hand experiences of space. The ability to experience space with the body brings forth in the mind the human life-world resultant the design will create. Bringing experience to the forefront allows for phenomena to be reintegrated as part of the process of design rather than an expected outcome.

Interaction With The Body

Another benefit to the tool of augmented reality is the ability to interact and change things within the augmented environment. These changes can be created with different interfaces but the ultimate end would be through using the human bodies arms,

hands, and fingers. This brings forth another level of understanding decisions based off immediate feedback of the body. The architect is immediately informed of how big something is or how far away it is, the position of the body within space and how it corresponds to the environment. One of the biggest benefits to this tool for creating architecture lies in the experience of space and then being able to add the extra elements and tweak them until they correspond best to the outcome which brings architecture to the level of art. There is a fine level of control and efficiency possible while maintaining a contextual based understanding of architecture in the life-world and in the human environment.

Problems

The unfortunate reality of this technology is that it is not quite at the level of being useful or rather efficient enough to be used for projects quite yet. In the future this tool will become predominate in architecture.

02.4 THE TOOL OF THESIS OUTPUT

Each of the previous tools offer a solution however the one this thesis will work with is Virtual Reality as it provides the appeal to multiple senses and the computational abilities technology is at a point where it is able to be explored currently, rather than speculated. It is of note, however that this will not be the only tool used in this exploration. Namely sketching and a form of 3d modeling will be used. Sketching provides a quick process and vague notions to be portrayed quickly and certain programs are more efficient at creating mass models quickly.

03

PROGRAMMATIC
FRAMEWORK

03.1 FEEDBACK LOOPS

"Architecture is a profession that takes an enormous amount of time. The least architectural effort takes at least four or five or six years, and that speed is really too slow for the revolutions that are taking place." Koolhaas, 2016

Within architecture we use both Tools and our Experience to design. In doing so we are working within a feedback loop. There is an output in which we learn from and then integrate through the use of tools into the process. The tools themselves are used to represent and portray the idea of the experience and inform the architect in order for them to make a design decision - when the idea is portrayed the author creates a new memory of foundational understandings.

One of the main reasons for the slowness of architecture is these feedback loops and our production process of designs. This want for speed has led architects to look towards different technologies to help speed up the process.

With the new technologies we have had a separation of focus within architecture. There is one side that is focused on the speed of production and the automation/efficiency of getting things built according to quantitative data, the production side. Opposite to this is the Qualitative side that is focused on the true everyday use of Architecture and its effects on the humans that live there. My interest falls into merging these two realms to try and bring forth the Quality that has been missing within the vast majority of what is being built.

Now, for the first time, we have tools that can practically change the feedback loop and the information of experience/ being in space that is portrayed to the senses, to inform, as part of the loop. These tools are no longer confined to the 2d realm of representation but have evolved into 3 dimensional representation of experience that can appeal to more senses than the 2d methods currently do.

Now is the time to critically access the design process and understand where phenomena leads design decision and what senses are involved in these decisions. Where has phenomena been embedded in the design process and where has it dropped out?

The analysis of the senses shows individuals experience architecture through their body and the appeal to memory. Architects design buildings in order to provide the frame work in which one lives and experiences life within. In order to do this in a way that is focused on an individuals experience in space we have to understand the experience gained from/during design processes are returned as a feedback loop to inform design decisions and how these correlate to understanding the quality we seek to produce.

Preinhabitation is a combination of prior knowledge and imagination both must coexist to engage in this process of design.

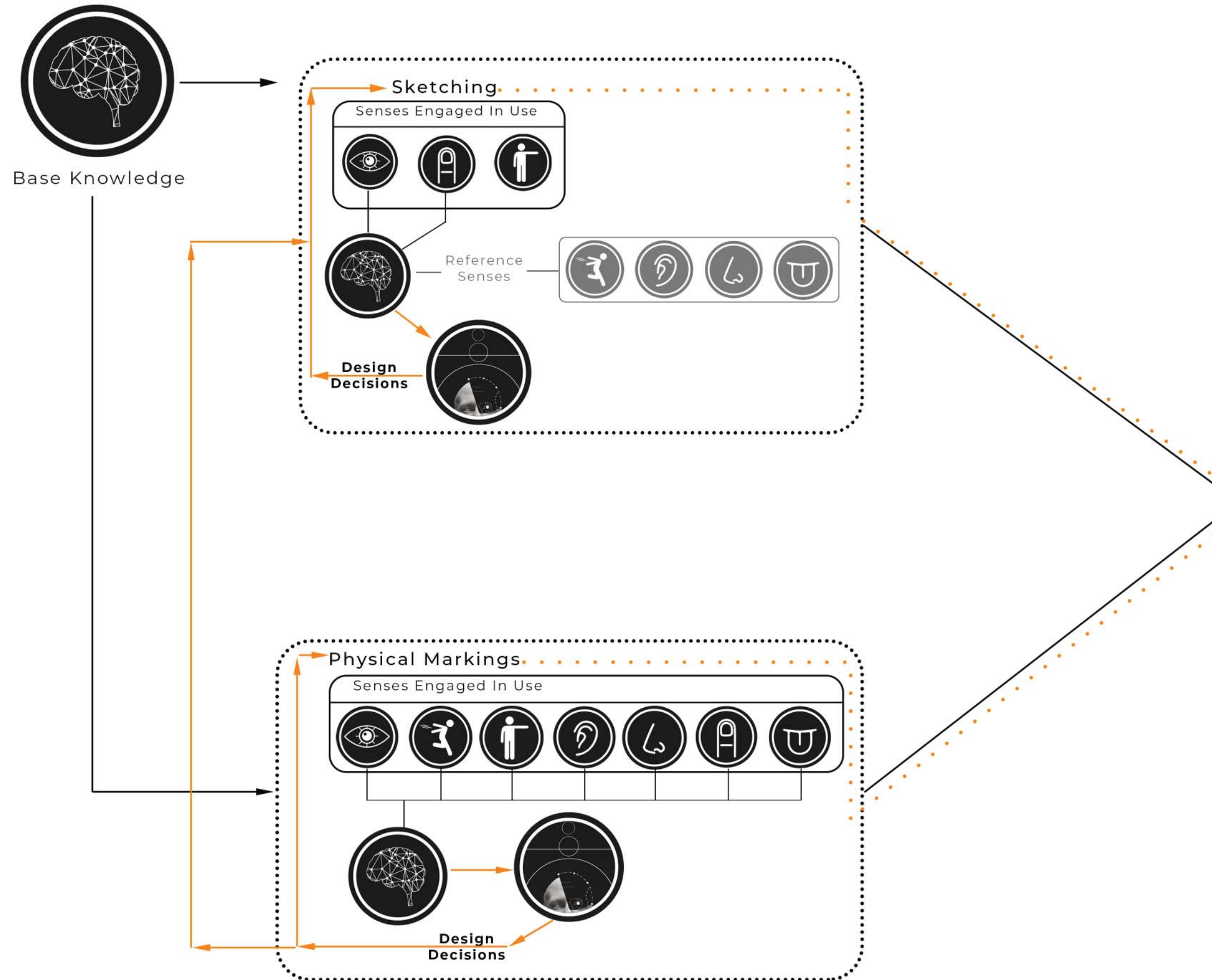
PRIMITIVE FEEDBACK LOOP

In rural communities and those less developed places in the world and throughout history architectural design was done during the building without tools. The process would be as follows:

1. Walk the site
2. Sketch and/or Walk the site and make physical markings
3. Physically make what was imagined or sketched down.

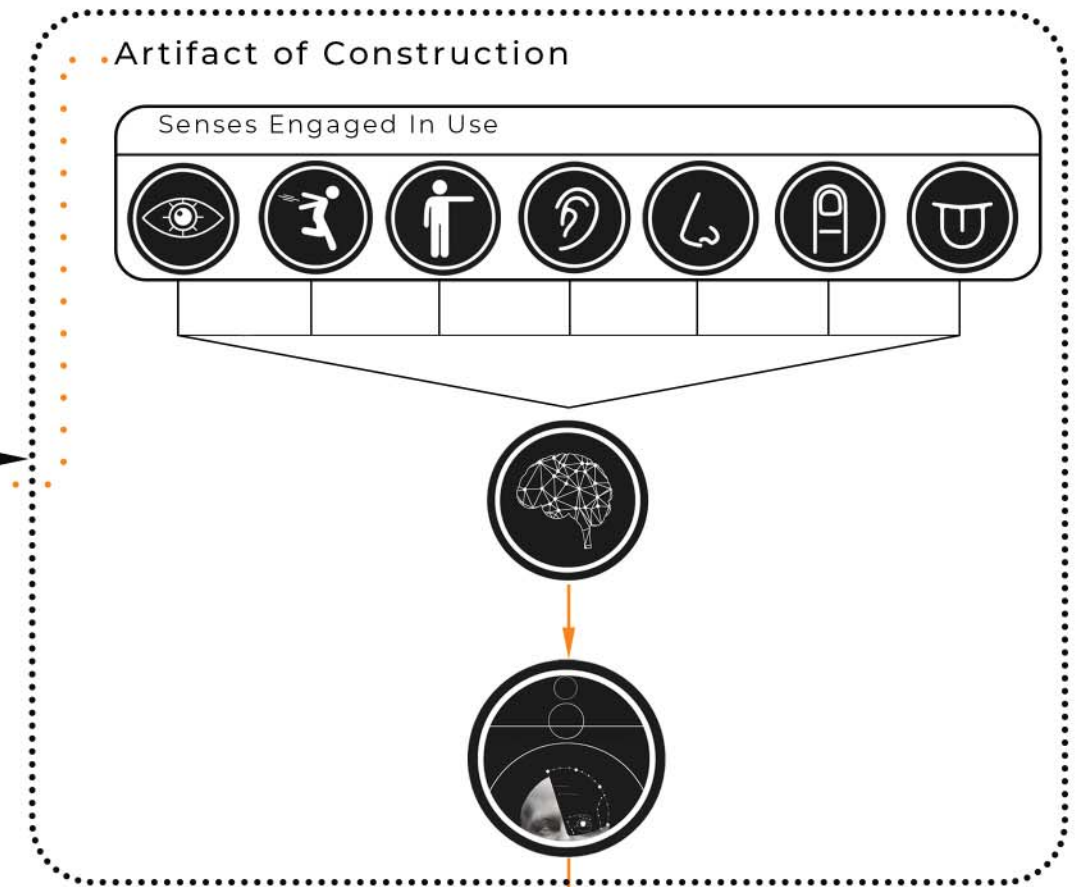
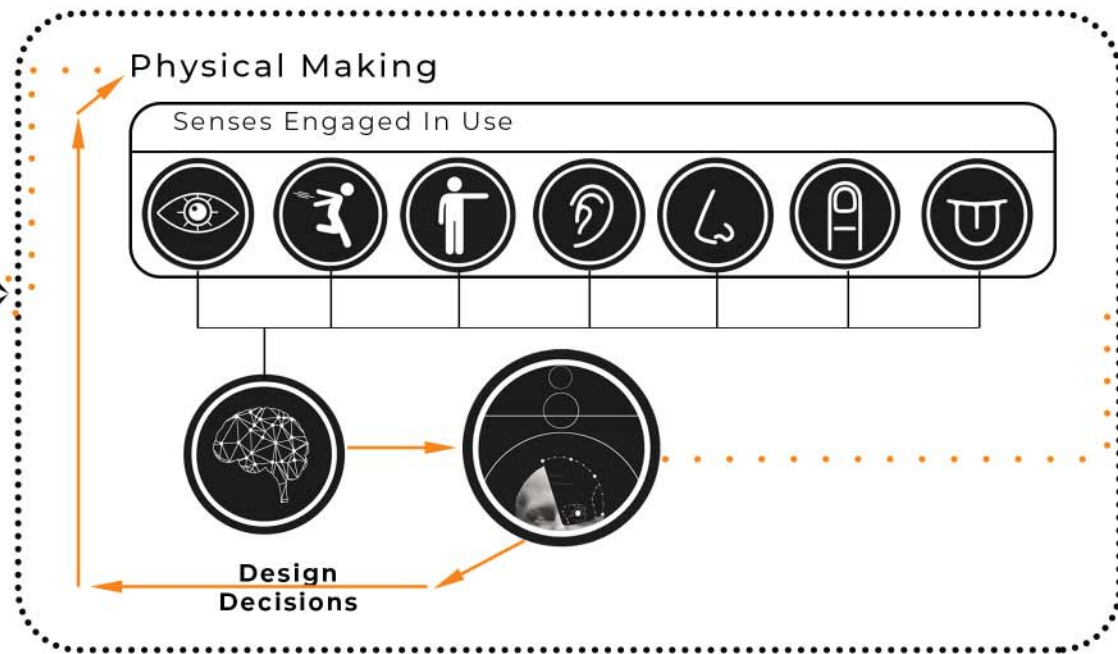
This processes created a feedback loop in which every sense was involved in the process and the phenomena was created and understood through the connection with spirit every step of the process. This explains why people enjoy older buildings. They were built with the use and phenomena within as a primary focus during the design process as this process involved subjective base knowledge, each of the bodies senses, and spirit.

SCHEMATIC DESIGN



CONSTRUCTION

BUILDING



TRADITIONAL FIRM FEEDBACK LOOP

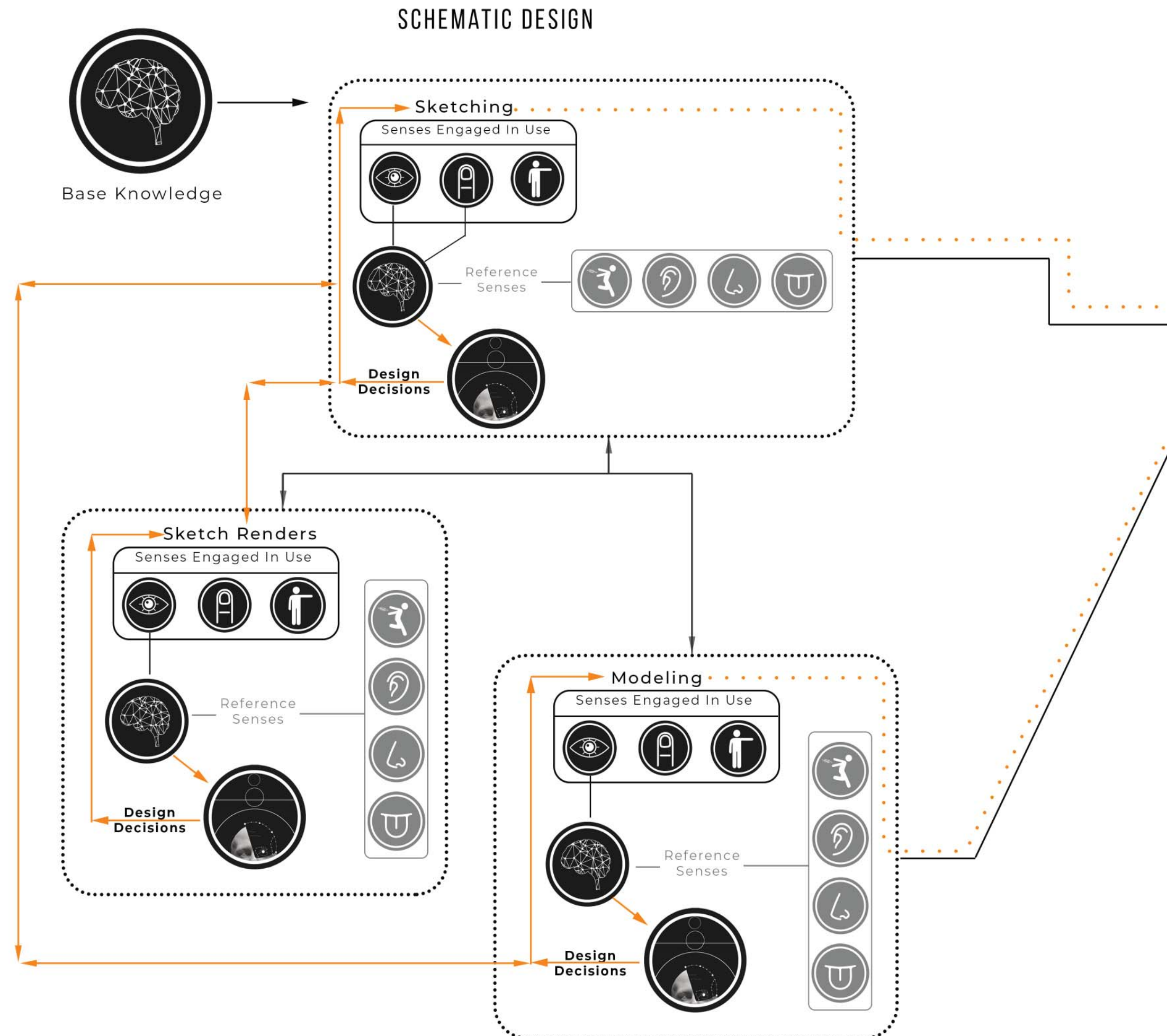
Traditional Feedback Loops within practice required a passing down of experience practices based off of a mentors knowledge. This in turn would inform the new architects and they would gain experience over a period of years in practice. This processes is described as follows:

1. Mentor or Head Architect makes the major decisions and passes down their knowledge of phenomena in architecture to those that work under them usually directly to the principals or interns. These architects are the final decision makers.

2. The principal would produce the drawings and confirm their understanding and design decisions with the Mentor/Head Architect. Through this system they were able to substitute their lack of years of experience with someone who has more understanding of phenomena within practice.

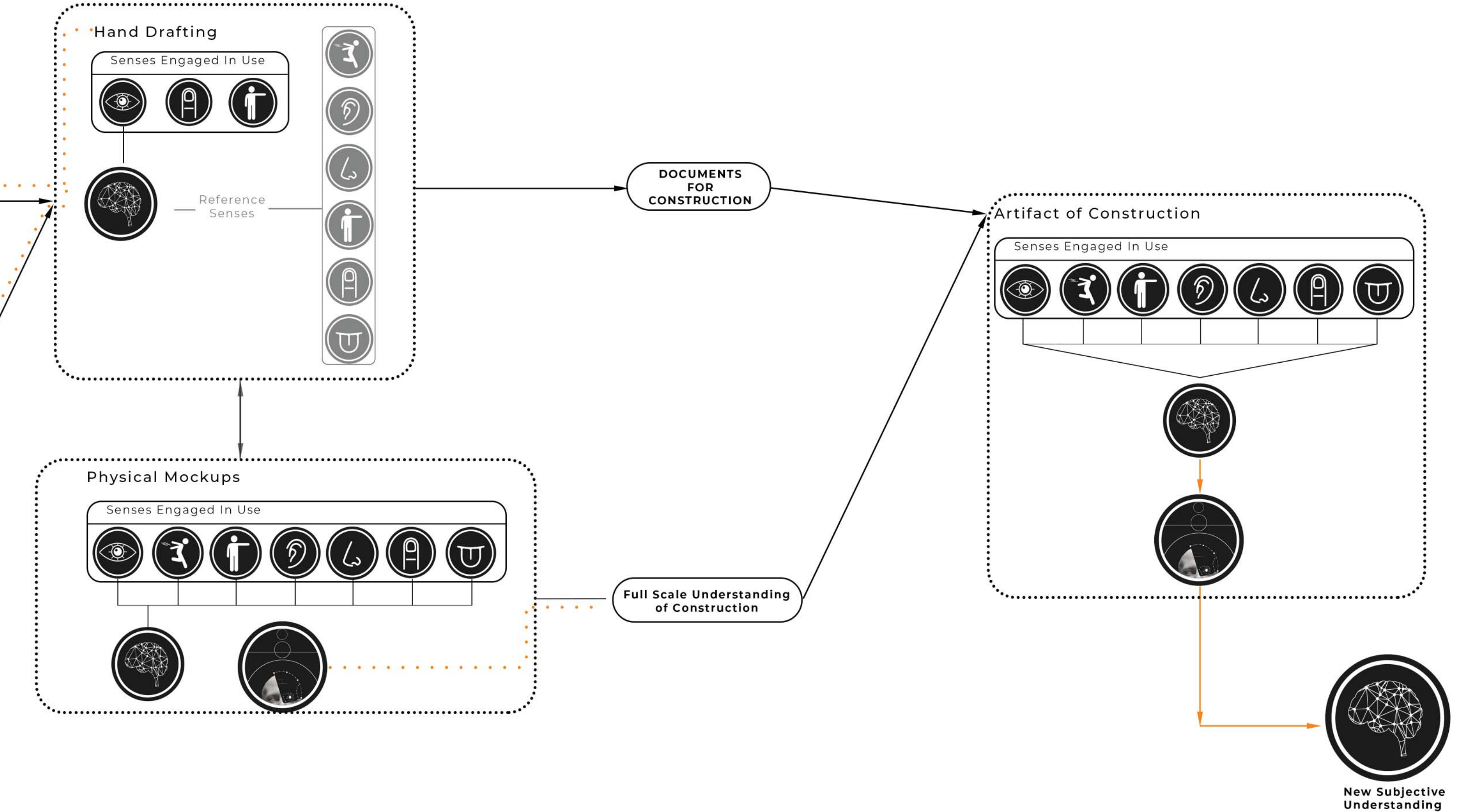
3. The Inter- Interns produced most of the drawings, models, documents, and renderings. Through the production they were guided and informed of phenomena by the Principal Architects and Head Architect. This passing down of knowledge allowed an understanding to be formed but took several years. The more projects they completed and were able to physically experience the more first hand knowledge they formed.

This feedback loop requires confirmation of design decisions however the tools of production involved using multiple sense in the process of outputs allowing for a closer understanding of phenomena through design process but true understanding was only formed from the artifact of construction.



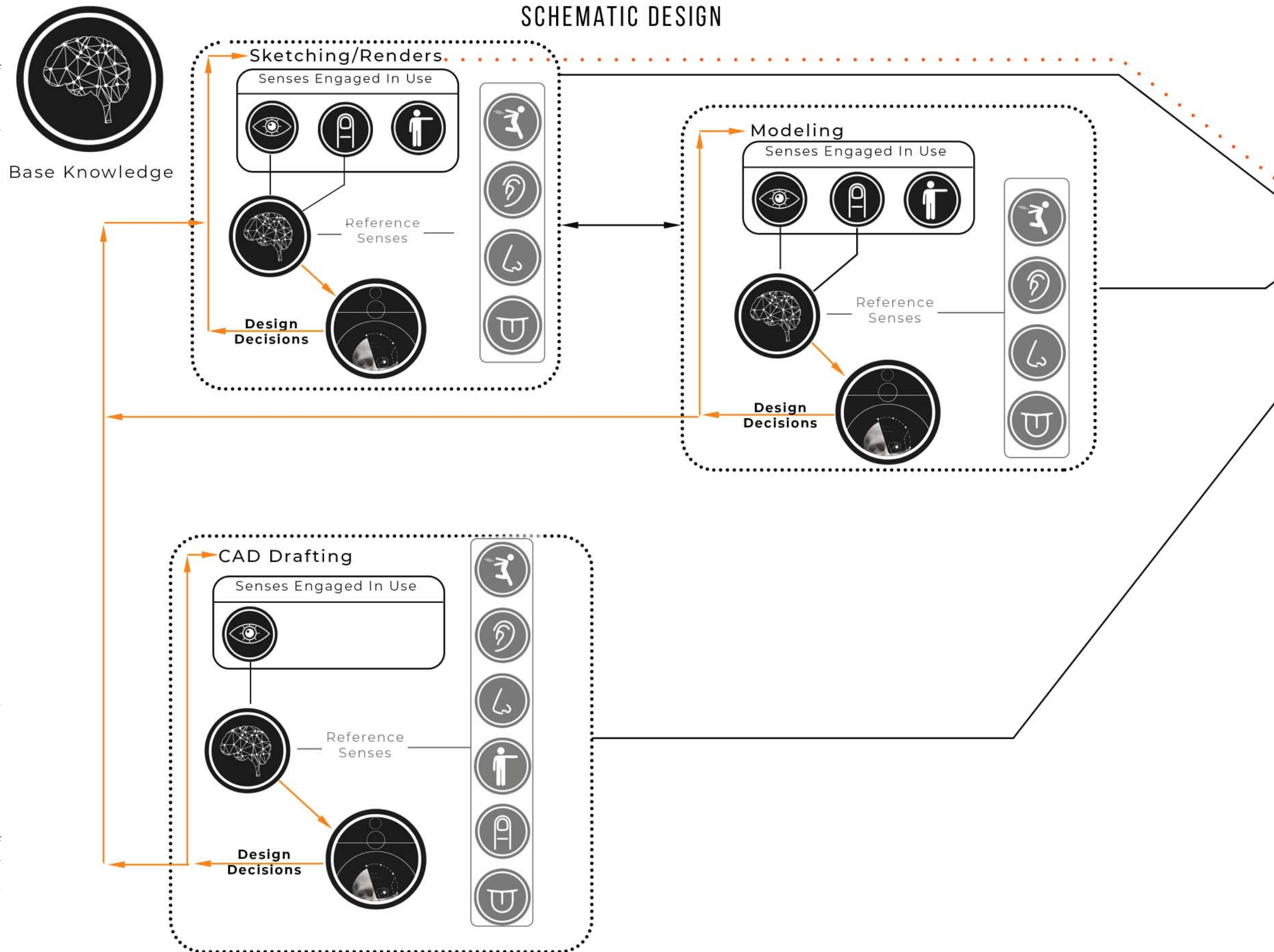
CONSTRUCTION DOCUMENTS

BUILDING



CAD FEEDBACK LOOP

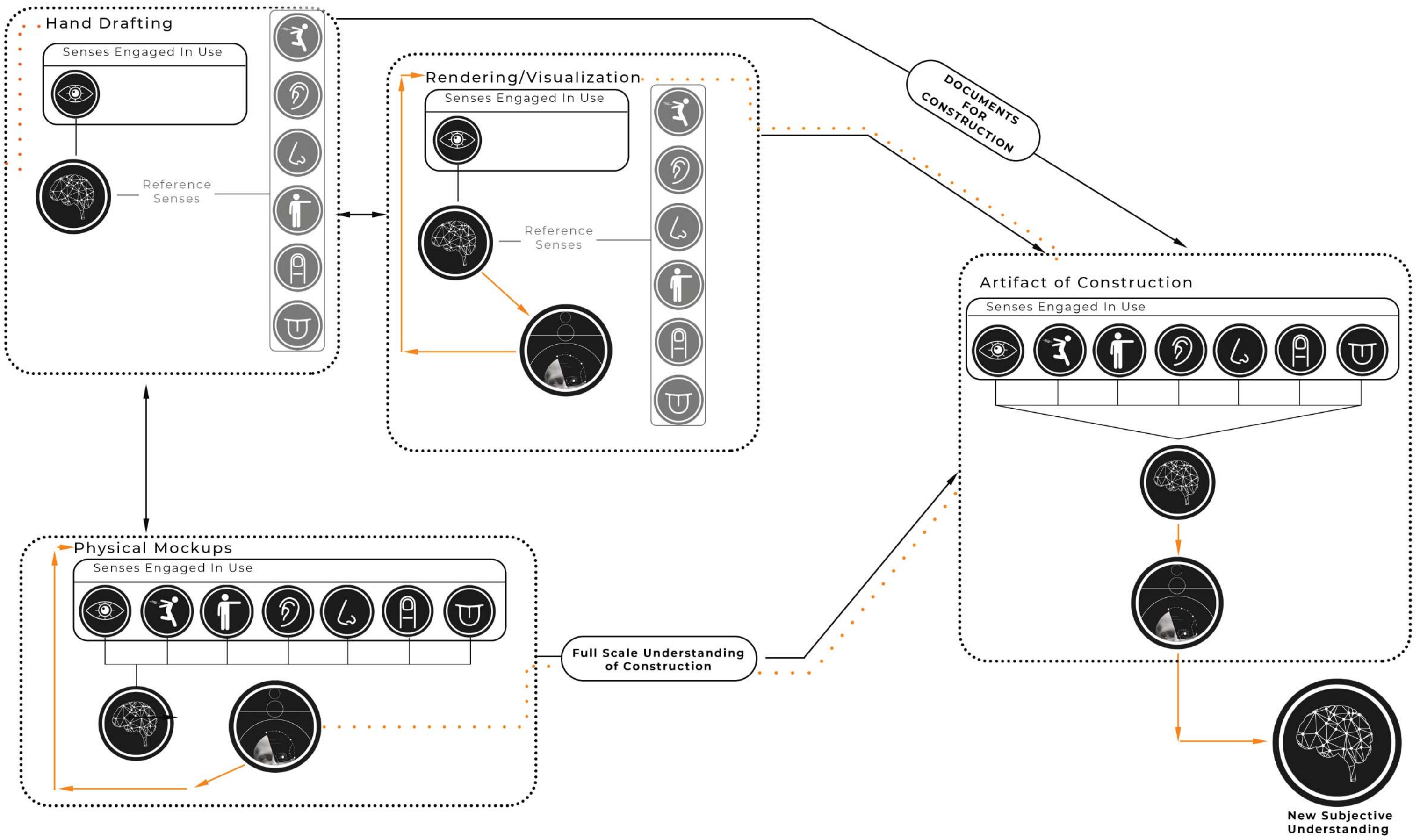
CAD increased the production aspect of design immensely but also changed the feedback loop of traditional practice. The mentor, principal, and intern roles are roughly the same. What has changed is the senses involved with the tools of production and how they correspond with understanding phenomena through the process.



The biggest change that occurred is the use of sight and referencing memory/imagination to understand how design decisions influence phenomena in the design process rather than relying hand creations which involved the touch and proprioception. To supplement this loss of focus involved when losing two senses in the process, and to communicate phenomena better, visualization techniques of computer rendering were introduced to portray phenomena. This however is still only involving sight and referencing memory to form understanding.

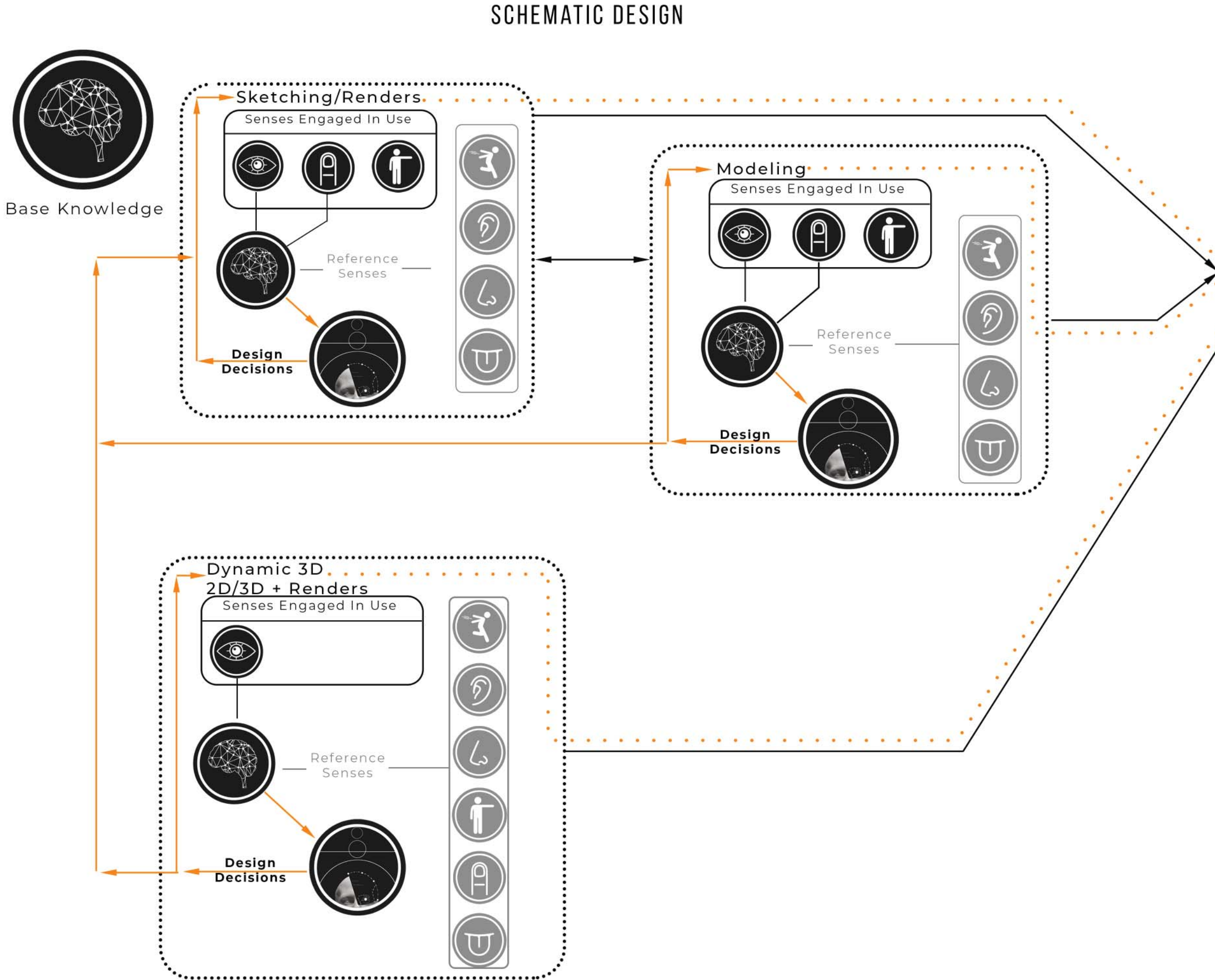
CONSTRUCTION DOCUMENTS

BUILDING



DYNAMIC 3D FEEDBACK LOOP

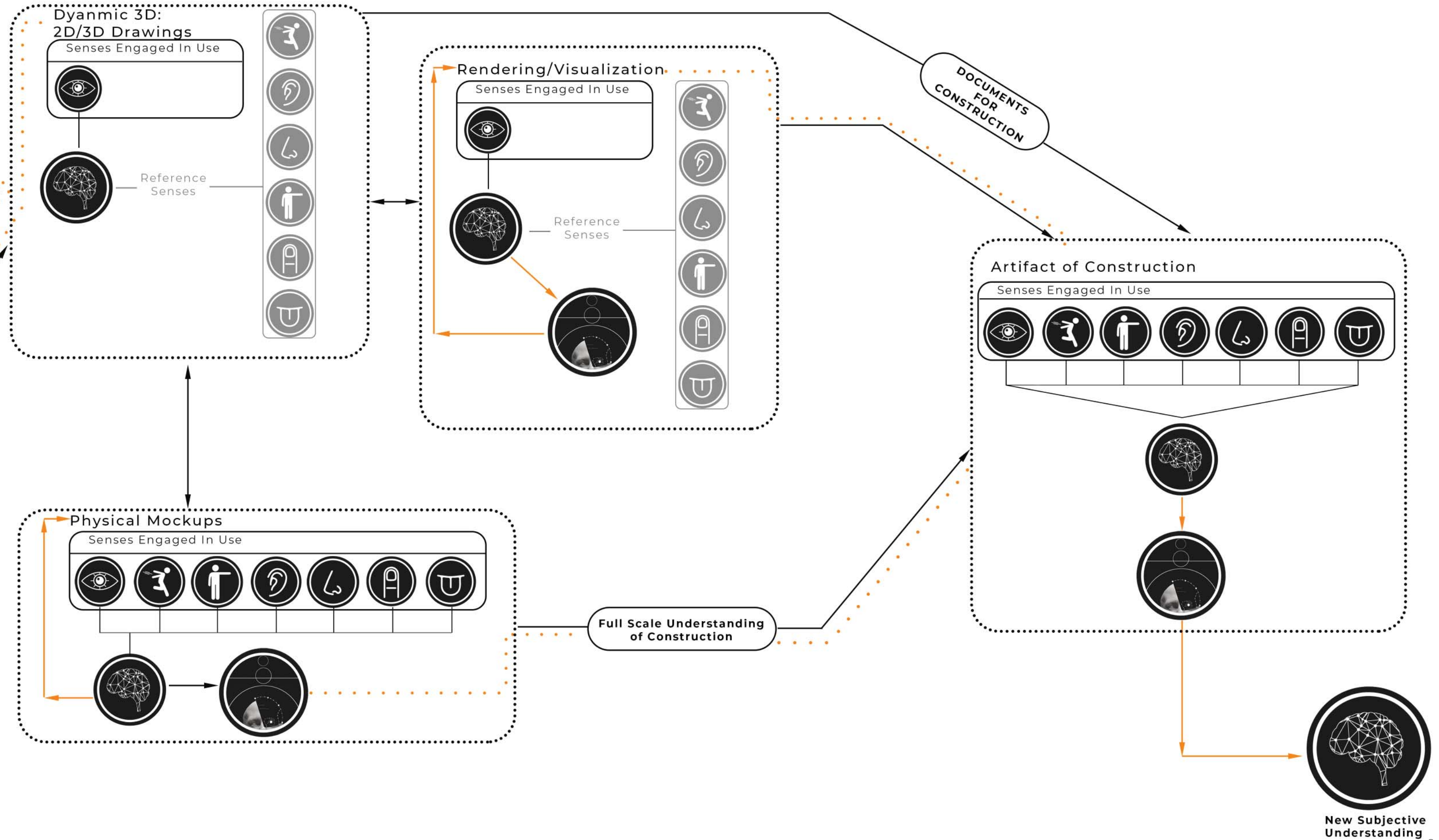
The advent of dynamic 3d allowed for a change in the focus and understanding of phenomena within practice however it is based upon the foundations of CAD systems. The roles of the mentor, principal, and intern have slightly changed but are generally the same. The reliance on the interface of these tools being computer 2d representations means that the dynamic 3d feedback loop is reliant on sight and memory/imagination to form understanding of phenomena in the process of design.



Dynamic 3d allows for faster production but by going back and looking at the analysis of tools these have their flaws in producing phenomena as a focus.

CONSTRUCTION DOCUMENTS

BUILDING



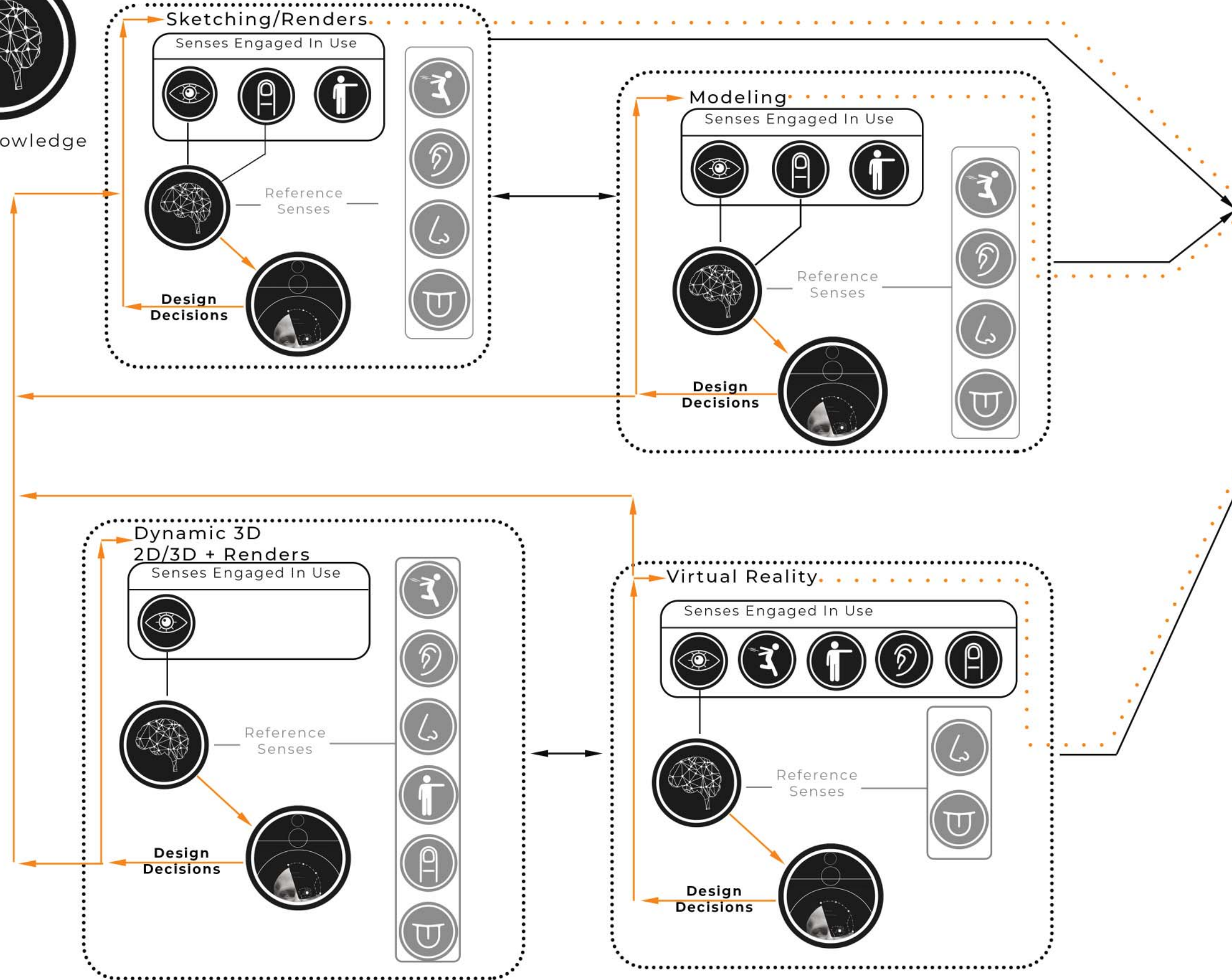
VIRTUAL REALITY FEEDBACK LOOP

Virtual Reality as a design tool moves one step forward within the design process focusing on phenomena. It takes this step by using 4-5 senses to portray experience versus the current tools using primarily vision and referencing memory to form understanding. By adding these in extra senses in the focus on phenomena is reinforced to be the forefront of this tools design intent engagement.



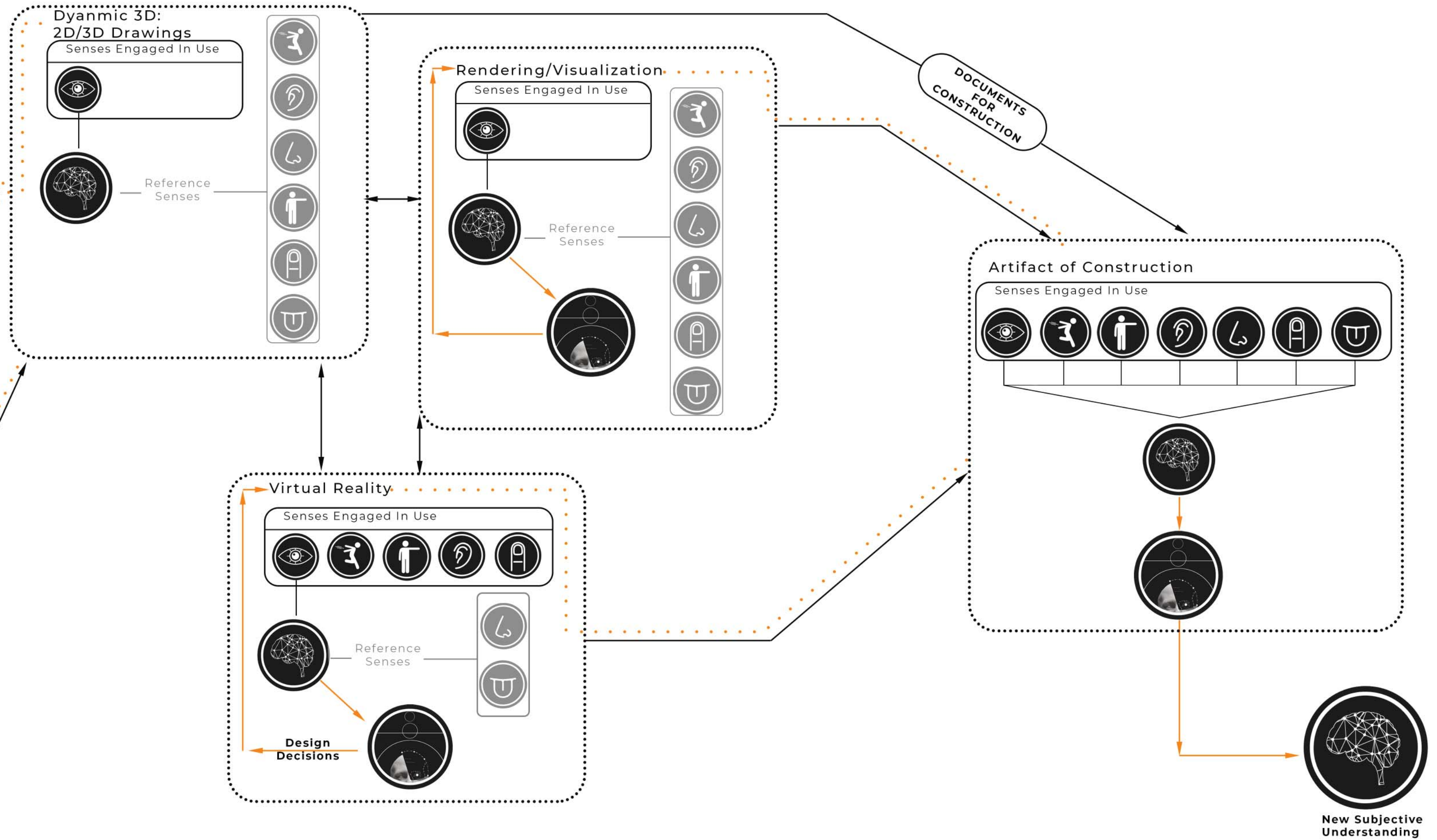
Base Knowledge

SCHEMATIC DESIGN



CONSTRUCTION DOCUMENTS

BUILDING



04

QUALITY WITHOUT A NAME

04.1

CONNECTION BETWEEN THEORISTS

In Ch1 it was mentioned that a connection is seen within analysis of A Pattern Language between the phenomena being discussed in architecture and patterns. This connection becomes very clear discussing what the various theorists, writers, and architects have been writing about with phenomena being the focus of architecture. The following pages goes through the authors and theorists works and pulls out the major ideas of their work to show the connection between what they are discussing and Pattern Language. To begin this research analysis we will start with phenomenology as it is suggested to be the start of the solution.

Phenomenology is within most peoples perception of it is misunderstood. It is not "return of things" as many define it. Rather it is more of a methodical way of thinking in which one reflects on an experience in order to gain an understanding. This misunderstanding has created the thought that there is phenomenological architecture, this thinking is false. Within architecture however, we do ask ourselves what the experience within a space is, we are concerned with the individuals life-world experience. This thinking is phenomenology, as defined by Husserl, yet it is not concerned with the philosophy of phenomenology. Rather the concern is with the implementation of this thought processes understanding into the design process. Phenomenological Architecture is just a definition of a type of architecture in which focus is upon the user experience as the primary driving force and output of design. For the start of our analysis we will start with Husserl coined the father of Phenomenology.

Before we go further lets summarize what we have established thus far.

First we have looked at a problem within architectural practice - the lack of ability to pre-inhabit architecture... to design with the phenomena of use in the forefront of design. We looked at what theorists were calling for as a solution and determined that Pattern Language was a missed opportunity that tried to be a new theory to solve the problem in process.

From Pattern Language we brought forth the idea of the authors experience and the use of the tools of production working together.

From these two missed opportunities we have taken survey of the tools of contemporary practice, elaborated on what it means to experience architecture to inform the authors understanding of space, and how the two work together in the production of architecture in feedback loops.

Next we examined the tools that are changing the process of architecture by providing the ability for extra senses to be used in the production process and chose a tool of study Virtual Reality.

Before we go forth in our use of virtual reality tools to explore Pattern Language,(primary organizational steps of quality focused design) we must understand what this Quality is.

04.1.1

EDMUND HUSSERL

A WAY OF QUESTIONING ARCHITECTURE

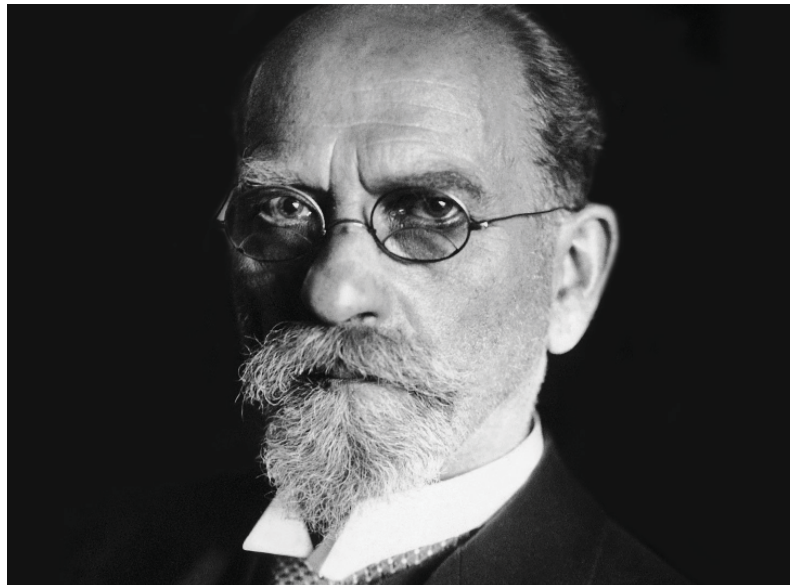


Fig.59

Defined Phenomenology as a reflective study of how things appear to our conscious awareness and ultimately how the world appears to us in terms of our subjective experience. In other words reflecting upon our experience to gain some understanding of its underlying order and coherence.

Husserl accepts that we have a "Natural attitude" towards things. This attitude accepts the world but sees it as separate from our experience to it. While the Phenomenological attitude towards the world is there is a dualistic meaning, a further meaning than what is first perceived. Phenomenology is meant to explore this meaning versus taking it for-granted as we do with the natural attitude.

The way in which one explores this meaning is through essences or "Eidos." These Eidos are features of our experience that are both necessary and invariant. The question now is

How do we find the essence of a thing?

Using eidetic reduction we ask a specific question about the thing. This is meant to find a moment we explore our intuition to realize the nature of consciousness or our understanding of what the "thing" is.

We can also use Imaginary Variation, where we explore the various attributes as a way to understand what is truly necessary for a thing to be what it is.

Phenomenology is always said to be a "Return of things". A return as a more true understanding of a thing in the way we experience them. In this return it focuses on the Consciousness.

Husserl learned from his mentor Franz Brentano that consciousness is not like a box which contains perception in fact it is an act of ongoing referential process. This stance helped to create the idea that Consciousness has Intentionality.

Actual Consciousness states that consciousness is always doing something it is active.

Referential Consciousness states that it is pointing out something referencing memory.

At the same time as Husserl we also have Maurice Merleau-Ponty focused on the idea of Perception and its ties to consciousness. As, if the conscious is always doing something as well as referencing something we must ask **what is the process of the conscious perceiving something? In asking this we can further our reflection of experience of a "thing". The thing in our case being Architecture.**

04.1.2

MEURICE PONTY

HOW DO WE PERCEIVE?

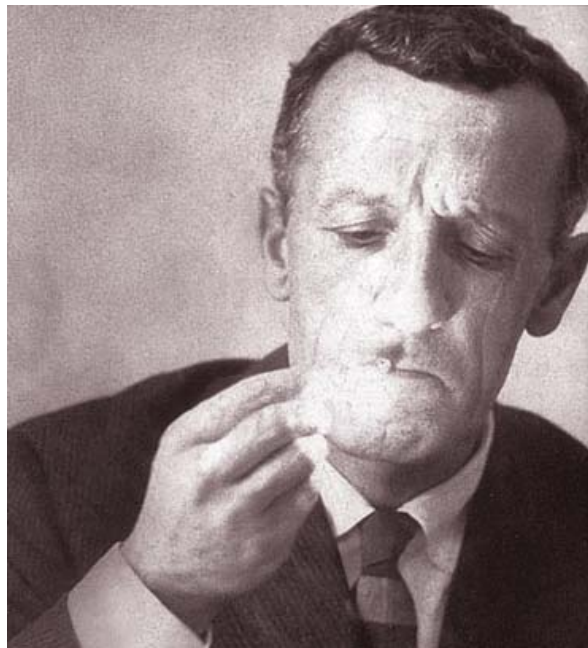


Fig.60

Maurice Merleau-Ponty was an artist and wrote on Phenomenology. One of his many works Phenomenology of Perception deals with the topic of perceiving and the phenomena of perception itself within the realm of phenomenology.

“What is phenomenology? It may seem strange that this question has still to be asked half a century after the first works of Husserl. The fact remains that it has by no means been answered. Phenomenology is the study of essences; and according to it, all problems amount to finding definitions of essences: the essence of perception, or the essence of consciousness, for example. But phenomenology is also a philosophy which puts essences back into existence, and does not expect to arrive at an understanding of man and the world from any starting point other than that of their ‘facticity’. It is a transcendental philosophy which places in abeyance the assertions arising out of the natural attitude, the better to understand them; but it is also a philosophy for which the world is always ‘already there’ before reflection begins—as ‘an inalienable presence; and all its efforts are concentrated upon re-achieving a direct and primitive contact with the world, and endowing that contact with a philosophical status. It is the search for a philosophy which shall be a ‘rigorous science’, but it also offers an account of space, time and the world as we ‘live’ them. It tries to give a direct description of our experience as it is, without taking account of its psychological origin and the causal explanations which the scientist, the historian or the sociologist maybe able to provide.”

Ponty, Pg.Xii

Ponty provides several insights into the phenomena of sensing and its correspondence to memory and the body. These insights this thesis shall build upon as an understanding of how we experience architecture.

“The perceptual ‘something’ is always in the middle of something else, it always forms part of a ‘field’.”

Ponty, Pg. 4

This is also the basis of consciousness and memories. Consciousness is given the context by memories formed when we perceive the thing it is within a layer of context. The context and thing both inform us and our memories.

“To perceive is not to experience a host of impressions accompanied by memories capable of clinching them; it is to see, standing forth from a cluster of data, an immanent significance without which no appeal to memory is possible. To remember is not to bring into the focus of consciousness a self-subsistent picture of the past; it is to thrust deeply into the horizon of the past and take apart step by step the interlocked perspectives until the experiences which it epitomizes are as if relived in their temporal setting. To perceive is not to remember.”

Ponty, Pg. 26

Merleau-Ponty in conjunction with Husserl's breakdown of the Phenomenological process of questioning gives us a starting point to begin questioning the experience of architecture. Husserl gives the framework to which we ask a question and Ponty gives us the explanation of perception being the consciousness gaining information. **Yet to bring Phenomenology into Architecture we must look towards Martin Heidegger first.**

04.1.3 HEIDEGGER

HOW TO FIND THE ESSENCE OF A THING



Fig.61

BUILDING, DWELLING, AND THINKING

Martin Heidegger was a philosopher within the phenomenology movement and became what many consider as **the person who brought phenomenology to architecture** with his book *Building, Dwelling, Thinking*. Within this book Heidegger breaks down his thought process in order to explore the concept of Dwelling.

Through this process of thinking about dwelling Heidegger revealed that, Building is really dwelling, Dwelling is the manner in which mortals are on the earth, and building as dwelling unfolds into the building that cultivates growing things and the buildings that erect buildings. These gave architects a multitude to think about but there is a major idea of thought, being we should question what a "thing" is further than just the qualities we perceive it as having. This questioning is the process of phenomenology as defined by Husserl. This notion pushes forward to better understanding something of interest. In his writings he states that, "**western thought only focuses on the perceived qualities of something leading towards a shallow understandings of the "Thing."**" (Heidegger, Pg. 360) To explore this notion he uses the example of a bridge.

"To be sure, the bridge is a thing of its own kind; for it gathers the fourfold in such a way that it allows a site for it. But only something that is itself a location can make space for a site. The location is not already there before the bridge is. Before the bridge stands, there are of course many spots along the stream that can be occupied by something. One of them proves to be a location, and does so because of the bridge. Thus the bridge does not first come to a location to stand in it; rather, a location comes into existence only by virtue of the bridge. The bridge is a thing; it gathers the fourfold, but in such a way that it allows a site for the fourfold. By this site are determined the localities and ways by which a space is provided for." Heidegger, Pg. 360

The idea of the four-fold, Earth, Sky, Mortals, and Divinity is something Heidegger attributes to all building and dwelling itself. He tries to **bring forth the idea of site and the need for a building based off the site.**

04.1.4

W.G. CLARK

ARCHITECTURES CALL TO BEING



Fig.62

W.G. Clark is an Architect who work ranges from the years of 1975 - 2004. His writings gave place to the idea of call to being of Site and architecture being the almoreative act in which we recoup the loss of nature.



Fig.63

"The American landscape is being sacrificed to building. The result is dismal, adding up to nothing satisfactory or even significant except as an accurate self-portrait of our cultural and ethical dissolution. This is an observation neither rare nor subtle."

Clark, Pg. 3



Fig.64

"We want civilization to be a good thing. We want our habitats and artifacts to become part of the place and to substantiate our wish to belong. We want our things, like those of the civilizations we admire, to form an allegiance with the land so strong that our existence is seen as an act of adoration, not an act of ruin. We are only happy where this occurs, where we have managed to make something to replace what we have taken"

Clark, Pg. 2



Fig.65

"Architecture, whether as a town or a building, is there conciliation of ourselves with the natural land. At the necessary juncture of culture and place, architecture seeks not only the minimal ruin of landscape but something more difficult: a replacement of what was lost with something that atones for the loss. In the best architecture this replacement is through an intensification of the place, where it emerges no worse for human intervention, where culture's shaping of the place to specific use results in a heightening of the beauty of the landscape. In these places we seem worthy of existence."

Clark, Pg. 1



Fig.66

*"Every site contains three places: **the physical place** with its earth, sunlight, and view; a **cultural place**, the locus of the traditions of human intervention; and a **spiritual place**, or that which we should call an evocative presence, which stirs our imaginations and sends us in search of images, memories and analogues. **Each of these roughly corresponds to mind body and spirit.**"*

Clark, Pg. 5

W.G. Clark's work focuses on architecture being a moral act in which we can create something humans deem as good. He talks about the idea of architecture recouping the destruction of the natural land. In the creation of architecture there is this idea of the call to being of site. The site must have a call for architecture to be built it must have a purpose. The architecture must also be worth the destruction of the land in order to provide a value and be worthy of existing. Only in this way can it be true architecture and for humans to feel good about the architecture being built at all. These ideas lead him to talking about the three places of every site in which he corresponds them to the mind, body, and spirit being captured in a design. **Through capturing these elements we are able to create "Places" which we find memorable in the landscape.**

04.1.5

CHARLES MOORE

WHAT TO DO ABOUT MAKING PLACE

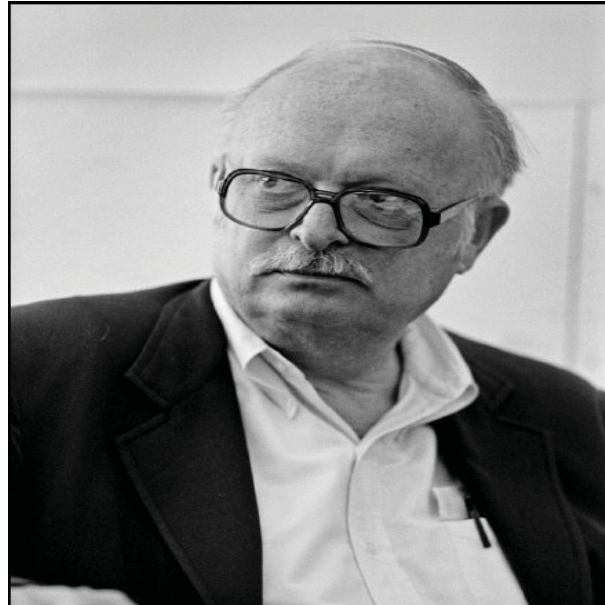


Fig.67

Charles Moore was an Architect whose work spanned roughly 1960-1993. He was among the first to notice the problem with architecture during the period of modernism. He also is the first to discuss what needed to be done to create place. What follows are the 11 things he discusses in "Towards Making Places."

"Architecture is in a bad way. It is taught as a craft and its best disciples are craftsmen. They learn to respect the nature of materials, to organize surfaces and solids. Sometimes they master the molding of space, and a few can learn to manipulate the magic flow of light (while others learn to manipulate the magic flow of money)."

Moore, Pg. 88

The General and The Specific

Charles Moore discusses two distinct ideas of solutions within architecture. The first is the General Solution taken by those he calls "form givers"

"The general solution, whether curvily sculptural or puritanically cubed, is the diagram of an independent idea, conceived in isolation;"

Moore, Pg. 91

The second type of solution which is more are specific to the site

"The specific solution starts with a place, makes it habitable, and enhances the qualities of the specific place by making it responsive to the needs of the people who use it (in all those ways we find so difficult to communicate)."

Moore, Pg. 91

The problem with these solutions is they tend to be something is too general or too specific. In order to work towards a solution he states, "We are in urgent need of understanding places before we lose them, of learning how to see them and to take possession of them." (Moore, Pg. 91) This became the topic of the paper towards making places in which he separates out the portions of places that we have control over and need to grasp or perhaps re grasp.

The Frame

This section of Towards Making Places discusses something of important note within the research of this thesis as well as in architectural practice. The Frame discussed is actually more about the frame of mind and the frame of the project to which one takes sensibilities towards. Moore calls for sensitivity not just to the architects goal of abstraction of process or even the single user but these as well as to his neighbor and more importantly within nature itself. To take note of these details of mans existence and his context in order to create an inside we must not forget the outside less we fall short of whats within our control to create, good architecture.

The Search for Order

Architecture must search for the harmony between the natural and human environments to create a sense of order. This order provides the sense of place.

"When we are at a place, we know it. If our image or perception of a specific environmental order is confused or unclear then there is no place. We don't know when we are there; we don't know where we are. Organic synthesis, human possession have not occurred. Our lives are increasingly spent in just such meaningless environments. Mechanically contrived "order" is substituted for environmental synthesis and becomes our reality. Immobility replaces action"

Moore, Pg. 99



Fig.68

Boundaries

On the topic of boundaries Moore discusses the traditional way of making places out of landmarks and notes that this can still be a powerful way to make place. Yet he notes more importantly the demarcation of edge. The notion of a boundary upon which one can distinguish a "there" is more connected to the everyday life than the distinguishing of a monument far away.

"A sense of place might conceivably exist independent of such traditional ordering devices as processional axes, boundaries, and landmarks; but basic to it is the division of inside from outside."

Moore, Pg. 93



Fig.69

Inside and Outside

"Once the architect has established inside, it's his responsibility and right to select and screen the view out. It is, indeed, one of the advantages of being inside—being in is being selective."

Moore, Pg. 94

The idea of being "inside" is based off the idea of knowing where you are. The location you are at is inside everything else is the outside. The only way to know you are somewhere is to make the distinction that it is different from elsewhere. That is why places like the Court of the Lions make users have a distinction of inside the court and outside the court is inside the building.



Fig.70

Participation

"Most importantly, we must "let in" the user," the person who uses the architect's clues to establish a world for himself."

Moore, Pg. 97

The user must be allowed into the process. They dwell within the creations that are formed usually of abstractions of spacial possibilities while the user intertwines within the natural order of use. The image of the Bernares is an example. To the architect the steps are a simple drawing while to the people it is where they bath, pray, wash, travel, sleep. It is where they dwell.

The Symbolic Function

"Significant buildings evolve from human intercourse and action, and can even evoke them, but if the form derives from some arbitrary, formalist code of aesthetics, out of contact with the client, then it can slowly strangle life."
Moore, Pg. 102

Symbolic ideas often have little effect with actual life other than to hold a meaning lost on those who are out of the loop. The same goes with architecture. A grand scheme of rules or thought based decisions will always be lost on person who has to clean the floor, or the person visiting for a job interview.

A Need for Testing (Feedback Loop)

Moore is one of the first to discuss the idea of a feedback loop of understanding the results of architecture and bringing them back into practice and focusing on the inhabitants response to the architecture. He calls for an, "integration of architectural methods with the work of both behavioral and social sciences and the natural environmental sciences." He calls for this because the trend at that time and is still a trend today is to judge a piece of architecture by pictures of it or the drawings rather than how inhabitants react to it.

"The system of experiences, spatial and temporal order created by architecture, is dynamic and open-ended. Architecture becomes relevant and real only as it involves its users, imparts meaning to their experiences and elicits response. The reality of architecture is the process of interaction between place and inhabitant. This essential reality is most often ignored in current practice with the current test of successful architecture seems to be the number of pages of architectural garnish garnered in the trade press."
Moore, Pg. 99

An Economic Standard

"The economic standard of objective performance does not absolve us from a professional and individual responsibility of determining what our objectives and values should be. To forfeit our right to influence these decisions is professionally irresponsible."
Moore, Pg. 101

The idea of choosing material resources to match a budget and design standard is often confused with cheapness. An architect must be willing to work within the economic means while upholding a standard value of design objectives in order to not lose the intent of the architecture. Keeping this as a standard will benefit not just the client but the community as a whole.

Dispelling the Mystique

In order to begin to solve a problem with architecture one must start by understanding people and the way they use the space rather than the cost per square foot. The users should be the generators use and activity should be the chief push of design. Moore asks us to wipe from the vocabulary phrases like,"expression", "enrichment," "rhythm," "personal style." He asks this in order to dispel the preconceived notion that these things will create the "art" and "wonder of creation" rather, *"it depends on one's talents and one's logic and one's courage."* (Moore, Pg. 104)

Our Obligation

The obligation of which Moore speaks is to make everyday people that are not architects. He asks that architects make places that are real to him and that he will feel he is a part of rather than come up with an artistic mystique create a place that grow according to his need. This is a call to the bring back focus to the everyday life use of architecture.

There are 3 important things this thesis takes from Charles Moore's work. The frame of mind to include the sensibilities of not just the individual but the context as well. The idea of a feedback loop to improve design. The obligation to bring the focus of architecture on the user and away from thought based rules.

04.1.6

NORBERG SCHULZ

A Phenomenology of Architecture



Fig.71

Norberg Schulz followed Heidegger thoughts in his work *Genius Loci Towards a Phenomenology of Architecture* in which he *brought forth the idea of phenomenology of Architecture* in the architectural discipline as more than just a location. This book helped frame architects towards post modernism.

Understanding Places

In *Genius Loci Towards a Phenomenology of Architecture* Schulz discusses the idea of scientific analysis versus objective knowledge when discussing places.

"Being qualitative totalities of a complex nature, places cannot be described by means of analytic, "scientific" concepts. As a matter of principle science "abstracts" from the given to arrive at neutral, "objective" knowledge. What is lost, however, is the everyday life-world, which ought to be the real concern of man in general and planners and architects in particular. Fortunately a way out of the impasse exists, that is, the method known as phenomenology." Schulz, Pg.8

Schulz is stating two important things here first looking for scientific data or quantitative data for understanding place always loses the objective knowledge or qualitative understanding of a place. The second thing he discusses is that the everyday life-world should be the focus of architecture.

Identification and Orientation

Amongst his exploration he discusses the idea of identification and orientation of mans being in the world. Schulz talks namely about the alienation of the individual that comes from the lack of focus on the identification portion of places and more on the practical notions of how to orient people within the fabric around them.



Fig.72

"Identification and orientation are primary aspects of mans being-in-the-world. Whereas identification is the basis for mans sense of belonging, orientation is the function which enables him to be that homo viator, which is part of his nature. It is characteristic for modern man that for a long time he gave the role as a wanderer the pride of place. Today we start to realize that true freedom presupposes belonging, and that "dwelling" means belonging to a concrete place."

Schulz, Pg.21

The idea of orientation is quite easy to grasp yet the idea of identification is more of an abstract concept with many layers to it.

"In our context "identification" means to become "friends" with a particular environment....It implies that the environment is experienced as meaningful.... every character consists in a correspondence between outer and inner world, and between body and psyche"

Schulz, Pg.21

The idea of identification is closely related to the way in which people understand themselves as well as the world around them. This is what leads to people feeling they belong to a location and it is a part of them. Take the concept of saying I am a New Yorker this is completely related to the concept of New York as a Place and the schemata that the person has formed with New York defining themselves. Identification is not just a quality of perception but a product of the minds understanding of its existence and the context its within.

Character of Place

In the book Genius Loci Schulz states, "A PLACE is therefore a qualitative, "total" phenomenon, which we cannot reduce to any of its properties, such as spatial relationships, without losing its concrete nature out of sight." *Schulz, Pg.8* In his writings he discusses the character of place often but certain themes run through the book.

Atmosphere

Light

Time

Boundaries

Things

Norberg Schulz ultimately gives architecture an idea of the elements of Place and the ways in which traditional architecture has created Places based off of these elements. He **ultimately calls for a focus on the life-world and the usage of phenomena to create place in order to create something meaningful and of value.**

04.1.7

MICHEAL BENEDIKT

Call for New Theory



Fig.73

Micheal Benedikt is an Architect and Director of the Center for American Architecture and Design. He has written hundreds of articles and published five books as well as being a practicing architect.

Field of Interest

Benedikt is interested in the correlation between architecture and human activity/life. He has more recently explored the correlation of personification of buildings and their connection to each other as a personification of human connection.

For most of his career he has primarily focused on the idea of vision as connection of man and architecture. The correlation between what is seen, understood, experienced, felt, or otherwise connected with people and architecture. In order to explore this he coined the idea of isovists in order to explore human sight line of view with-in and out of architectural space.

The Problem with Modernist Thoughts

In his writings of *Less For Less Yet* he discusses the idea of computerization being brought forth in practice from the idea of production and this harming architecture as it takes focus away from experience and the things that matter to people. The biggest driving force behind the production force in architecture he states is Modernist ideals that have actually caused more harm than good.

"that integrity and honesty of expression is a virtue; that form follows function; that simplicity is beautiful; that cheap doesn't necessarily mean bad or ugly; that creativity is the architect's chief gift to society; that indoors and outdoors should be melded; that shaping or manipulating space is the essence of what architects do; that the grid is rational; that the world is "speeding up" and architecture should/ must follow (corollary: that advances in technology offer possibilities for architecture that should not be passed up); that together with our consultants we understand completely what a building is and does." Benedikt, Pg. 1

Towards Production

Those ideals wound up pushing architecture towards production based thoughts as a means to increase the efficiency of output rather than quality. Benedikt goes as far as to denote the phrase, Form Follows Function as only a means to make things efficient,

"Form follows function. Functionalism was a poison pill, swallowed first by well meaning architectural writers drawing (mistakenly) on the "design" intentions of nature (which is, in fact, profligately rococo); second by ambitious architects with an eye to getting more work from businessmen using social Darwinism ("survival of the fittest") as an operating principle; and third by ordinary persons, who hardly needed convincing that Progress depended upon the power of machines to be ruthlessly focused in purpose." Benedikt, Pg. 3

This push towards production in Benedikt's view has caused a lack of value in architecture and the national will towards creating good architecture has lapsed as there are few places they place value in. Production ultimately led to Computerization which in his mind has done little to nothing for architects yet offered those interested in the economic means exactly what they wanted.

"To their credit, the architects mentioned above use the computer to permit greater complexity of form and depth of design exploration as well as to attempt greater precision and ambition in construction. But the computer is not being used so skillfully by the majority of architects responsible for what you see on the drive to the mall."

Benedikt, Pg. 4

What Is Lost

What has been lost in this push is the sensibility towards and control of the things that give architecture value, the phenomena. Architects have relinquished most of the traditional means of control to engineers and others who lack the understanding of the Phenomena created from Architecture.

"Architecture has discarded in the wholesale handing over of everything remotely scientific and quantitative to consulting engineers. Acoustics, light, lighting, air quality and air movement, heating, cooling"

Benedikt, Pg. 6

What are the Phenomena

These are the elements of control in which create phenomena in architecture. *"These phenomena were once the chief source of architecture's value and were attended to "automatically," with, as it were, the DNA of traditional models. Today few architects know about such things."* (Benedikt, Pg. 6) The loss of understanding and control has directly correlated with the loss of what Benedikt coins as joy-in-inhabitation.

Joy-In-Inhabitation

"The complex and delicate experience of joy-in-inhabitation, to which we all have a right, comes from a thousand subtleties of position and color and view"

Benedikt, Pg. 4

These thousand subtleties discussed directly relate to those discussed by Charles Moore, and Norberg Schulz when they discuss place. These are the things that characterize place and create a connection with the life-world. These items often attribute to the feelings of atmosphere, contentment, and understanding of self within place. In order to return these things Benedikt calls for a new theory of Architecture to bring back value and phenomena.

"Creating a body of architectural knowledge. creating an architectural sensibility, a realm of facts and insights that can support popular connoisseurship of the qualities of buildings equal to that devoted to the valuation of music, cars, and movies."

Benedikt, Pg. 7

In order to push forward efficiency architecture has looked towards the computerization of the design process and in turn has relinquished portions of the discipline in order to do less work more efficiently. This has caused a loss of quality in architecture that in turn created a loss of architecture being valued. This has become a cycle of downward spiraling of design focusing away from the everyday experience. In order to fix this **we need a new theory based on our legacy of thought in architecture. We need to bring back the phenomena of architecture** back under our control and **mix this with contemporary practice.**

02.1.8

PETER ZUMTHOR

Creating Atmosphere

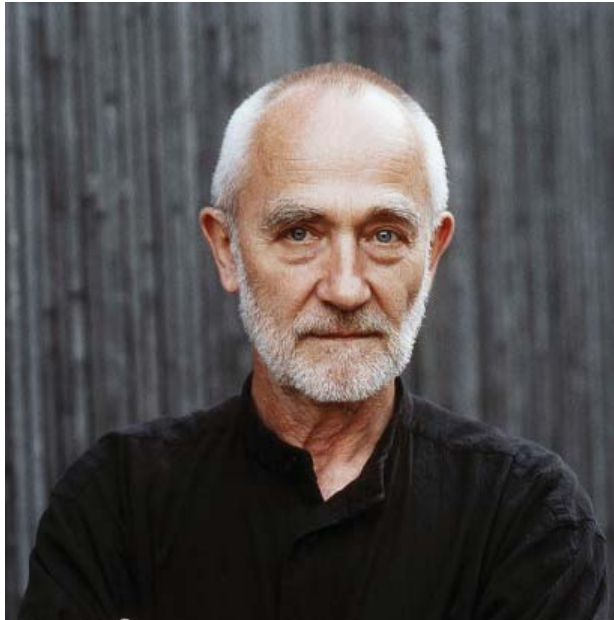


Fig.74

Zumthor is one of the most successful contemporary architects that work within the field of phenomenology. He works closely with material properties in order to create what he calls Atmosphere. This is closely related to what the other writers have discussed. He has also given a *Recipe for Atmosphere*.

Architectural Quality

"What do we mean when we speak of architectural quality? It is a question I have little difficulty in answering. Quality in Architecture does not - not to me anyway - mean inclusion in architectural guides or histories of architecture or getting my work into a publication. Quality in Architecture to me is when a building manages to move me. How do people design things with such a beautiful, natural presence, things that move me every single time? One word for it is Atmosphere."

Zumthor, Pg. 11

This quote is from Zumthor's book *Atmospheres*. It describes what he feels creates quality in architecture and it is easy to see the connection of what he is discussing as part of the phenomena, place, site, and experience that the previous authors and architects, explored in this thesis research, have been discussing. In this *Atmospheres* Zumthor explores the phenomenological question for himself of what makes atmosphere and moves him. Zumthor created a *Recipe* of the things he uses in practice to create the atmospheres he is so famous for.

The Body of Architecture

"The material presence of things in a piece of architecture, its frame. Architecture collects different things in the world, different materials, and combines them to create a space like this. Its like our own bodies with their anatomy and things we cant see and skin covering u. As a bodily mass, a membrane, a fabric, a kind of covering, cloth, velvet, silk, all around me. The body! Not the idea of the body - the body itself! A body that can touch me."

Zumthor, Pg. 21

The architecture here is personified as a body which correlates with the idea of architecture connecting and living with the individual. The architecture encompasses and interacts with the user more than just a frame for life it frames, contains, and changes with life.

Material Compatibility

"Materials react with one another and have their radiance, so that the material composition gives rise to something unique. Material is endless. There are a thousand different possibilities in one material alone."

Materials provide endless possibilities of combinations, together some can be aesthetic while others not so much. The architect must find those that work well together for the intended use as materials can change the atmosphere of space, we must have a sensibility and understanding of materials. Take the idea of roughness it can be used to create shadows, indicate where you do not want people to be, and even for intrigue. You can also use smoothness to indicate where you want people to be as it would feel better in contrast to another material thus they prefer to sit where its smoother. These are the sensibilities one must understand and control.

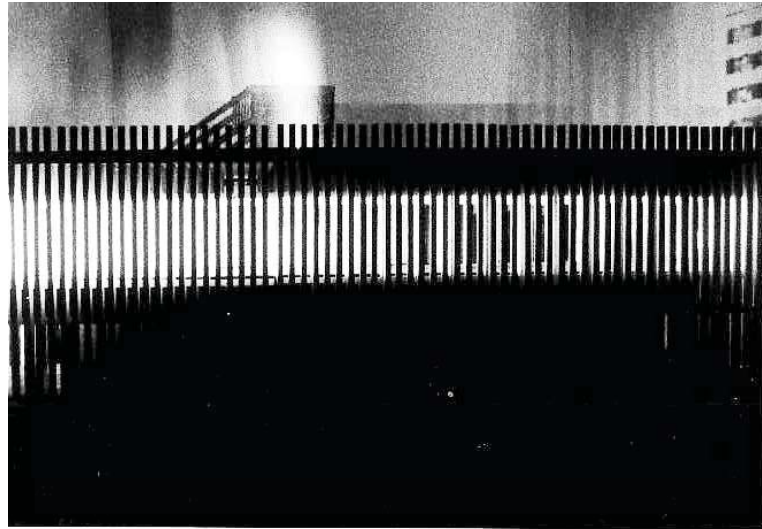


Fig.75



Fig.76

The Sound of Space

"interiors are like large instruments, collecting sound, amplifying it, transmitting it somewhere else." Zumthor, Pg. 29

This observation is quite undervalued in my opinion. Buildings and rooms each have their unique sounds. These sounds are created by things, people, air, and even the building itself. The feeling and understanding of a space is highly dependent upon the sound of it. Imagine if you will a cafe bustling with people the sound of the people create the environment and help you feel as if you are somewhere within the whole. If you took away the sound the feeling is no longer the same. Architecture itself houses things that make sound and the sounds will change the space. It takes mastery over building to accomplish but materials and spatial volume itself has a sound when no one else is there and this can affect users. If it is too quite one becomes self conscious, if it is too noisy from mechanical systems one gets distracted and perhaps annoyed.

The Temperature of Space

"Temperature in this sense is physical, but presumably psychological too. It's in what I see, what I feel, what I touch, even with my feet." Zumthor, Pg. 33

Humans have a unique disposition of imagination and memory recollection when it comes to temperature. Certain materials are associated to use with certain temperatures. For instance, wood feels warm, it is alive, and steel feels cold as it is metallic and desolate. These feelings or dispositions towards a material are based off our memory and association. We experience and then attribute temperature to what we see. It is something we perceive not just with our bodies but with our minds as well. Good architecture should take advantage of these to attribute the temperature of space for life-world use.



Fig.78



Fig.79

Surrounding Objects

"I am impressed by the things that people keep around them. The idea of things that have nothing to do with me as an architect taking their place in a building, their rightful place - its a thought that gives me an insight into the future of my buildings: a future that happens without me."
Zumthor, Pg. 35

Architecture house the activities of people as well as their belongings. The things people own, the objects, are also housed within, they are given a place they belong and are used. The amount of objects and type can dramatically change the space. I find myself thinking of this as aggregation of space as the more things one has the more it changes the space. An architect must keep in mind the objects the user will house in order to make a the space whole as the objects will have value for the owners, they will not easily relinquish things.

Between Composure and Seduction

"Architecture is a spatial art, as people always say, hospital corridors are about directing people, but there is also the gentler art of seduction, of getting people to let go, to saunter, and that lies within the powers of an architect. The ability I am speaking of is rather akin to designing a stage setting, directing a play."
Zumthor, Pg. 41

Architecture has the ability to direct people and the ability to cause people to saunter. The difference between the two is the intent. When creating architecture the way in which one creates space will cause subtle changes in how people use and move within. Seduction of spaces can cause attraction and on the other side a lack of uniqueness will lead to being lost. One must understand the subtleties of composure and seduction to conduct the play of



Fig.80



Fig.81

Tension Between Interior and Exterior

"Architecture takes a bit of the globe and constructs a tiny box of it creating, thresholds, crossings, the tiny loop-hole door, the almost imperceptible transition between the inside and the outside, an incredible sense of place, an unbelievable feeling of concentration when we suddenly become aware of being enclosed of something enveloping us, keeping us together holding us - whether we many or single."
Zumthor, Pg. 45

The facade of buildings have their own impression on the outside world about what is inside and what the owners and architect feels about others being let in. This facade creates a tension between what is out there and what is in here. The stance from the inside can directly oppose the outside each having their own unique feeling or they can be merged together it is all in the hands of the architect.

Levels of Intimacy

"It all has to do with proximity and distance" Zumthor, Pg. 49

The idea of intimacy begins with the feeling of distance and proximity between the architecture, user, and others or other places. One can feel intimacy in a wide open space with something as simple as a low roof and 4 columns and can also feel exposed within a small booth if exposed to everyone or on display. The level of intimacy always corresponds with the proximity of things and the distance to one self.



Fig.82

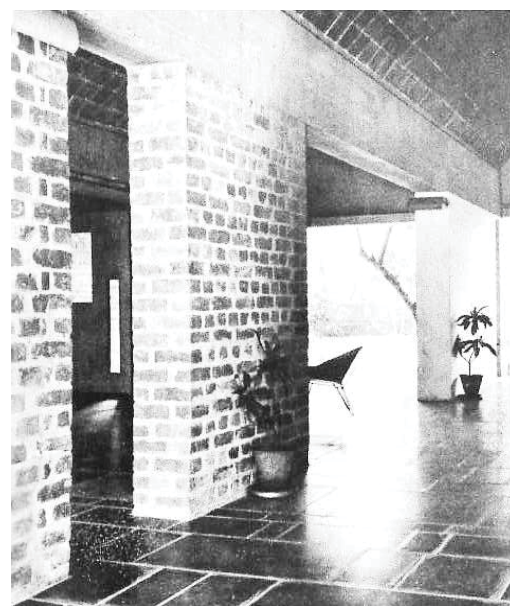


Fig.83

Light on things

"I have two favorite ideas about this; plan the building as a pure mass of shadow then, put light in as if you were hollowing out the darkness, as if the light were a new mass seeping in. The second idea I like is this; I go about lighting materials and surfaces systematically and to look at the way they reflect."

Zumthor, Pg. 59

Zumthor speaks of daylight with a fondness. He describes it as making him feel as if there is almost a spiritual quality to it, and justly so. Light has the ability to completely change the feeling of space so much so that studies have shown it even has an effect on the behavior of those that inhabit spaces with more daylight and less daylight. Few architects today understand light the way Zumthor does and it is my goal to try and pull some of the uniqueness of the quality of light he captures into this thesis.

Architecture as Surrounding

"That really appeals to me: the idea of creating a building, or big complex of buildings, or even a small one, and that it becomes part of its surroundings... What I am talking about is it becoming part of people's lives, a place where children grow up."

Zumthor, Pg. 63

Architecture, at least in America, of late has failed to live up to this idea of implementation with the surroundings. Buildings converse with each other and to those that use them. For architecture to be successful it must connect between them in a way where they do become a part of people lives a place that is used and enjoyed, otherwise it is useless building, a failed shell

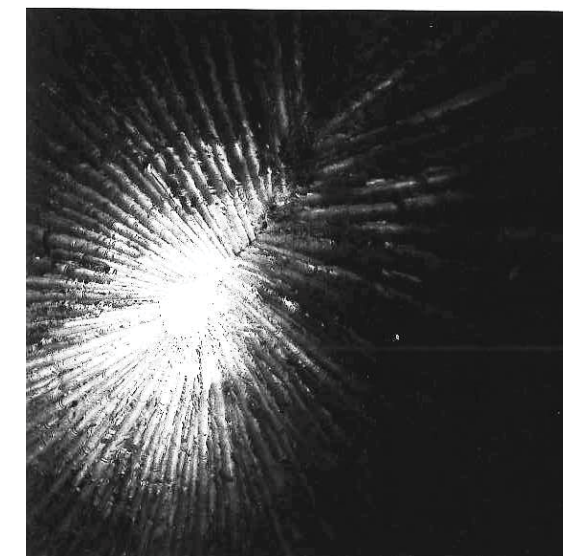


Fig.84

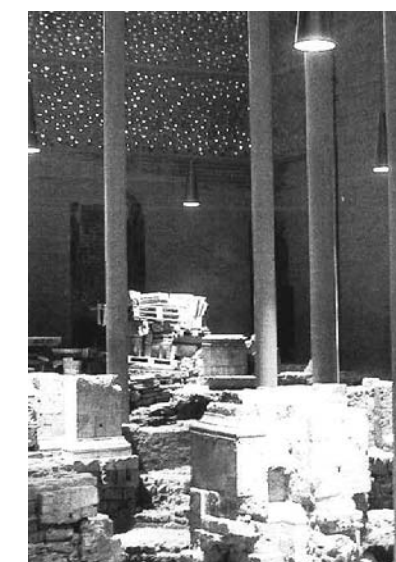


Fig.85

Coherence

"I think Architecture attains its highest quality as an applied art, and it is at its most beautiful when things have come into their own, when they are coherent. That is when everything refers to everything else and it is impossible to remove a single thing without destroying the whole place. Place, use, and form. The form reflects the place, the place is just so, and the use reflects this and that."

Zumthor, Pg. 69

The idea of coherence is related to what Schulz discusses on place when he says nothing can be taken away without destroying it. It is at this point where things fit together and the architecture just works and is at a point where it is probably the best solution for the problem it tries to fix. In this sense coherence is more than just about the singular sight it is about its

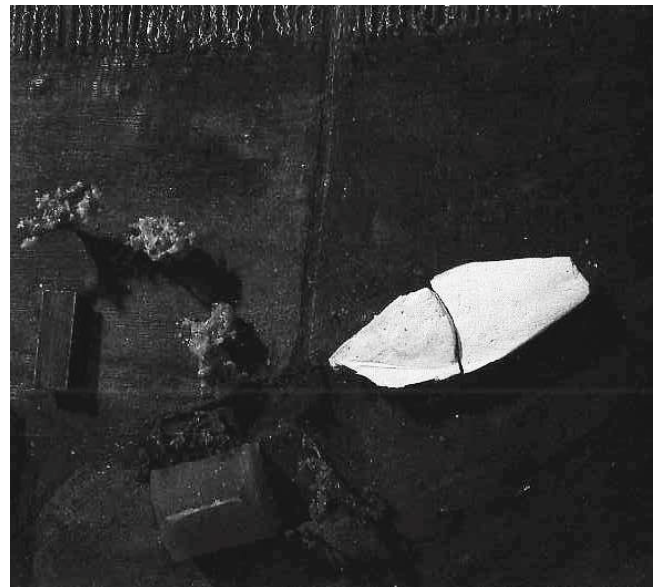


Fig.86

The Beautiful Form

"I may find it in some icon, and sometimes in a still life - both help me to see how something has found its form - but also in a common or garden tool, in literature, in a piece of music. At the end of the day, the thing does not look beautiful, if the form doesn't move me, then I'll go back to the beginning and start again."

Zumthor, Pg. 71

Things sometimes move us, they resonate with a part of us, this can be explored as a resonance with memory but it always becomes a thing of value to a person. Architects should aim to create that which moves people to provide a greater value for life, this moves towards a more moral coherent built environment.



Fig.87

Peter Zumthor has a grasp on architecture to the point where he is able to create spaces that resonate with people and provide extra value in their lives. This is very difficult to accomplish and is what really has been missing in the broad sense of architecture. All of the previous research has shown several of the elements mentioned by Zumthor and discussed ways to bring these back into practice. If we look back to 1978 however all of the things we have looked at thus far were eluded to or directly talked about in Christopher Alexander's A Pattern Language. It was a missed opportunity within the discourse that can be used as an artifact of documented primary design steps to learn from and explore.

Yet, there is one more thing we must do before we can use Pattern Language. We must determine the reason and context of the writing of A Pattern Language.

04.2 CHRISTOPHER ALEXANDER

Pattern Language



Fig.88

Alexander is a widely known influential architect and design theorist. His work focuses on the nature of human-centered design. His most famous contribution to the highly contested design theory is his book *A Pattern Language*.

The Series

Pattern Language was part of a series of books that were meant to serve as a new method and theory of architecture. If we look closely at the predecessor of *Pattern Language*, *The Timeless Way* we can get both an overarching understanding of the methodology behind *Pattern Language* and its intended use. In this book, the base reasoning of *Pattern Language* was in search of what Alexander coined, "The Quality Without A Name."

This quality is closely related to what theorists were discussing as the elements of place, capturing the mind, body, and spirit in design, and the focus of architecture being on the use of space. To understand this connection lets start with understanding what is brought forth in *The Timeless Way* as the initial thought process behind what this quality is, to tease out the connection between this work and what theorists have been discussing and calling for as a solution to the problem within architecture.

The Interest and Problem

"I have am interested in creating living architecture, cities, towns, streets, gardens. For the most part of the last 50 years or so or at least since WWII has virtually no ability to produce that kind of living structure in the world. As inhabitants, in our daily life, the living structure which is meant to substance us and nurture us, which did exist in traditional society and rural communities has disappeared drastically."
Alexander, 1996

This quote comes from a lecture rather than the *The Timeless Way* but it drives home an initial connection that we can relate to the other theorists, authors, and architects we have discussed. This is part of the initial idea that ultimately resulted in *Pattern Language*. Alexander was interested in these spaces primarily because he believed that certain things in architecture were disappearing and that the current architects were not able to currently provide these elements.

Architects could not provide these things and this resulted in what he calls.. *"a problem every man, woman, and child, has to live."* (Alexander, 1996) This problem stems from the lack of these elements and the primary driving force behind his creation of *The Timeless Way* and *Pattern Language* came from him trying to, *"get a handle of the physical structures that might make the built environment nurturing"* and, *"...to do this in a way that allowed it to happen on a large scale,"* (Alexander, 1996)

Method of Change

Alexander started his attempt to get a handle on these structures by creating something that Charles Moore and Benedict called for - a new theory of architecture. In this new theory he proposed a system in which to implement change within the discourse .

1. Build A Gate- A new method which establishes the beginning understand and processes in which one can bring these elements forth to understand them once again.
2. The Way - Practice the method in order to start creating change and bringing forth this Quality Without A Name back into architecture.
3. The Kernel - Leave the Gate behind once we are practicing The Way we no longer need the processes of the gate.

To build this Gate, the first thing needed was something that Benedict asks for. *"Take survey of what architects have given up in the pursuit of production-the phenomena that were once the chief source of architectures value"* (Benedikt, Pg.7) What Alexander says is missing is the Quality Without A Name.

The Quality - What Is It

"There is a central quality which is the root criterion of life and spirit in a man, a town, a building, or a wilderness. This quality is objective and precise, but it cannot be named."

"We have been taught that there is no objective difference between good buildings and bad, good towns and bad. The fact is that the difference between a good building and a bad building, between a good town and a bad town, is an objective matter. It is the difference between health and sickness, wholeness and dividedness, self-maintenance and self-destruction. In a world which is healthy, whole, alive, and self-maintaining, people themselves can be alive and self-creating. In a world which is unwhole and self-destroying, people cannot be alive: they will inevitably themselves be self-destroying, and miserable. But it is easy to understand why people believe so firmly that there is no single, solid basis for the difference between good building and bad. It happens because the single central quality which makes the difference cannot be named."

Alexander, Pg. 25

To break down what this Quality Without A Name is, he used a form of Phenomenology in which he broke down what the essence of that element was. His approach to this was within eidetic reduction. He started by breaking down what this quality was within language to portray this illusive element to others and to define it for himself. We can see a similar process within Heidegger defining of Dwelling and in fact see similarity to what Heidegger calls dwelling to the quality without a name.

Understanding The Quality Through Language

The following are excerpts from The Timeless Way that discuss what this quality is through language.

"The word which we most often use to talk about the quality without a name is the word "alive." *Alexander, Pg. 29*

"There is a sense in which the distinction between something alive and something lifeless is much more general, and far more profound, than the distinction between living things and nonliving things, or between life and death. Things which are living may be lifeless; nonliving things may be alive. A man who is walking and talking can be alive; or he can be lifeless."

Another word we often use to talk about the quality without a name is "whole." *Alexander, Pg. 30*

A thing is whole according to how free it is of inner contradictions. When it is at war with itself, and gives rise to forces which act to tear it down, it is unwhole. The more free it is of its own inner contradictions, the more whole and healthy and wholehearted it becomes.

But the word "whole" is too enclosed. *Alexander, Pg. 31*

"The word carries a subtle hint of self-containment. And self-containment always undermines the quality which has no name. For this reason, the word "whole" can never perfectly describe this quality."

Another facet of the quality which has no name is caught by the word "comfortable." *Alexander, Pg. 32*

"The word "comfortable" is more profound than people usually realize. The mystery of genuine comfort goes far beyond the simple idea that the word first seems to mean. Places, which are comfortable are comfortable because they have no inner contradictions, because there is no little restlessness disturbing them."

Yet the word "comfortable" is easy to misuse, and has too many other meanings. *Alexander, Pg. 33*

"There are kinds of comfort which stultify and deaden too. It is too easy to use the word for situations which have no life in them because they are too sheltered."

A word which overcomes the lack of openness in the words "whole" and "comfortable," is the word "free." *Alexander, Pg. 33*

The quality without a name is never calculated, never perfect; that subtle balance of forces only happens when the ideas and images are left behind; and created with abandon.

And yet, of course, this freedom can be too theatrical: a pose, a form, a manner. *Alexander, Pg. 34*

A building which has a "free" form—a shape without roots in the forces or materials it is made of—is like a man whose gestures have no roots in his own nature. Its shape is borrowed, artificial, forced, contrived, made to copy outside images, not generated by the forces inside. That kind of so-called freedom is opposite to the quality which has no name.

A word which helps restore the balance is the word "exact." *Alexander, Pg. 34*

The word "exact" helps to counterbalance the impression of other words like "comfortable" and "free." These words suggest that the quality without a name is somehow inexact. And it is true that it is loose and fluid and relaxed. But it is never inexact. The forces in a situation are real forces. There is no getting round them. If the adaptation to the forces is not perfectly exact, there can be no comfort, and no freedom, because the small forces which have been left out will always work to make the system fail.

A word which goes much deeper than the word "exact" is "egoless."

Alexander, Pg. 36

When a place is lifeless or unreal, there is almost always a mastermind behind it. It is so filled with the will of its maker that there is no room for its own nature. Think, by contrast, of the decoration on an old bench -small hearts carved in it; simple holes, cut out while it was being put together these can be egoless. They are not carved according to some plan. They are carefree, carved into it, wherever there seems to be a gap. It is not in the least contrived; there is no effort in the decoration; it does not seek to express the personality of the man who carved it. It is so natural, that it almost seems as though the bench itself cried out for it: and the carver simply did what was required.

A last word which can help to catch the quality without a name is the word "eternal."

All things and people and places which have the quality without a name, reach in to the realm of the eternal. Some are eternal in almost a literal sense: they are so strong, so balanced, so strongly self-maintaining, that they are not easily disturbed, almost imperishable. Others reach the quality for no more than an instant, and then fall back into the lesser state, where inner contradictions rule. The word "eternal" describes them both. For the instant that they have this quality, they reach into the realm of eternal truth. At that moment when they are free from inner contradictions, they take their place among the order of things which stand outside of time.

Beginning Connections

When reading through this explanation of the Quality Without A Name we can start to make connections what some elements that theorists have been discussing. Firstly, we can see a slight connection between Heideggers way of thinking of Dwelling and Alexanders way of thinking of this so called Quality Without A Name. Both start their analysis within the Language and words themselves as way to describe. There is also a slight connection to be seen in that both use the word "free" in their analysis of the words of language to describe their individual ideas. We can also start to see the connection between what W.G. Clark discusses as humans wanting architecture to be a good thing and having feelings towards architecture when he discusses the words of Whole and Comfortable. These two elements deal with the connection between feeling good in the space and feeling that it has value. We can also see a connection between whole, comfortable, and free with Micheal Benedict's notion of Joy-in-inhabitation.

These connections are most interesting as we can see how these individuals are all working around the same ideas. The difference between the theorists we have discussed and Alexander is Alexander tried to actually put forth a new theory in which these elements are the foundation of changes the discourse.

Now we have an understanding that Alexander was trying to create a change within discourse, through Gate, Way, and Kernel in order to bring forth, this so called Quality Without A Name. Before he could create this new theory and method of change he had to define this Quality within buildings and how it relates to architectural design. So far he was defining the vague notions of which this Quality could be communicated through language. He began to connect the Quality Without A Name with Pattern Of Events.

Patterns Of Events

"Those of us who are concerned with buildings tend to forget too easily that all the life and soul of a place, all of our experiences there, depend not simply on the physical environment, but on the patterns of events which we experience there."
Alexander, Pg. 62

"A building or a town is given its character, essentially, by those events which keep on happening there most often."
Alexander, Pg. 66

"Indeed, a culture always defines its pattern of events by referring to the names of the physical elements of space which are "standard" in that culture. And the mere list of elements which are typical in a given town tells us the way of life of people there. This does not mean that space creates events, or that it causes them. It simply means that a pattern of events cannot be separated from the space where it occurs. And, in the same way, the patterns of events which govern life in buildings and in towns cannot be separated from the space where they occur. The life which happens in a building or a town is not merely anchored in the space but made up from the space itself."
Alexander, Pg. 71

The quotes above make a very strong connection between Alexander's work and W.G. Clark's idea of the mind, body, and spirit being captured in design. W. G. Clark related these elements to every project having a physical place, cultural place, and spiritual place. Alexander is discussing a similar and related idea that there are patterns of events within space that are related to the culture of a place. This space is also corresponded to a physical place with the buildings elements.

"These patterns of events are always interlocked with certain geometric patterns in the space. Indeed, as we shall see, each building and each town is ultimately made out of these patterns in the space, and out of nothing else: they are the atoms and the molecules from which a building or a town is made."
Alexander, Pg. 71

"The quality without a name in us, our liveliness, our thirst for life, depends directly on the patterns in the world, and the extent to which they have this quality themselves. Patterns which live, release this quality in us. But, they release this quality in us, essentially because they have it in themselves."
Alexander, Pg. 122

This idea of patterns of space and the connection to patterns of events in space became the foundation upon which Alexander defined what a pattern in architecture is. The book itself is a collection of these patterns that were found to be "ALIVE" within successful spaces.

05

PATTERNS BEING ALIVE

05.1 PATTERNS

Analyzing the Work

"A pattern language is a system which allows its users to create an infinite variety of those three dimensional combinations of patterns which we call buildings, gardens, towns. Each pattern is a rule which describes what you have to do to generate the entity which it defines."

Even though this is stated in *The Timeless Way*, most critiques of these patterns are they are meant to be strictly followed. This is mostly because of the outspokenness of the creator of the patterns in *Pattern Language* Christopher Alexander. If, we are going to look at *Pattern Language* as an artifact to learn from we must start to analysis the work itself apart from the creator within this instance as what is written and what the author has said verbally sometimes do not coincide. We want to form a better understanding through analysis. Our first step in this analysis is to get to the bottom of what a Pattern really is.

What are Patterns

"These patterns are expressed as rules of thumb. Everybody follows rules of thumb. Every person has a pattern language in his mind. Your own pattern language is the sum total of your knowledge of how to build. The pattern language in your mind is slightly different from the language in the next person's mind; no two are exactly alike; yet many patterns, and fragments of pattern languages, are also shared. When a person is faced with an act of design, what he does is governed entirely by the pattern language which he has in his mind at that moment. Of course, the pattern languages in each mind are evolving all the time, as each person's experience grows. But at the particular moment he has to make a design, he relies entirely on the pattern language he happens to have accumulated up until that moment. His act of design, whether humble, or gigantically complex, is governed entirely by the patterns he has in his mind at that moment, and his ability."

Alexander, Pg. 179

"At the moment when a person is faced with an act of design, he does not have time to think about it from scratch. Even when a person seems to "go back to the basic problem," he is still always combining patterns that are already in his mind."

Alexander, Pg. 203

These two quotes from *The Timeless Way* are part of the missed opportunity discussed in CH1. This is the idea of a feedback loop of experiential understanding. Every person has their own life and understanding. This means they have their own underlying rules of thumb in how they design. Our next step is to show this idea of patterns visually.

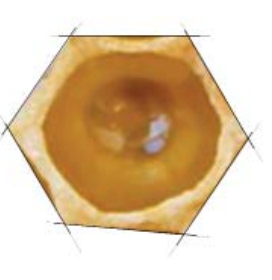
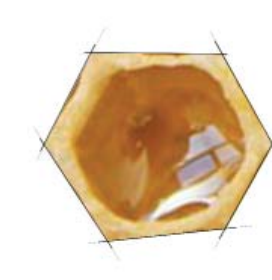
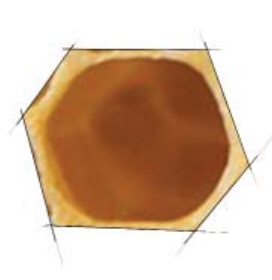
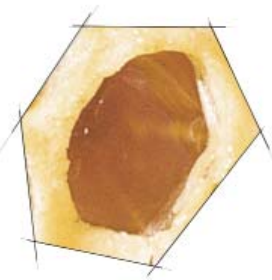
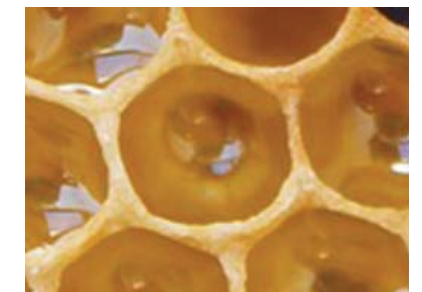
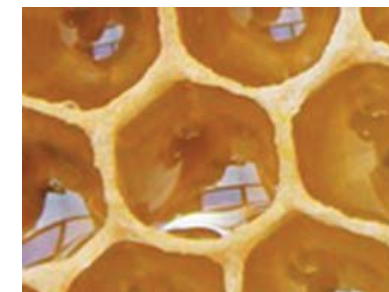
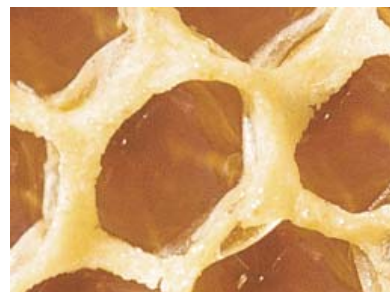
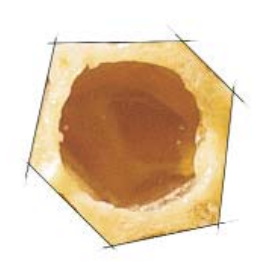
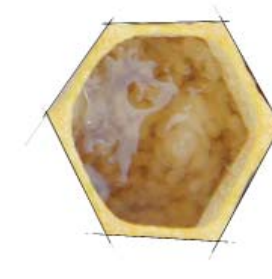
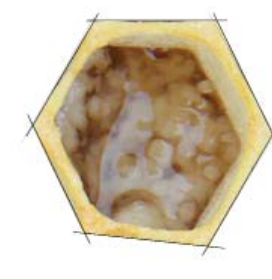
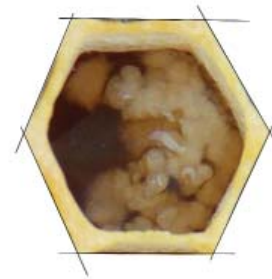
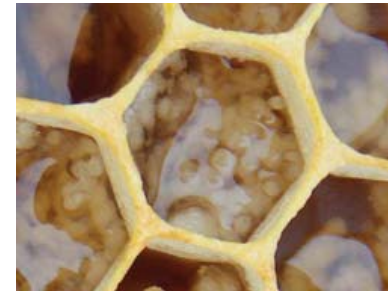
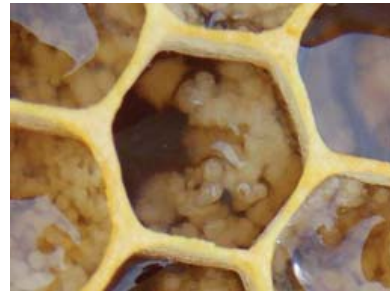
"Nature is never modular. Nature is full of almost similar units (waves, raindrops, blades of grass)-but though the units of one kind are all alike in their broad structure, no two are ever alike in detail.

1. The same broad features keep recurring over and over again.

2. In their detailed appearance these broad features are never twice the same."

Alexander, Pg. 144

We can see this within the basic pattern for honeycombs within a beehive is a hexagon but within this pattern there are millions of variations and the perfect geometric hexagon rarely if ever appears in nature. Thus the pattern has variations. We can describe this pattern as **a honeycomb should be in a hexagon shape and connected to another hexagon.**



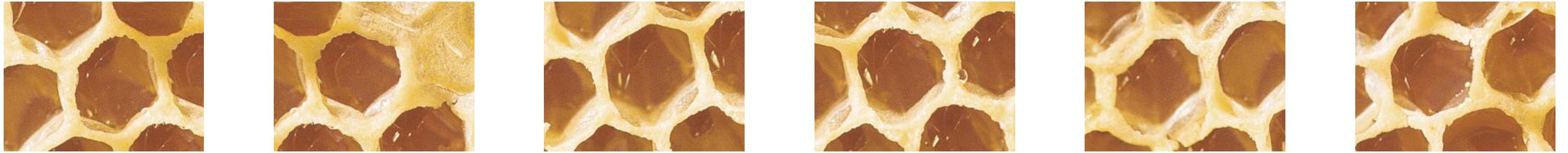


Fig.89



Fig.90



Patterns can also be more open such as the pattern for a cup.

Cups are containers in which we hold liquid to drink. The pattern is:

A object that is hollow, that hold liquids, and that humans can pick up with their hands to drink out of.

This pattern has millions of variations as during design their are subjective decisions by the designers that leads to the variations. These variations are in a multitude of different areas but lets look at just a few of the variations based off just material.

Glass



Wood



Plastic



Ceramic



"There are often cases where you may have a personal version of a pattern."

Alexander, Pg. 40



Fig.91



Fig.92



Fig.93



Fig.94

Closely Following Pattern



Rethinking Number of Legs

Patterns are meant to be rethought and adapted by individuals they are meant to evolve not stay stagnant.



A pattern that is closer to Architects would be the pattern for a Chair.

The pattern for a chair is simple but allows for endless variation:

Back
Seat
4 Legs

Besides just variation within the basic Pattern the Pattern itself can also be changed and questioned. To the right are examples of the variations that come from the pattern and how questioning the pattern itself leads to more variations.

Rethinking What Is Back and Seat



Rethinking What Is Leg Back and Seat





Fig.95



Rethinking Legs



Fig.96



Fig.97

Fig.98

The role of these Patterns or rules of thumb in Pattern Language are to create spaces that are alive.

Patterns being alive mean they have this Quality Without a Name. The reason they have it is they provide for human tendencies of use of space. The spaces that are alive have a connection with the mind, body, and spirit. The physical, cultural, and spiritual aspects. The spiritual is the resonance within a person where something has appealed to that person in a unique way. When this happens it can only be experienced by an individual or a group of people. This is seen in the way people react to photos of architecture. It is the architects job to provide this quality but how do we do

Alexander was under the impression that at the time of writing The Timeless Way and Pattern Language that architects could not create spaces of that are alive. I personally disagree with this statement but value the artifact he created

Alexander created the system of Pattern Language in order to create the framework in which architects can create spaces that are alive, being alive mean they have this quality. This is a new process of architecture he calls The Way.

Today, however, I would like to put forth that thanks to these new technologies Virtual Reality and Augmented Reality we have an opportunity to practice this so called "Way" organically through the design process.

05.2 5 ELEMENTS OF A CITY

Kevin Lynch's 5 Elements

To prove that we can implement these qualities and merge the qualitative and quantitative sides of architecture, we need to start making connections to what is changing within the design process itself once we add these extra senses into the mix. The difficulty comes when deciding which of the 252 patterns to start with.

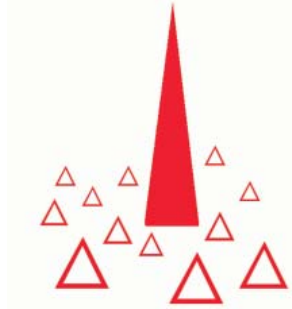
In order to narrow these down I looked towards Kevin Lynch (a prominent urban theorist whose work we still follow and read today) and his 5 Elements of A City to serve as a guide for breaking down the Urban Scale Patterns that follow what we still use today.



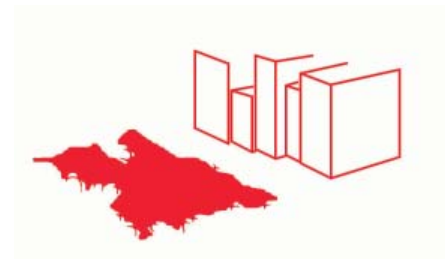
Path



Nodes



Landmark



Edge



District
Fig.99

In the following pages Kevin Lynch's 5 elements are cross referenced with the patterns within Pattern Language that deal with these 5 Elements within the Urban scale.

From this analysis, I recreated the base parameters of the patterns within the virtual environment and analyzed the new way in which decisions are able to be made upon the senses involved in the process of understanding these conditions.

PATH



Paths: routes along which people move throughout the city

PATTERNS

30

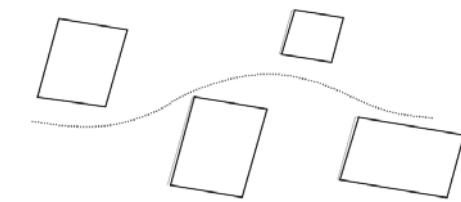
Activity Nodes

"Create nodes of activity through the community, spread about 300 yards apart. First identify those existing spots in the community where action seems to concentrate itself. Then modify the layout of the paths in community to bring as many of them through these spots as possible. This makes each spot function as a "node" in the path network. Then, at the center of each node, make a small public square, and surround it with a combination of community facilities and shops which are mutually supportive."

Alexander, pg. 166

120

Path and Goals



"To lay out paths, first place goals at natural points of interest. Then connect the goals to one another to form the paths. The paths may be straight, or gently curving between goals; their paving should swell around the goal. The goals should never be more than a few hundred feet apart."

Alexander, pg. 587

121

Path Shape

"Make a bulge in the middle of a public path, and make the ends narrower so that the path forms an enclosure which is a place to stay, not just a place to pass through."

Alexander, pg. 591

124

Activity Pockets

"Surround public gathering places with pockets of activity - small, partly enclosed areas at the edges, which jut out forward into the open space between the paths, and contain activities which make it natural for people to pause and get involved."

Alexander, pg. 601

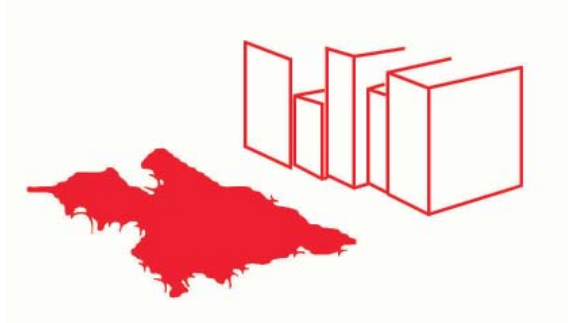
129

Arcades

"Wherever paths run along the edge of buildings, build arcades, and use the arcades, above all, to connect up the buildings to one another, so that a person can walk from place to place under the cover of the arcades."

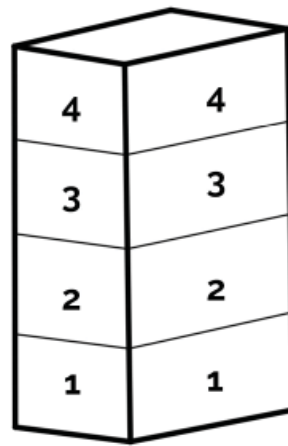
Alexander, pg. 583

EDGE



Edges: boundaries and breaks in continuity

PATTERNS



21

4 Story Height

"In any urban area, no matter how dense, keep the majority of buildings four stories high or less. It is possible that certain buildings should exceed this limit, but they should never be buildings for human habitation."

Alexander, pg. 119

32

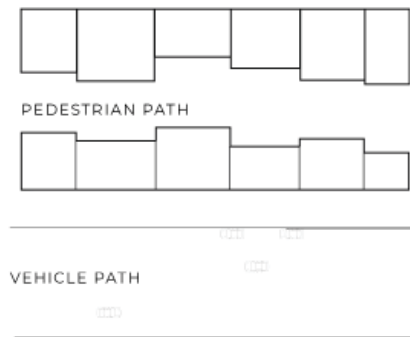
Shopping Street

"Encourage local shopping centers to grow in the form of short pedestrian streets, at right angles to major roads and opening off these roads- with parking behind the shops, so that the cars can pull directly off the road, and yet not harm the shopping street."

Alexander, pg. 177

38

Row Houses



"For row houses, place houses along pedestrian paths that run at right angles to local roads and parking lots, and give each house a long frontage and shallow depth."

Alexander, pg. 207

48

Housing In-Between

"Build houses into the fabric of shops, small industry, schools, public services, universities-all those parts of cities which draw people in during the day, but which tend to be "nonresidential." The houses may be in rows or "hills" with shops beneath, or they may be free-standing, so long as they mix with the other functions., and make the entire area "lived-in."

Alexander, pg. 258

129

Arcades

"Wherever paths run along the edge of buildings, build arcades, and use the arcades, above all, to connect up the buildings to one another, so that a person can walk from place to place under the cover of the arcades."

Alexander, pg. 583

DISTRICT



Fig.100

Districts: areas characterized by common characteristics

PATTERNS

8

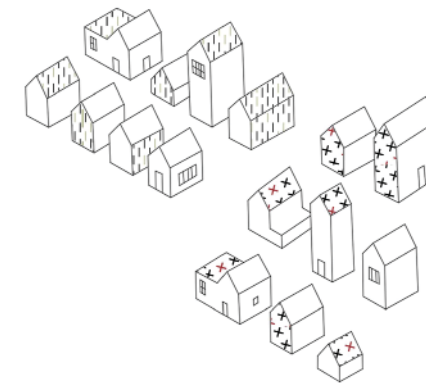
Mosaic of Subcultures

"Do everything possible to enrich the cultures and subcultures of the city, by breaking the city, as far as possible, into a vast mosaic of small and different subcultures, each with its own spatial territory, and each with the power to create its own distinct life style. Make sure that the subcultures are small enough, so that each person has access to the full variety of life styles in the subcultures near his own."

Alexander, pg. 50

14

Identifiable Neighborhood



"Help people to define the neighborhoods they live in not more than 300 yards across, with no more than 400 or 500 inhabitants. In existing cities, encourage local groups to organize themselves to form such neighborhoods. Give the neighborhoods some degree of autonomy as far as taxes and land control are concerned. Keep the major roads outside of these Neighborhoods."

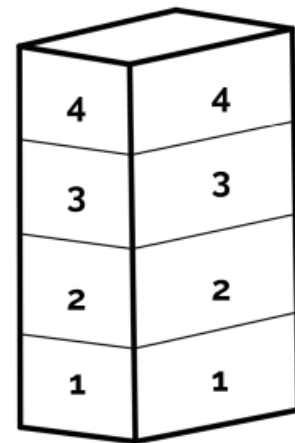
Alexander, pg. 84

15

Neighborhood Boundary

"Encourage the formation of a boundary around each neighborhood to separate it from the next door neighborhoods. Form this boundary by closing down streets and limiting access to the neighborhood - cut the normal number of streets at least in half. Place gateways at those points where the restricted access paths cross the boundary; and make the boundary zone wide enough to contain meeting places for the common functions shared by several neighborhoods."

Alexander, pg. 89



21

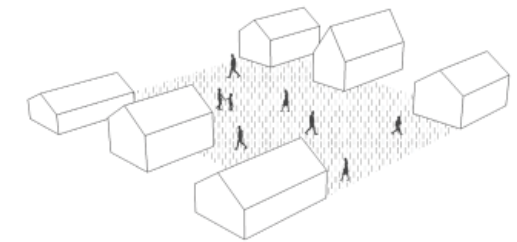
4 Story Height

"In any urban area, no matter how dense, keep the majority of buildings four stories high or less. It is possible that certain buildings should exceed this limit, but they should never be buildings for human habitation."

Alexander, pg. 119

37

Cluster Houses



"Arrange houses to form very rough, but identifiable clusters of 8 to 12 households around some common land and paths. Arrange the clusters so that anyone can walk through them, without feeling like a trespasser."

Alexander, pg. 202

NODES



Nodes: strategic focus points for orientation like squares and junctions.

PATTERNS

30

Activity Nodes

"Create nodes of activity through the community, spread about 300 yards apart. First identify those existing spots in the community where action seems to concentrate itself. Then modify the layout of the paths in community to bring as many of them through these spots as possible. This makes each spot function as a "node" in the path network. Then, at the center of each node, make a small public square, and surround it with a combination of community facilities and shops which are mutually supportive."

Alexander, pg. 166

121

Path Shape

"Make a bulge in the middle of a public path, and make the ends narrower so that the path forms an enclosure which is a place to stay, not just a place to pass through."

Alexander, pg. 591

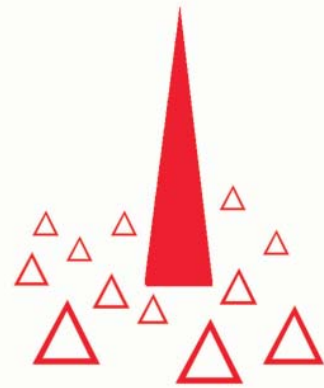
124

Activity Pockets

"Surround public gathering places with pockets of activity - small, partly enclosed areas at the edges, which jut out forward into the open space between the paths, and contain activities which make it natural for people to pause and get involved."

Alexander, pg. 601

LANDMARKS



Landmarks: external points of orientation, usually a easily identifiable physical object in the urban landscape.

PATTERNS

10

Magic of the City

"Put the magic of the city within reach of everyone in a metropolitan area. Do this by means of collective regional policies which restrict the growth of downtown areas so strongly that no one downtown can grow to serve more than 300,000 people. With this population base, the downtowns will be between two and nine miles apart."

Alexander, pg. 62

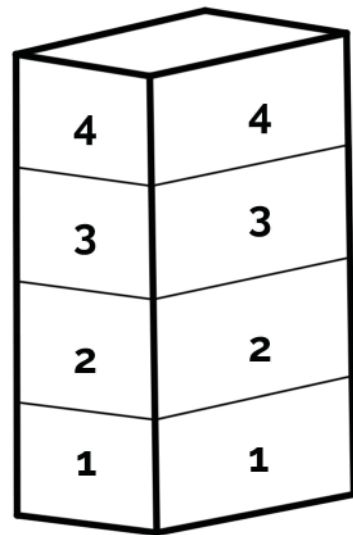
126

Something Roughly in the Middle

"Between the natural paths which cross a public square or courtyard or a piece of common land choose something to stand roughly in the middle: a fountain, a tree, a statue, a clock-tower with seats, a windmill, a bandstand, Make it something which gives a strong and steady pulse to the square, drawing people in towards the center. Leave it exactly where it falls between the paths; resist the impulse to put it exactly in the middle."

Alexander, pg. 607

05.2.1 BREAKDOWN OF BASE PATTERNS

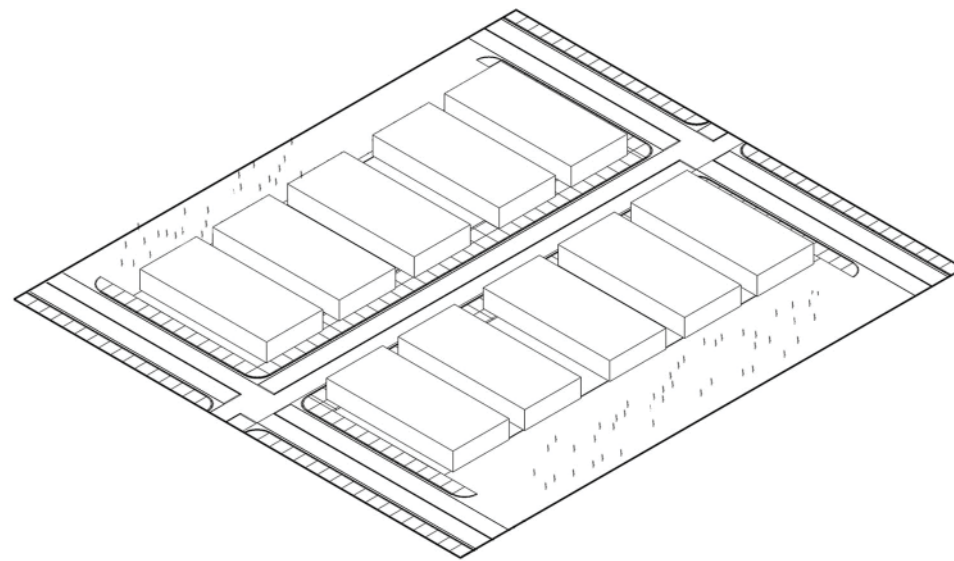


21

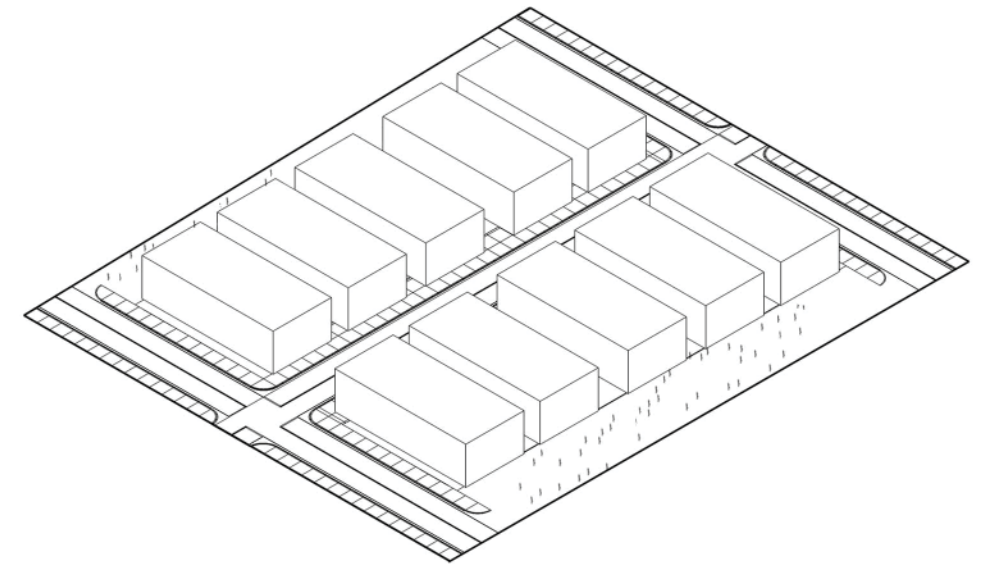
4 Story Height

"In any urban area, no matter how dense, keep the majority of buildings four stories high or less. It is possible that certain buildings should exceed this limit, but they should never be buildings for human habitation."

Alexander, pg. 119



1 Story Height



2 Story Height

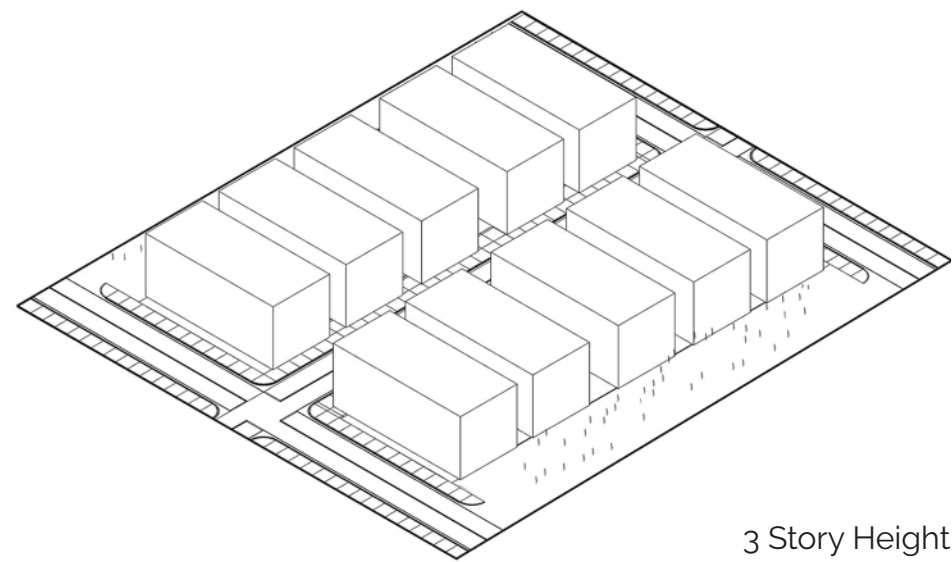
What do we experience within the Virtual Environment?



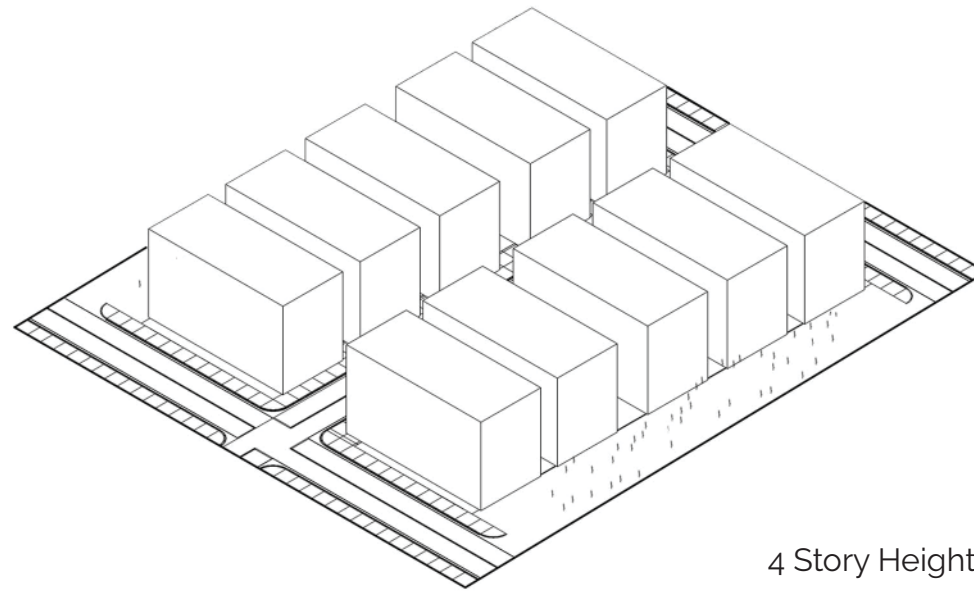
With this Pattern the visual the sense responds to building height by allowing the author to understand the presence and contextual relations at human scale immediately. The buildings shape and stance effects the space visually but also corresponds with the minds understanding of the space where the building "feels real". It has a physical presence to your perception meaning design decisions of height can correlate to the context based on experience rather than a number.



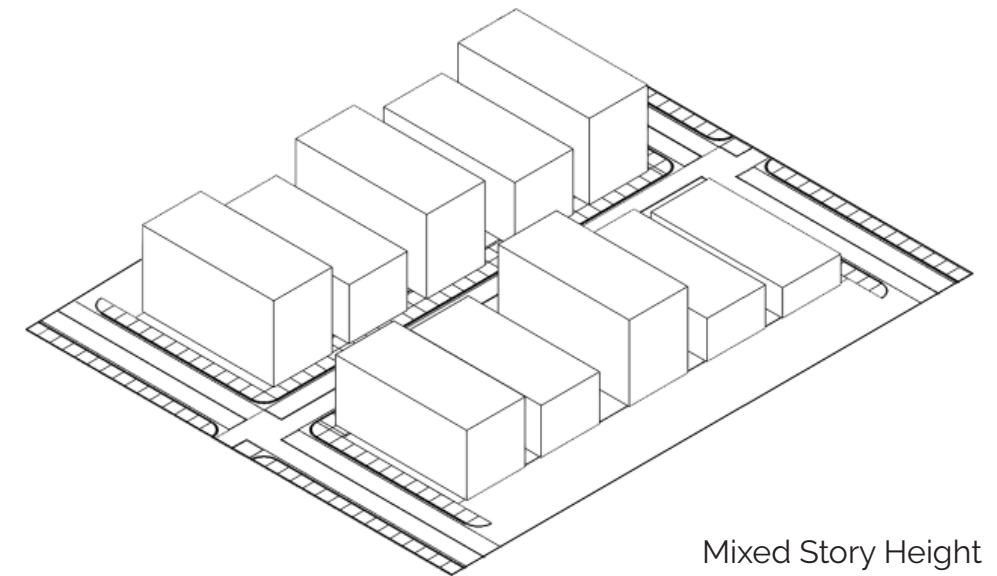
Hearing usually is not thought of when dealing with building height externally but rather internally for the occupants. If it is simulated with a virtual reality environment however it can reveal acoustic issues such as amplification of sound based off angles and sound sources. It also reveals new ways of thinking about navigating the space closer to reality by providing an extra sense to navigate by, building height dynamically changes the acoustics of the area depending on context.



3 Story Height



4 Story Height



Mixed Story Height



Building height does not really correspond with vestibular sensing traditionally. The height of the elements on the street scape and being able to measure with your body for height relationships however provides new ways of thinking of street connection to building height relationships within a Virtual Environment. For instance, two story buildings and the ground level can be seen as an interaction opportunity while at three stories the connection is almost entirely visual and one sided. These are now able to be immediately tested and understood.



When dealing with proprioception and height we have another contextual testing method upon which we can determine how it feels to be standing at the edge of the building. How high is too high for a balcony? How does it feel moving by a building that is 1 story vs 4? One story buildings reveal more sky and are open while four story buildings presence press down on you. The dynamic completely changes when moving past a building however and this is what changes in the Virtual Environment.



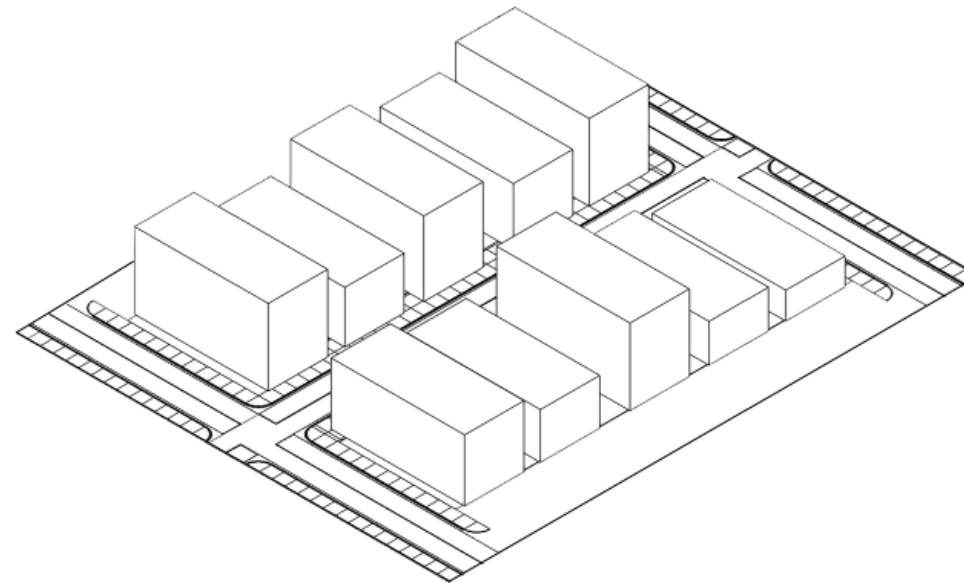
Touch feedback is still under development and may not necessarily correspond with building height.

38

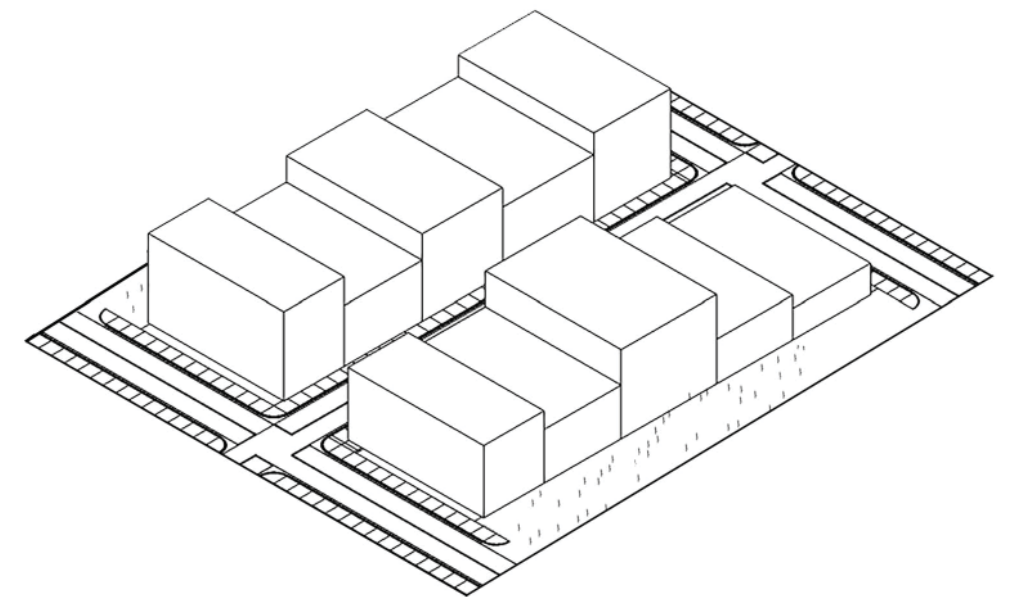
Row Houses

"For row houses, place houses along pedestrian paths that run at right angles to local roads and parking lots, and give each house a long frontage and shallow depth."

Alexander, pg. 207



Mixed Height



Connected Rows

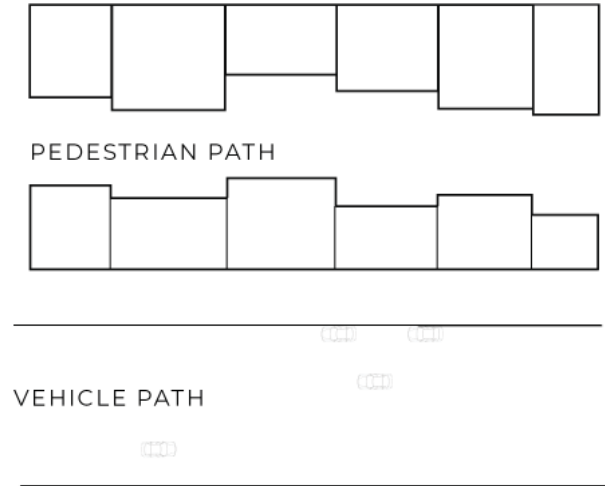
What do we experience within the Virtual Environment?



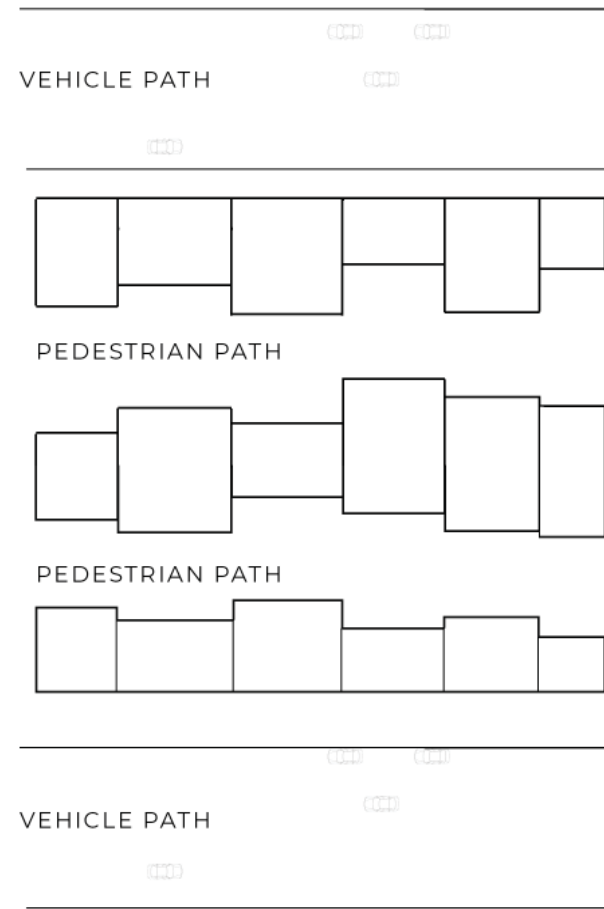
Row Houses visually create a large presence and edge condition that frame pathways in which pedestrians are to navigate. Visually the Virtual Environment reveals connections based on the context between buildings and program based on human movement. If you view from this location going this way can you see X? What about Y? This can be tested and responded to rather than a local focus a larger context is opened up to really deal with.



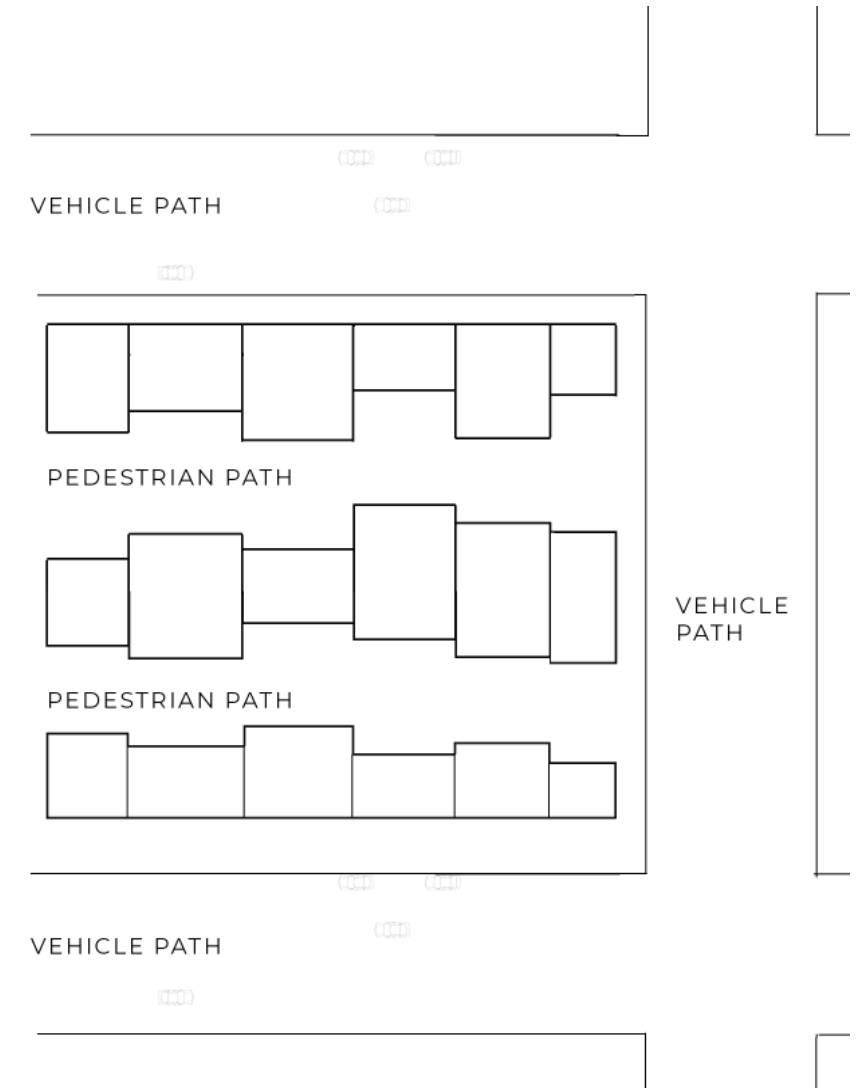
Edge Conditions created by Row Houses can be dramatically different acoustically. The materiality and size are instantly variables that change how it sounds moving in front of row houses.



Row Houses



Expanded Rows



Rows Within A Block



Proprioception within Row houses starts allowing design decisions to deal with the use of the setbacks, and tendencies of human use of the edge condition created by the rows. This helps determine programmatic relationships based off the human scale within the exterior space.



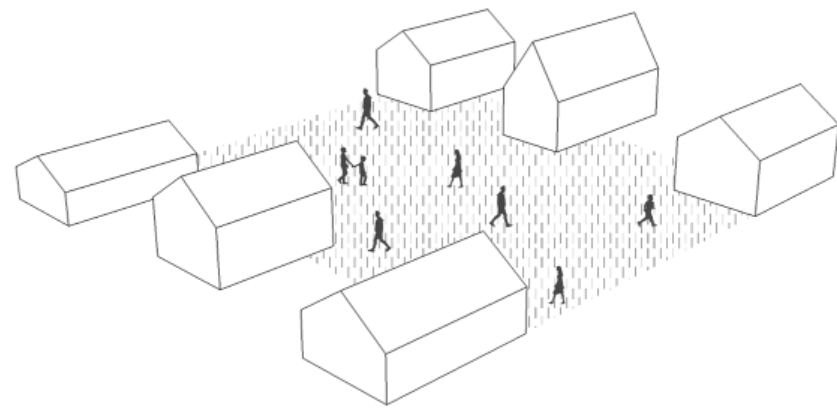
Vestibular understanding within the virtual environment of the Row House pattern reveals more contextual responses for the identification within context, the distance between programmatic elements, and size considerations at the human scale.



Touch feedback is still under development and may not deal too much with this pattern, however, outside of daylight being impacted by each building and its effect on the pedestrian path and vehicle path would be brought forth.

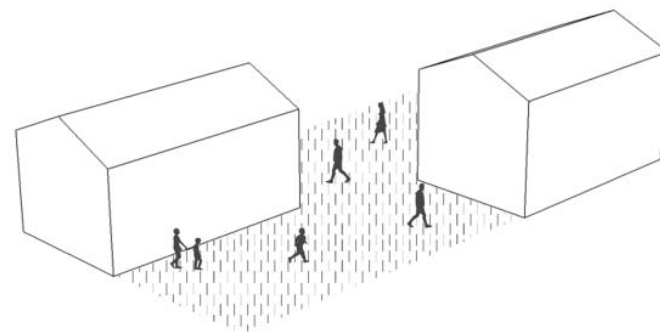
37

Cluster Houses

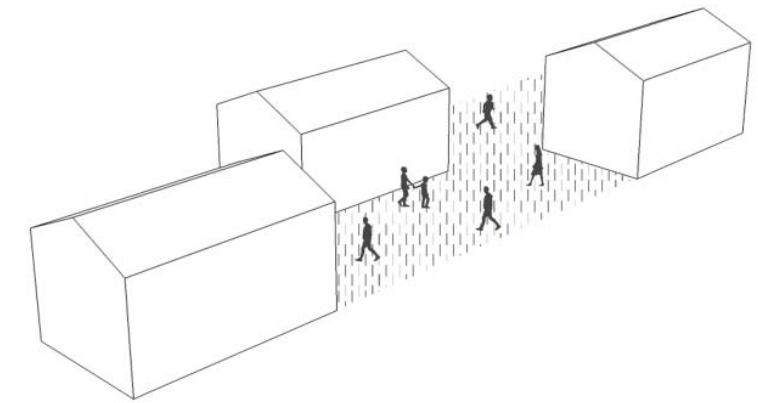


"Arrange houses to form very rough, but identifiable clusters of 8 to 12 households around some common land and paths. Arrange the clusters so that anyone can walk through them, without feeling like a trespasser."

Alexander, pg. 202



2 Building Cluster



3 Building Cluster

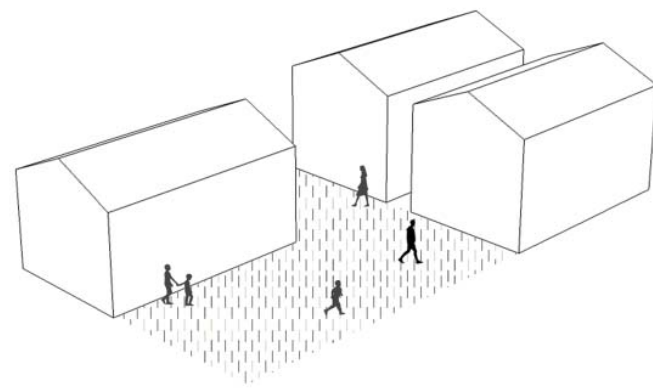
What do we experience within the Virtual Environment?



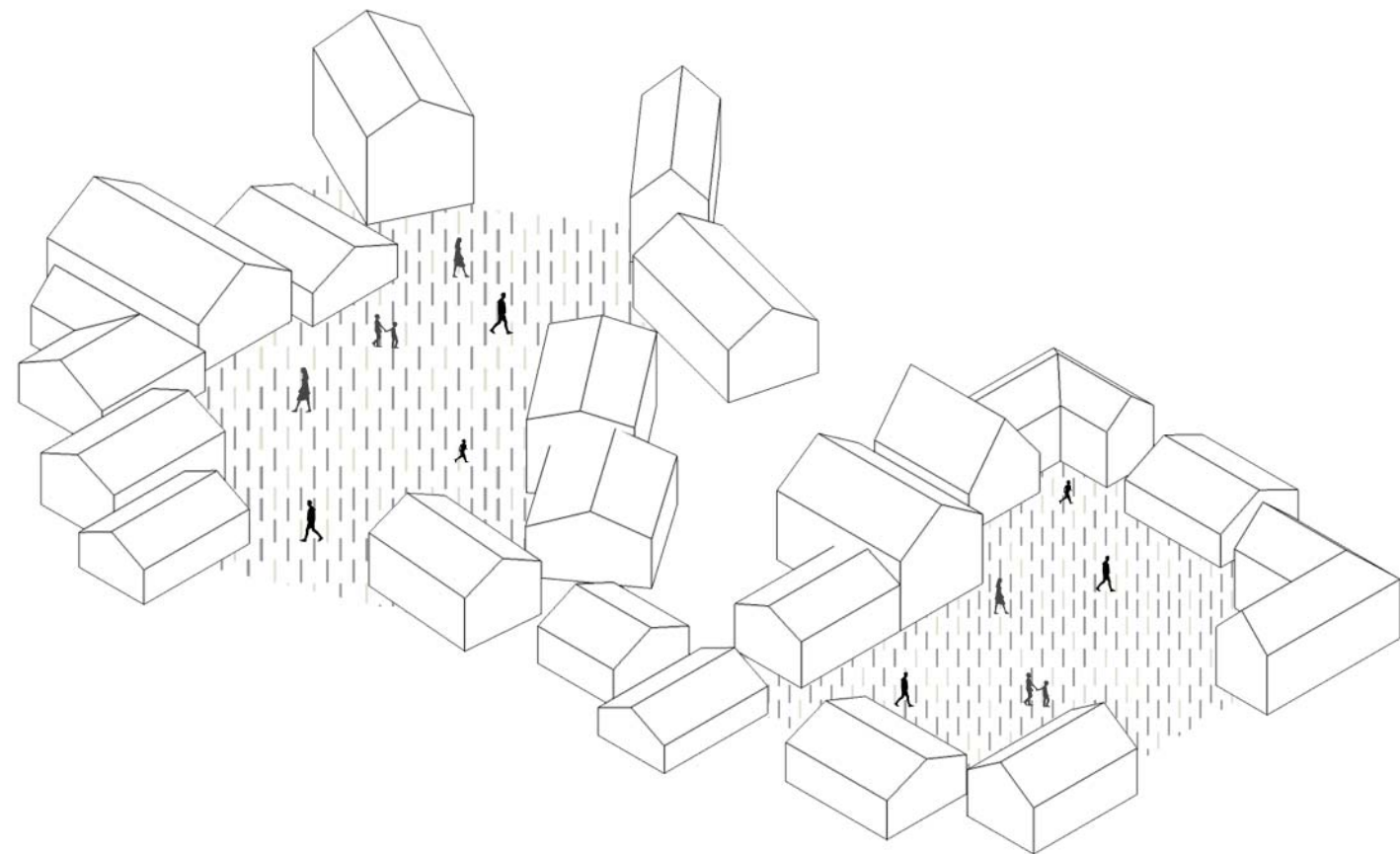
Within Clusters the visual connections between each building, green space, the contextual programmatic relationships become primary elements to consider for privacy and use of space.



The programmatic planning of clusters are able to be thought of now in terms of the sound they produce and the effects they will have on buildings within the cluster close to them and farther away.



3 Building Cluster



Multiple Building Clusters



The space in-between each buildings is key to allow for human movement. Being able to measure it within the space and make a corresponding decision allows for less of a rigid quantitative decision and base it more off actual use.



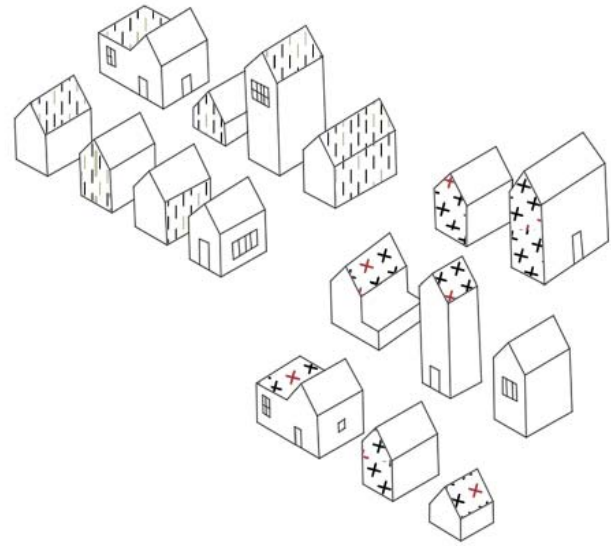
Vestibular movement through clusters bring into focus orientation within a cluster, and distance to street and other programmatic elements.



Touch feedback is still in development, within clusters the materiality, and day lighting become key elements to correspond to with program.

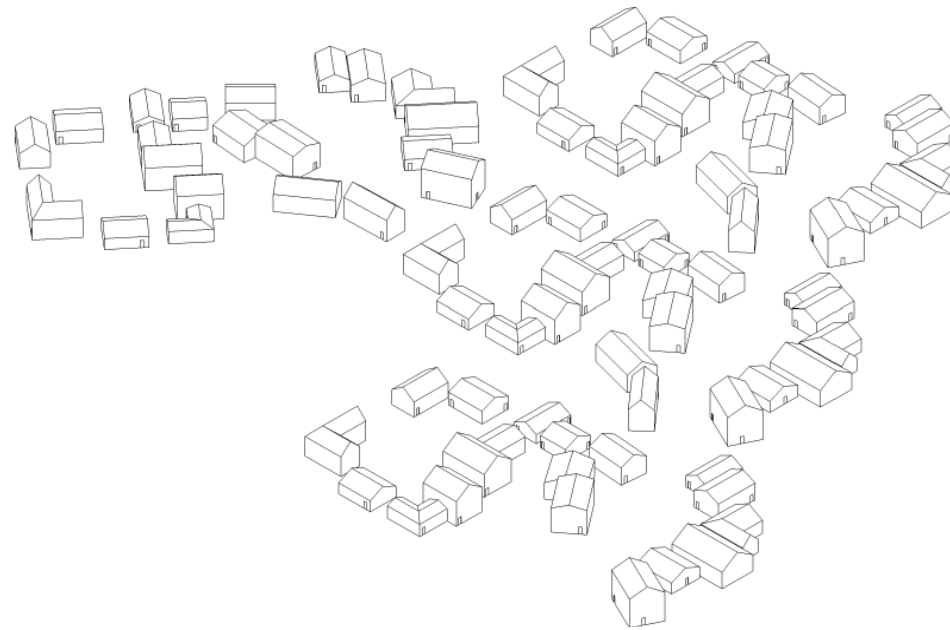
37

Identifiable Neighborhood

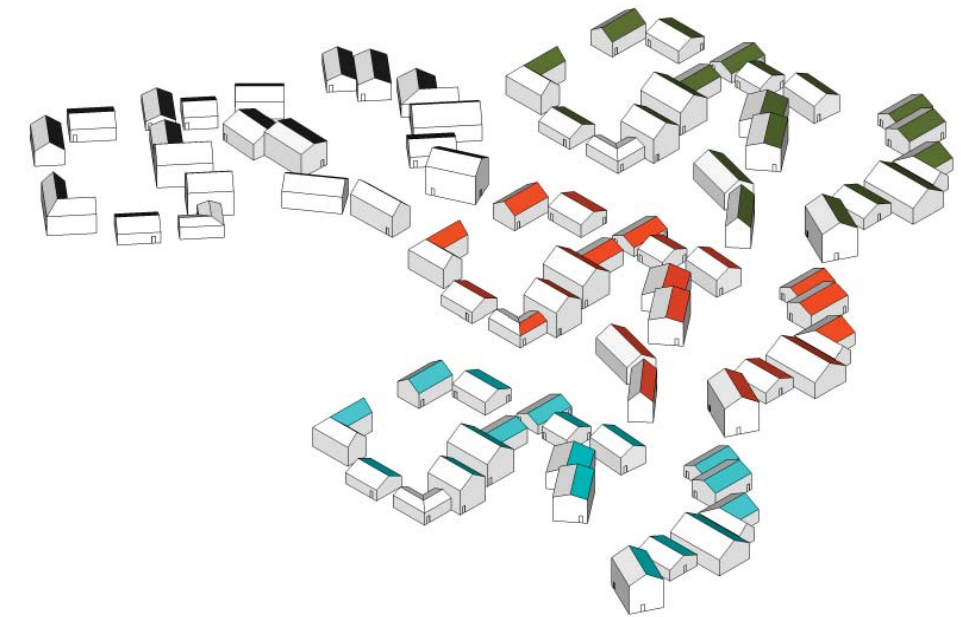


"Help people to define the neighborhoods they live in not more than 300 yards across, with no more than 400 or 500 inhabitants. In existing cities, encourage local groups to organize themselves to form such neighborhoods. Give the neighborhoods some degree of autonomy as far as taxes and land control are concerned. Keep the major roads outside of these Neighborhoods."

Alexander, pg. 84



No Color



Color On One Plane

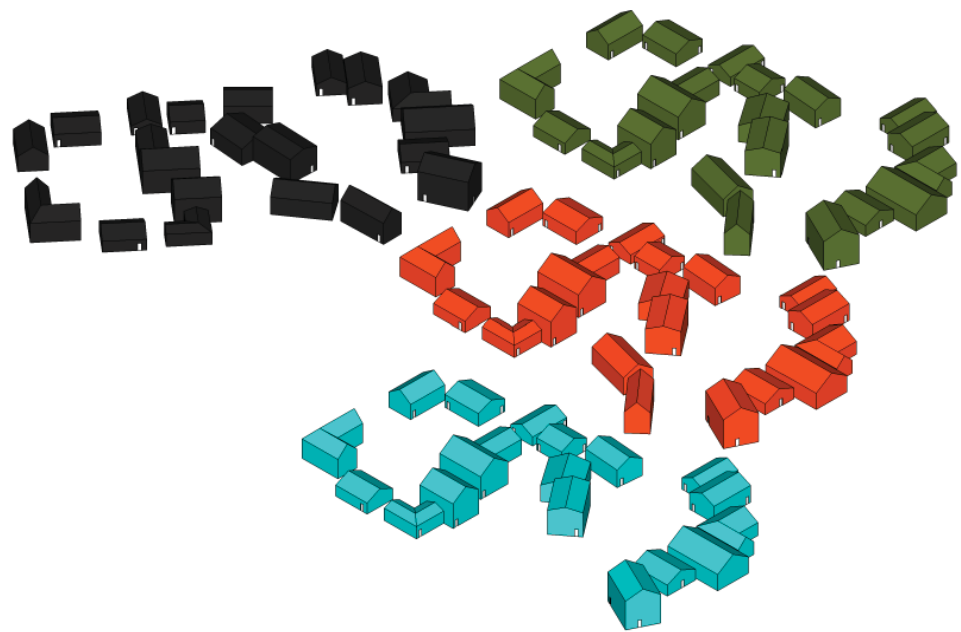
What do we experience within the Virtual Environment?



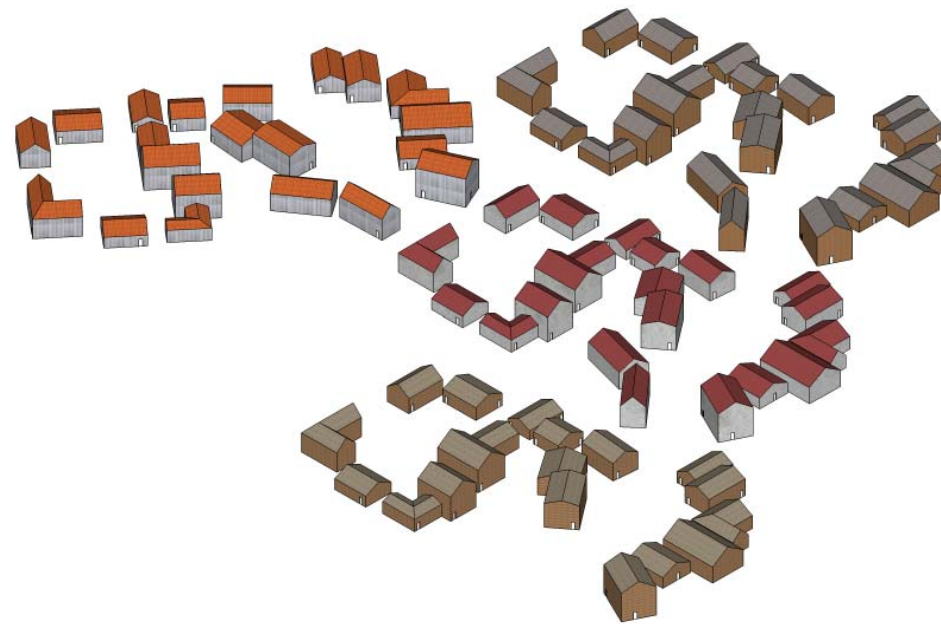
Within an identifiable neighborhood orientation is primarily going to be visual. The above demonstration revealed that more context understand is truly needed to create anything identifiable that is not based off size or shape. How these become identifiable visually from other areas is also able to be tested according to visual memory of movement through the virtual space.



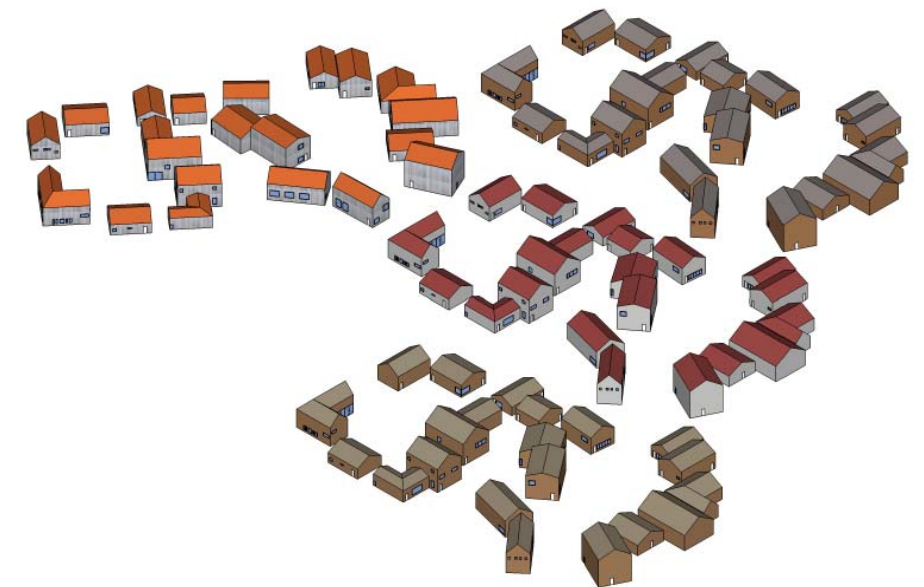
Bringing hearing as a sense to determine decisions bring forth contextual programmatic understanding to the forefront of how to make an area identifiable along with vision. We can hear things we can not see.



Color



Materiality



Materiality + Doors + Windows



The space in-between each buildings is key to allow for human movement. Being able to measure it within the space and make a corresponding decision allows for less of a rigid quantitative decision and base it more off actual use.



Within a neighborhood the movement through space will vary by context and program. Being able to test primary means of movement through space reveals that spaces can be used more effectively as smaller spaces for navigating as pedestrians and the pathways themselves are what determine how we identify based off, sound and vision.



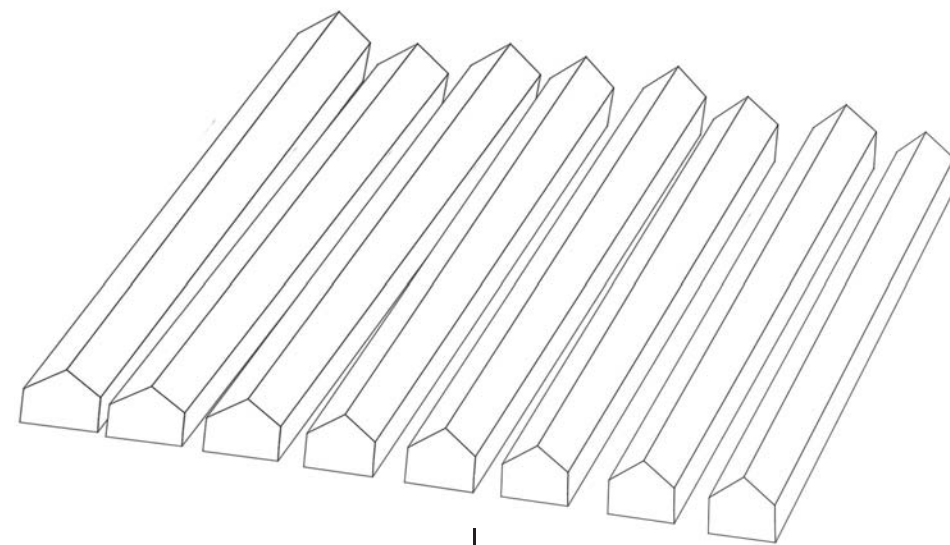
Touch feedback is still in development, within Identifiable Neighborhoods the materiality, and day lighting become key elements to correspond to with program.

05.3 HAGAN ISLAND PRECEDENT

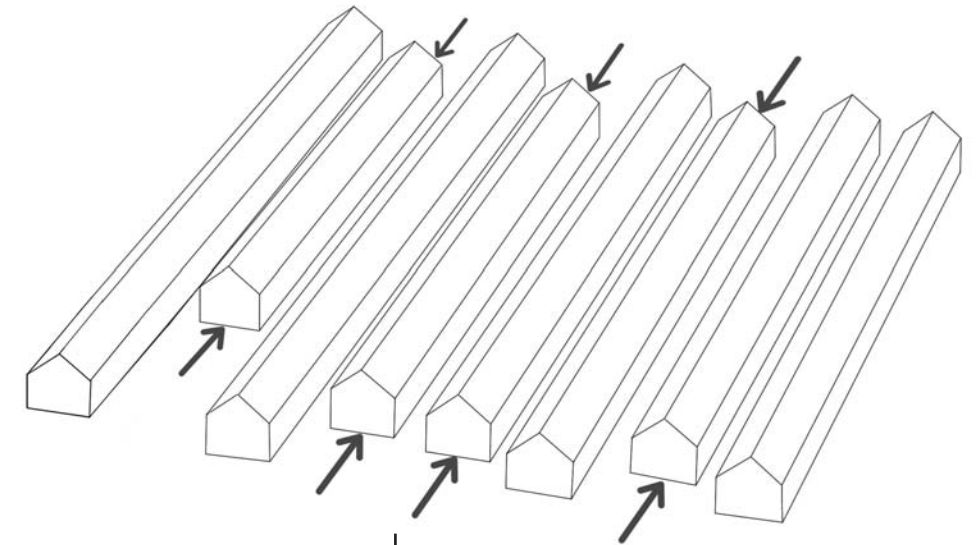


Fig.101

MVRDV created Hagan Island as an experimental housing solution. This has become a very well received project and has won design awards. If we look closely we can see that this project uses several of the Patterns mentioned in *Pattern Language*. The following diagrams I created to show how through a few basic design moves this project can be created by following the patterns.



Row Houses



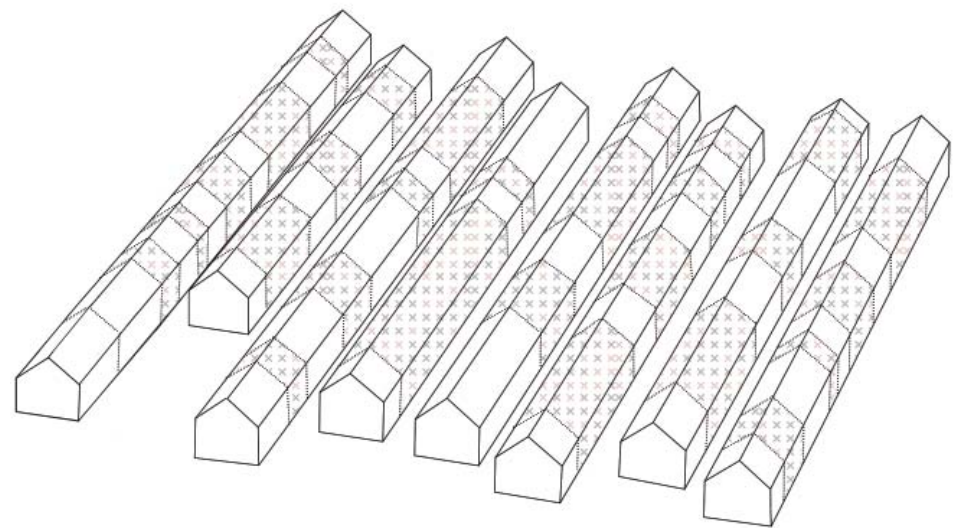
Manipulation of Rows

38

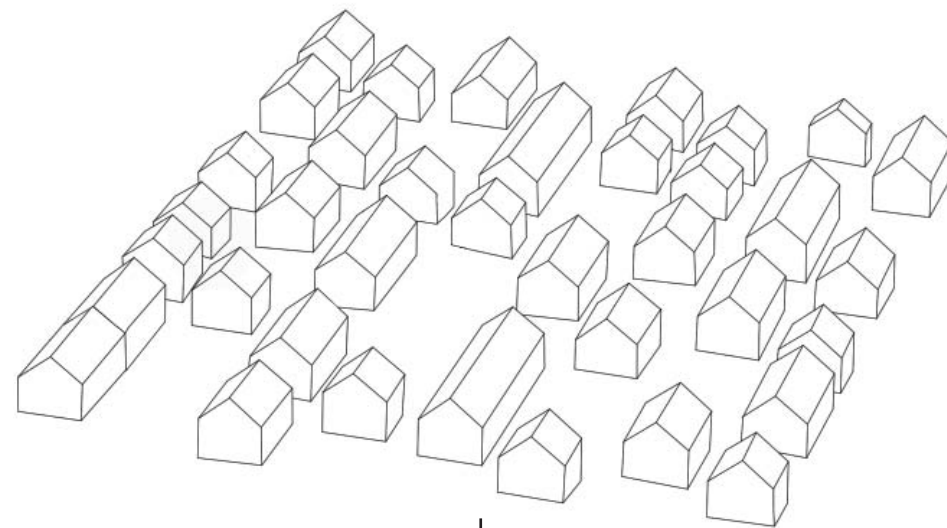
Row Houses

"For row houses, place houses along pedestrian paths that run at right angles to local roads and parking lots, and give each house a long frontage and shallow depth."

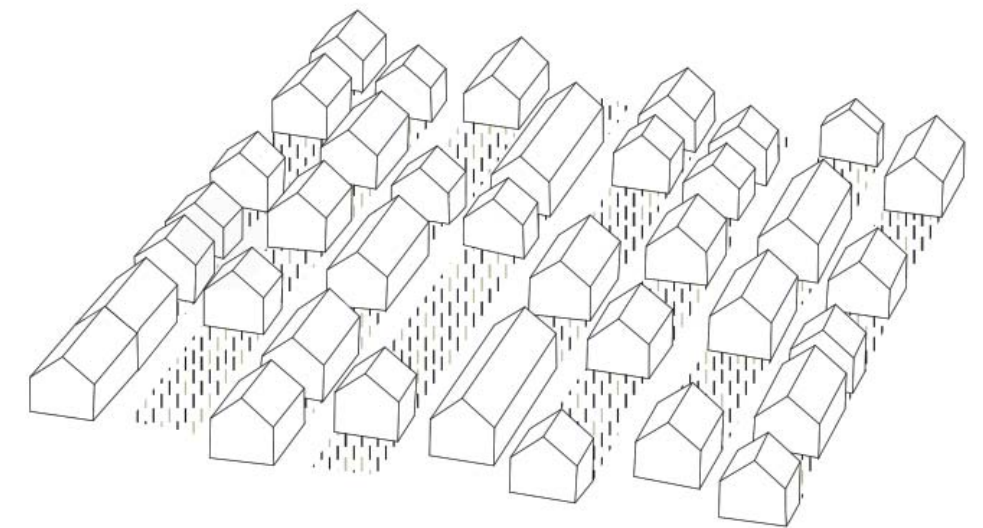
Alexander, pg. 207



Cutting Rows



Resulting Clusters



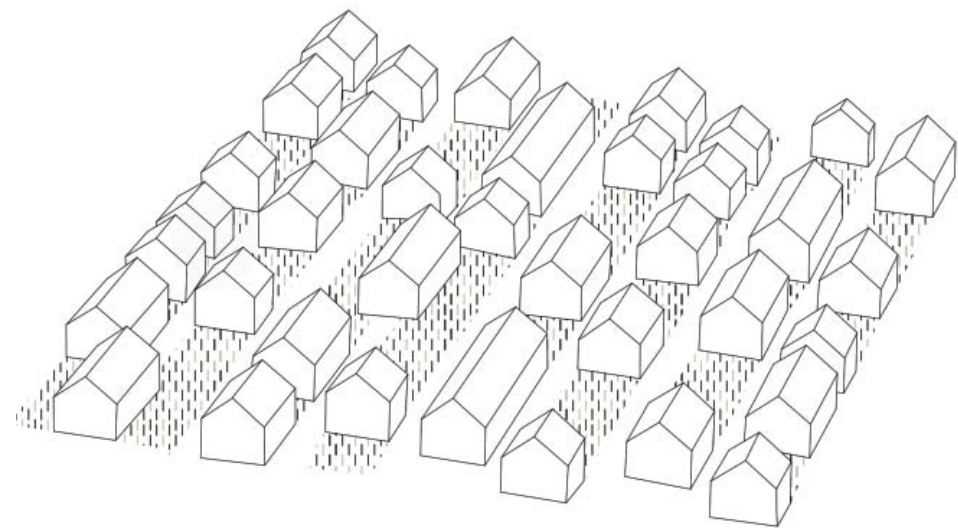
Green Space

37

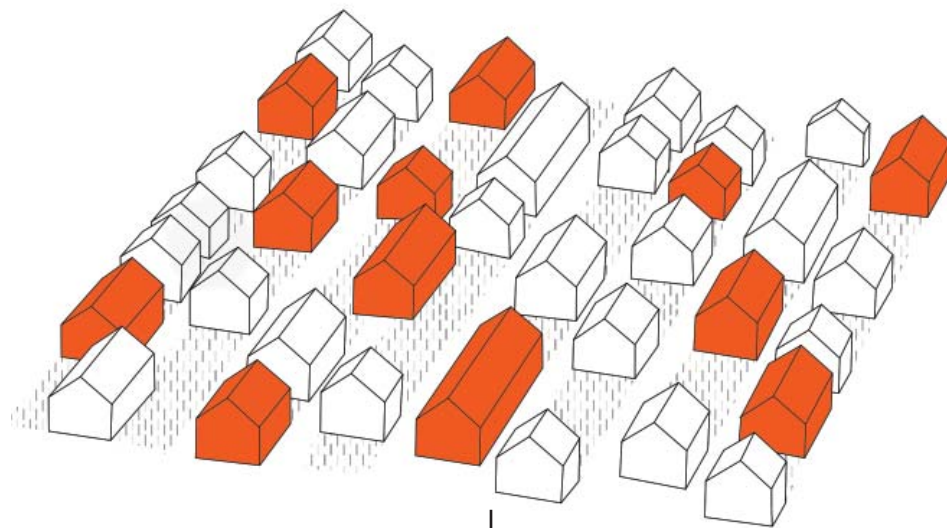
Cluster Houses

"Arrange houses to form very rough, but identifiable clusters of 8 to 12 households around some common land and paths. Arrange the clusters so that anyone can walk through them, without feeling like a trespasser."

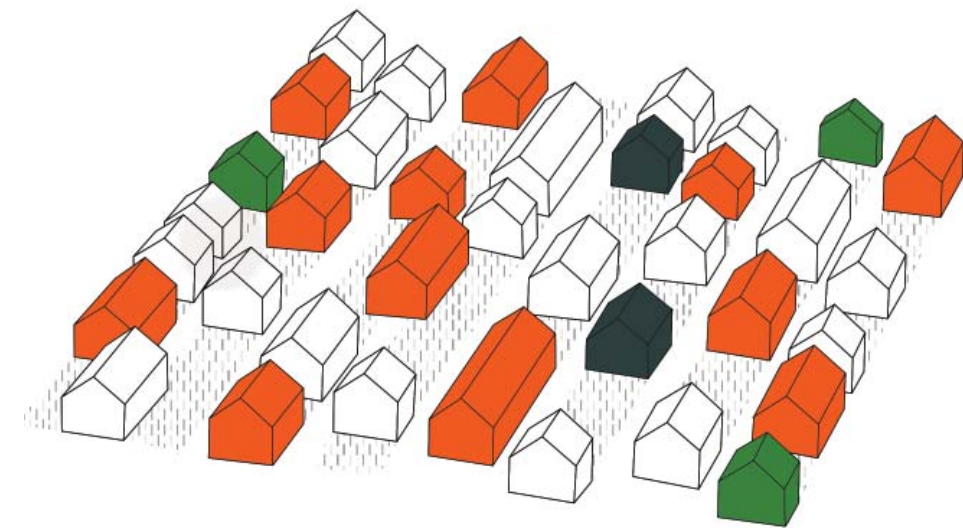
Alexander, pg. 202



Green Spaces



Adding Color/Texture



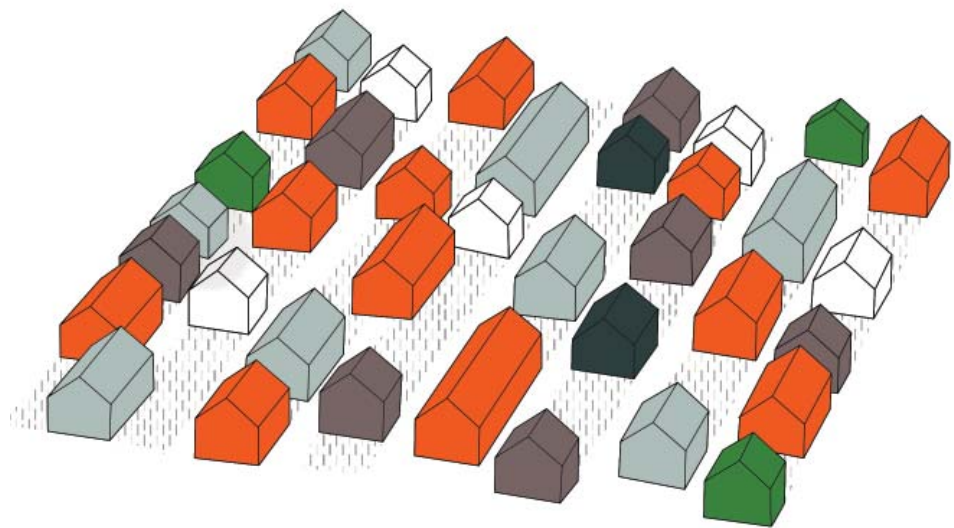
Adding Color/Texture 2

14

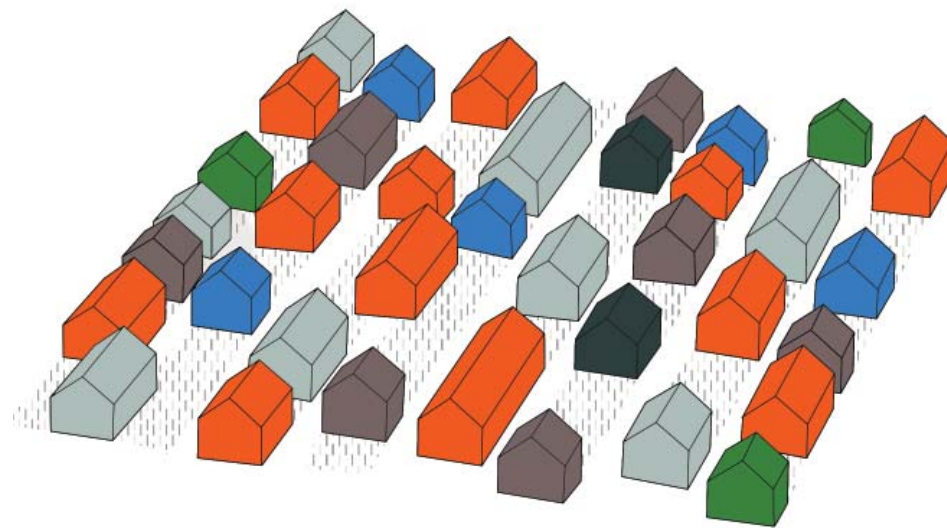
Identifiable Neighborhood

"Help people to define the neighborhoods they live in not more than 300 yards across, with no more than 400 or 500 inhabitants. In existing cities, encourage local groups to organize themselves to form such neighborhoods. Give the neighborhoods some degree of autonomy as far as taxes and land control are concerned. Keep the major roads outside of these Neighborhoods."

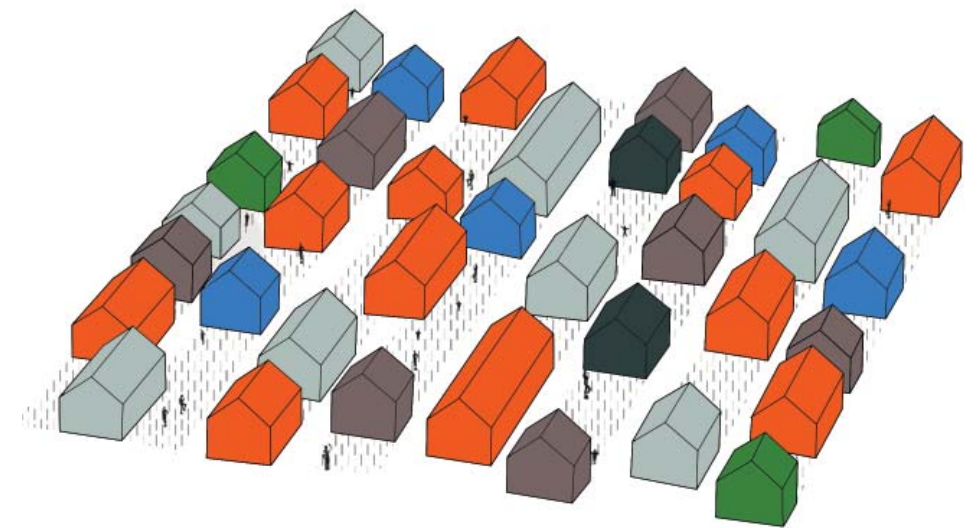
Alexander, pg. 84



Adding Color/Texture 3



Adding Color/Texture 4



Resulting Design

CHANGES WITHIN THE VIRTUAL ENVIRONMENT

Now that we can see the correlation of Hagen Island to patterns and this precedent has been confirmed as a qualitative space by those that live there, we can use this as an example to explore the changes I have discussed in 05.2.1 that occur once we are in the Virtual Reality Environment.

The following images are taken from a video I have created that can be accessed here:

https://youtu.be/_1CoB-pCmWQ

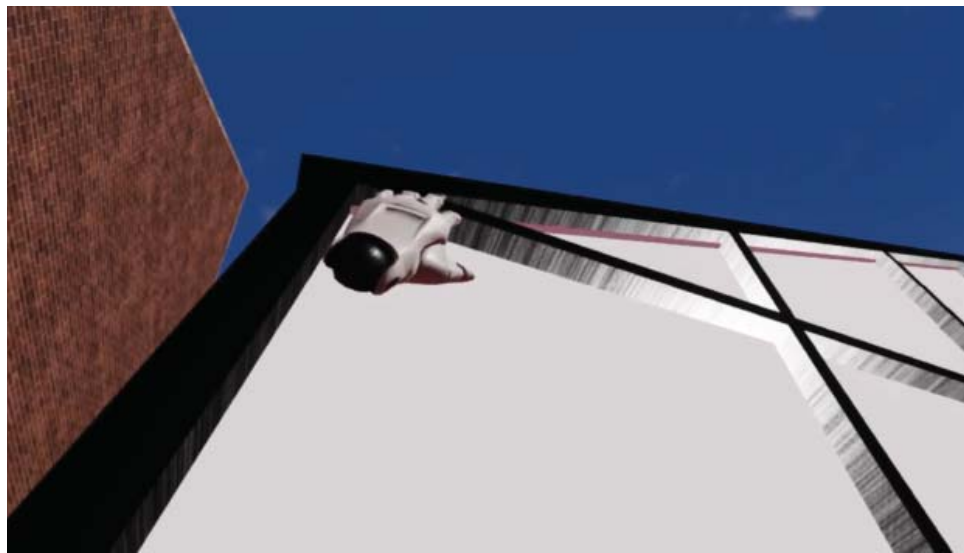
The video discusses the changes mentioned in 05.2.1 and use the Hagan Island Project recreated within the virtual environment as an demonstration of these ideas. The time stamps below each image show what sense is being discussed and what portion of the video to skip to learn more.



Sight 00:31 -01:56



Hearing 01:57 -03:03



Proprioception 03:04 -04:07



Vestibular 04:07 -05:53



Touch 05:54 -07:01

The main idea we can take from this demonstration is that the virtual reality environments portray enough information to the senses to allow for decisions to be influenced directly by the experience of being in the virtual space. Decisions are now focused on contextual understanding of the human body moving and being in space.

05.5 VIRTUAL REALITY MANIPULATION

Beyond just a representation methods, Virtual Reality can be used to execute design decisions. Programs are being further developed to add in controls upon which an individual can manipulate the space. This brings a level of building space where the architect becomes the builder within the virtual environment by using the body and its understanding of the space to execute design changes.

The following images are taken from a video I have created that can be accessed here:

<https://youtu.be/jz8cpqxiKBI>

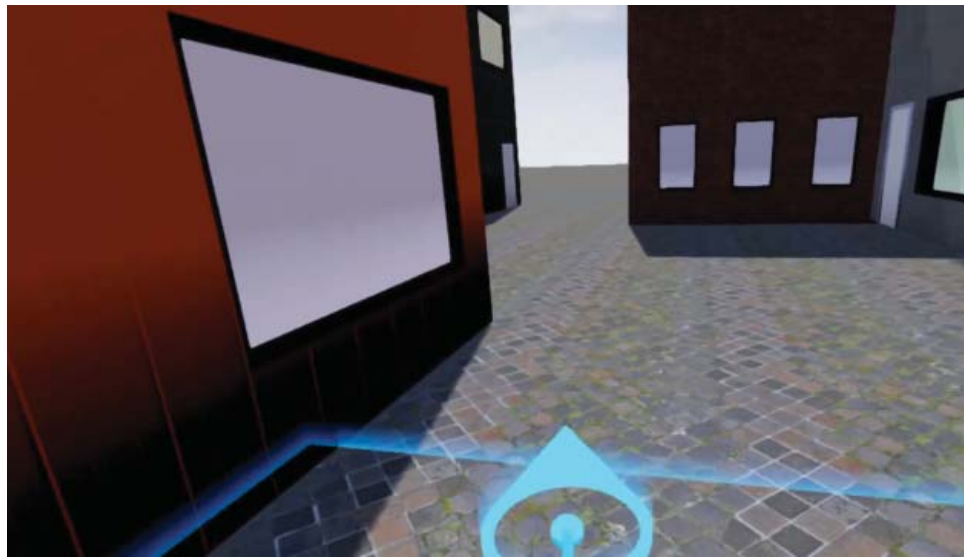
The video demonstrates how manipulation done within the virtual environment allows decisions to be made off the experience of the virtual space created and how this is determined through a human body contextual understanding of being in space.



Base Condition



Moving Building Edge



Moving Through Moved Space



Resulting Condition



Restoring Base Condition

05.6 VIRTUAL REALITY PROGRAMMATIC DECISIONS

Not only is manipulation possible but it changes how programmatic space can be determined, arranged, and experienced at the human scale. It allows this change by making an environment upon which we can test the space and the decisions are informed by the senses response to the virtual environment.

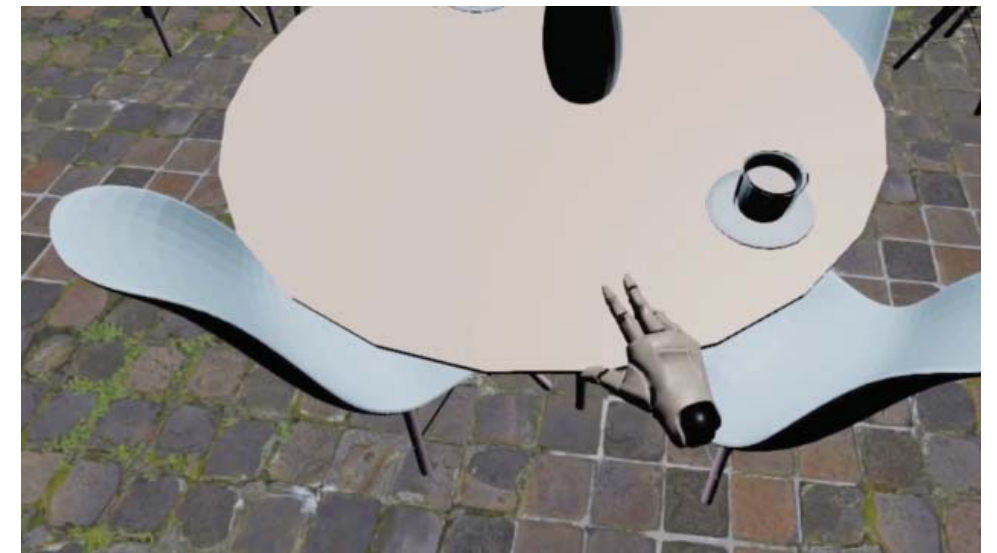
The following images are taken from a video that can be accessed here:

<https://youtu.be/b4eRcqXS00o>

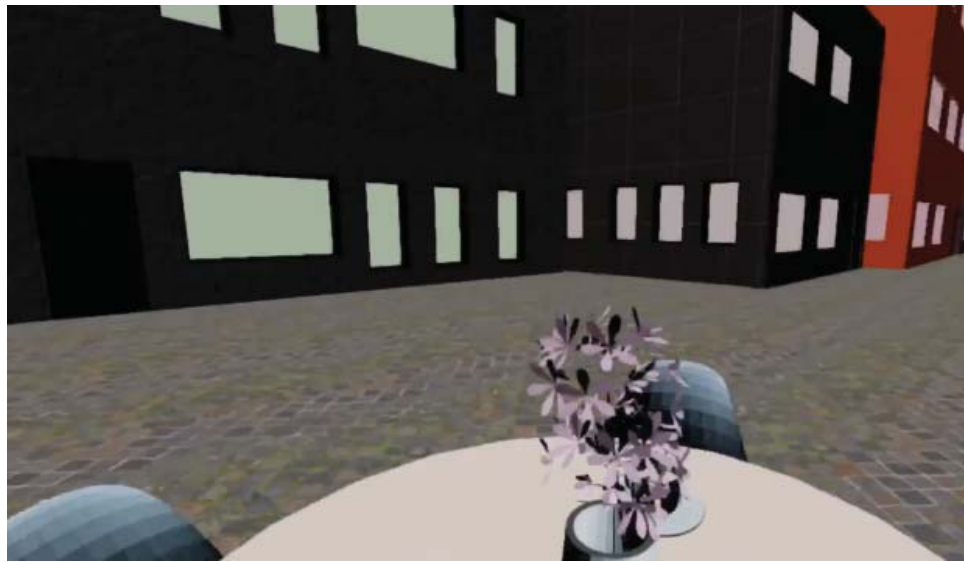
The video demonstrates how manipulation done within the virtual environment allows programmatic design decisions to be tested within the movement through space and a feedback of how each design decision influences the context around it.



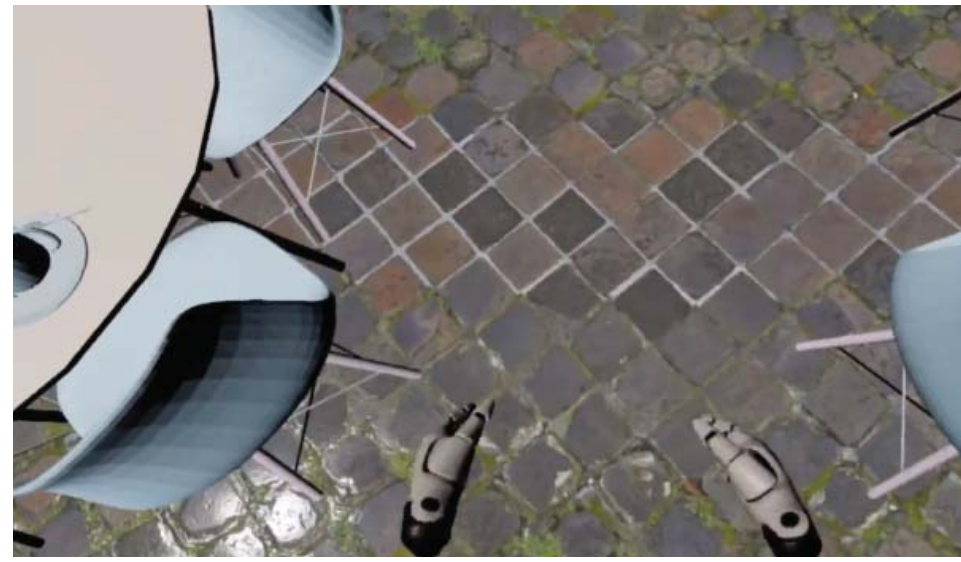
Base Condition



Grabbing Furniture



Placing Furniture



Programmatic Changes Based off Proprioception



Example of Creating Node Experience

05.8 VIRTUAL REALITY FIDELITY EXAMPLES

The following images are taken from virtual environments to show the quality that can be achieved, and used to enhance the immersion. The ones on the right spread were created by me while those on the left were created by studio teams.



Fig.102



Fig.103



Fig.104



06

CONCLUSION

This thesis book contains multiple different explorations and thoughts. To bring these all together concisely I would like to separate the conclusion into 3 parts. 1.Virtual Reality as "The GATE", 2. Aggregation of Space, and 3. Perspective Applications

06.1 VIRTUAL REALITY AS “THE GATE”

The main interest leading into this thesis was combining the productive realm of architecture that focuses on the quantitative elements (efficiency, standard dimensions, resultant based design outputs) and the qualitative realm, which focuses on the experience of architecture for the individual.

This interest led to reading several books on qualitative theory as the type of architecture this side produces is the type of architecture I want to create and I believe is lacking in quantity for people to inhabit. From this research I found connections to what was being called for by theorists and Christopher Alexander's work *“A Pattern Language.”*

The theorists wanted to bring forth qualities into architecture by looking at what was wrong with it and coming to their own conclusions of what was missing or elements that architects needed to focus on. (A summary of these can be found on page 10.)

When looking at what Christopher Alexander intended to do, create a method of practicing architecture that's focus is on the dwelling within space (the qualitative elements of experiencing architecture), and what theorists were focusing on (elements or qualities within architecture they felt focusing on could help create higher quality within architecture) we can see both were calling for a focus of decisions based on the human scale and experience of the use of space.

Pattern Language was a work that tried to merge these qualities and focus back into the production of architecture through a 3 step process of integration that Alexander called The Gate, The Way, and Kernel. (These were expounded upon on page 91.)

The Gate was the first step, the “thing” that allowed architects to start focusing on the elements he and other theorists were discussing. In order to focus on these elements they needed to be documented and architects needed examples of well designed spaces that created the quality of space that was missing in architecture. This became Pattern Language

The idea behind patterns was a documentation of base programmatic design decisions based off human experience within these spaces. The focus was always on how the architecture that results from patterns create experiences for those that dwell within.

“The Way” was the process that Alexander mentions as “The Timeless Way”. This can be boiled down to creating architecture as it was produced organically in the past in which focused on the qualities of the space and the use of the space by those that dwelled in it. He believed using pattern language to design would result in architects practicing in this way once they became acclimated.

The Kernel was leaving behind the Patterns as architects would no longer need a guide of learning they would be focusing and creating the quality in architecture again within practice.

Through my research and documentation of how the implementation of Virtual Reality allows for the process of creating architecture to involve more of the bodies senses within and a change of focus, I would like to put forth that:

Through the use of Virtual Reality in the production of architecture we have a contemporary idiom of Pattern Language.

The involvement of the extra senses changes the focus to the contextual experience of the body in space as an instantaneous feedback upon which design decisions are made. The focus of decisions are not just the visual appeal of the building nor the efficiency of layout or facade design, it brings the focus of architecture back to the phenomena of experiencing life within.

It is the new "GATE"

06.2 AGGREGATION OF SPACE

Through the process of this research I started testing base patterns within Virtual Reality as a way of understanding what changes when we have these extra senses to determine decisions as our decision making focus. The more I created these environments and tested them the more I noticed an element/parameter within the process of creating space that can serve as a guiding principal of creating a particular intended experience within a space.

This element comes forth from this research is

Aggregation within space serves a large role in determining the phenomena of the experience within space.

Within the process of creating architecture especially within the Virtual Realm we need this aggregation of space in order to ground our designs closer to reality to better inform decisions.

Aggregation traditionally is defined as the formation of a number of things into a cluster.

Within architecture aggregation can be thought of more simply as the element of the 3 dimensions of space by which objects, planes, materials, entities movements, and all things we can think of within architecture are perceived.

A mistake may be made when describing aggregation within space as depth but it is more than just a visual element to control, it deals with touch, sound, body movement, taste, smell to some extent.

Within space, depth and aggregation are intimately linked and directly interact with the experience of space through the bodies senses. When we touch something rough, it is because of an aggregation of varying depths at a microscopic level. When we see grass, the grass aggregates space as the clusters of grass blades protrude through space. When we walk into a room the objects in a room frame the spatial boundaries of that room and directly command the experience of that space.

When we hear the number of sound sources populate the space and create elements we respond to. When we walk the elements we feel become part of memory and become part of how we walk.

An easy way to test this parameter of aggregation is by using a phone charging wire. If the wire is neatly folded and bundled on the floor the effect it has on space is minimal and it is seen as an object in space. If, however, we unfold that wire and let it fall on top of itself it is seen as clutter and takes up more visual space leading to the small object taking on a larger portion of visual/experienced space.

If you are not sold on the idea of aggregation of space leading the experience we have in space try this experiment. Clean a room completely of all objects. Then slowly add items into the space based on the real program of the space. The more items you add back the more cozy the space becomes until you reach a point where there are too many items and it feels cluttered or full.

Another easy experiment to do is by taking a fuzzy or more plush rug, which aggregates space by the protrusion of each fiber into space, and add it to a floor that is flat. This simple addition completely and instantly changes the feeling of that space visually, but also when walking, the difference is felt through touching the flat floor and then the rug, it also affects the acoustic sound within the space depending on the size.

There is even a connection between what we spatially remember as being in space and what our skin can feel. If you take the room you sleep in every day and walk through it with your eyes closed your mind remember where objects are and they have a presence which you react to. The more objects or larger objects there are the bigger the presence.

This aggregation within the design process can be thought of as adding context. You can not create your building as a single entity. At the large scale you need buildings to populate and fill the space so that you can understand the surrounding contexts effect on the space your creating and your spaces effect on the context. If you do not add this you are designing in a bubble.

At the small scale you need objects that will populate the space. You must look have the objects that will be in the space to truly understand the experience of dwelling in the space. The more of these you can provide the more control that is added for determining the output of experience.

06.3 FUTURE APPLICATIONS

Integration

It is important to note that I believe the real future tool of architectural production is Augmented Reality and not Virtual Reality. The reason I have chosen Virtual Reality to study is it is the first tool we can actually engage with, control, and integrate within the process today not in 5 years down the road.

That said, I do see many applications from the ideas in this thesis being applied to both tools.

Virtual Reality is going to be the tool of use for the next 1-5 years at the least and most 5-20 years if computational power advancement is slowed. In having this technology firms are using it initially for representation of designs to inform their decisions. The next step is to make decisions in the virtual realm instantly and to construct/design within the virtual reality environment itself.

Ultimate Goal

The ultimate resultant from the integration of Virtual Reality into the design process is going to be a return of the qualities that theorists have been calling for within architecture. These qualities will be brought forth when architects have to face the designed space and experience them within the immerse environment of virtual reality.

Documentation Sharing

Within this integration of Virtual Reality into the design process there is an opportunity or rather call for a documentation method where the virtual reality spaces can be shared and used to learn how certain experiences are created.

Within the discourse of architecture seldom do architects share their design processes and construction drawings. What is shared are usually process or schematic design drawings and renderings. Virtual Reality, Has the ability to record the process of design on the computer it is running on which can be shared to learn from. If this takes to many resources than making the virtual environment available for others to experience could instantly inform other architects of the quality of spaces that are able to be created through that particular firms design process.

The call for this documentation stems from the current lack of interaction between firms on their designs, the lack of engagement means that learning from other firms architecture is still only visual unless it is physically visited, (I am not advocating that we no longer visit buildings in person, rather that a virtual documentation would be highly beneficial to producing higher quality architecture on a larger scale.) By making them available the virtual environments, become interactive precedents that will further increase the feedback loop of design.

Another opportunity created in the same area of sharing designed virtual spaces to learn from is the creation and critique of architecture through sharing virtual environments that deal with specific problems that the architecture is solving. This would be very similar to what I have done for this thesis in creating the base pattern condition from Pattern Language.

An author can look at a design problem such as an entry way on a corner lot, or creating a particular view within an urban context, and then create several iterations within a Virtual Environment. Once shared other architects can experience the designs and critique them or possibly come up with their own unique solution. This will create a larger dialogue within the discourse which can bring architects together.

Firm Physical Structure

With the implementation of Virtual Reality into the design process there is a need for a rearrangement of the current firm structure. First a large physical space is needed in order to move around within the virtual environment. Currently an entire warehouse sized space is needed to explore a design effectively. The current solution to the space needed is teleportation systems but these take away physically moving in space. Instead further development in multi-directional movement pads is needed to have a single room to walk through a design through Virtual Reality.

Extra Design Jobs

In order to put this new tool into the current processes of creating construction documents, as manipulation within Virtual Reality is not currently available within the most common programs, two extra design jobs are needed in a firm. First an implementation job group that can fix any technical issues. This will be a support team. The second group will be the modelers that will fill in the context needed to experience the contextual area within the urban scale. Within the building room scale they will fill the space with the actual objects of the program use. This is the most important group to effectively make decisions.

Augmented Reality

As stated previously, I believe that augmented reality will become the key tool of designing architecture in the future.

With Augmented Reality as a tool architects should no longer design in the office but rather on the physical site they are dealing with. What better way to make a design decision than physically being there and seeing a overlay of your design in its real context? Urban design strategies will be revolutionized as you will be able to walk down the street with Augmented Reality lenses and see the design and how you can react to it, but also provide the people around the design as an overlay and see how they respond to your current design.

As more augmented reality overlays are created the more space is framed by them. Architectural Designs must also take into account pedestrian use of Augmented Reality and be prepared to design for potential overlays of information over the building within the street/building envelope context, as well as the interior. How people move through space and interact with buildings will be completely different.

Architects are specialists in creating space. They have a responsibility to start researching and being involved with the creation of augmented reality overlays and the effects they have on built environments as these overlays will influence human behavior and dwelling within space.

As part of this suggestion to share designs, and virtual environments, the ones I have created and shown will be made available for download at a future time at:

Koselig.space

"Those of us who are concerned with buildings tend to forget too easily that all the life and soul of a place, all of our experiences there, depend not simply on the physical environment, but on the patterns of events which we experience there. The life which happens in a building or a town is not merely anchored in the space but made up from the space itself."

- Christopher Alexander

**We must Pre-Inhabit our built environments in order to
Reawaken Quality in Architecture**

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Images

All graphics and images created by author unless noted otherwise with a Fig.#

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