



THE FIVE BASIC ELEMENTS OF ARCHITECTURE

BY GIJS HOOFT GRAAFLAND



TABLE OF CONTENT

CHAPTER 1

A VIEW ON ARCHITECTURE

P. 3

CHAPTER 2

THE 5 BASIC ELEMENTS

P. 10

CHAPTER 3

PRINCIPLE 1: THE WALL

P. 15

CHAPTER 4

PRINCIPLE 2: THE DOOR

P. 30

CHAPTER 5

PRINCIPLE 3: THE WINDOW

P. 41

CHAPTER 6

PRINCIPLE 4: THE ROOF/ CEILING

P. 56

P. 67

CHAPTER 7

PRINCIPLE 5: THE FLOOR

P. 70

CHAPTER 8

CONCLUSION

P. 72

CHAPTER 9

WWW.THEDUTCHARCHITECTONLINE.COM

CHAPTER 1

A VIEW ON ARCHITECTURE

Architecture may seem easy to describe, it is the method by which we give shape to our environment. After almost 35 years of practice, I have come to the conclusion that architecture is a true mystery. It is a mystery without end, a mystery without answers, it is like love and music, we all know what it is, but we have no words to describe it. Still I am going to try to let you in on some of the secrets of architecture that I have discovered for myself, which helped me to indicate why,

for example, some buildings are beautiful and others make you wonder why the architect even took up the profession.

If I take some boards, rafters and beams and a bag of nails I can construct a little shed. Before building it, I have put some thought into the length, the width and the height of the shed and how I am going to put it all together. Also I have considered the strength of the material and put some thoughts into the integrity of the construction, to make sure that the structure will hold up. And even

if I don't put any thought into it, I have created architecture. The question is: 'have I 'practiced' architecture?'

To start of on this journey, exploring the secrets of architecture, it may be good to first determine what aspect of architecture is being addressed here. The process of planning and designing a house and making sure that it doesn't collapse in the first storm, will not be the focus of this epistle on architecture. The actual designing and engineering also belongs to the skill of an architect, but these tangible aspects of architecture and building will not be addressed.

The architect Frank Lloyd Wright was a master of both the practical and mysterious aspects of architecture. His work has become the inspiration for many architects all over the world.



Instead the focus of this book is on the aspect of architecture that originates in the tangible matter which, although invisible, has an definite effect on our emotions and well-being. Architecture may be the result of the effort of putting together some building materials to create a shelter, but at the same time, there is so much more to the subject. My search in the field of architecture has brought me to explore the profound and rich experience that one may have through the application of architectural concepts and expressions. This experience comes from an aspect of the building that is actually not there to be touched or seen. Inside each building there

is a space that holds the mystery which turns out to be the essence of architecture. This invisible essence holds innumerable secrets and a potential for rich and profound experiences. (in my opinion, the most overlooked aspect of the design process).

We can see the elements of a building, we can touch the walls and the floors, but these sensory perceptions are only part of what determines the architectural experience which is something so subtle that it is hard to describe and therefore hardly ever taught to the young architect.

The most expensive buildings per square meter are probably churches and temples. These sacred buildings in general represent our culture and values in life.



To reveal some of those architectural secrets we need to focus on the aspects effecting the quality of our experience in an architectural space. What influences this experience and can it be manipulated?

It is well known that sound is transmitted by waves through the air. The string moves the air in the box of the violin and that box of the violin sends out sound waves that we perceive and hear because air in the room transfers the wave. Light is also perceived as a wave pattern. The inside of a room or a building is perceived by the waves of light that it receives from various sources. For the violin it

is clear that the quality of the sound that it produces is determined by the geometry and the materials of the box, its length, width height and shape and the proportions thereof. For a room or a building the same turns out to be true, that the quality of the experience in the space that it encloses, is determined by the geometry and the materials of the enclosure. Harmony peace and other uplifting experiences are obtained with the specific composition of geometry of the shell around the space.

There is yet an other aspect that I would like to address, and that is best illustrated when considering the following: even though each

A violin builder at work, following an ancient blueprint, the same that Stradivarius followed (1644-1737) to build his world famous violins.





violin is built according to an ancient blueprint, it is a known fact that not every violin sounds the same. This aspect has to do with the soul of the instrument. Somehow the violin builder who gives birth to the instrument, is able to give the seemingly lifeless matter a character and a soul.

This ultimate intangible and abstract aspect of, in this case, the violin, gives it its value both in money and experience. A violin built by Stradivarius, the famous violin builder from Italy (1644-1737), is worth 33 million dollars and that is not because of the materials that were used to construct it, it is the character and the soul that houses in that instrument, it is the invisible architecture that makes it special. The best artists, composers, poets and writers, in general all professionals with a creative profession, are able to take seemingly lifeless matter and infuse it with an essence and soul and a distinct character, that either appeals to us or repels us, but which determines how we value the creation.

Portrait of Adele Bloch-Bauer I
By Gustav Klimt
sold for \$ 135.000.000



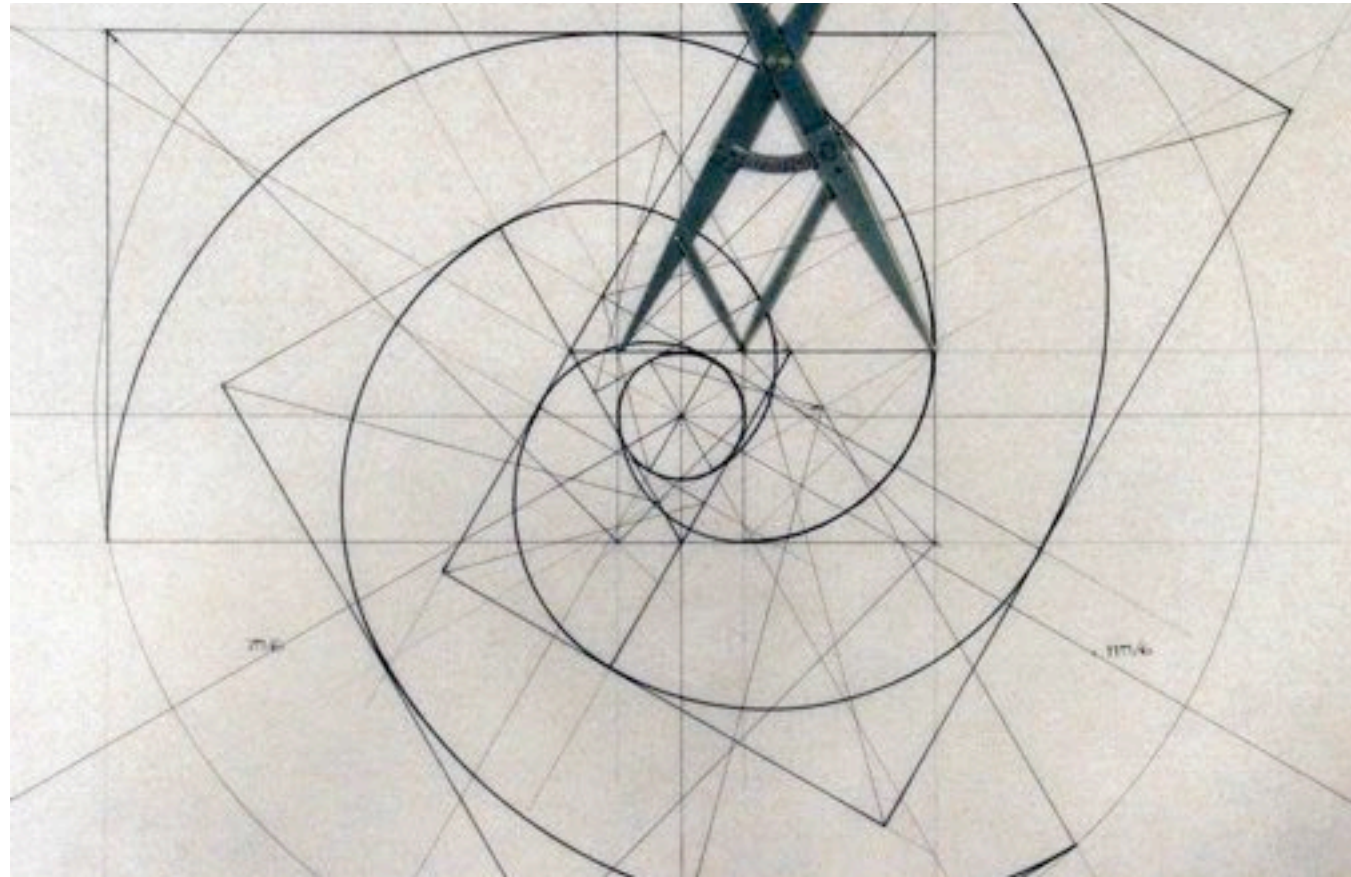
This mysterious aspect of architecture is like music. Every time we hear it, every time we are surrounded by it, it touches us at a very deep and existential level. Buildings become either expressions of well composed music or agonizing symphonies that shape the world around us. Seemingly lifeless matter has the ability to touch our soul, the core of our being. This soul will give the building its value and determines if we want to sustain it or not.

I have always been fascinated with this concept of the soul of a building and how I was able to instill this into a design. Walking through the old centre of Amsterdam for example with its ever

changing views and architectural details, makes me happy, it makes me almost forget that the building materials used to construct these buildings, are simple bricks, wooden beams and boards and some plaster ornaments. Nothing about the used materials is special, in addition these houses cost a fortune to maintain and are a nuisance to heat and cool. So what makes these buildings special and worth protecting and restoring and why are far more superiorly built structures valued less?

How does one give soul and character to a building and how does one give life to seemingly lifeless matter?

The architect has very few means to convey his story and his message: lines, symbols, colours and a lot of imagination is all that he has to give shape to world that we live in.





The violin builder has very few variations allowed by the design that give him the opportunity to make a special and valuable instrument. He can rub the oil in a different way during a fool moon, but in the end it is he, his attention, his love, his passion and dedication that make the difference and determine the value.

In architecture it is a little bit different as the blueprint is not set in stone which leaves the architect at liberty to create beauty, it also means that there are vast possibilities to create ugliness as well.

Frank Lloyd Wright, probably the most accomplished architect of our times, is celebrated for his style of organic architecture, as he called it. He gave soul to his design by incorporating the natural environment and making that natural environment part of the mystical experience on the inside of the house. His designs are icons of beauty and inspire many architects around the world to try and grasp its mystery.

With the sketches in the following chapters I will illustrate the liberty that an architect has to compose and design a building and the impact this has on the architecture.

Probably one of the most Beautiful private houses of our time: Falling Waters by Frank Lloyd Wright. The beauty is in the architecture but also in the way that the house is merged with its natural surrounding.

THE 5 BASIC ELEMENTS

The five basic elements of architecture actually refer to the five principle elements of a building: The wall, the roof, the door, the window and the floor. These building elements are not so mysterious until we realize that they hold the key to the secrets of architecture. By consciously manipulating these building elements we get a glimpse of the tool that an architect has to create works of beauty or ugliness and everything in between. In the next chapters you will learn that the

manipulation of these physical elements has the unique quality to evoke an experience that is personal or universal, in most cases indescribable but in all cases an essential aspect of architecture and a handy tool for an architect to design and define a space. Negligence of any of these principles always results in the degradation of the entire design.

What is pleasing for one is disgusting for the other and at the same time there are structures that have general pleasing effect on almost everybody. If you learn to describe what is beautiful in

nature or why you are moved by a well played piece of music and you will have discovered the mystery of architecture.

The apprentice can learn to design a building and construct it, the journeyman can overlook the work, coordinate the different disciplines and manage the project, the master architect is the one that gives life and character to the building and determines the lifespan of it.

The Duomo in Siena, built in the renaissance as a place of worship. The craftsmanship and detail, which represent a devotion for the divine, is rarely seen in today's architecture.



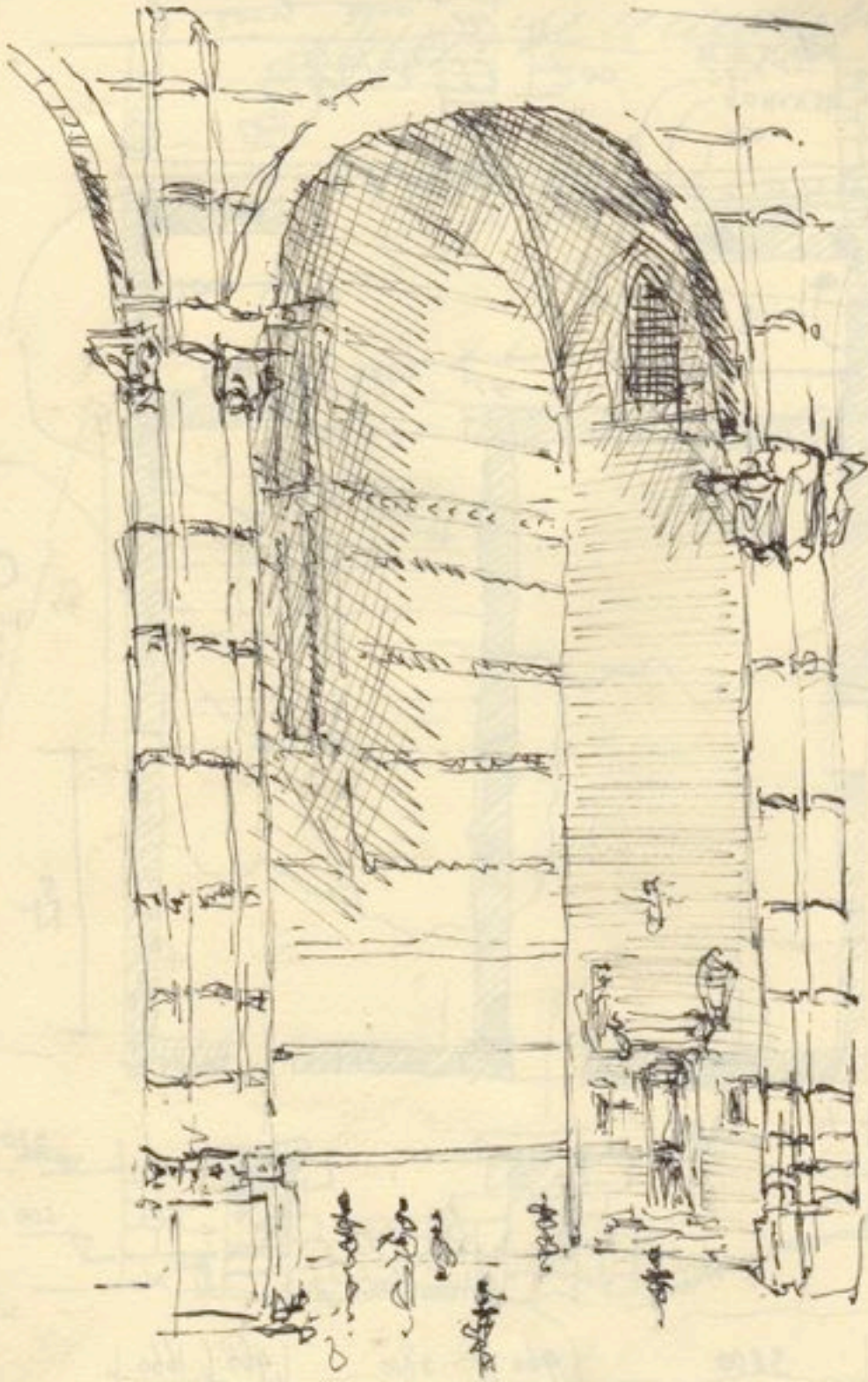
The mystery of architecture shared in this book is meant for the apprentice to open the eyes and to learn the tools that are necessary to go beyond the tangible and enter in to the world of the intangible aspect of architecture. These are tools that have to be felt and experienced over and over again until they are ingrained in the system of the young architect.

For the one not aspiring to become an architect, these tools can help to look at architecture in a different way, thereby enriching the experience of the built environment.

The lines of the sketches in the following chapters represent a certain atmosphere that is provoked by a design decision. The only way to communicate the experience of that atmosphere, is to recreate it in your imagination by looking at the image. All along it is not the line that is drawn on paper but the reaction in your mind which represents the principle. The images below illustrate the incredible ability that we humans have to recognize shapes from extremely simple images and retrieve the information related to the original object that they represent. Many people who see these

Symbols of architectural icons





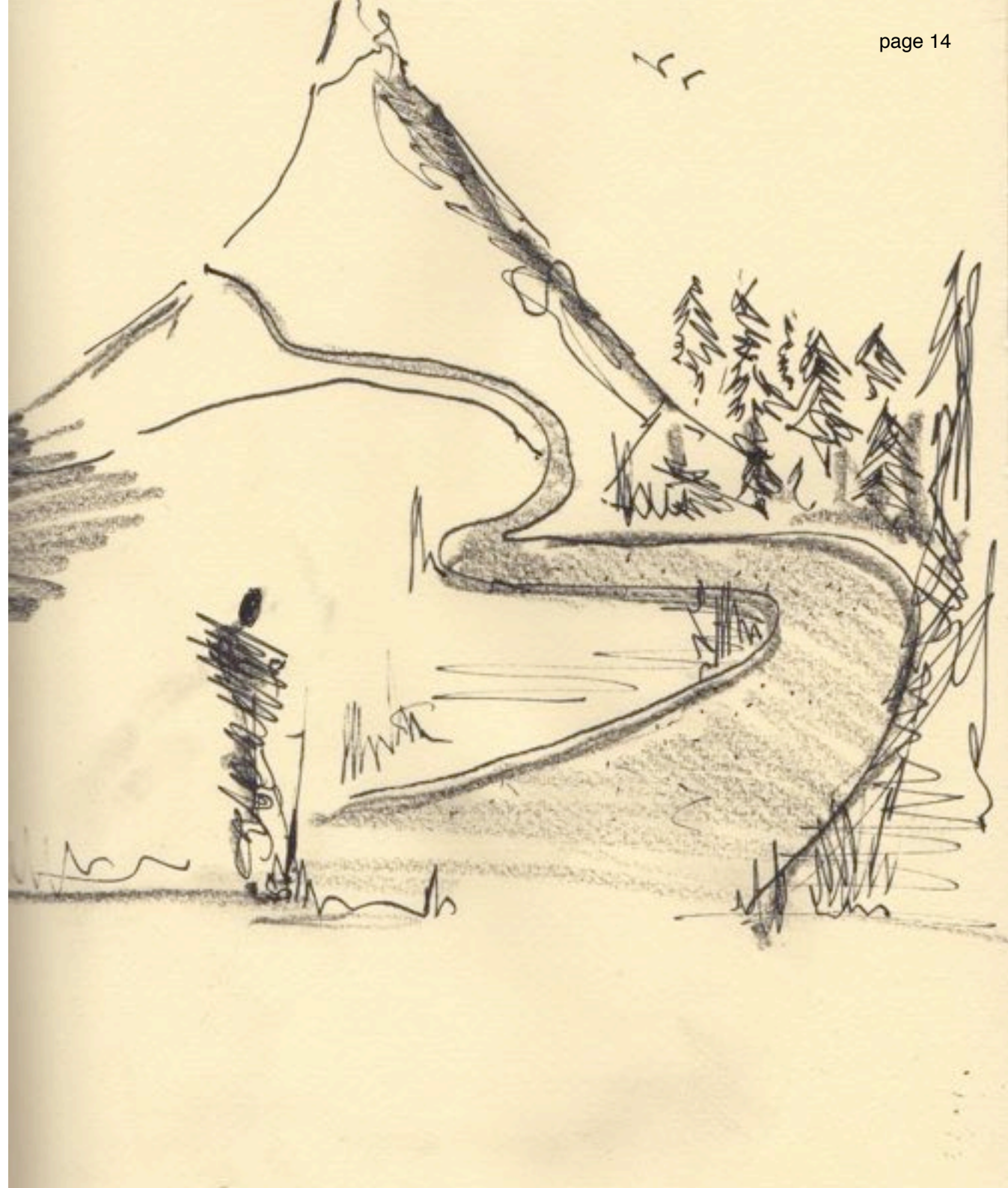
images will know the name of the building, the location, the size, some history of it and the culture that it belongs to.

Through the incredible power of suggestion you will experience the details of a building that can be beautiful or dull, exiting or intimidating.

Enter the world of architecture and find out what the architect has to consider in his attempt to design our world.

I invite you to join me on an adventure through Architecture with YOU as the main figure of the story. I will guide YOU along all the principles of architecture and invite you to while you imagine yourself as the figure in the drawing.

These little sketches will introduce you to one of the main principles (wall, roof, door, window and floor) and their various but basic variations



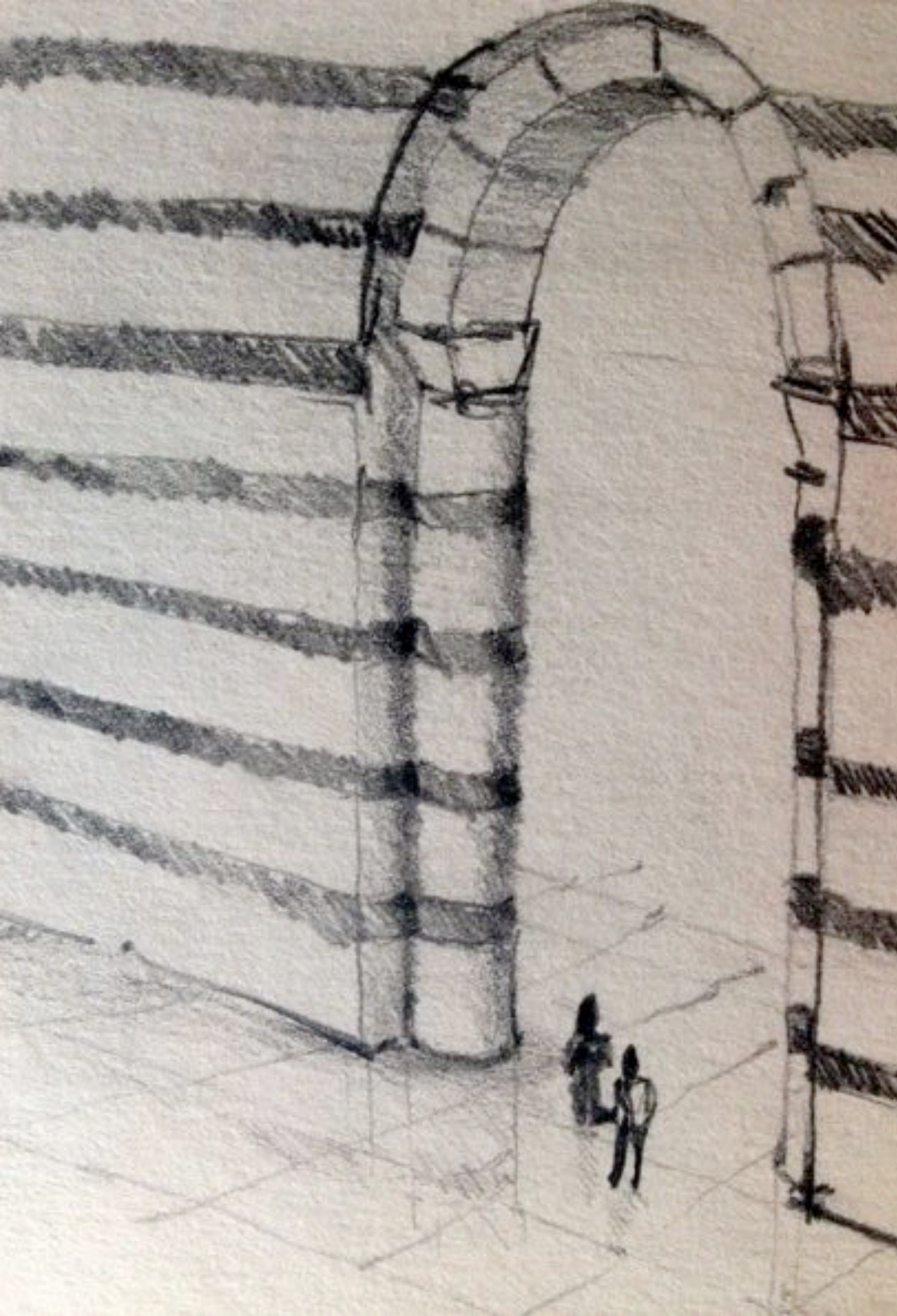


CHAPTER 3

THE BASIC ELEMENT:

THE WALL

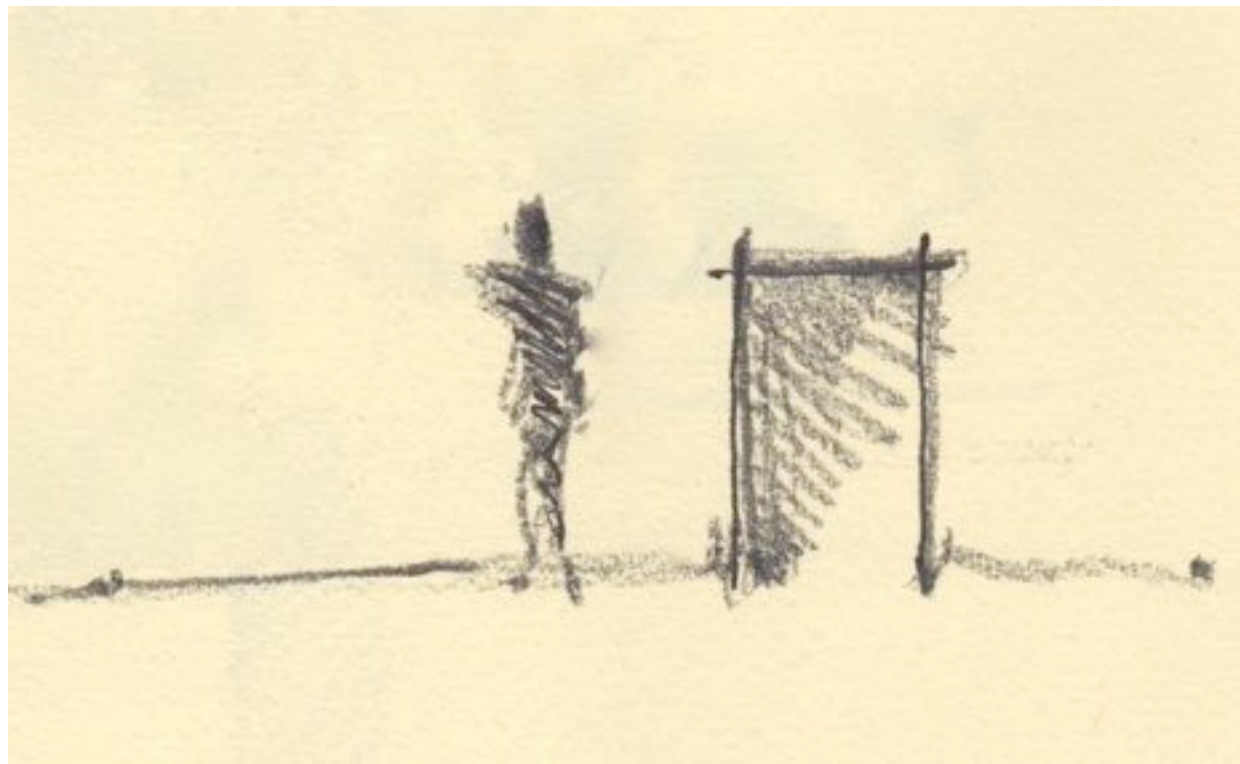
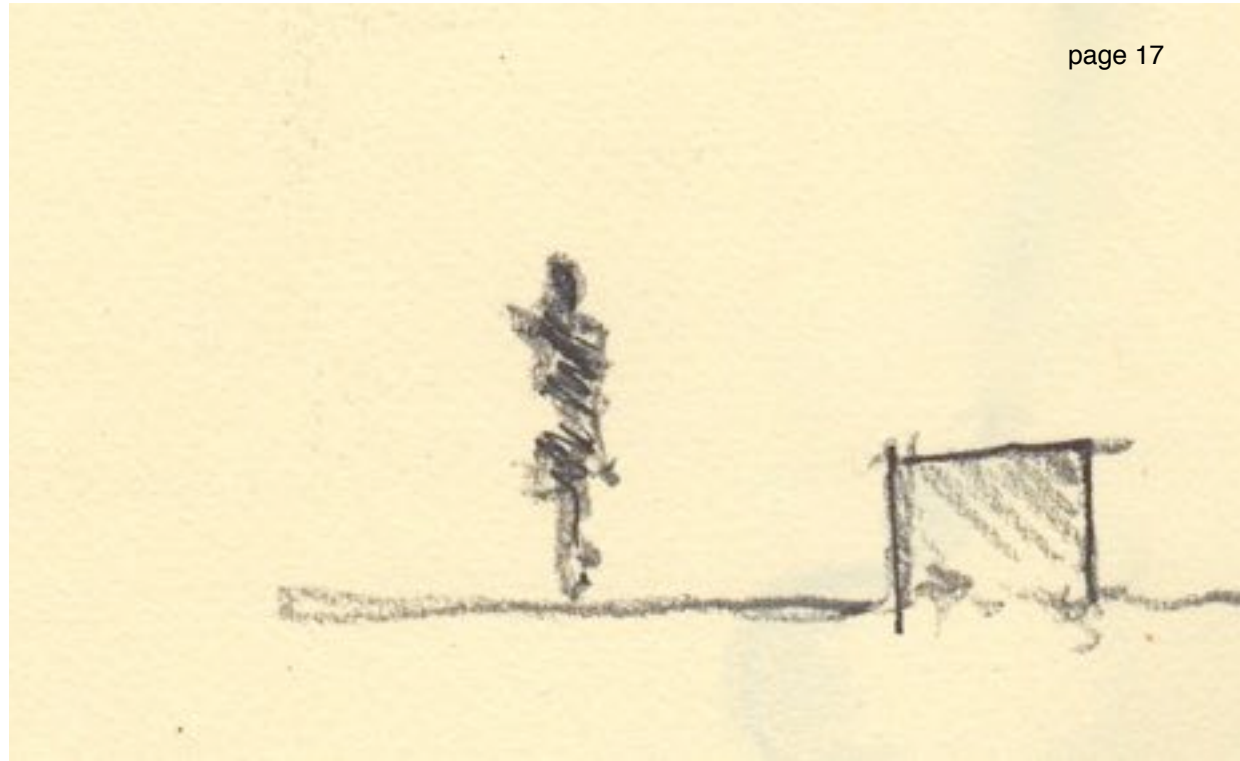
Every structure or building has walls, they can be straight, round, high, low, soft, hard, monotonous, chaotic, broad, thin, transparent, closed, existing of columns, of water, of light, of smoke, of artificial or natural material, combined structures and the list is endlessly expandable, There is one trade that all these walls have in common;



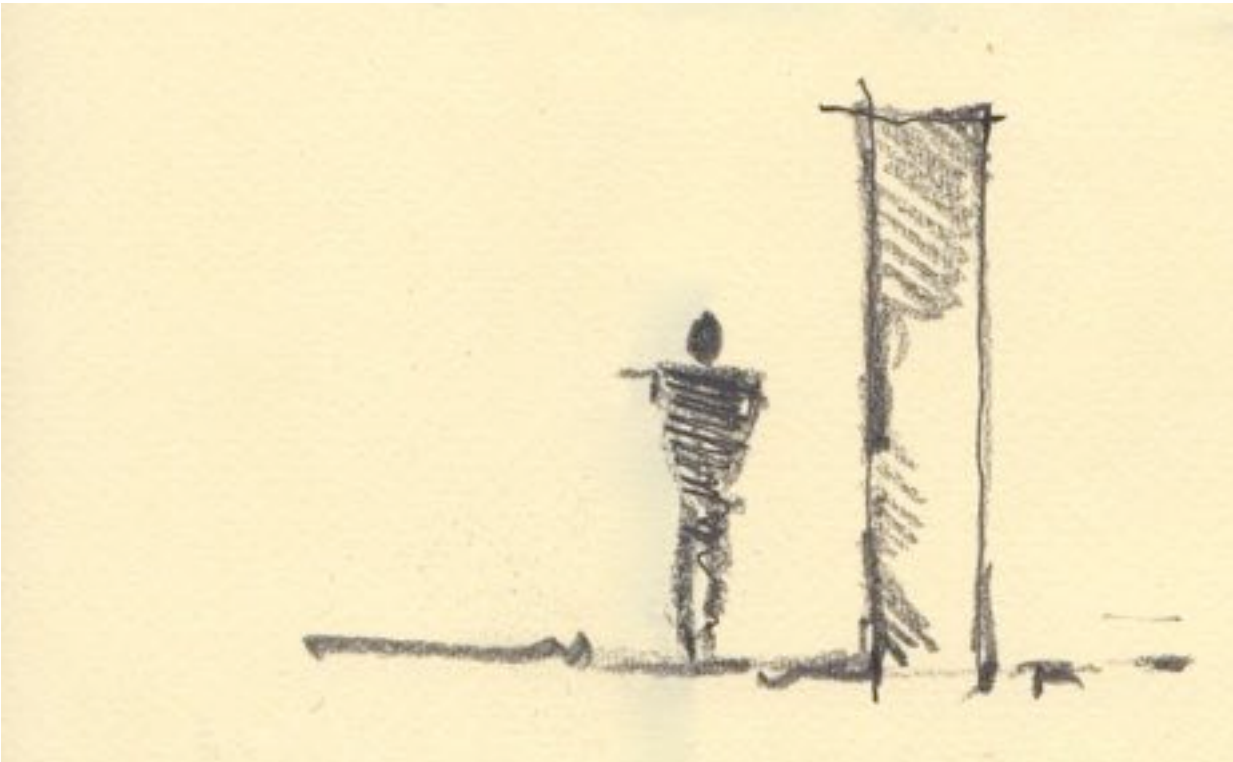
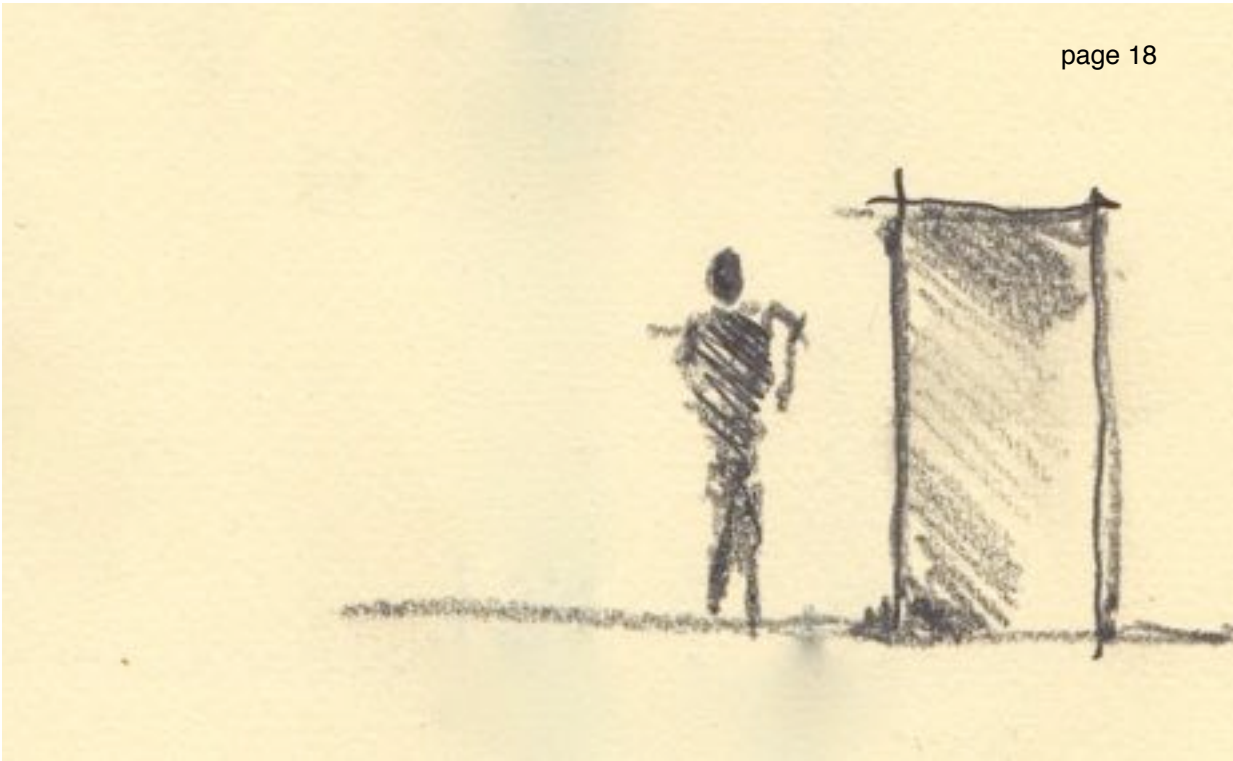
they separate one space from the next. Every kind of wall has a unique experience and as such forms one of the main principles of architecture.

Enter the world of architecture and find out what the architect has to consider in his attempt to design our world.

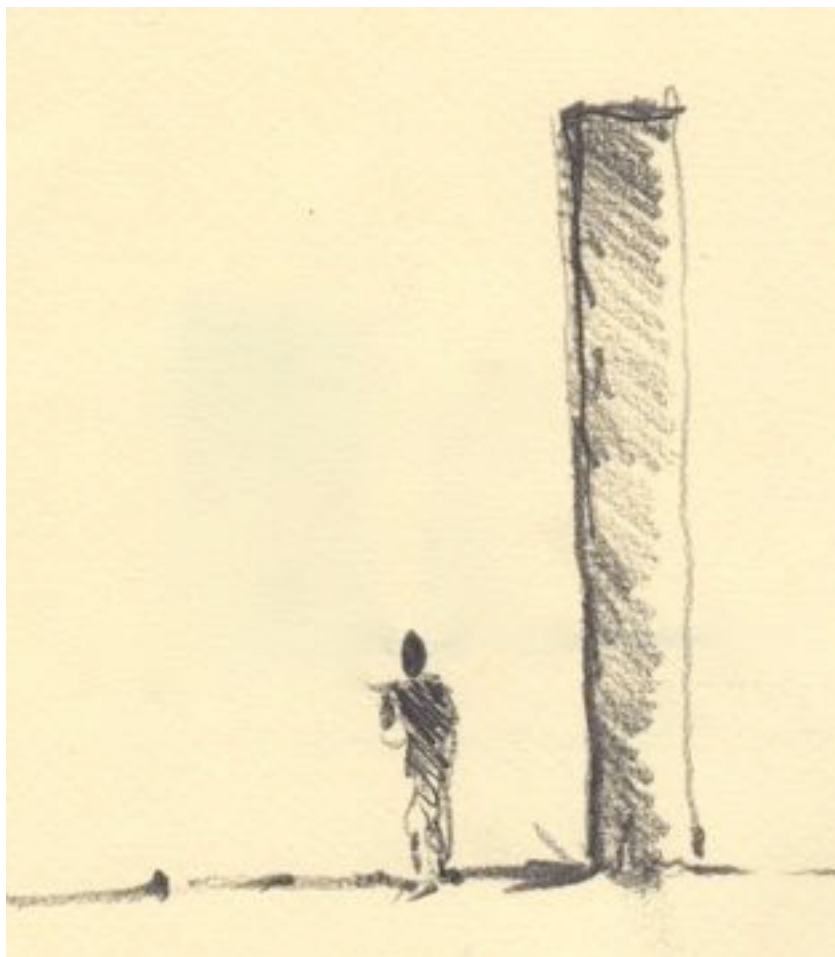
We start with a simple wall and in this example the only variation is its height relative to your height. Each consecutive image shows you next to a higher wall. What is your relationship with that wall? Does this relationship change as the wall increases in height?



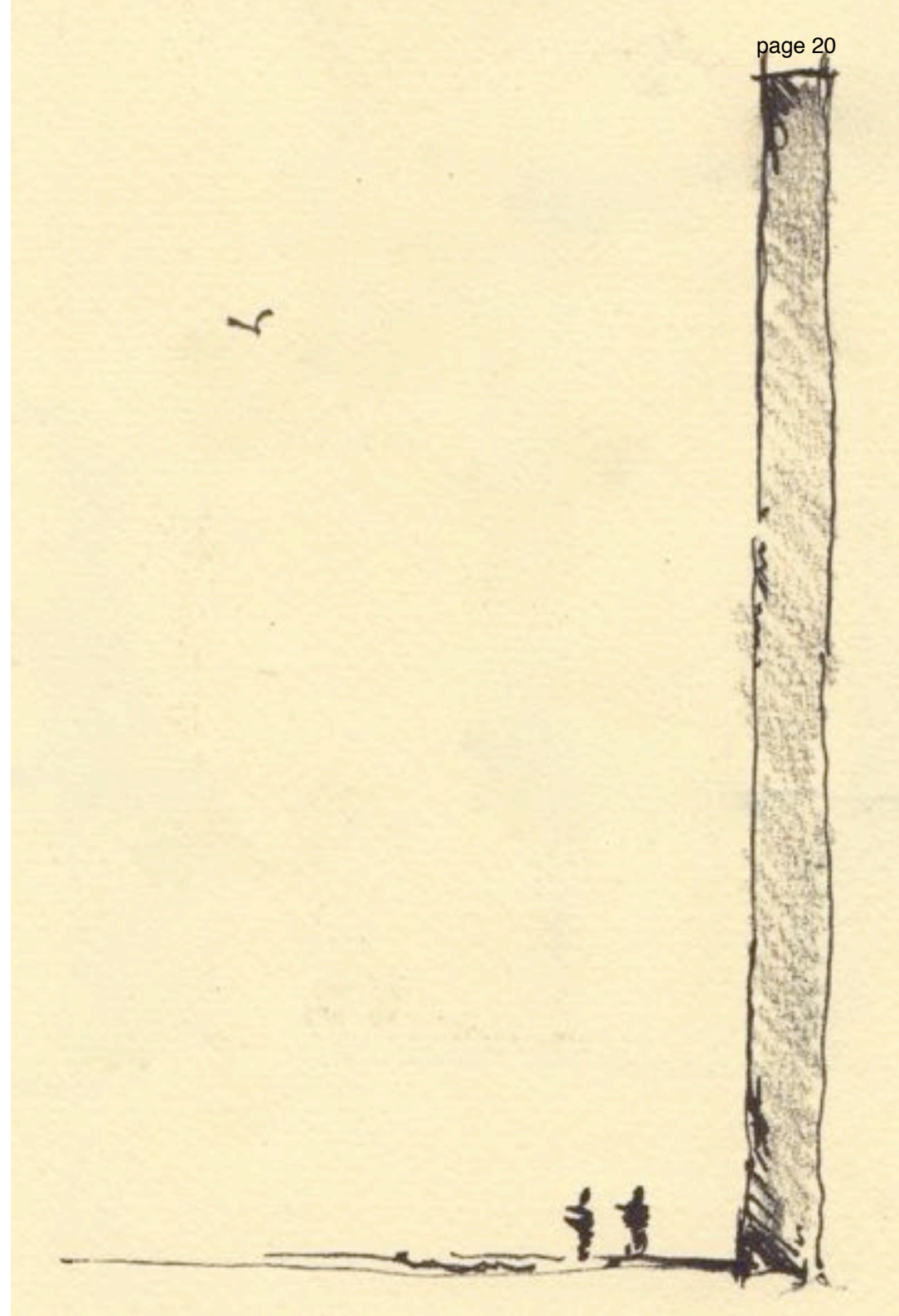
As the wall increases in height, you may notice it starts to limit your view, block the light, etc.



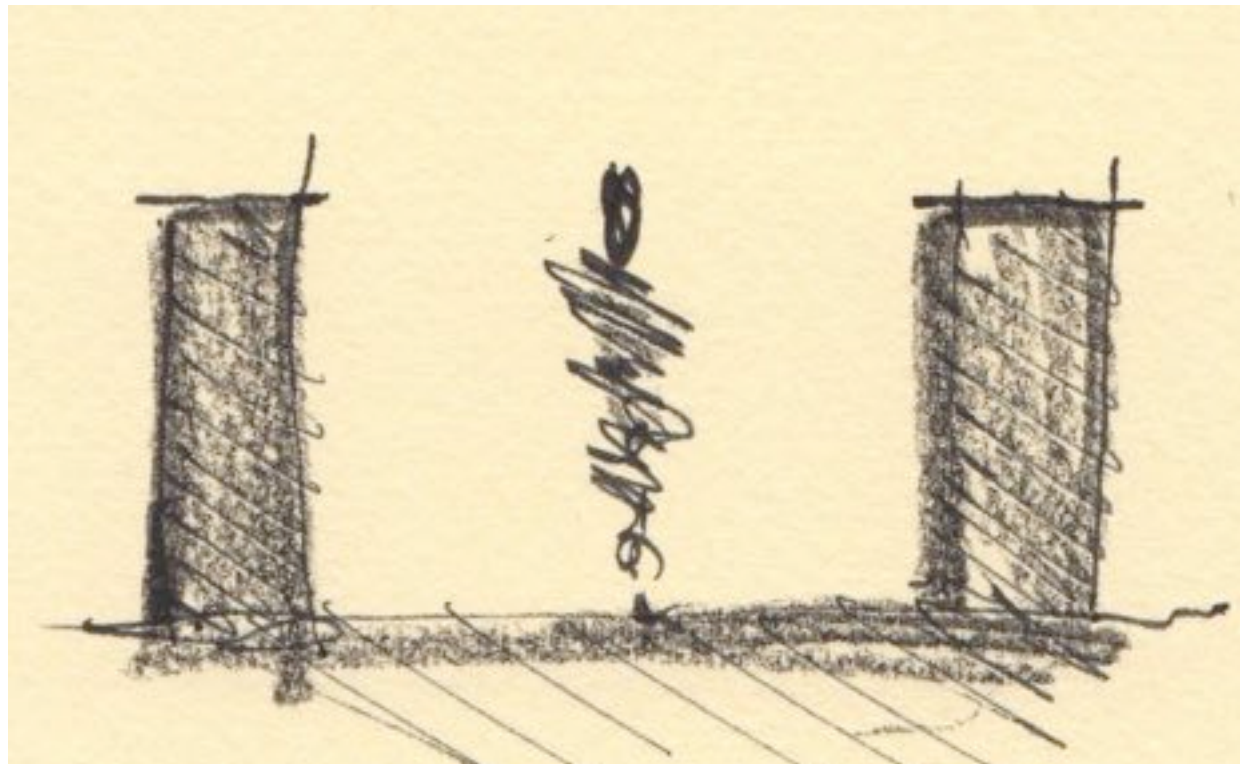
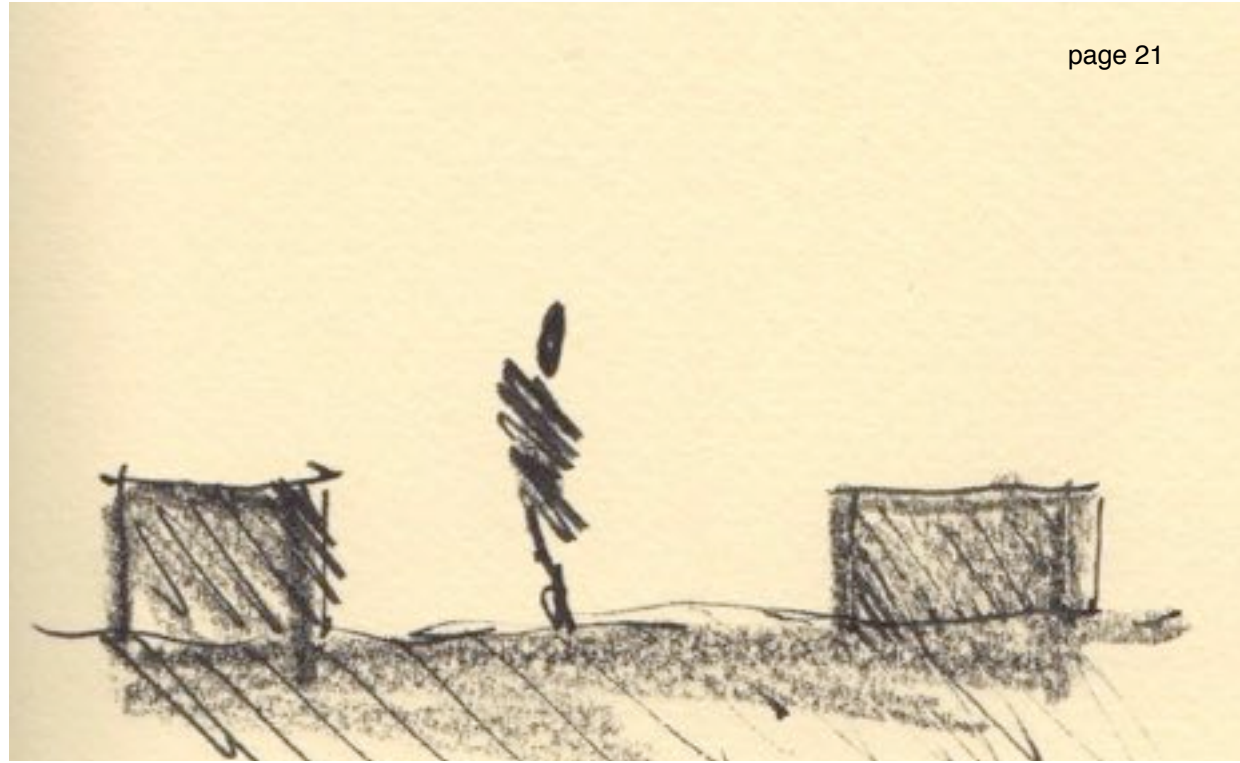
As the height increases even more, the experience of the wall keeps changing in a distinct way. You may start to hold more distance, feel enclosed, or direct your gaze up.



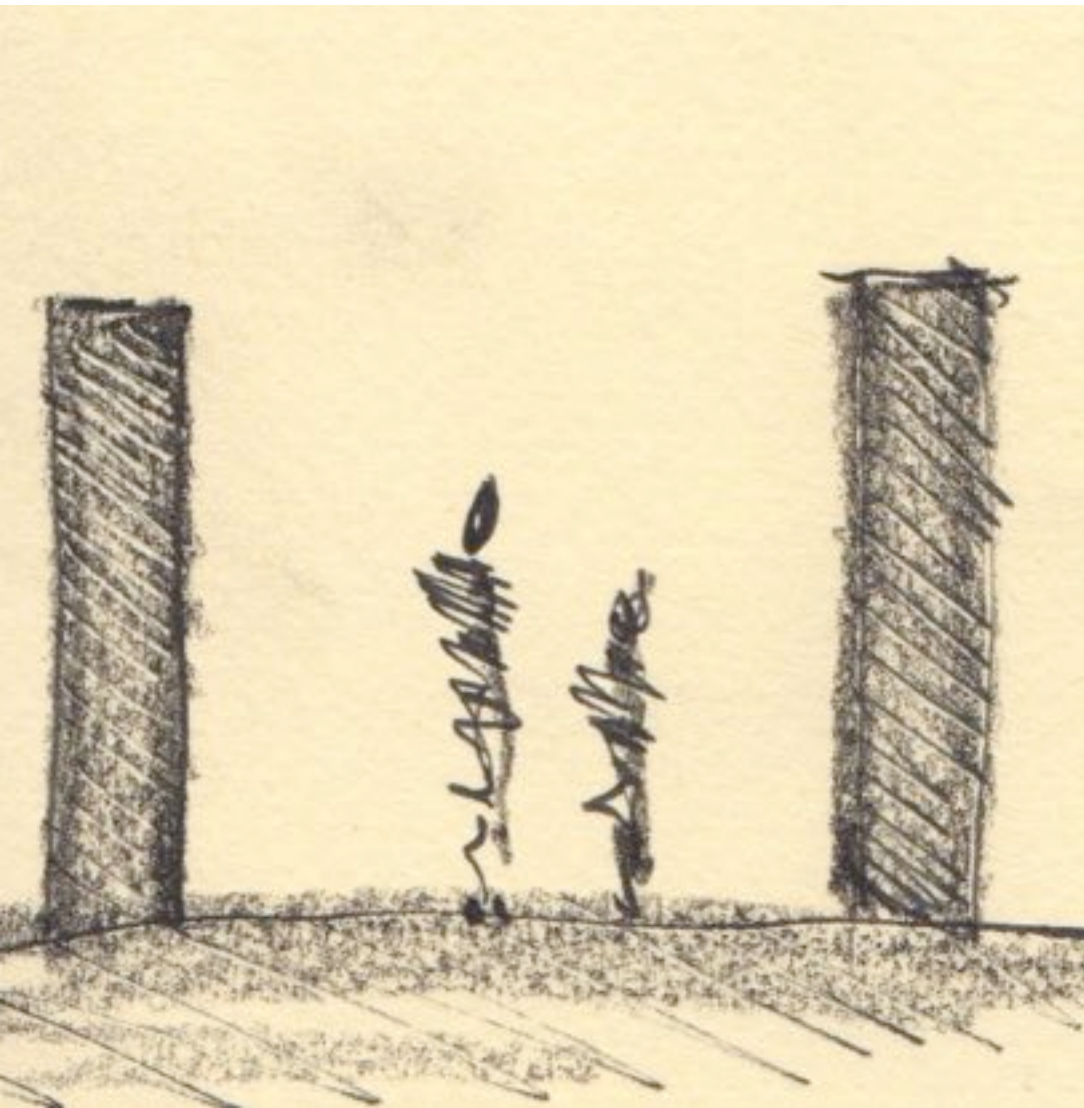
At a certain height it may make you feel small and insignificant.

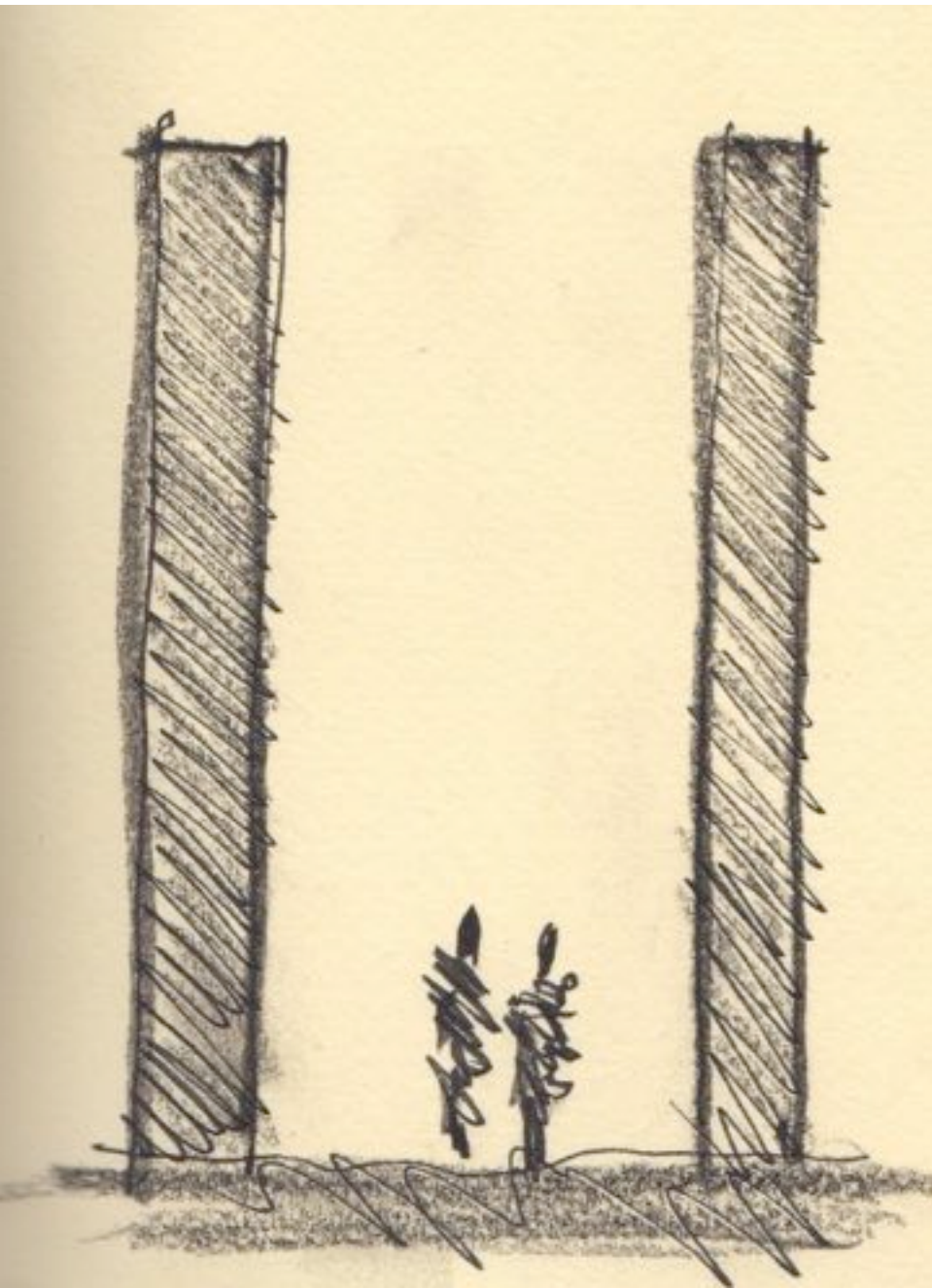


Experience how it feels with
walls on both sides varying
in height.

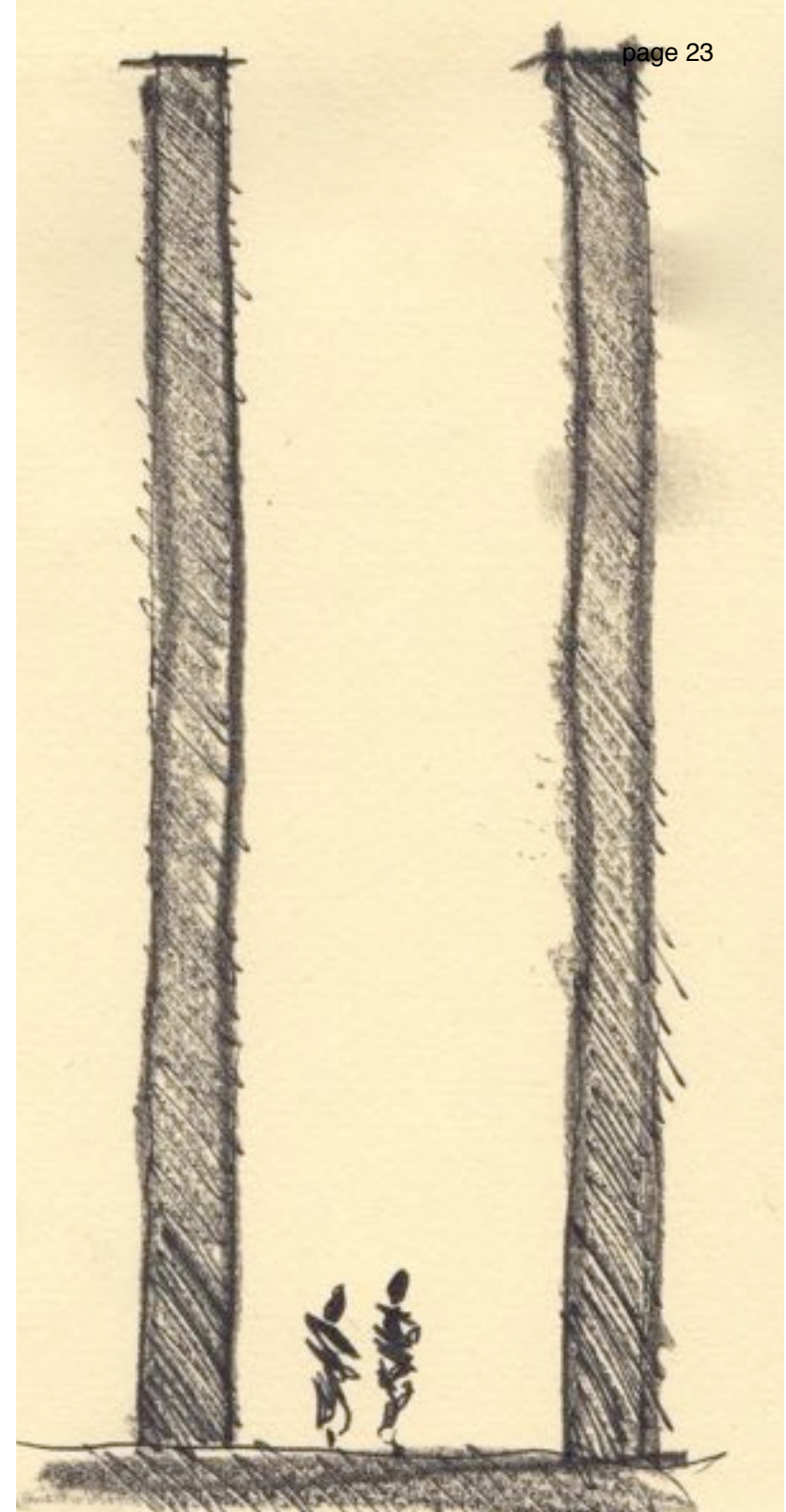


A space starts to form as the two walls increase in height. It is curious to notice that adding a second person has an effect on the atmosphere of the space

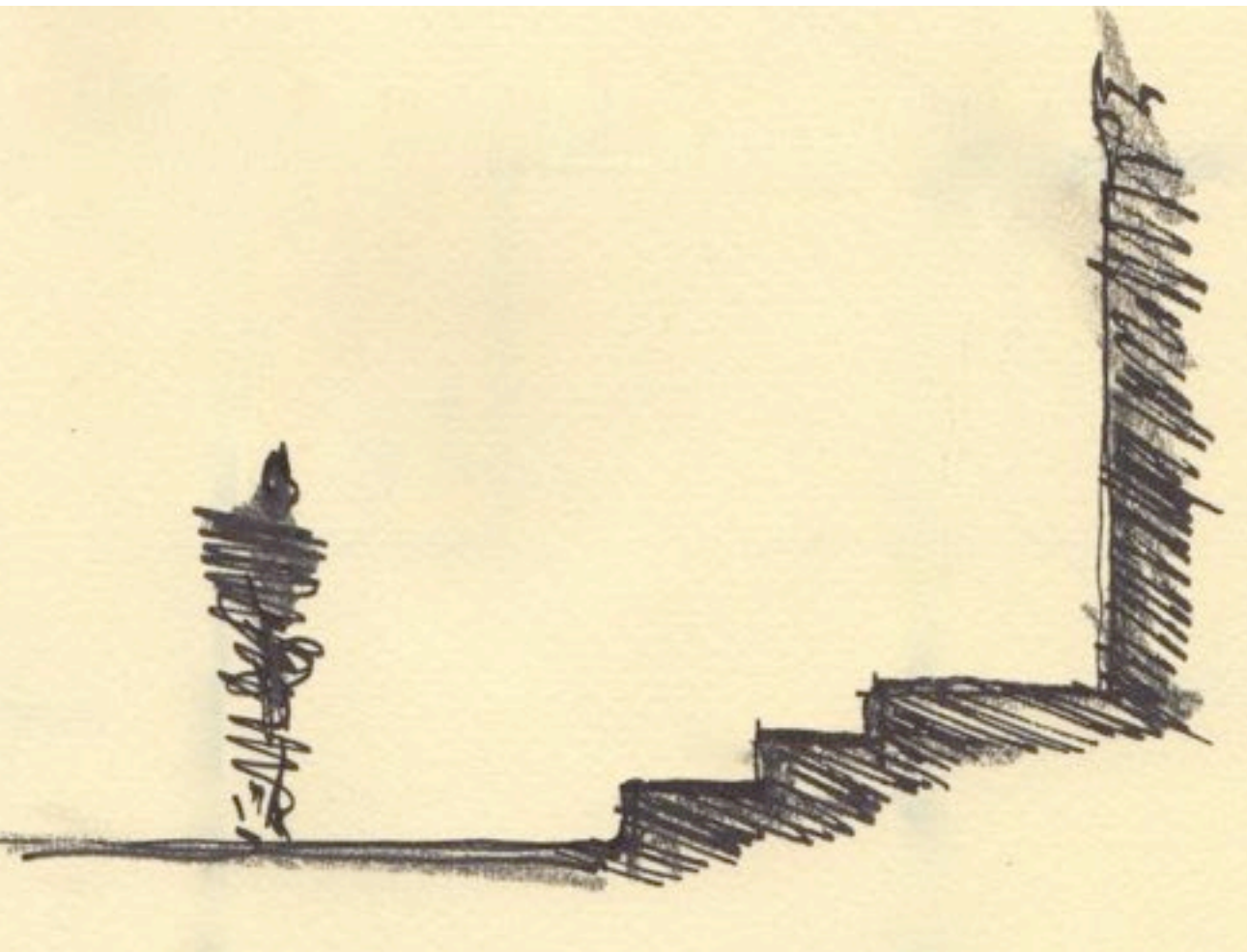


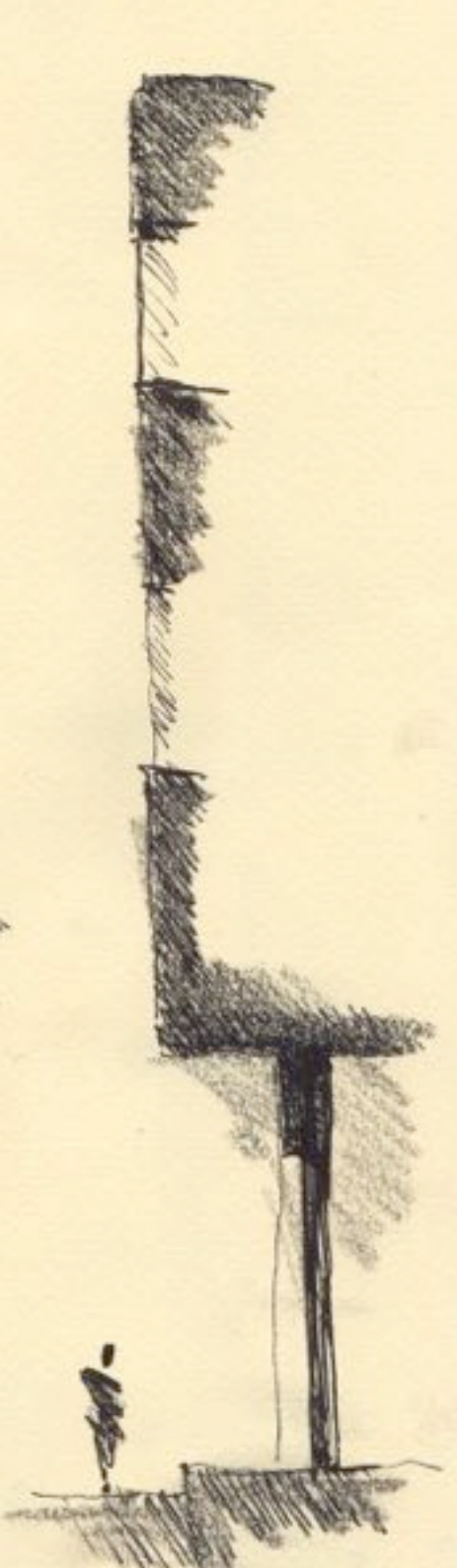


The space that is forming as the two walls increase in height changes in atmosphere, there comes a point when we feel entirely enclosed even though it is still open at the top.



The base of the wall and how it meets the earth is also important information for the experience.

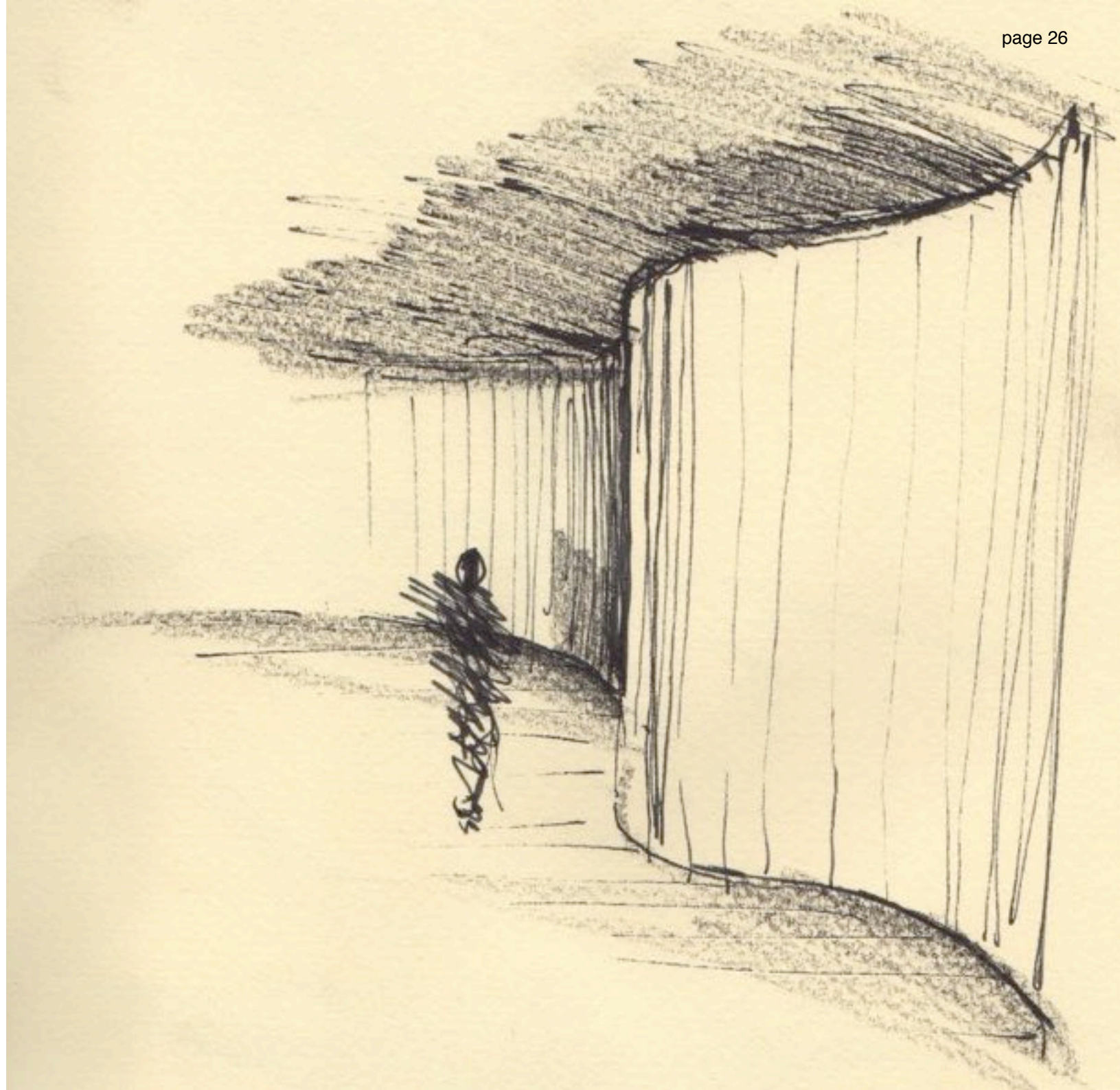




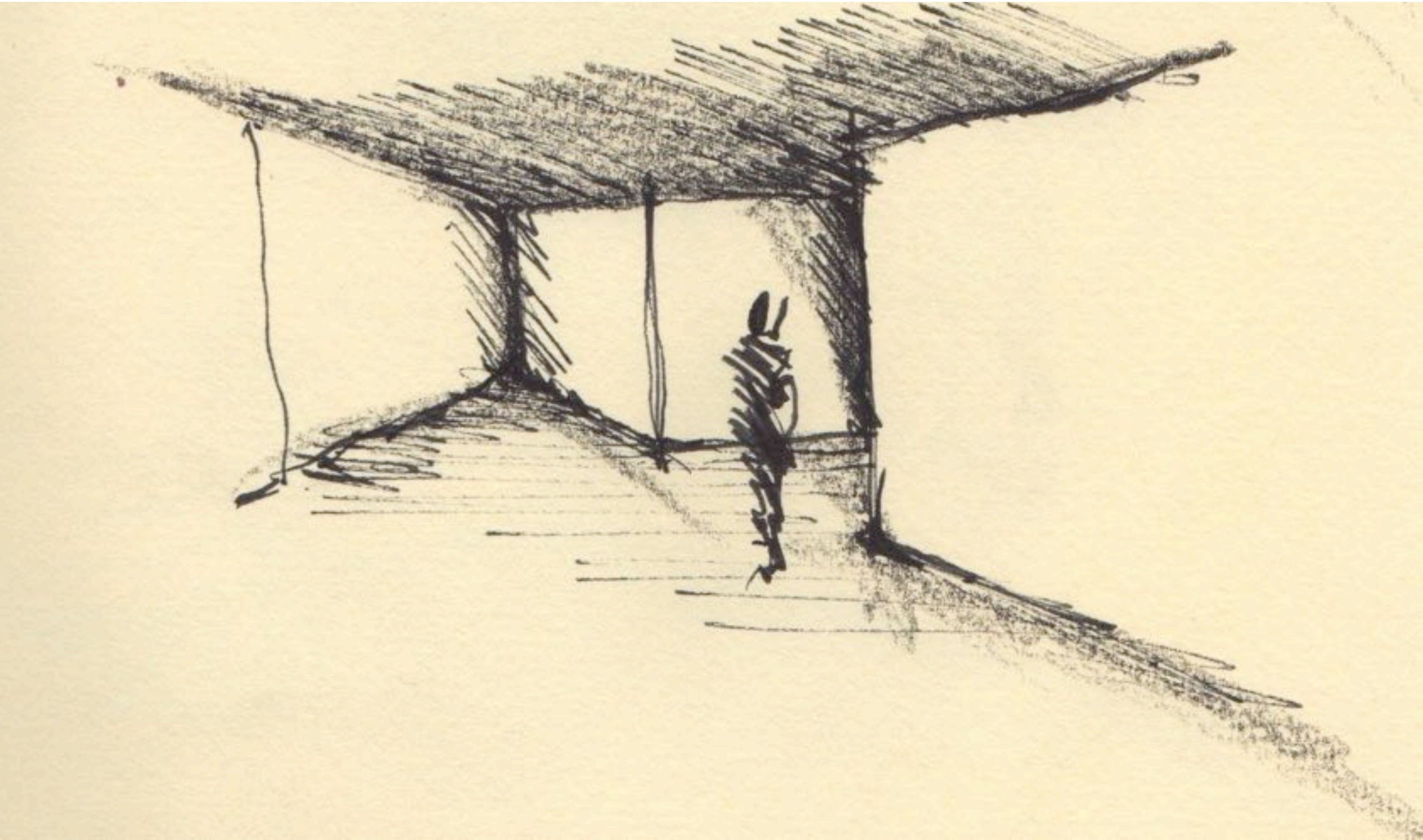
These sketches illustrate the effect of openings, windows and entrances in walls. The approachability of a building is greatly influenced by the way the window is set in the wall. In the drawing on the left there is not much to relate to as far as proportions and detail go, In the drawing on the right with lots of added detail the experience is completely different. On the left your attention will be drawn to the mass of the building, on the right you will be drawn to the different details. The same difference continuous to have an effect while you enter the building



The wall with curves instead of angles

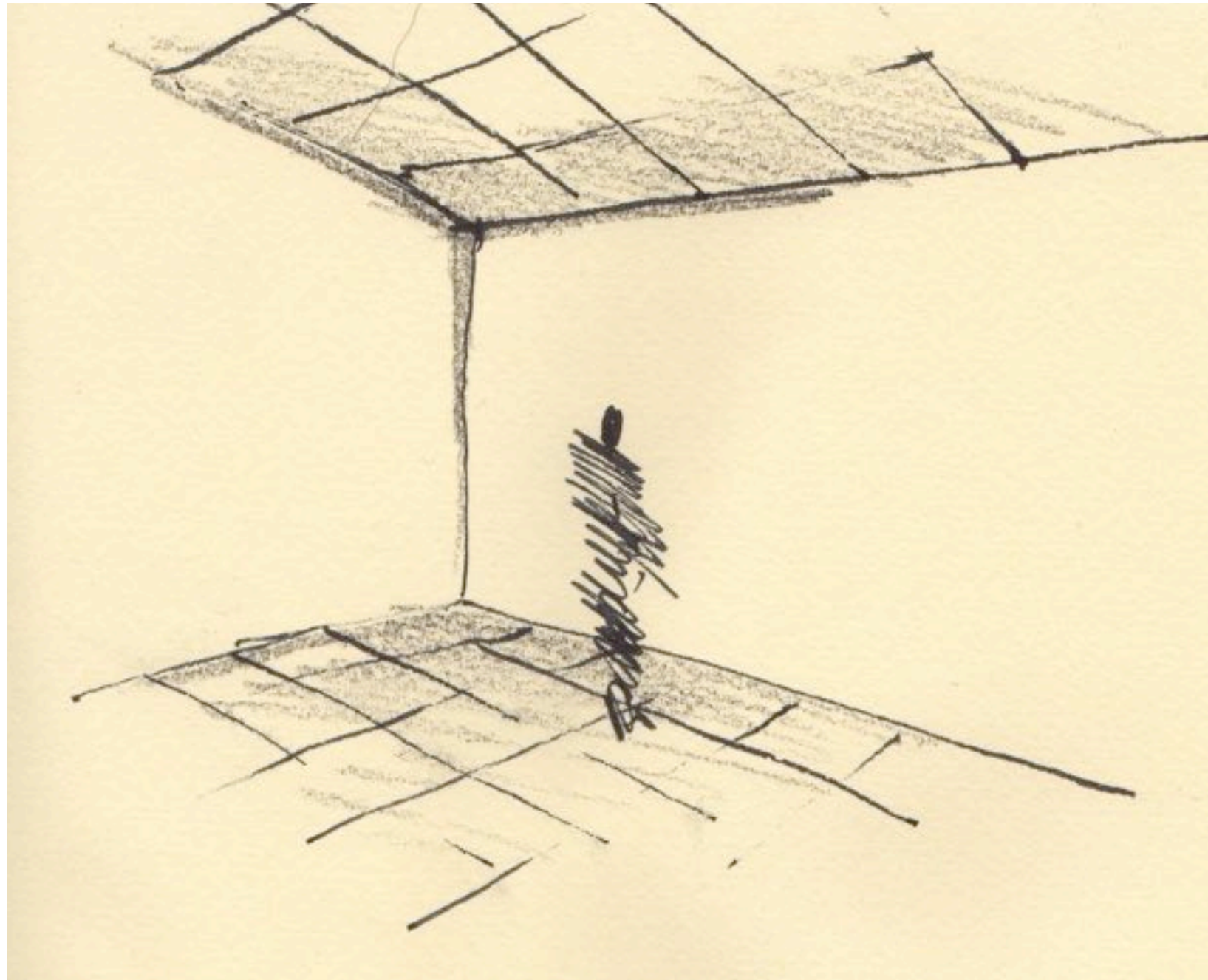


This is what a wall with sharp corners will provoke, and of course the height is of consequence as well. See if you can prolong the image in height or shrink yourself to see what that does to the experience.



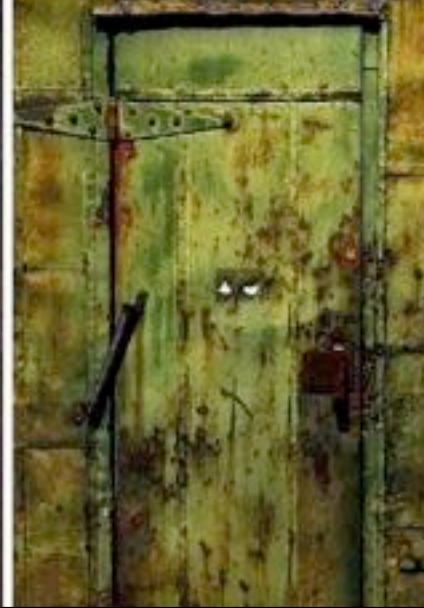
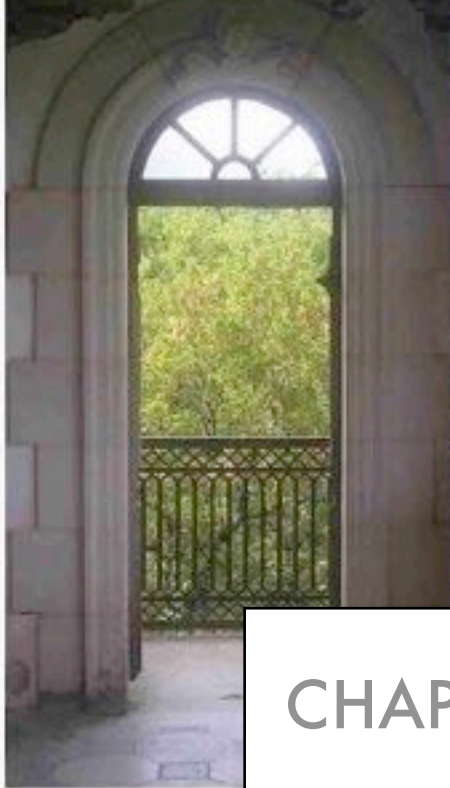
There is so much more to say about a wall but with this set of references, you will develop your own relationship with the subject 'wall' as you start noticing walls around you and what they communicate to you. The image on the right shows you the plain straight wall that has become so common in our world, in most cases white with flat ceiling and with windows in the same plain as the wall. Add prefabricated suspended ceilings, fluorescent light and a zooming air conditioner and you have the space in which a lot of people spend most of their lives.

As an alternative, on the next page, I give you one variation on that theme and invite you to use your own



You can decorate the wall with whatever comes to mind, make interesting details and accents and know by now that it will have an effect on how you feel and on how you experience the space.



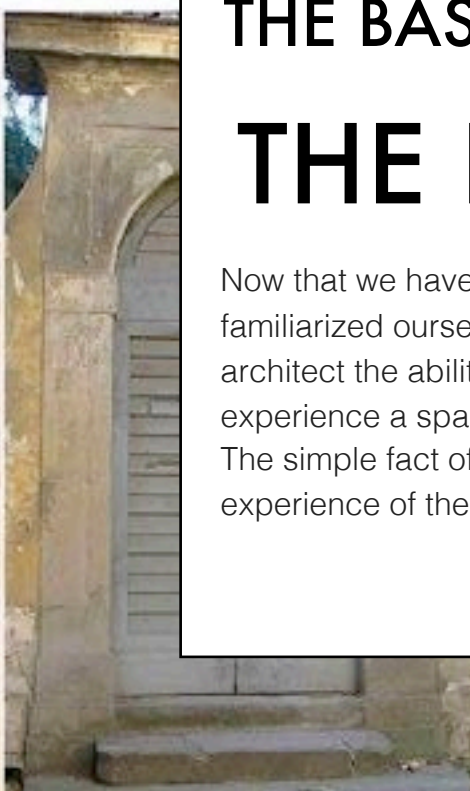


CHAPTER 4

THE BASIC ELEMENT:

THE DOOR

Now that we have explored the principle of the wall and have familiarized ourselves with the aspect of architecture that gives the architect the ability to influence and manipulate the way in which we experience a space, it is time to address the hole in the wall. The simple fact of placing a door in a wall changes the entire experience of the wall. The door itself has its own story to tell.





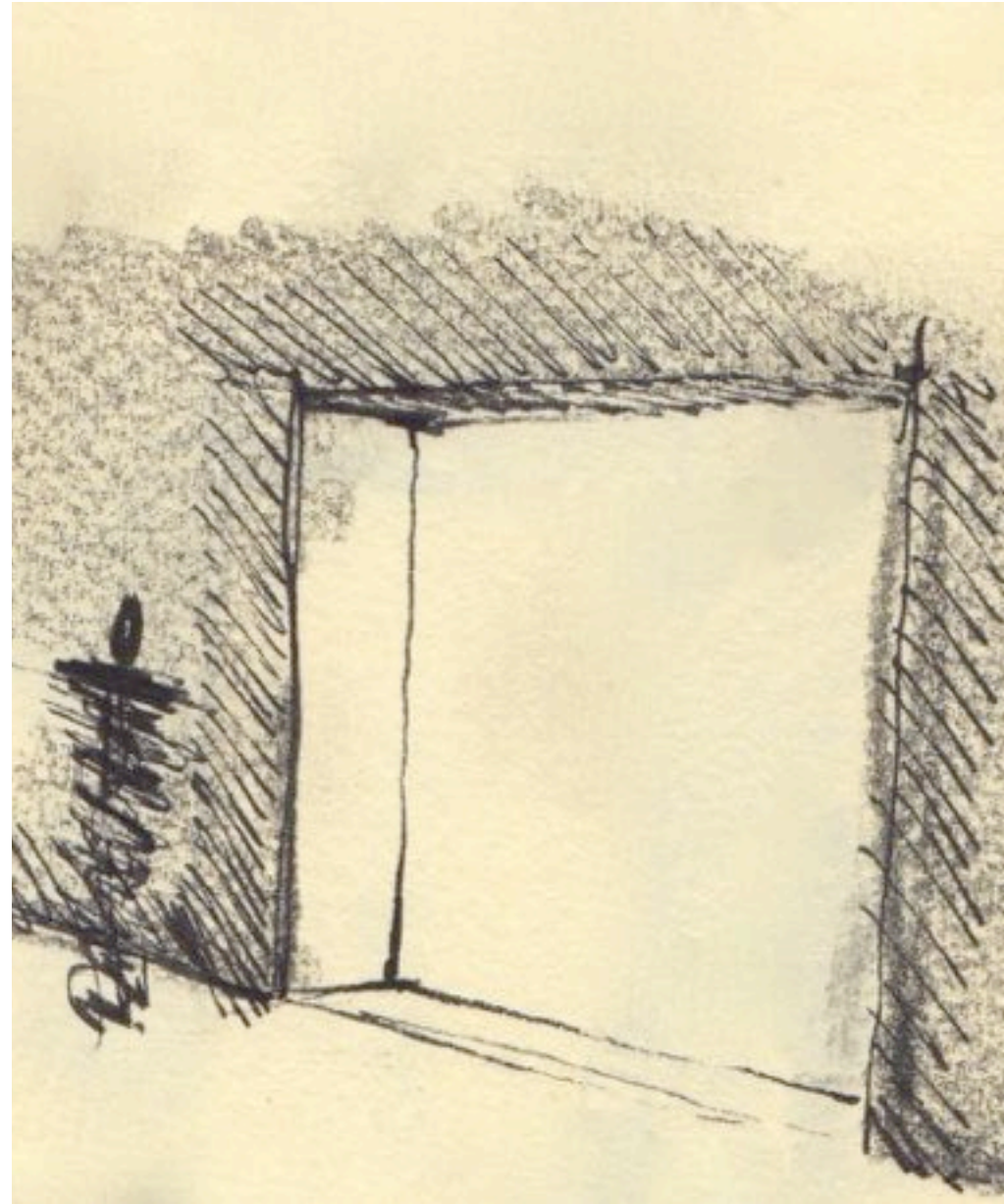
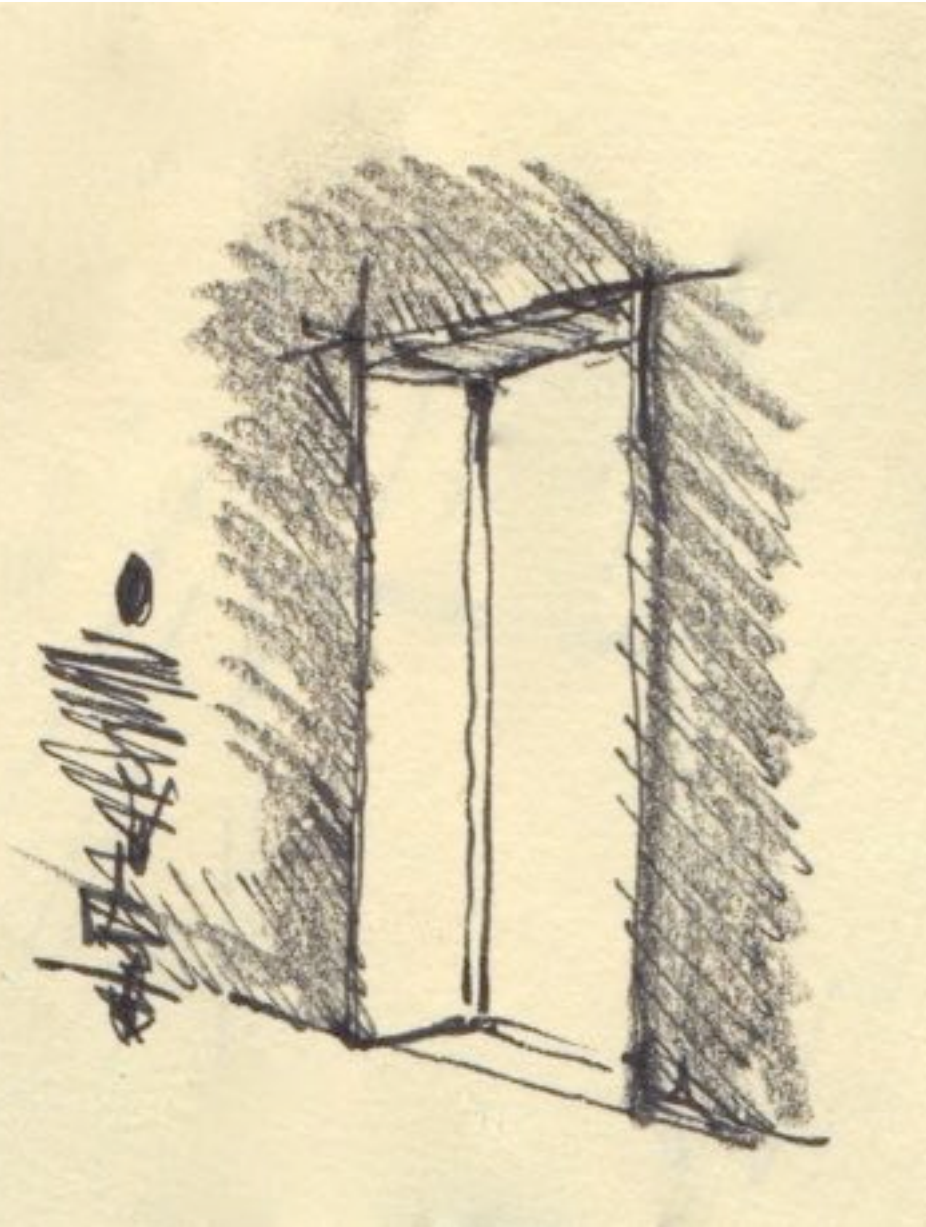
The door, an entrance, a passageway from one space to an other. All these expressions relate to a door or more precise to an opening in a wall or barrier.

Passing through a door opening we leave something behind and enter into a new world. As such you can imagine how determinative a door can be and how much information can be passed on to you as you pass through that opening.

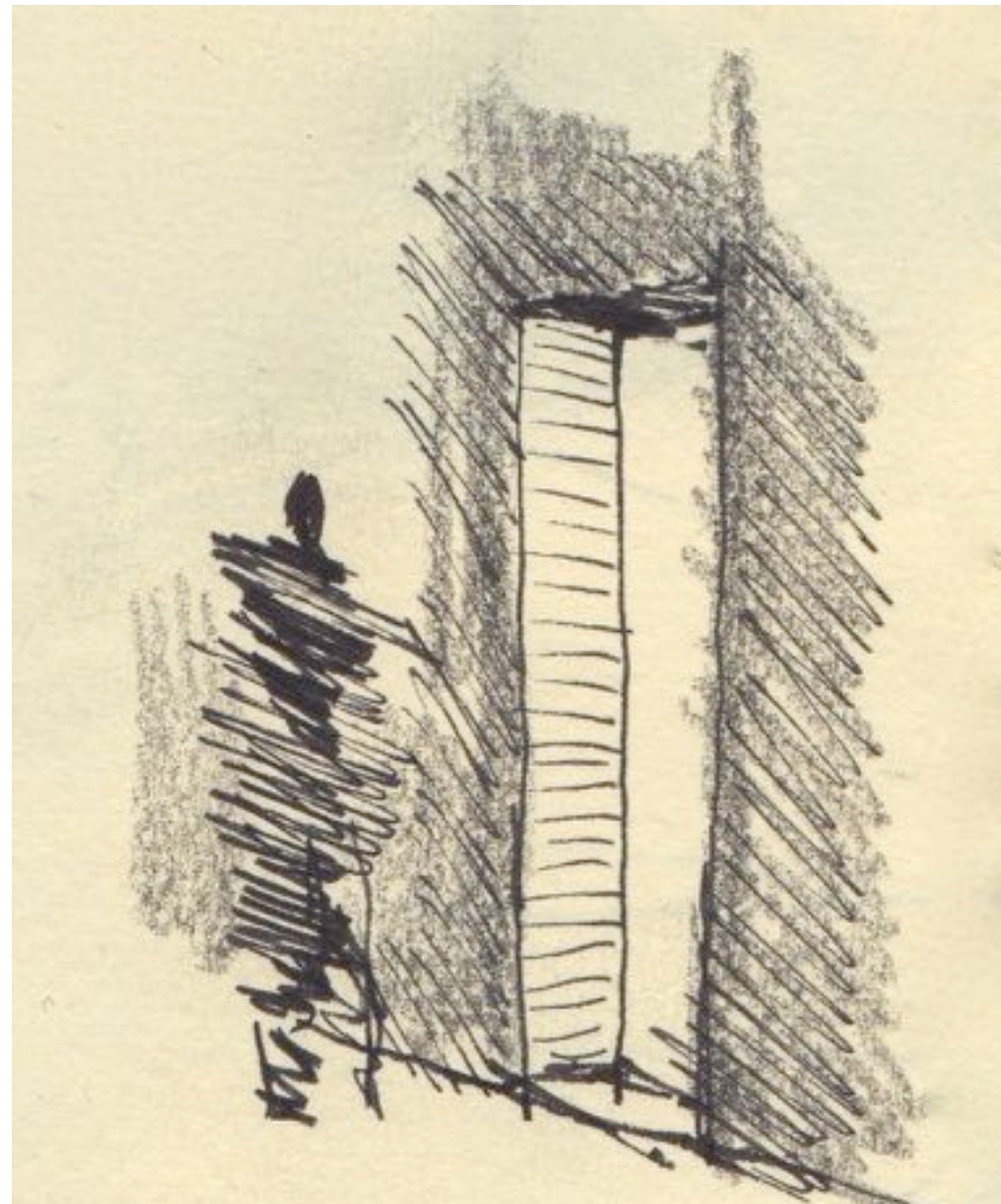
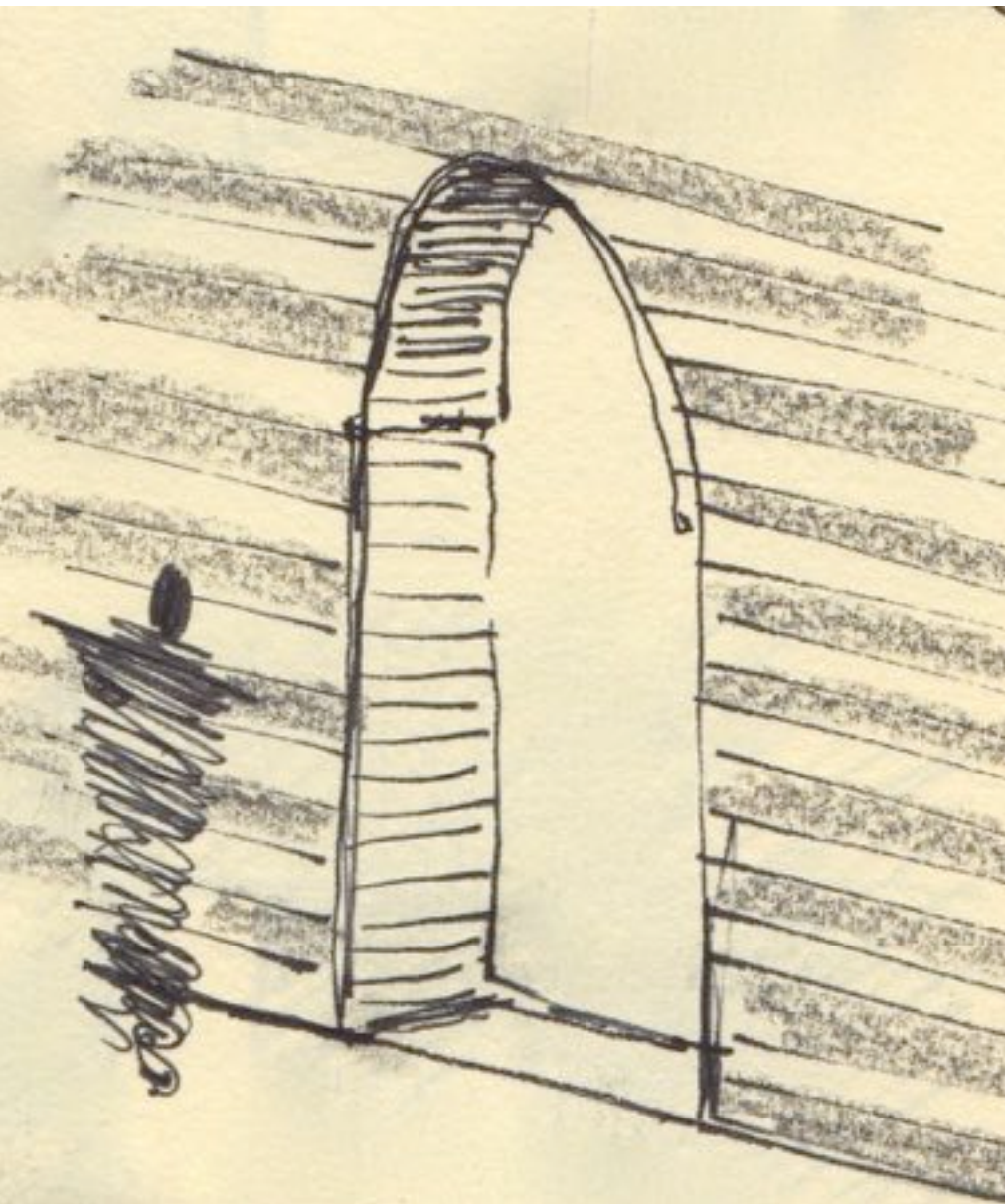
The door as an expression of culture, a historical measure, a status symbol, an identity, a passageway into an unknown world

The shape, height, width and the size of the door opening itself, the door, the details of the frame, the hinges, the color, the wall around it, the lock, the knob, everything adds to the experience and to the expression of that passageway.

Width.....

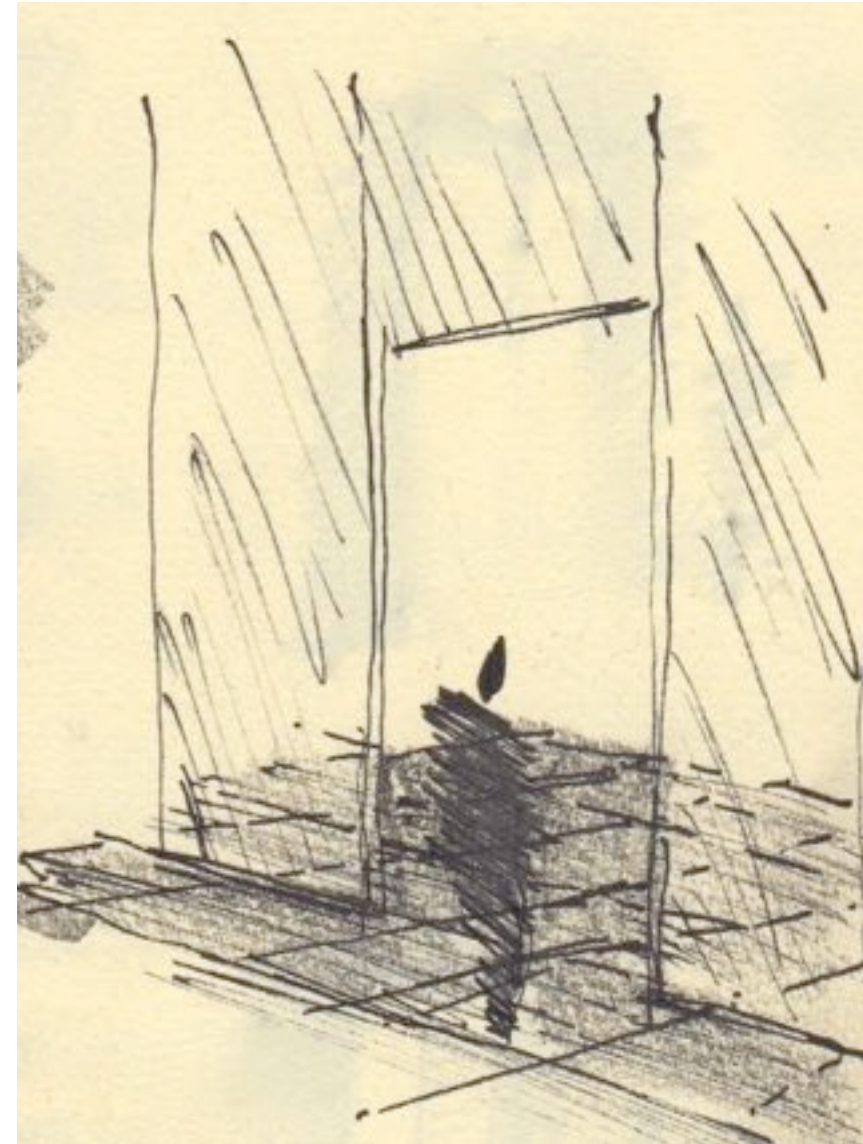
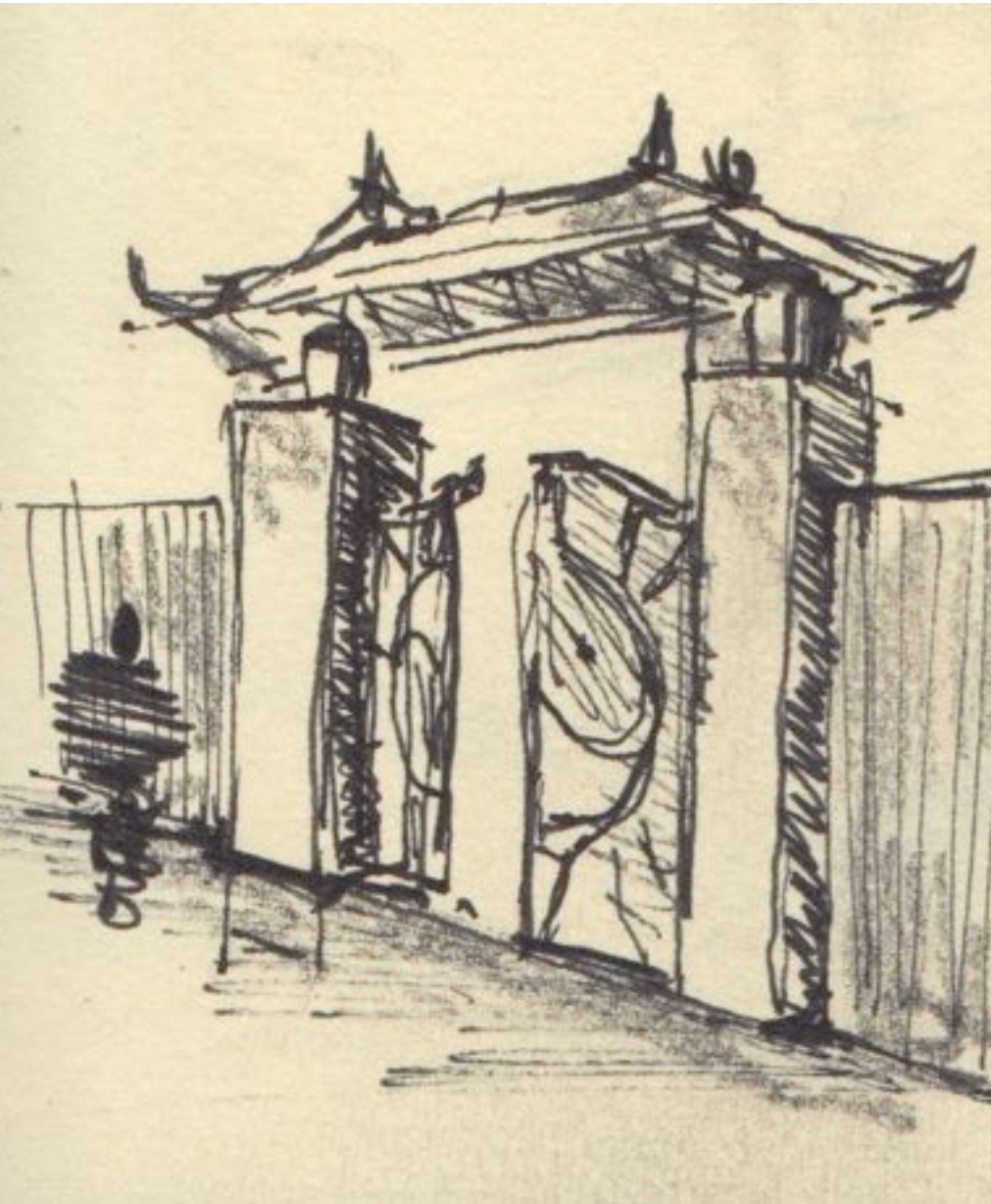


Shape.....

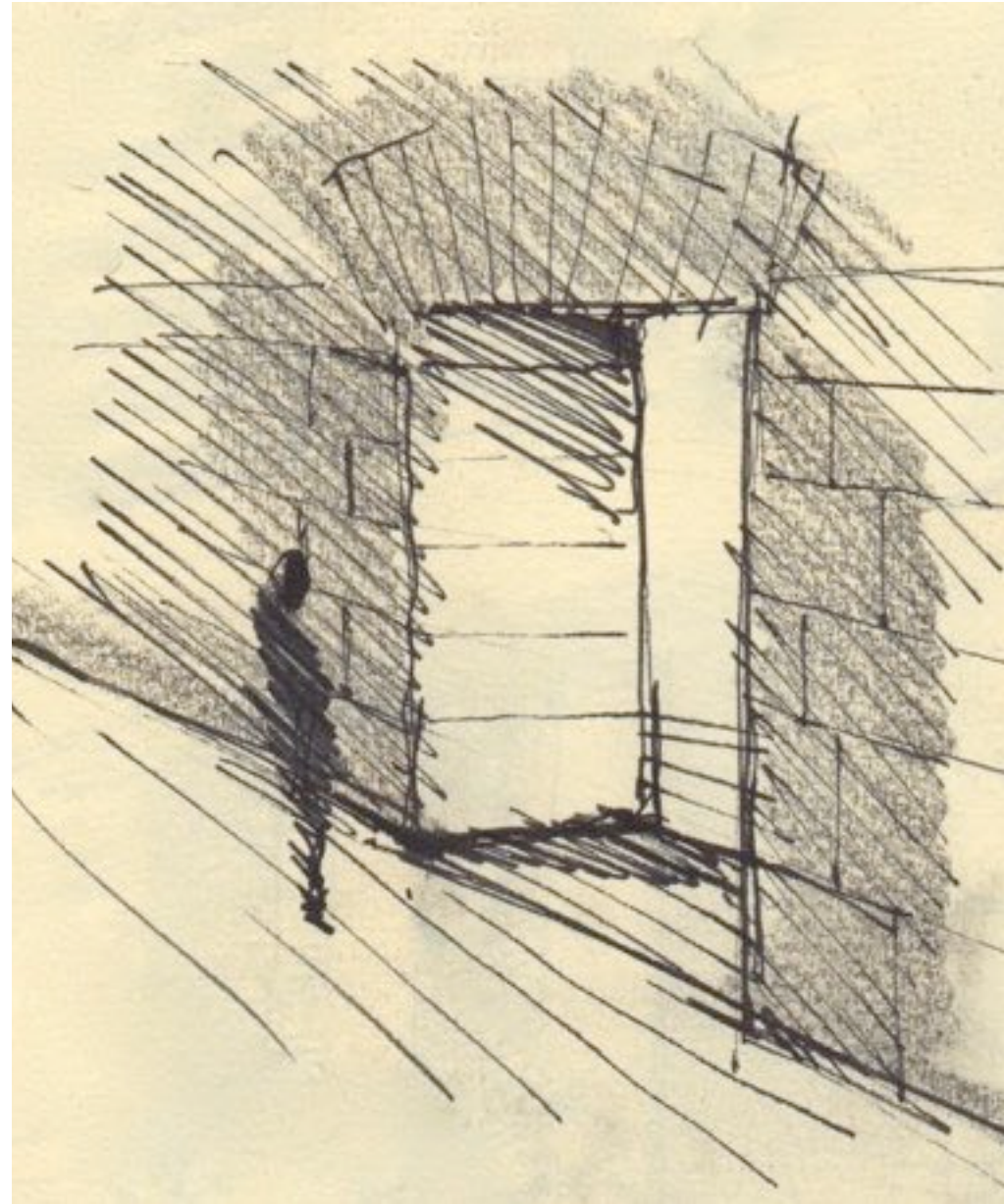
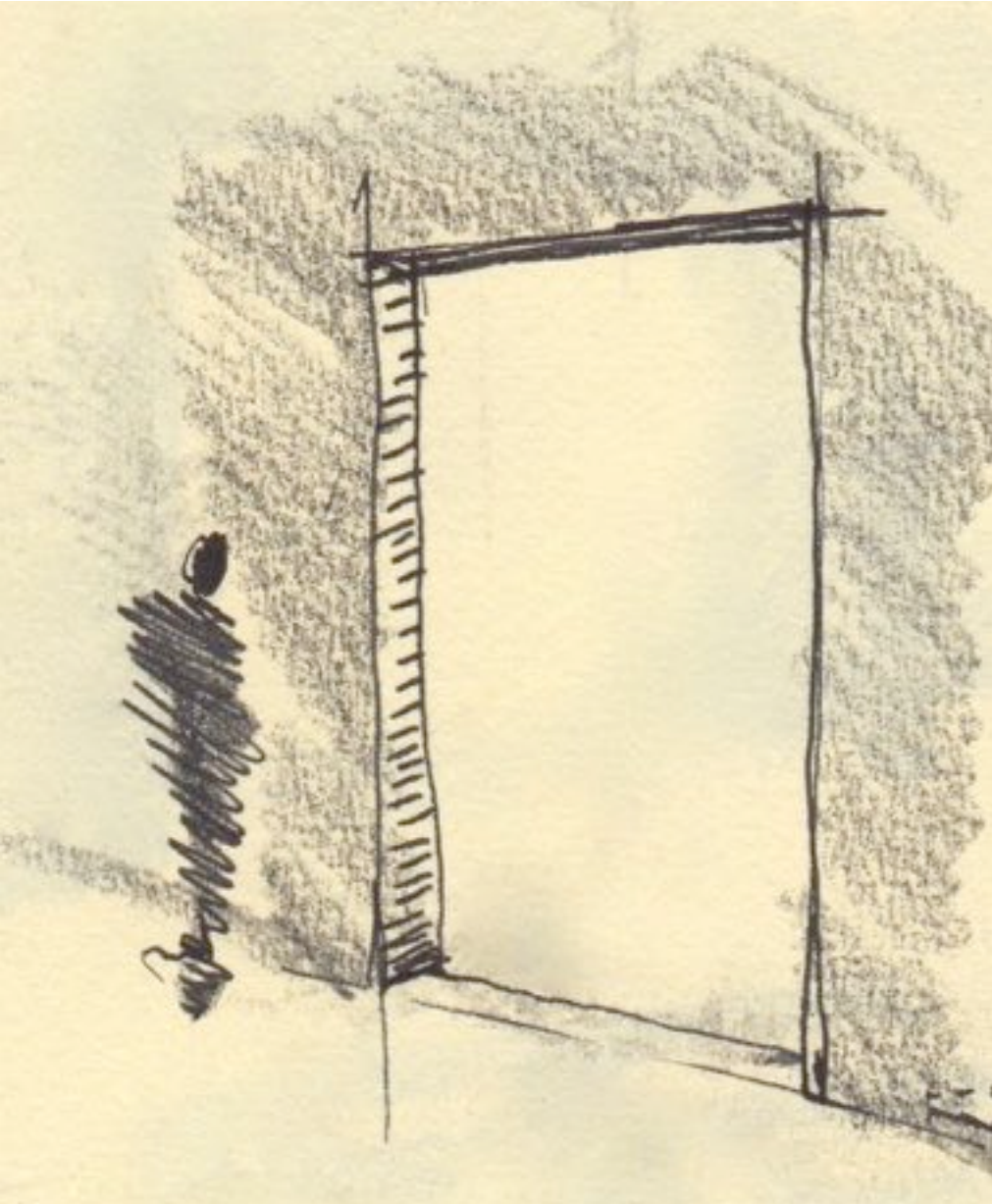


As an entrance, the door conveys a lot of what can be expected behind it. It tells us something about e.g. the owner, the space, the light and whether entering feels safe or scary. The door can make you curious, it is all about anticipation. (or not.....)

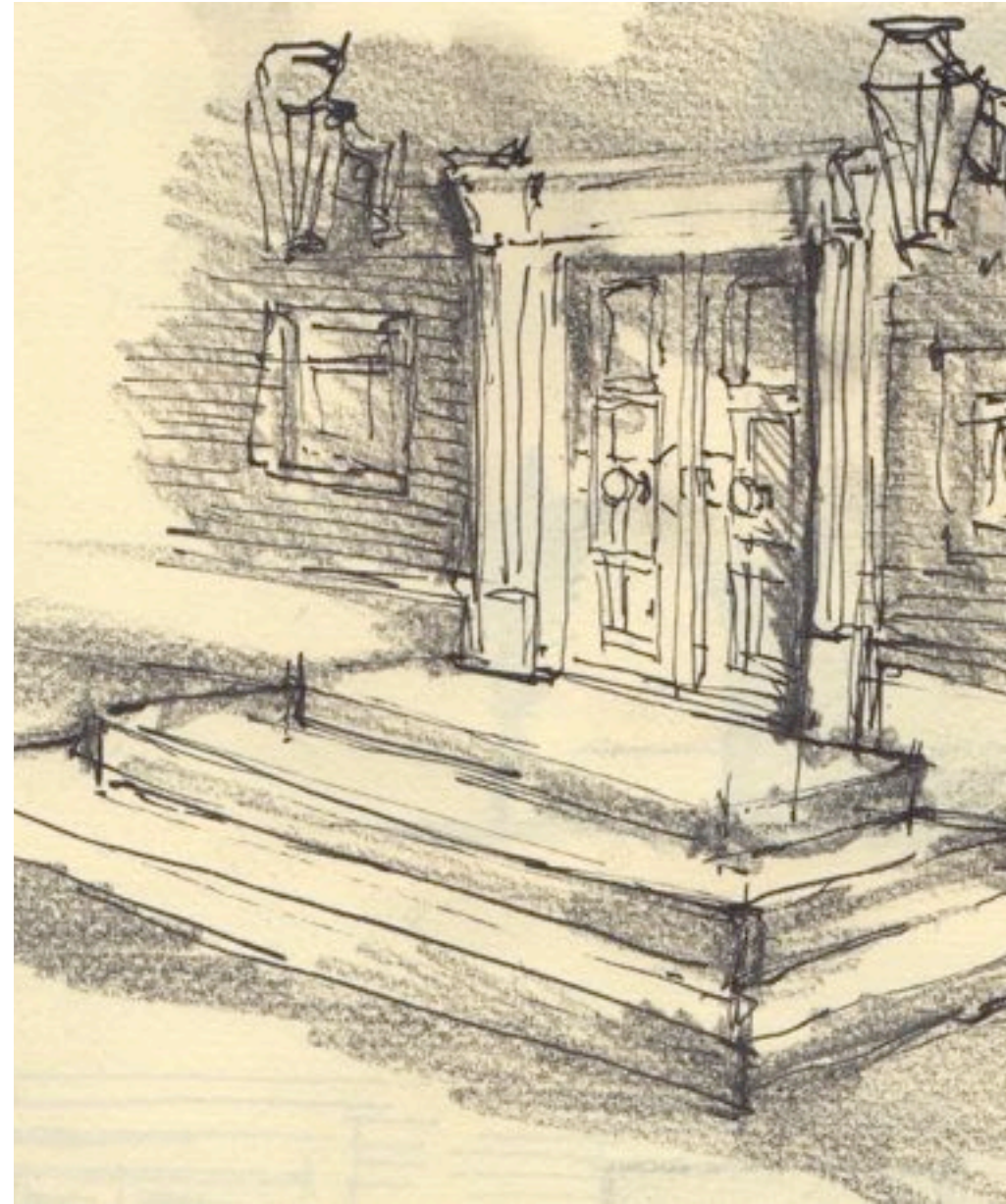
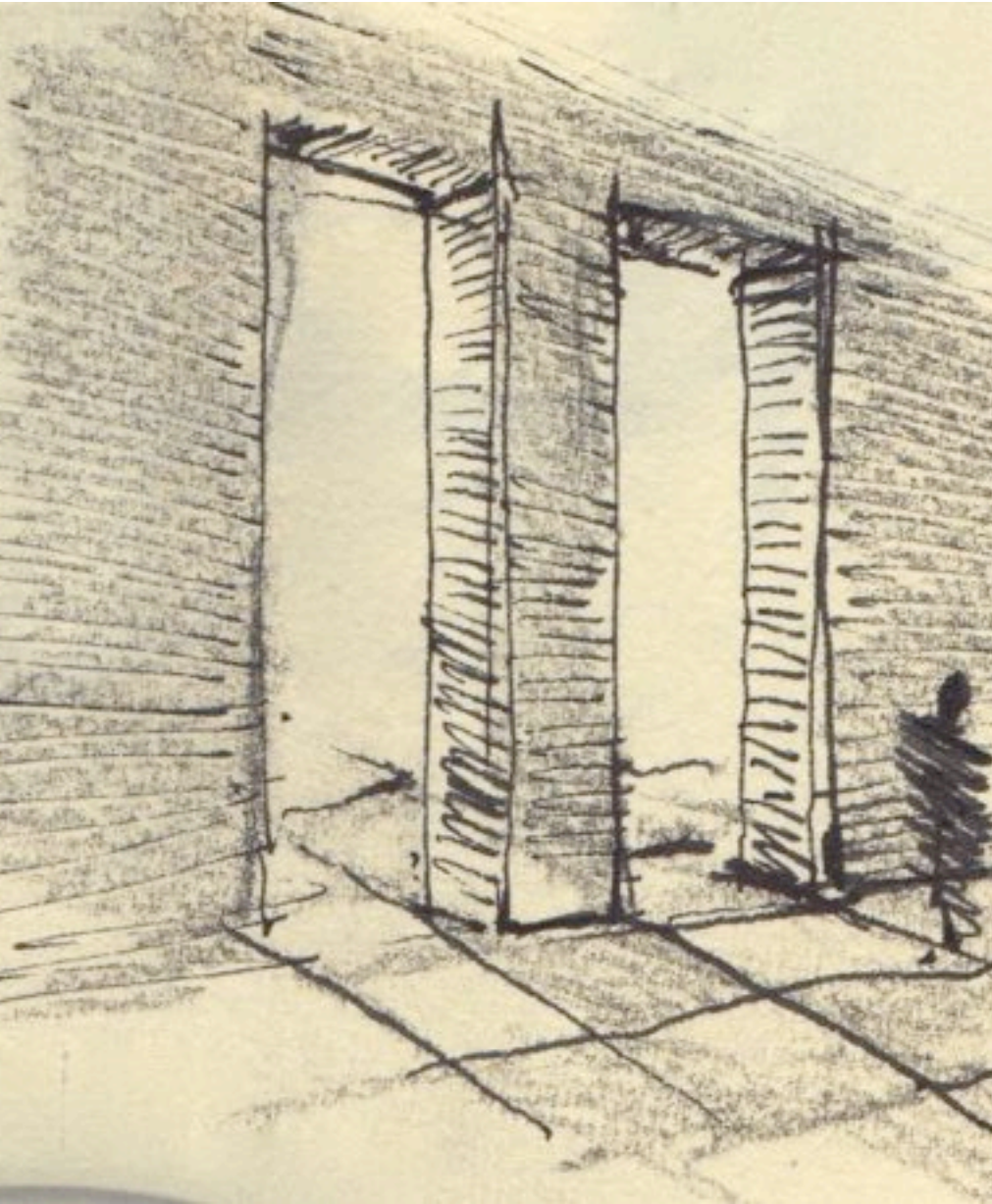
Style.....



The thickness of the wall.....

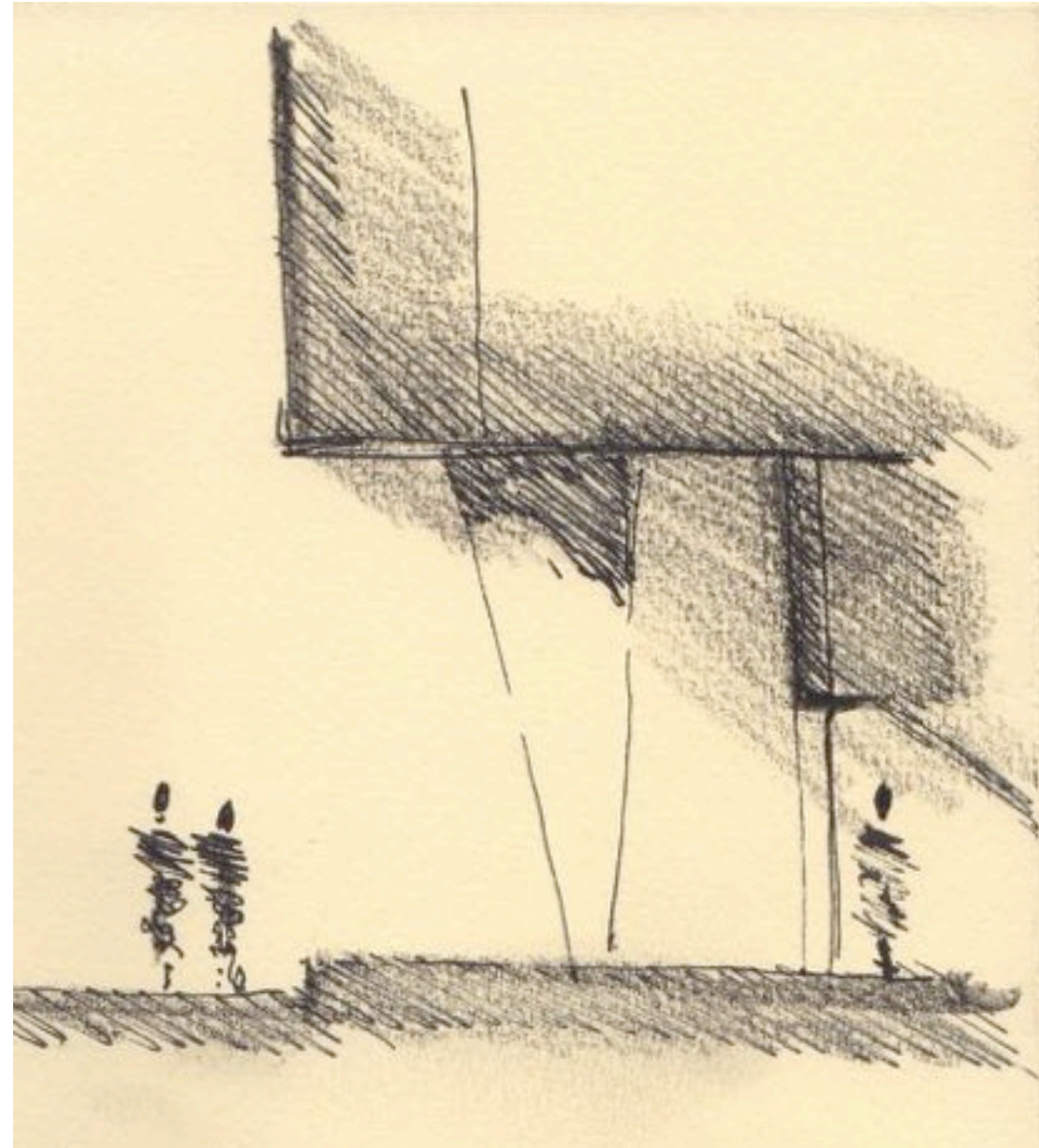
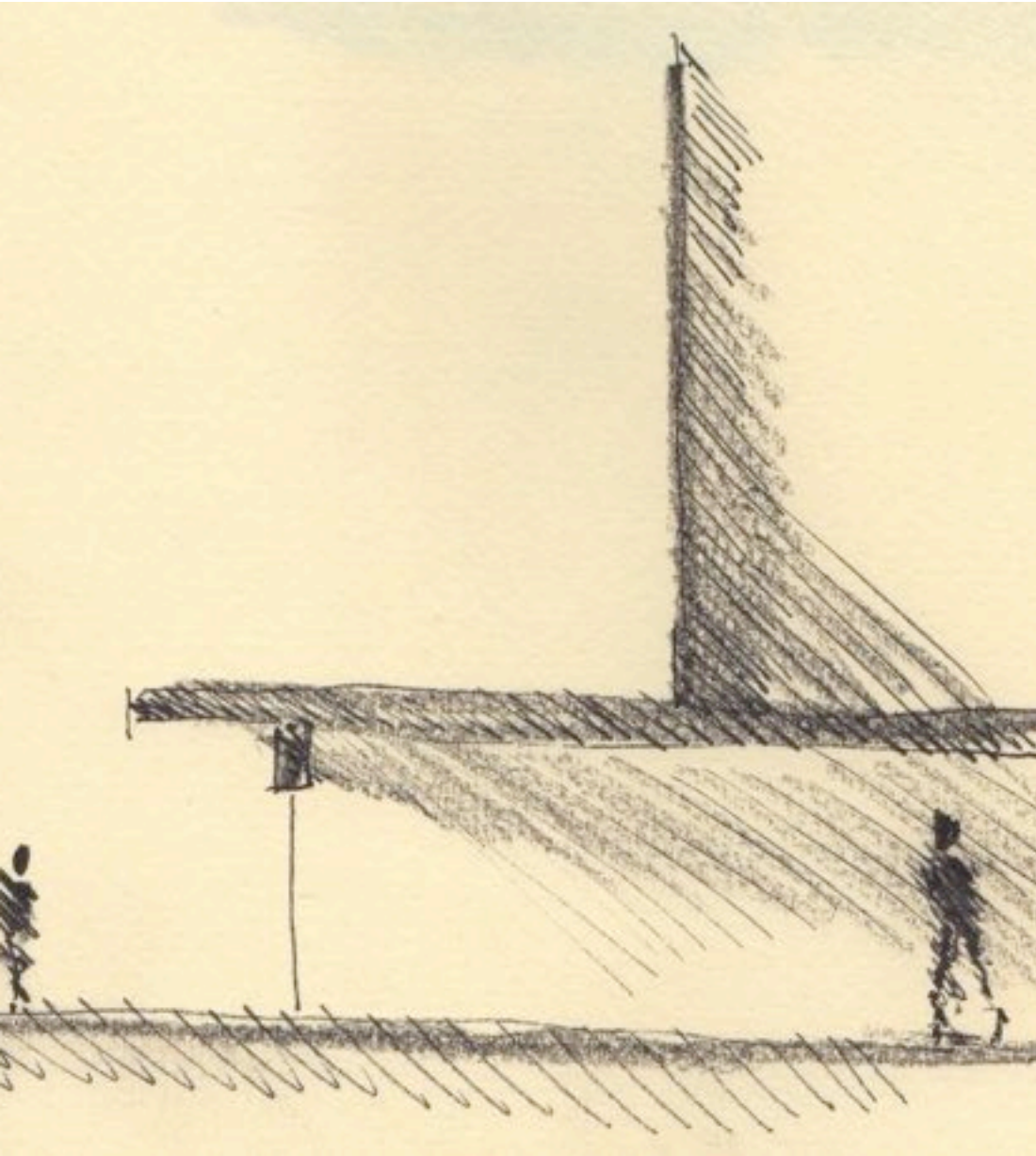


Modern versus antique.....

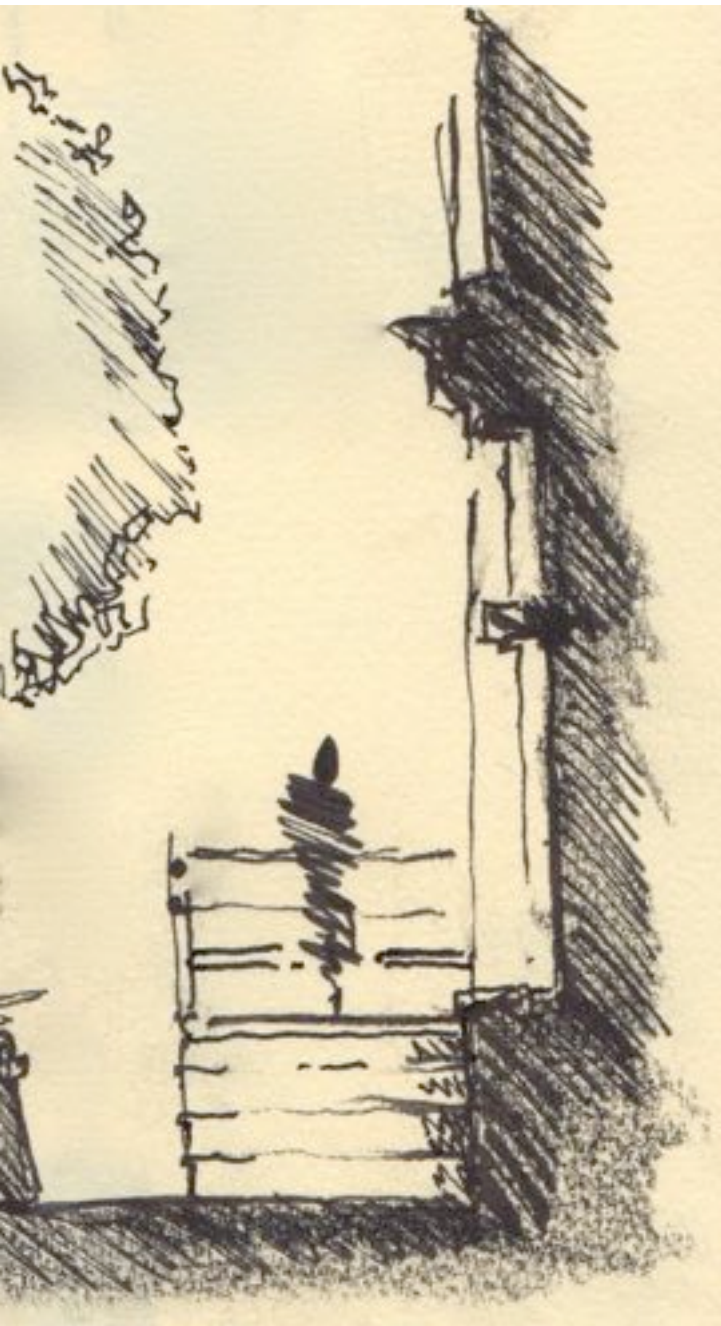


The transition.....

The entrance as a an addition in front of the building-volume or underneath the building-volume.....



Door openings can provide a soft transition gently guiding you into the building.....

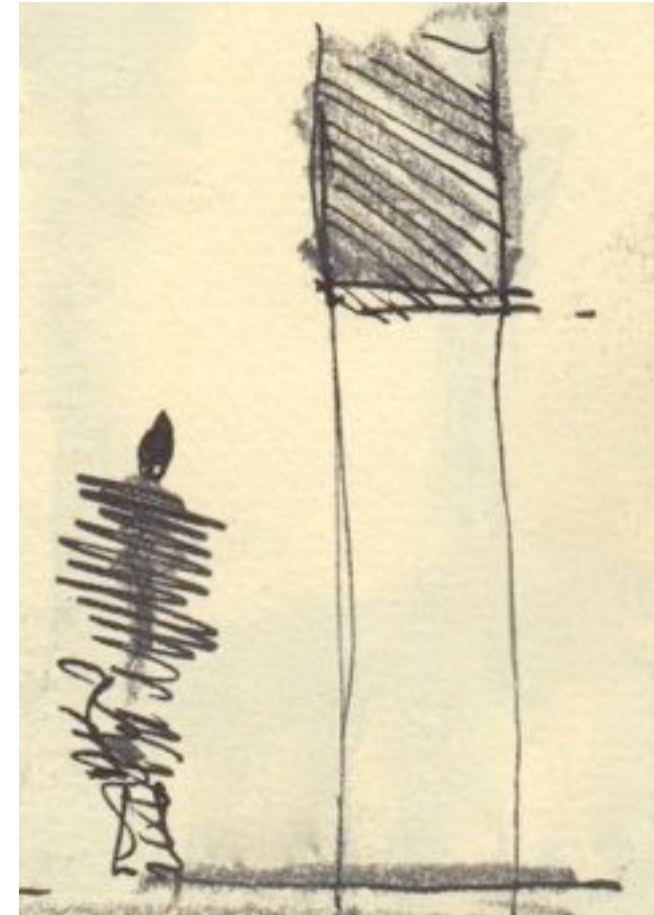
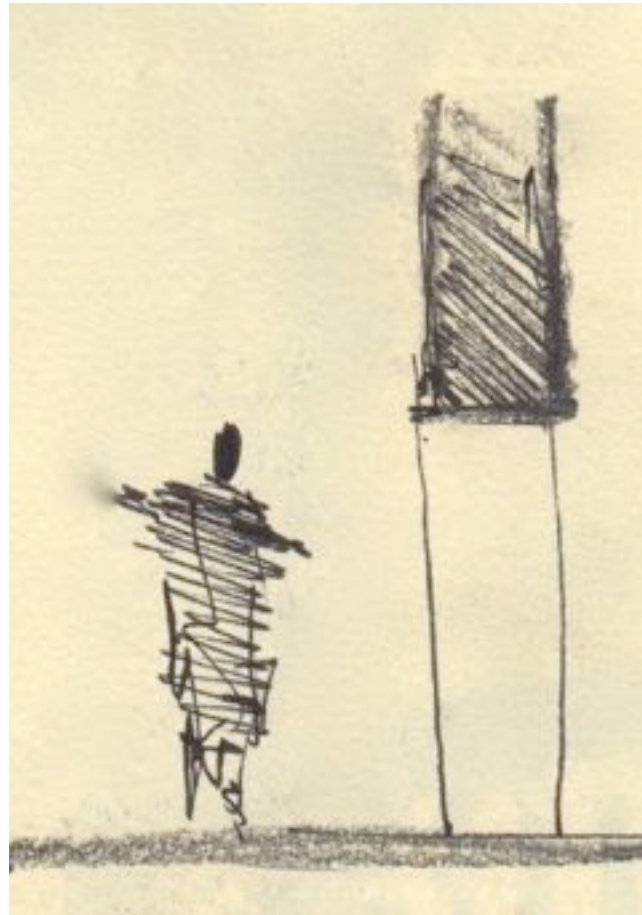
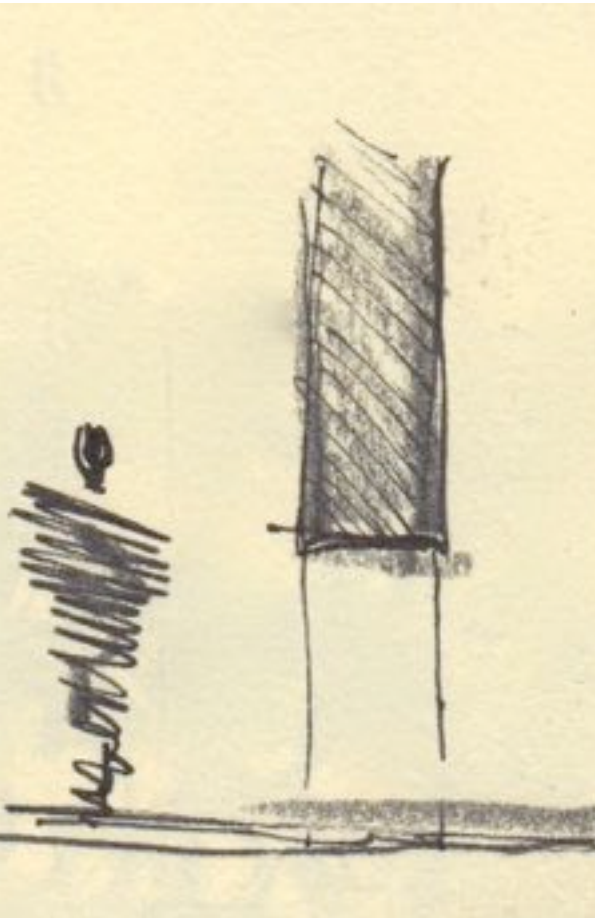


Height.....

Notice that the difference in height of these door openings has a significant impact on the experience of:

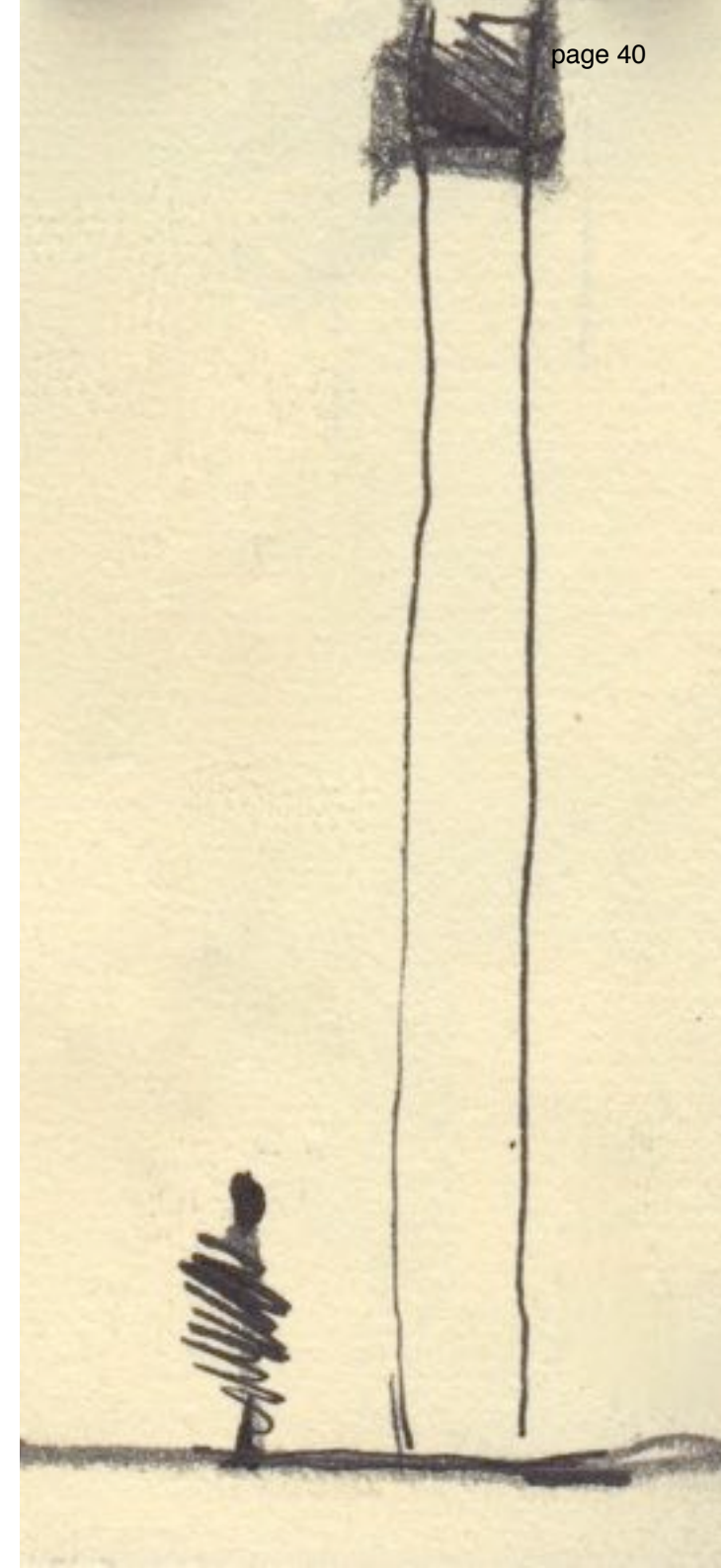
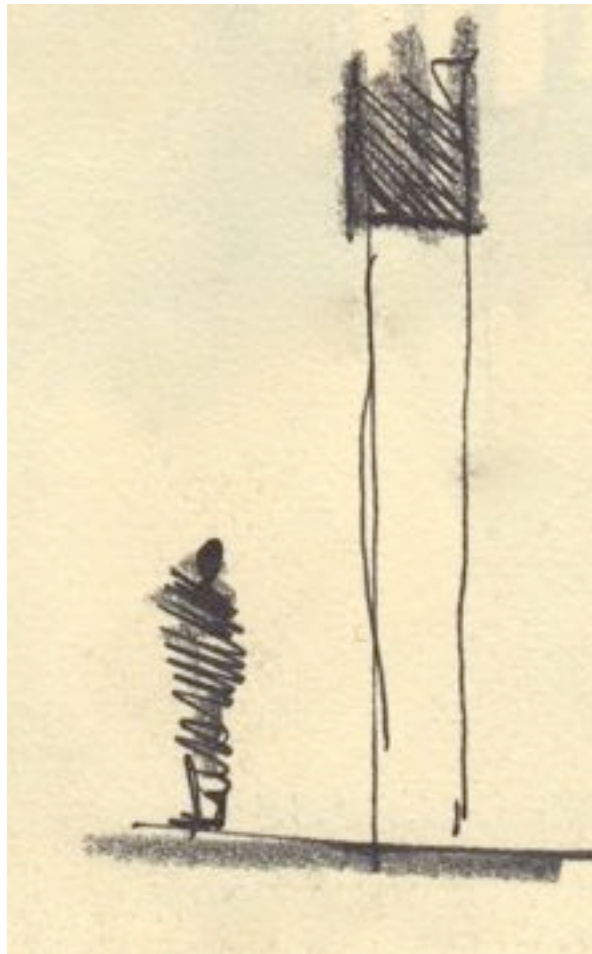
The approach,

The passing through,



Every different door height calls for a different design of the frame, the door itself, the wall surrounding it, etc, etc.

A detailed discussion on the qualities of the actual door is beyond the scope of this book.





CHAPTER 5

THE BASIC ELEMENT:

THE WINDOW

While the door is a passageway for the movement of people, the window is simply to let in the light. This light is of great importance in the design of a house or a building. By varying the parameters of the window opening and the window, the architect has a great tool to create an experience. Windows can also have a major impact on the composition of the exterior.



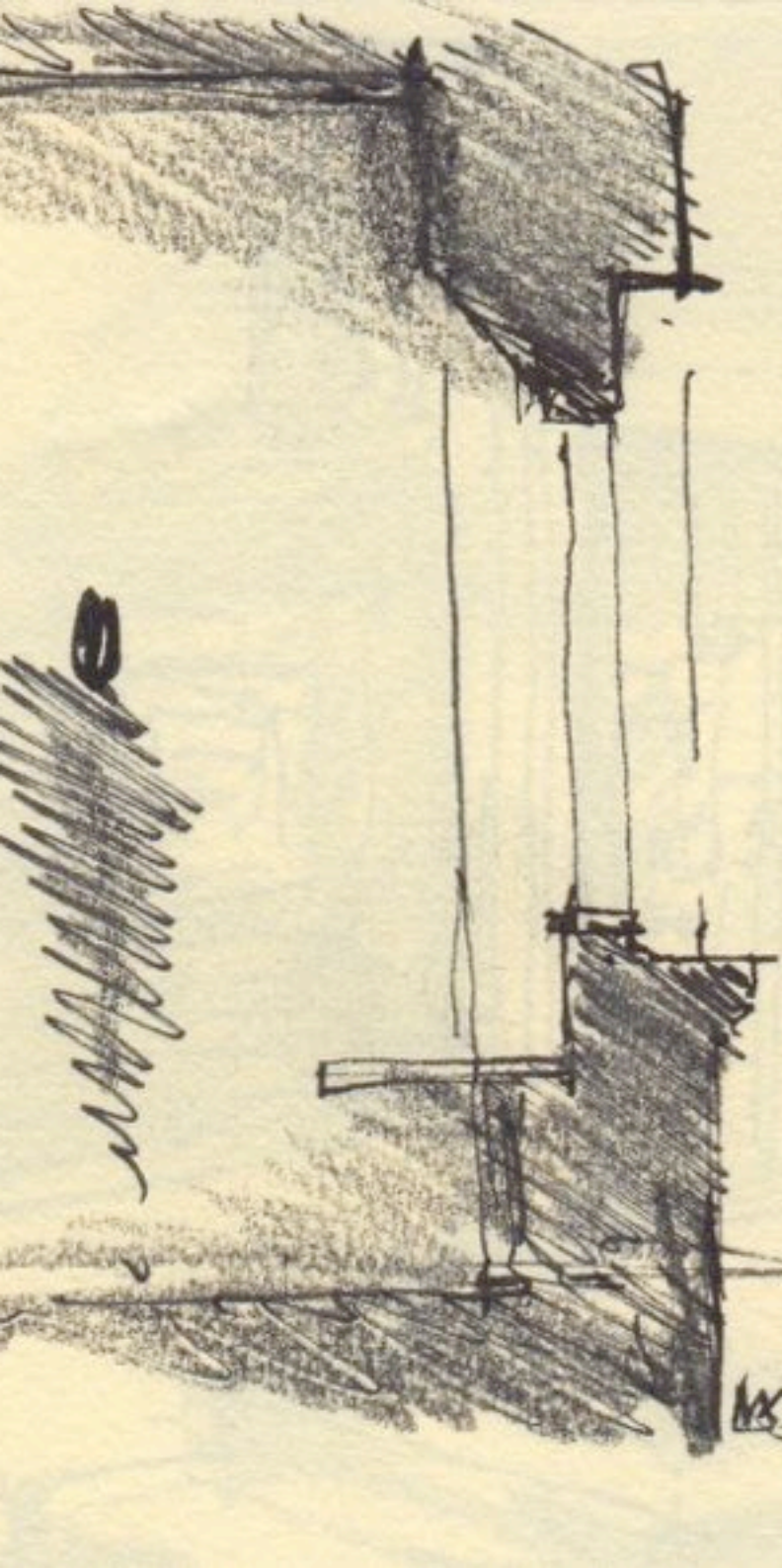
If we look at the doors and windows of buildings, we realize that there is so much more to these elements than meets the eye. The history of architecture shows to which extent these basic elements of the design are used to give expression, character and meaning to buildings like e.g. churches castles and temples. Furthermore the shape and design of the window frame is defined by culture and the historical period that the building was built in.

This chapter gradually reveals the impact that windows have in the architectural language. By changing the shape of the opening, the placement in the wall and a few other variables the whole atmosphere of the room changes. The outside appearance of a building is to a large extent defined by the size, shape and placement of the windows. On the inside however the light that enters through these same windows is a crucial part of how we experience the building's interior.

When entering a totally dark room, we are more aware of ourselves than of our surroundings. As soon as the light enters through a hole in the wall, we suddenly are able to notice the room and its qualities. With light coming in, the building and the room come alive.

In the following examples we explore the quality of the window.

Considering the different designs of windows, we notice that each culture and each period in history seems to express itself in a unique way.



Some of the possible variations are:

The size of the window

The design of the windowsill,

the design of the frame,

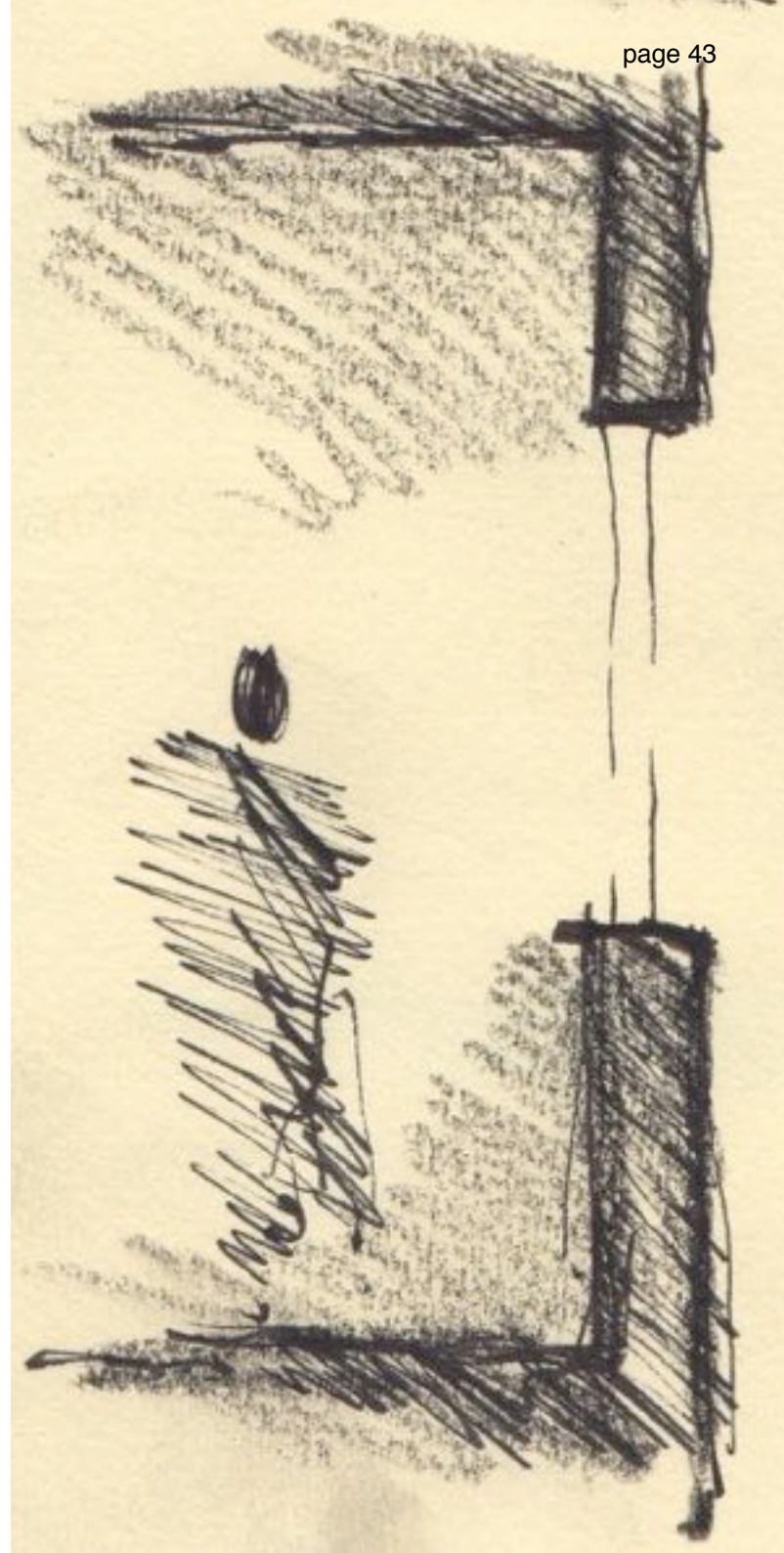
the placement of the window

relative to the outside,

The window can be in one piece or divided,

the color of the glass,

the view from the window, etc.,

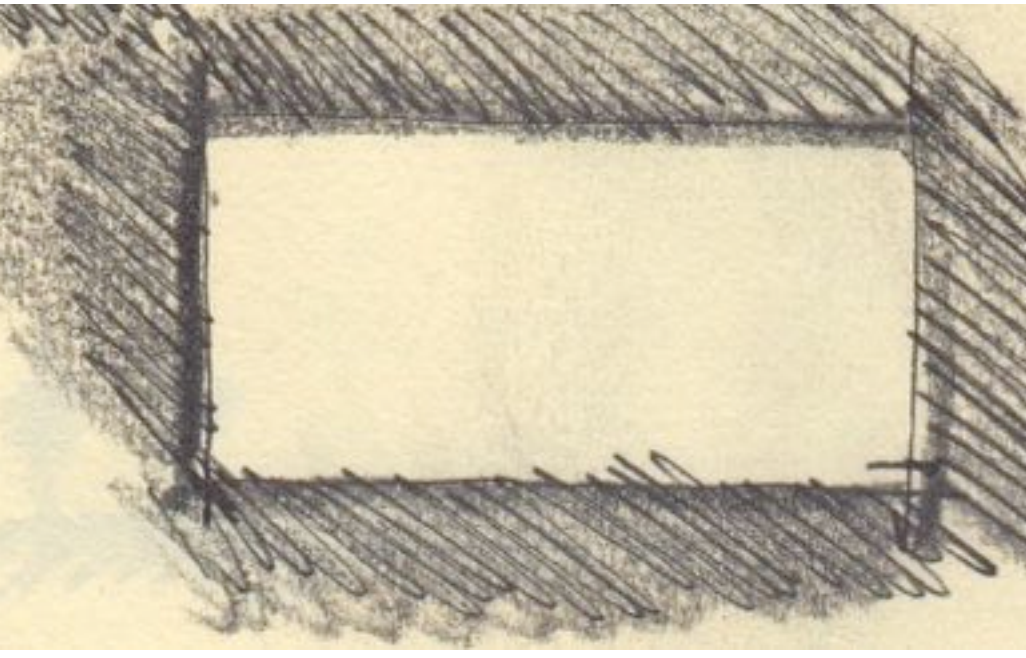
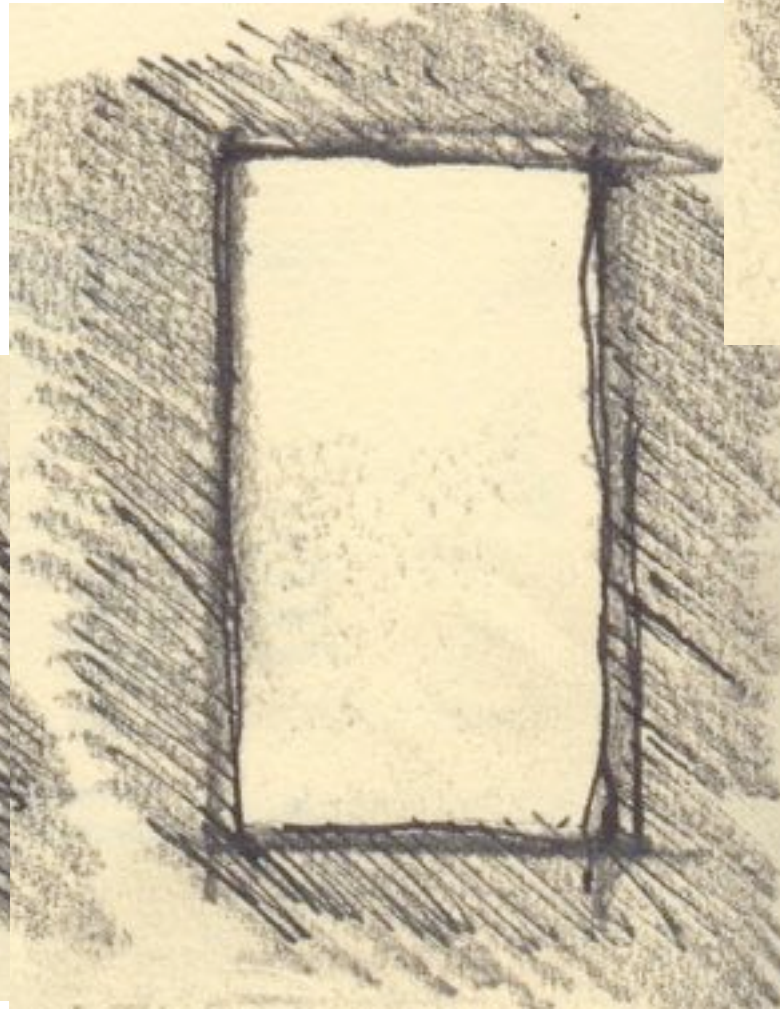
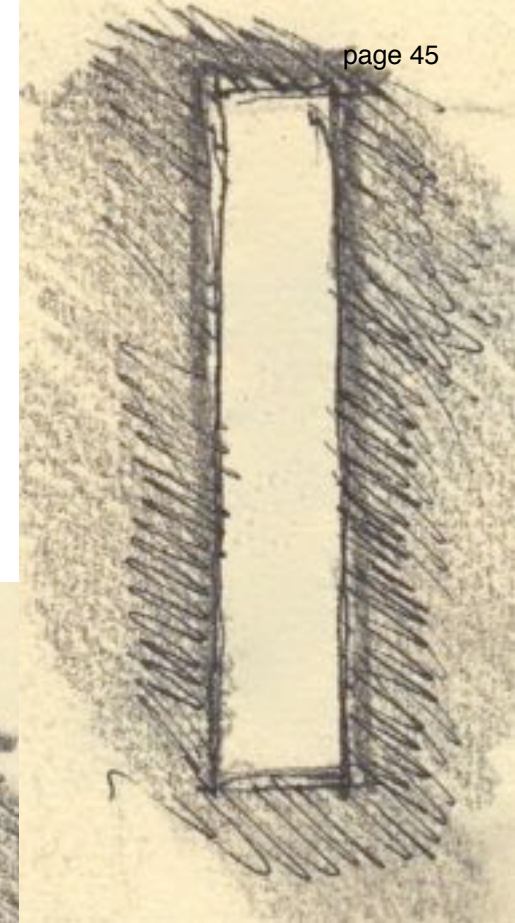
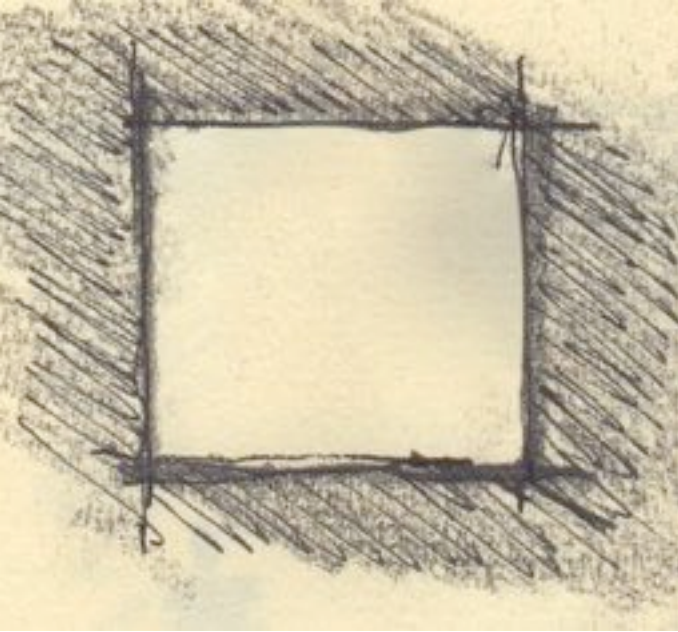


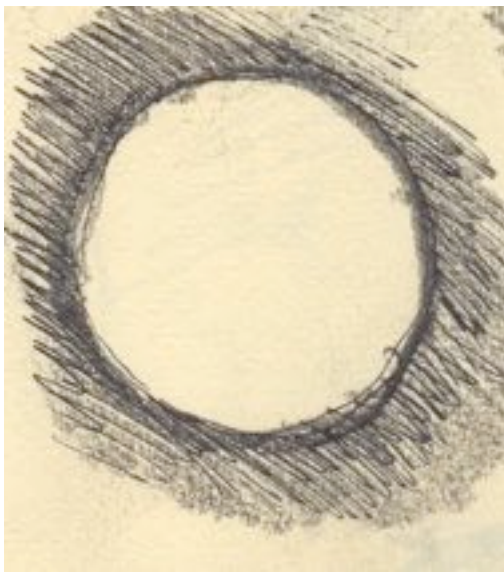


The window sill and its design determine the relationship between the interior and the outside of a room. If the glass runs all the way to the floor, a greater connection between the in- and outside is experienced.



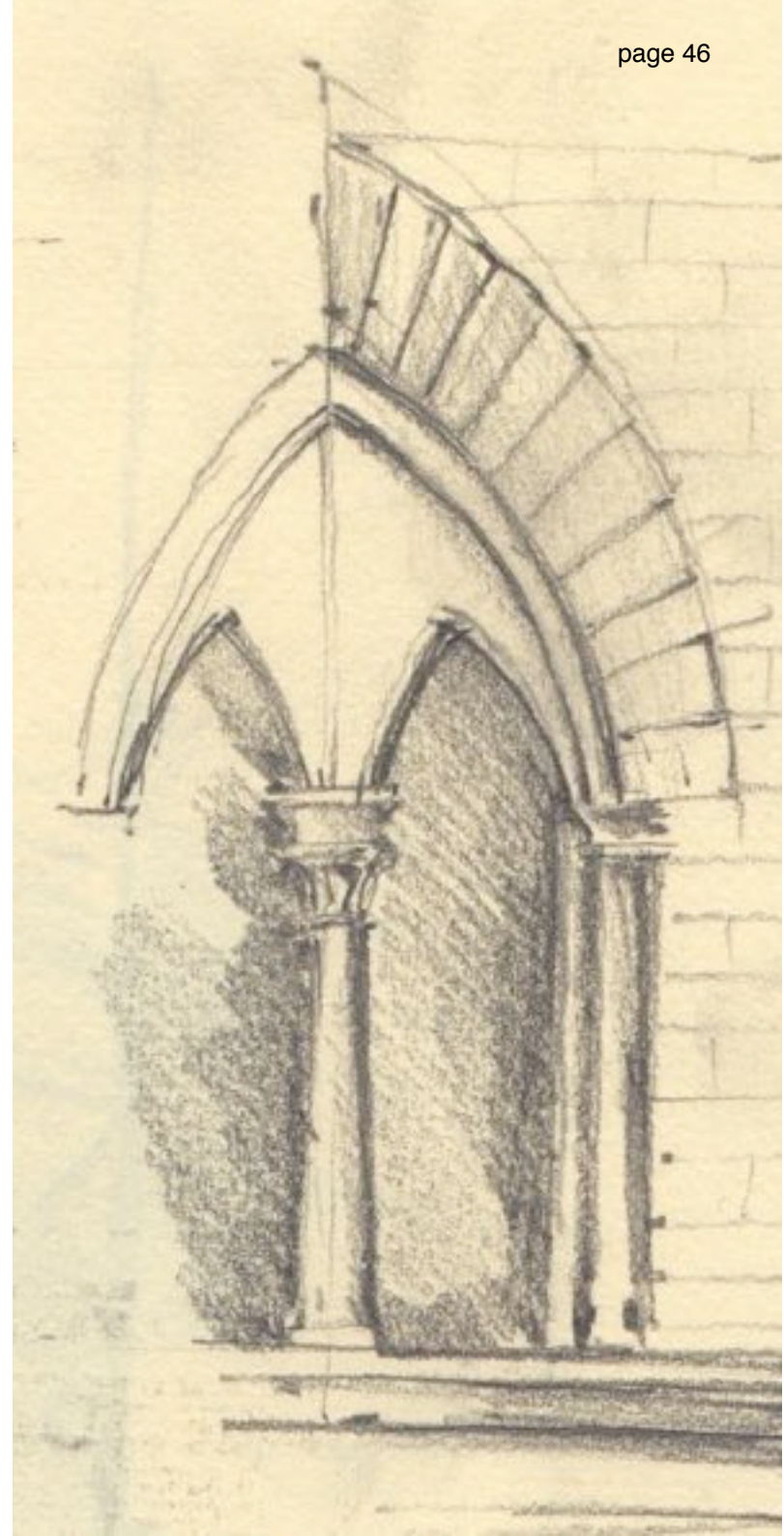
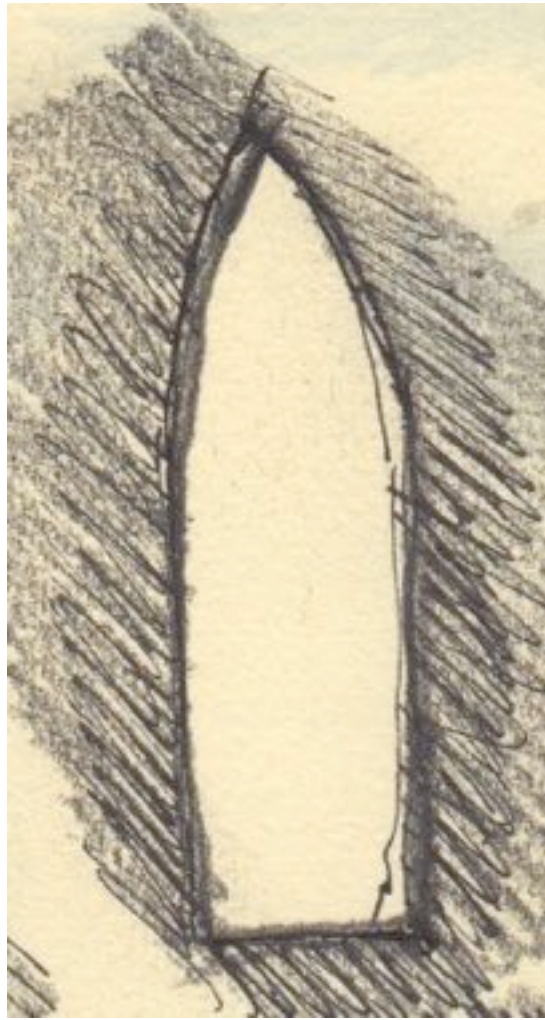
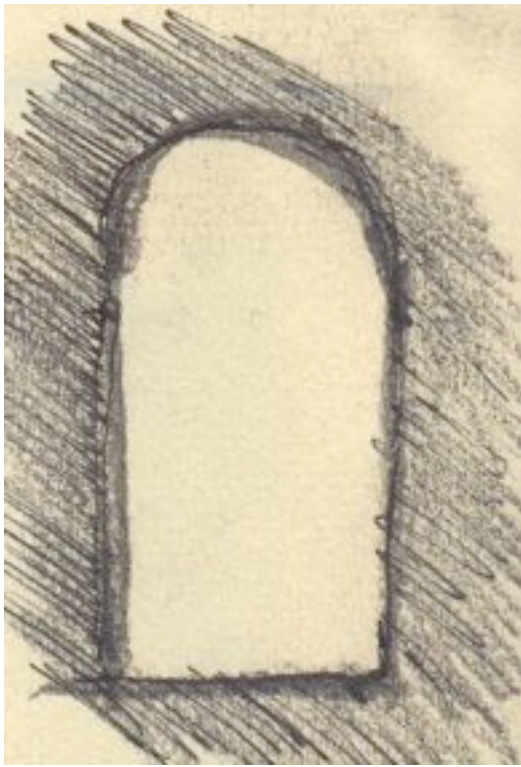
The varying proportions in height and width turn out to be a major factor for the quality of the light that enters through a window opening.



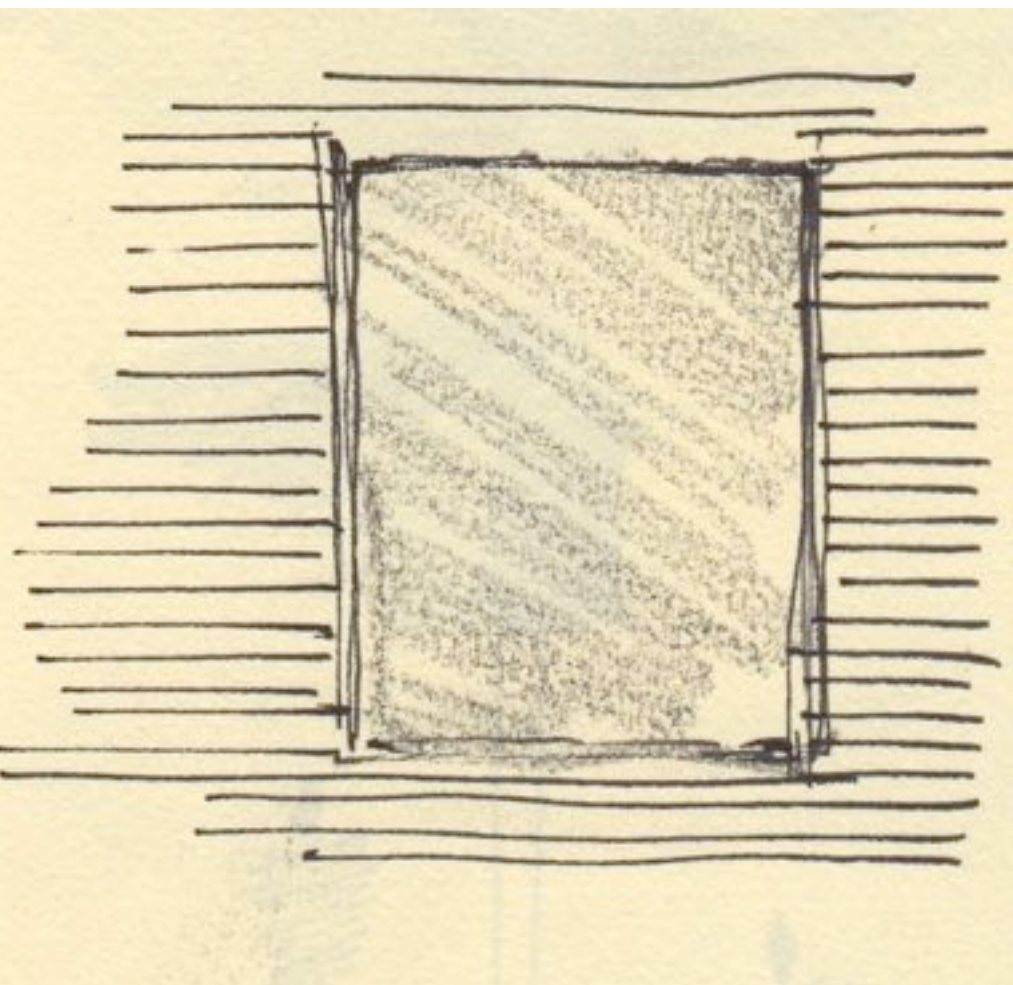


A round window has the special effect of drawing the attention to its geometrical shape. Considered special, a round window is often placed in a significant spot in the wall.

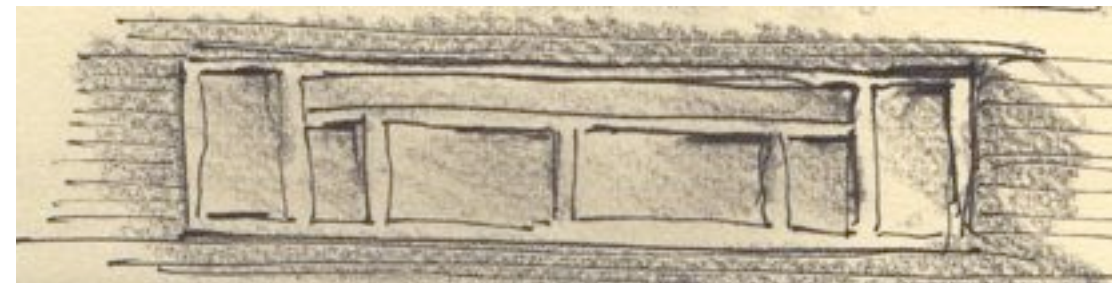
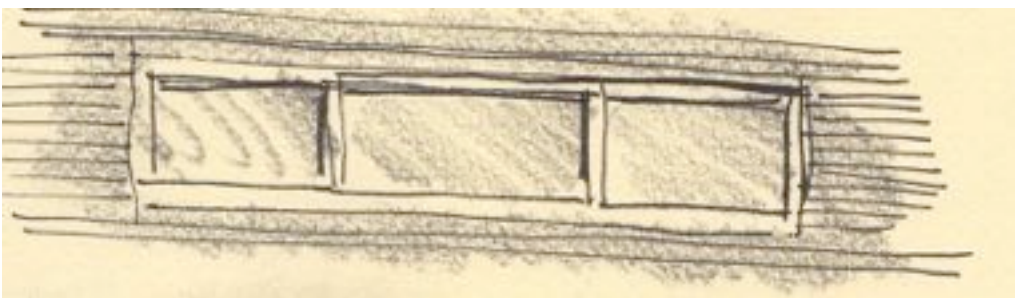
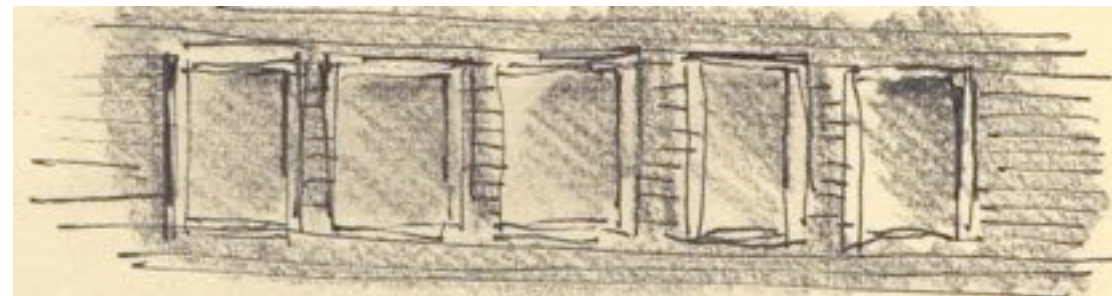
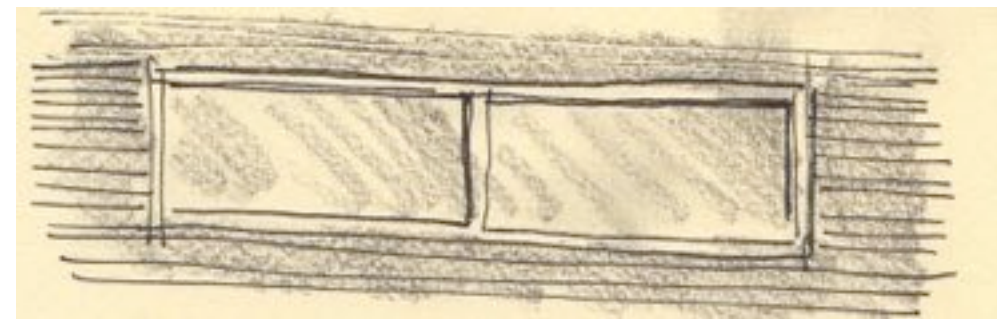
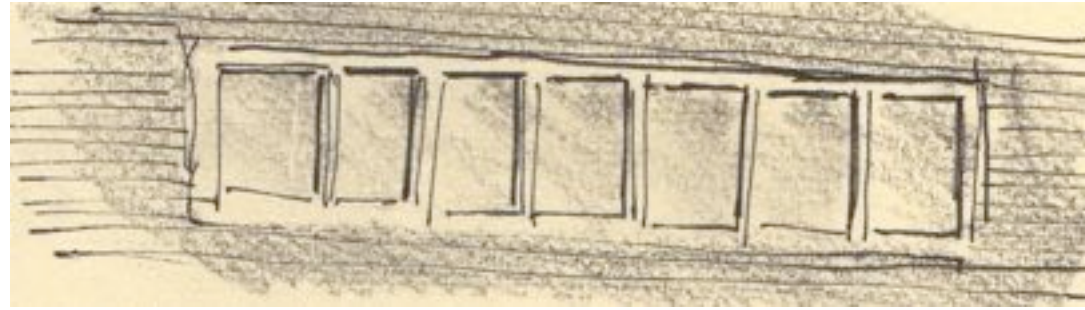
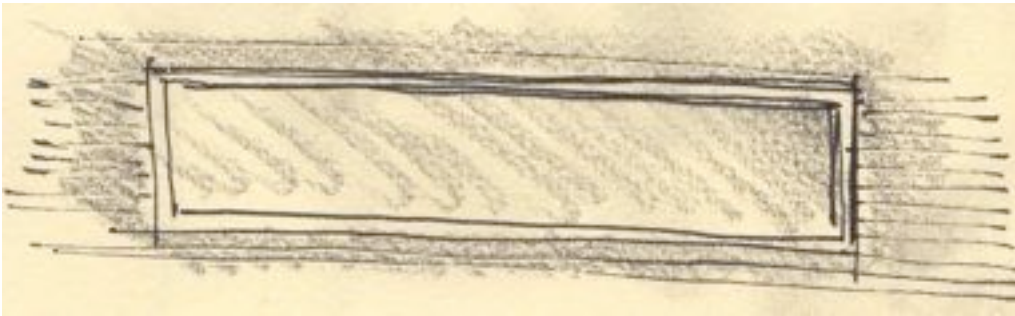
All variations on the shape of the window have a special effect on



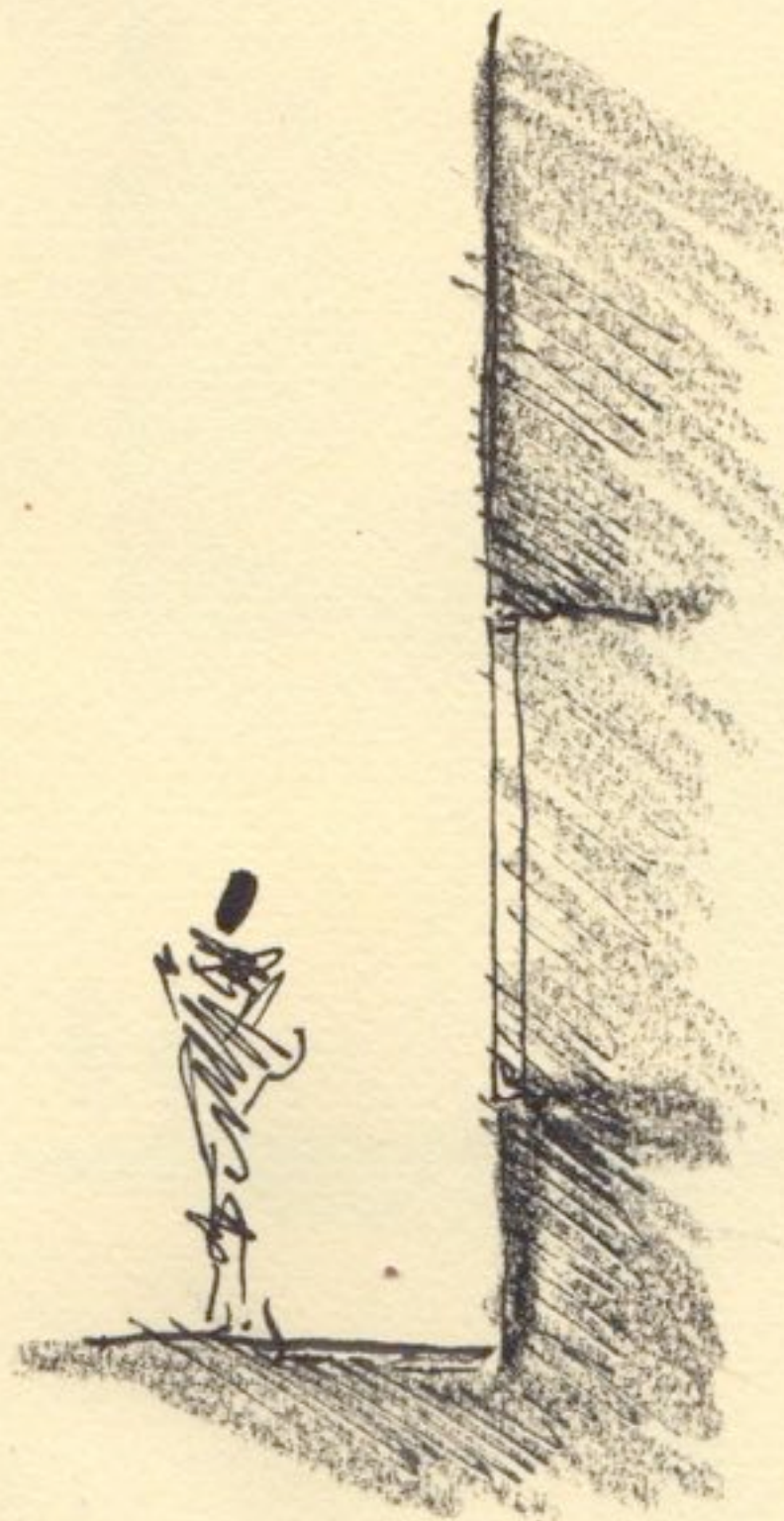
Square versus dividing the square.....



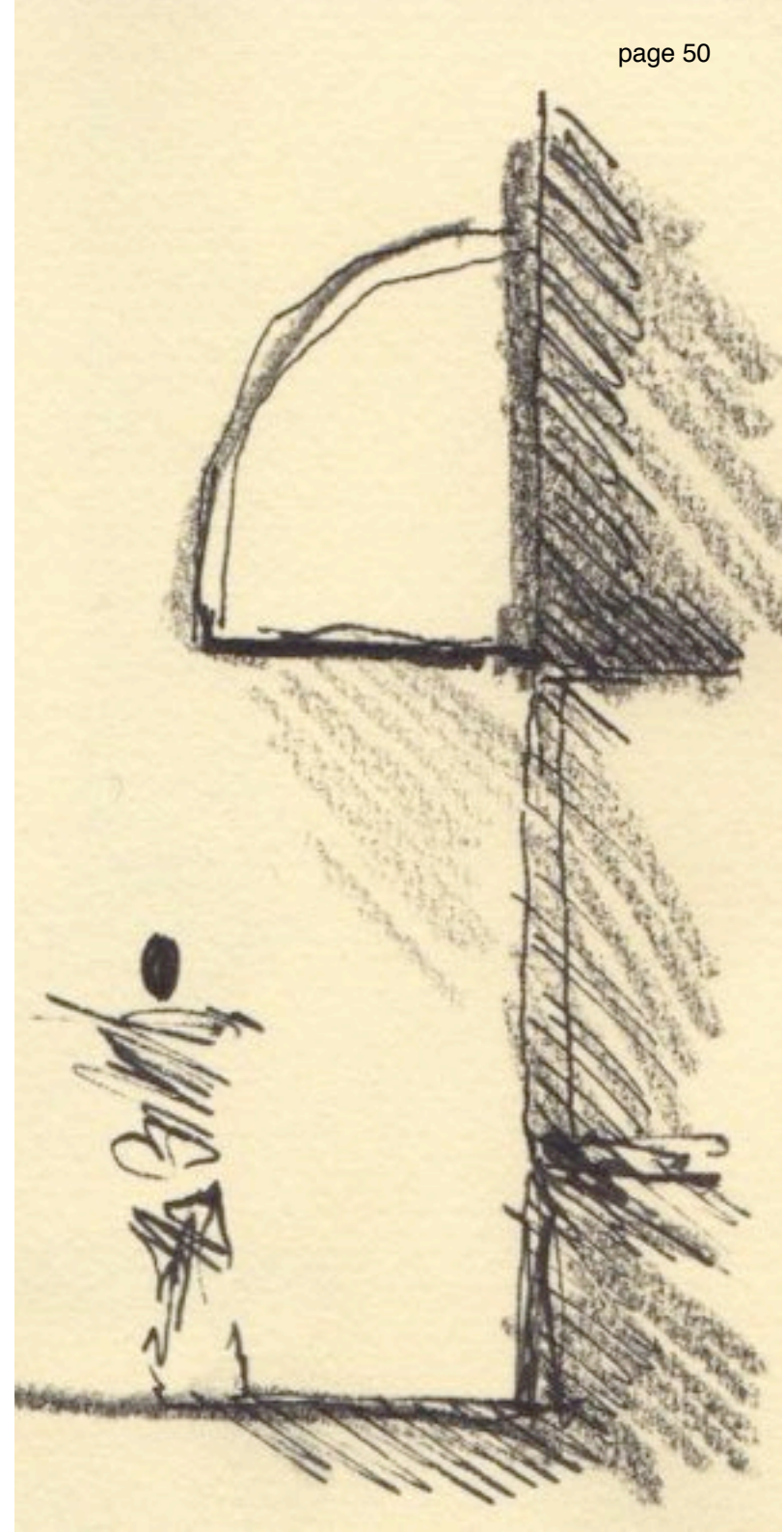
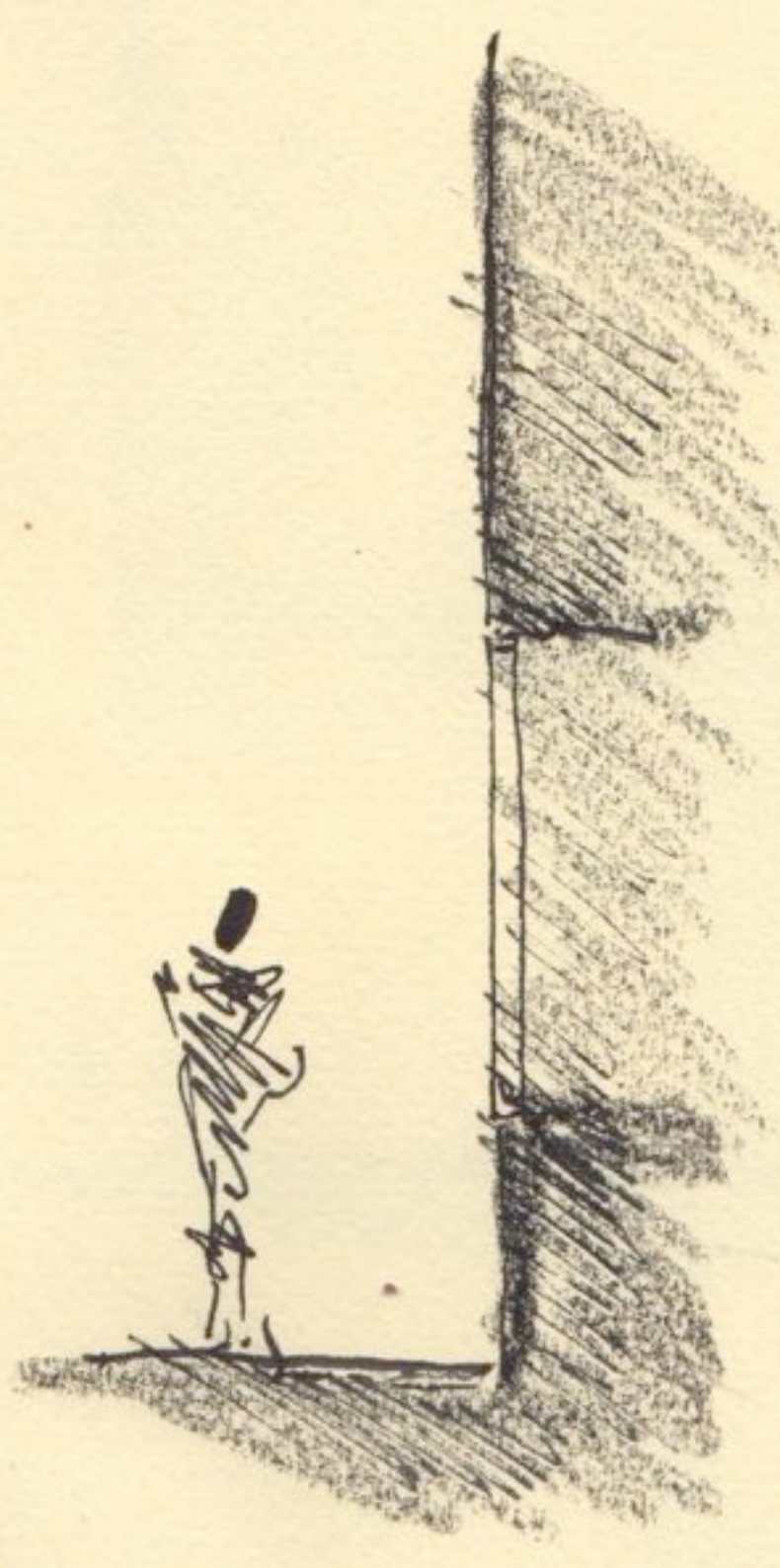
Rhythm and shape.....

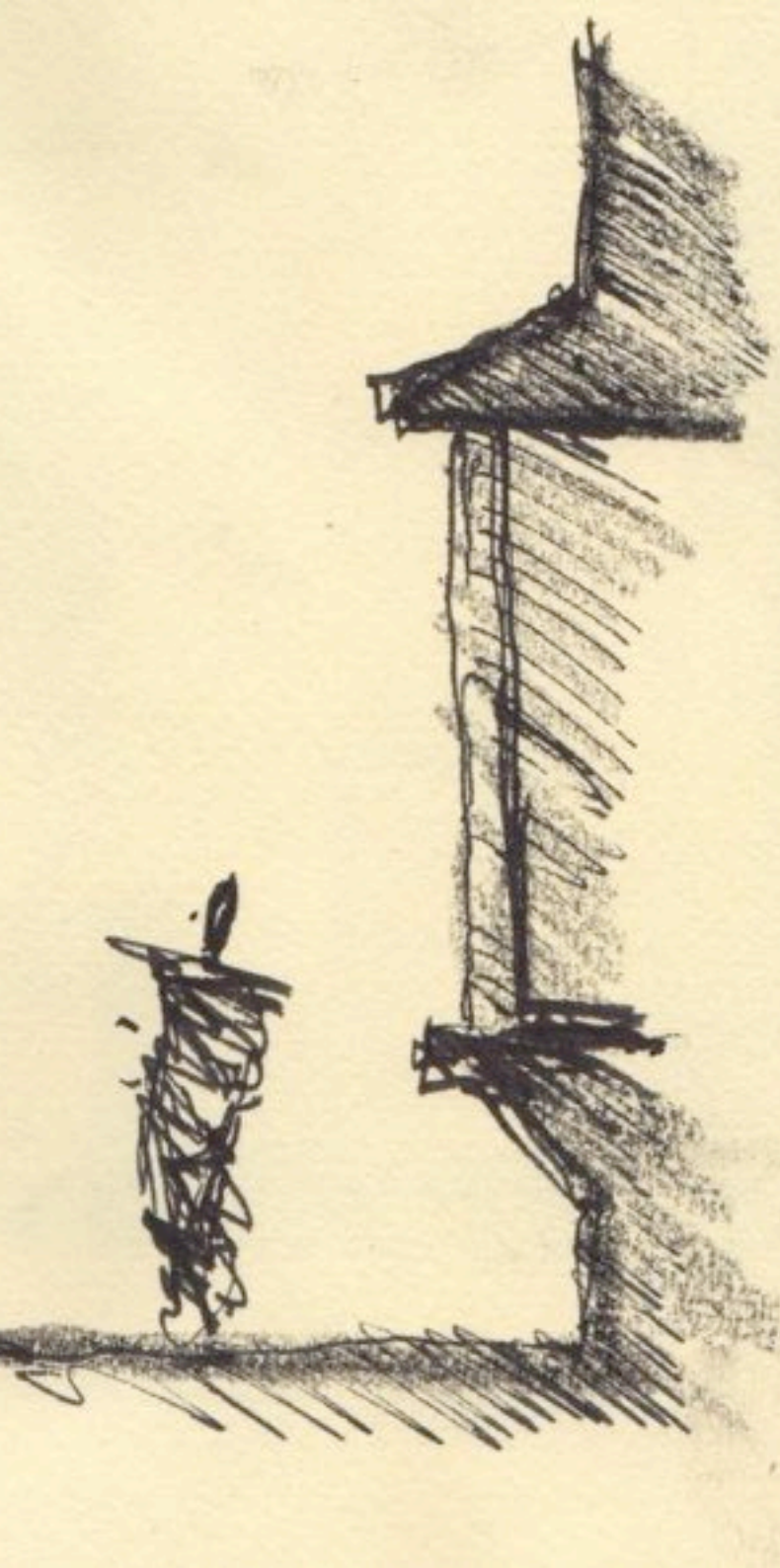


On the right the window is an identifiable object within the building because of its placement. On the left however the way the window is placed, in the same plane as the facade, it's perceived as part of that facade .



On the left the window is again placed in the same plane as the facade but at a different height. On the right the same window is accentuated by an awning. The awning changes both the character of the building as well as the experience of the window.

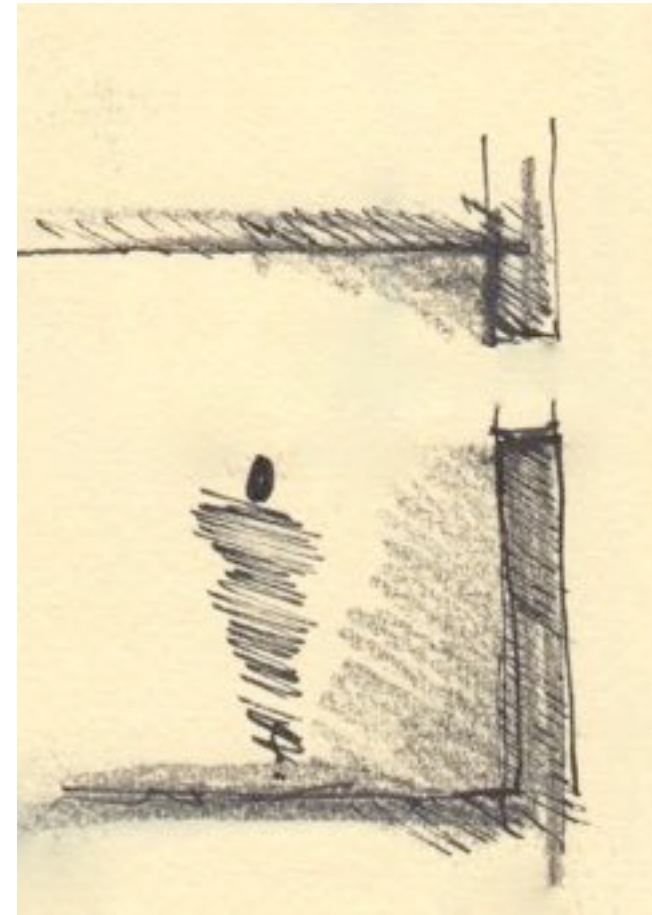
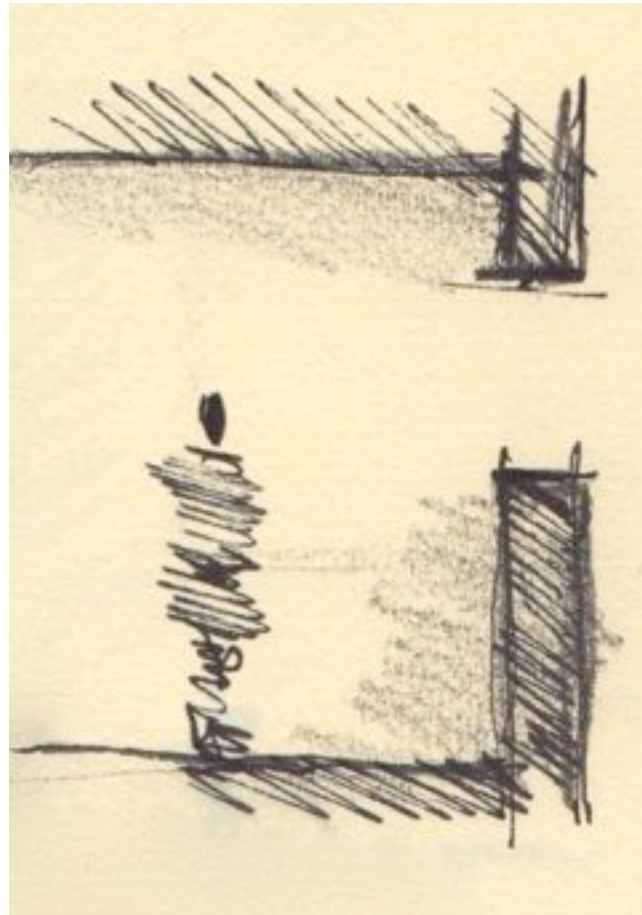




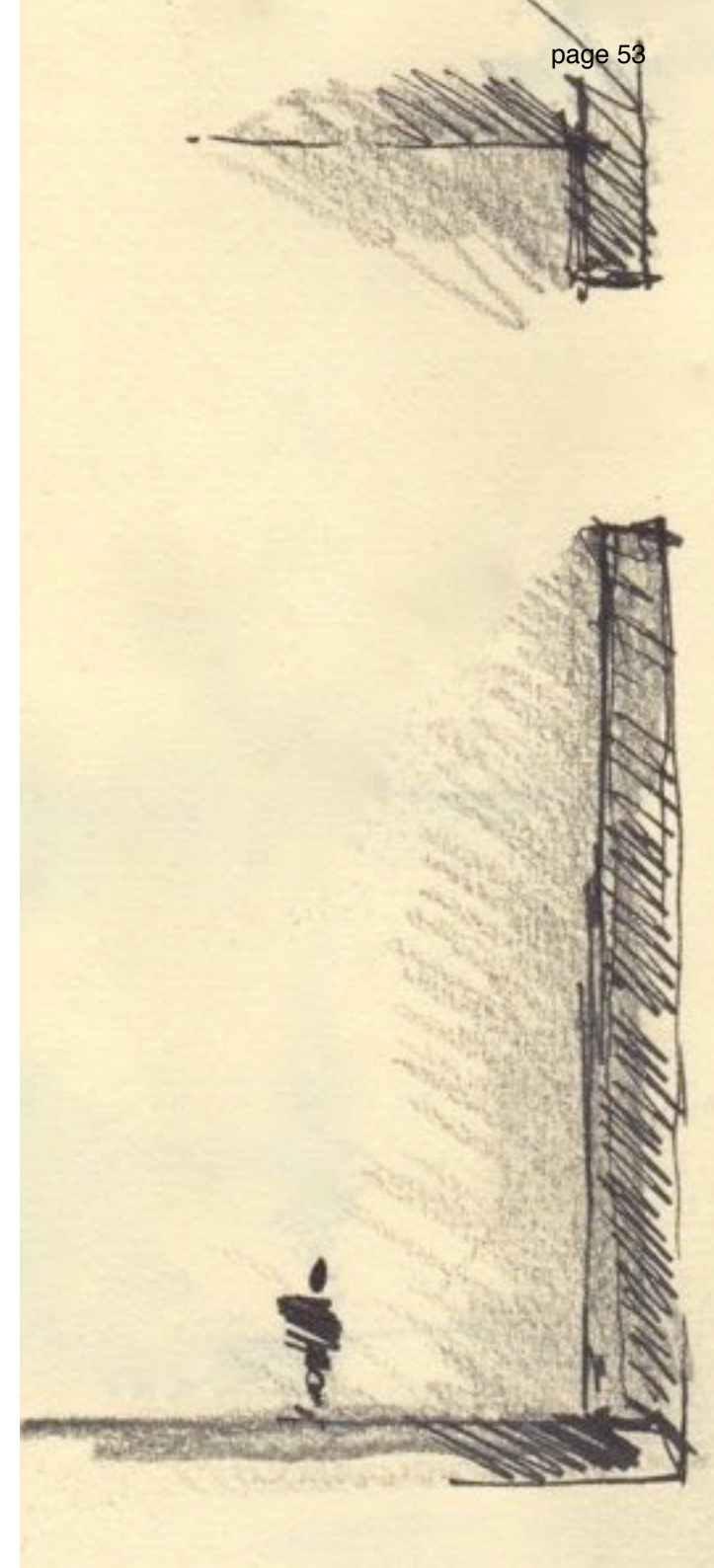
On the left the window is placed outside the plain of the wall. Due to its height relative to the street, it has a different function then if it was placed e.g. on the first floor. On the right the design of the window has the function of drawing your attention to look in.



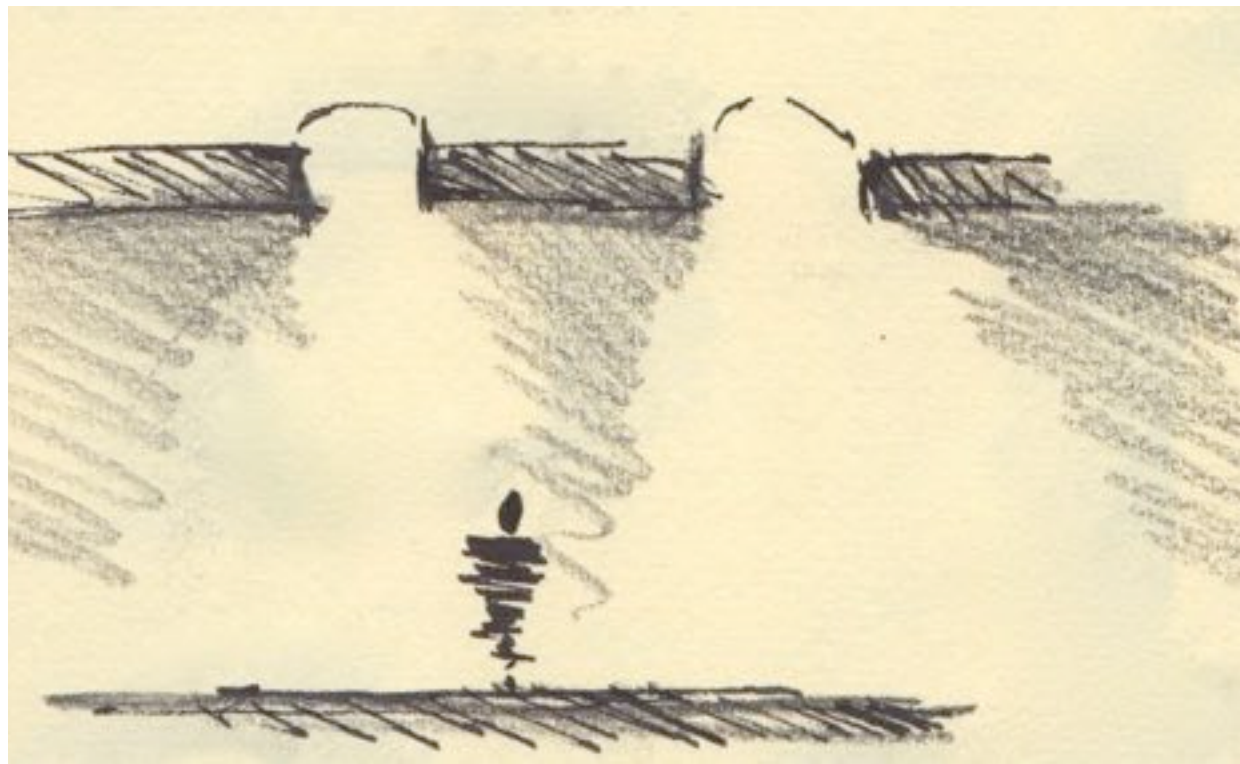
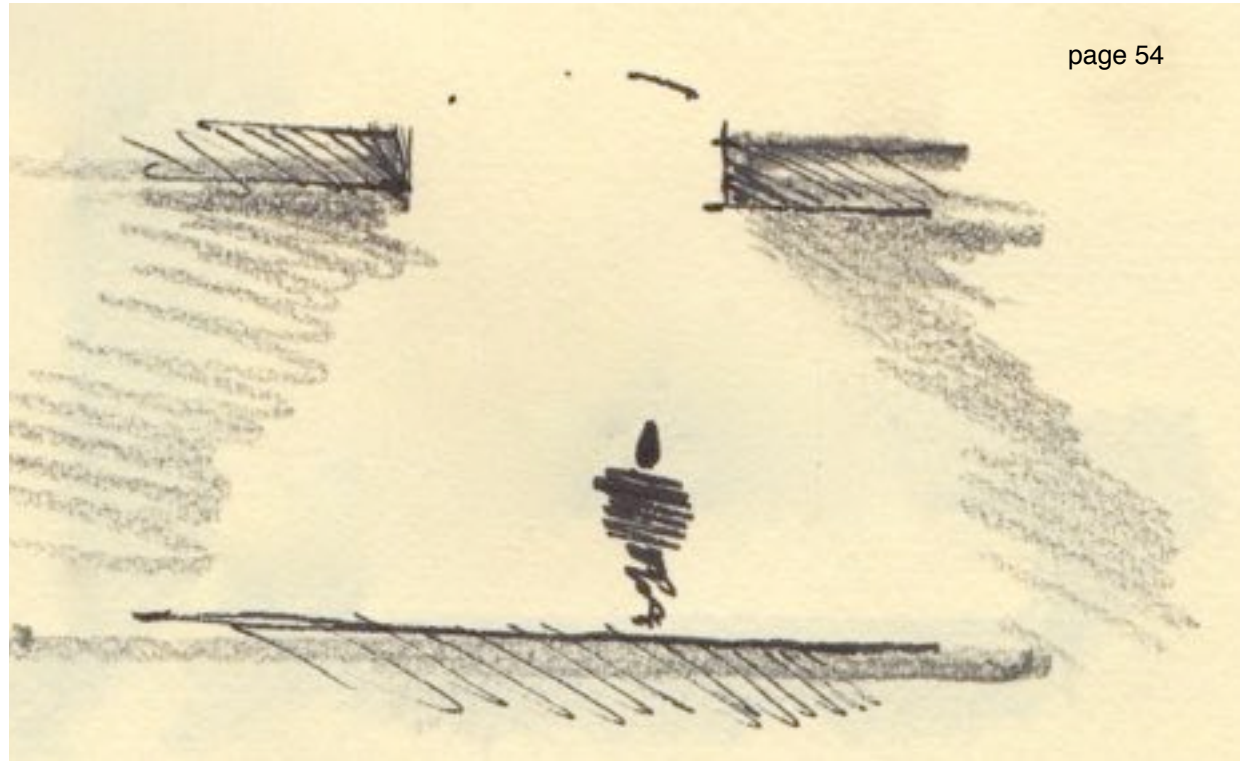
The quality of the light is both effected by the size and the height of the window sill.
Notice how many nuances in quality of the room are revealed in these examples, just by
varying the light openings.



Placement of the window.....



Roof lights.....



Roof Light and varying ceiling
height.....





CHAPTER 6

THE BASIC ELEMENT:

THE ROOF/CEILING

Protecting ones self from the elements is a major reason for constructing a building.

A roof over our head! A much used expression and intrinsically interwoven with being human. Still, when further considered, everyone will have a unique concept regarding the shape, the looks and the meaning of a roof. We all remember the pitched roof with the chimney and a plume of smoke on our kindergarten drawings. The roof or

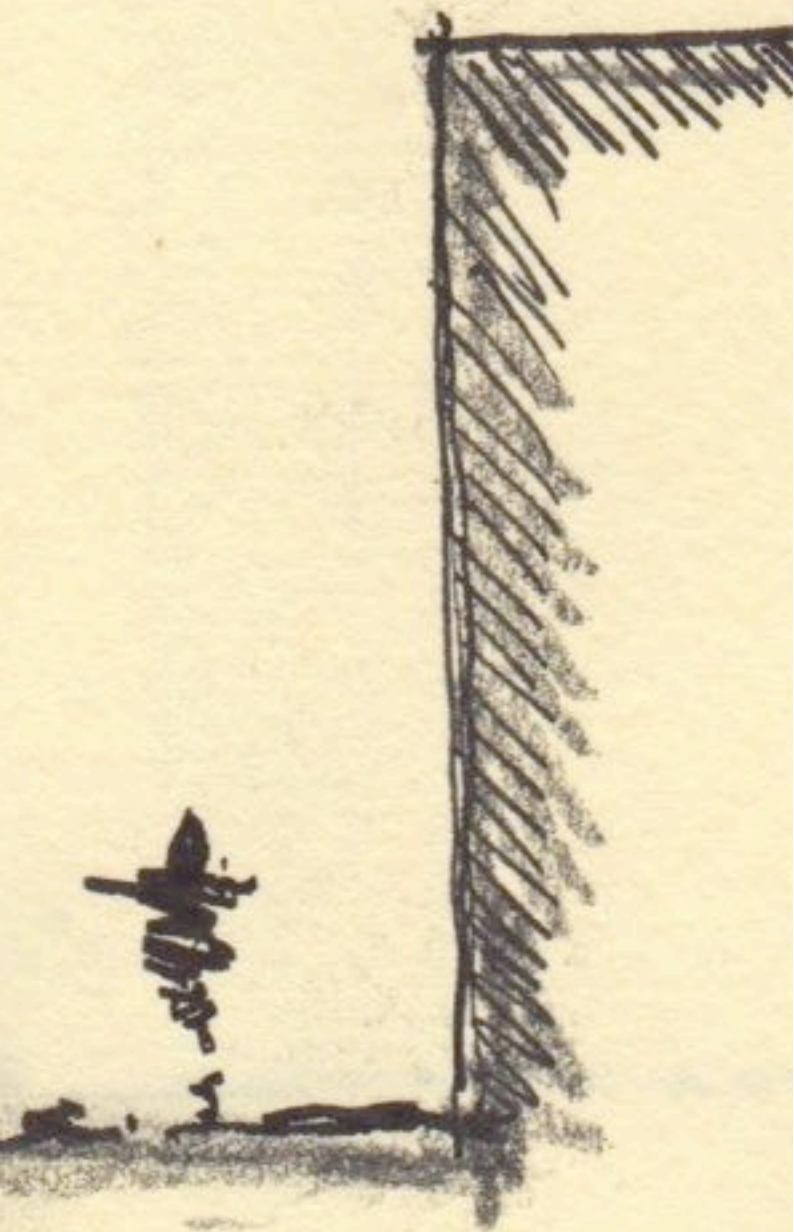


ceiling has a tendency to dominate the interior space of a building. In the following chapter we will address the variations of the roof and the ceiling and how they effect the experience of a space,

Among roofs, the flat variation has a unique place due to the fact that, even though it fulfills all the functions of a roof, it has no archetypal connotation as a roof.

This flat roof variation is widely used, yet, in the sentient and experiential realm it is difficult to qualify as an actual roof.

This roof of the Johnson Wax factory, designed by the architect Frank Lloyd Wright, is made out of glass tubes, supported by specially shaped pylons. He achieved the feeling of protection with the shape of the pylons, while the light passing through suggests an open connection with the sky.



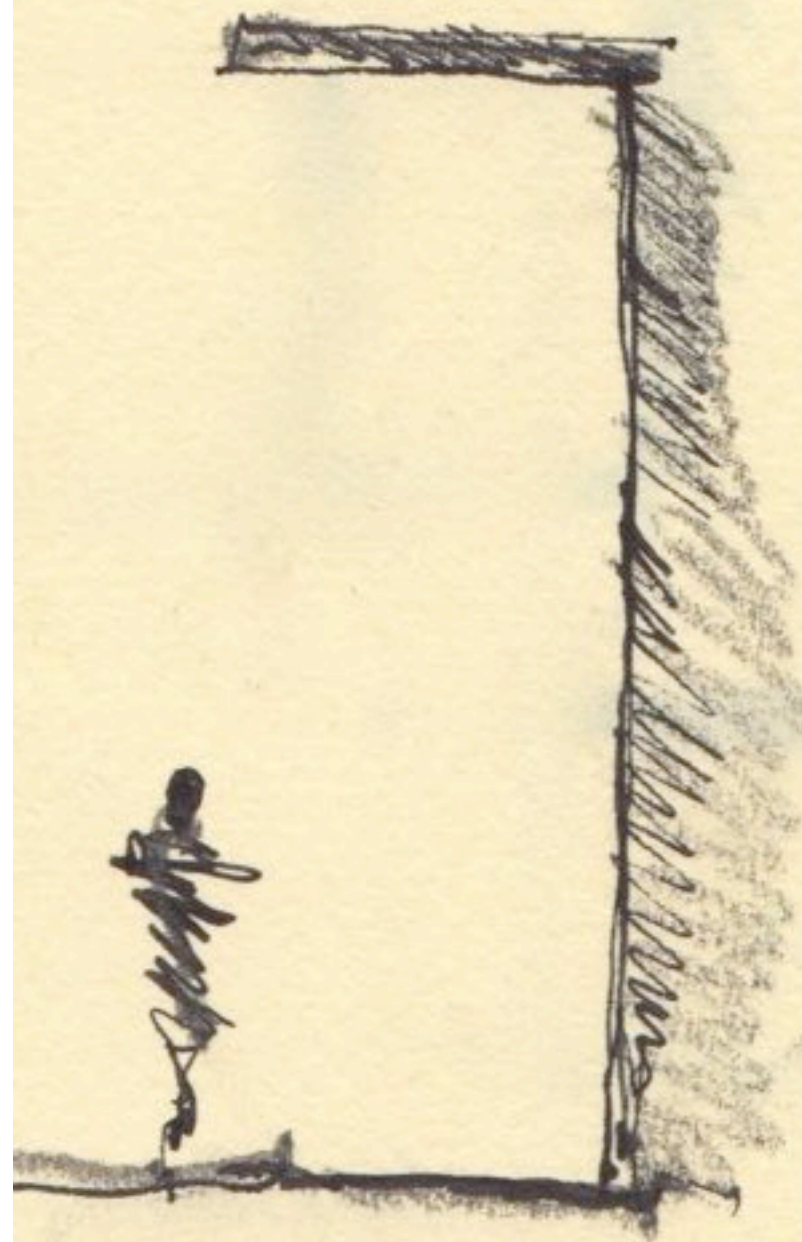
On the left there is no suggestion of a roof.
On the right the roof extends over the edge of the building hereby extending some of its protection to the passer by. Somehow this small suggestion of a roof makes it easier to relate to a building.



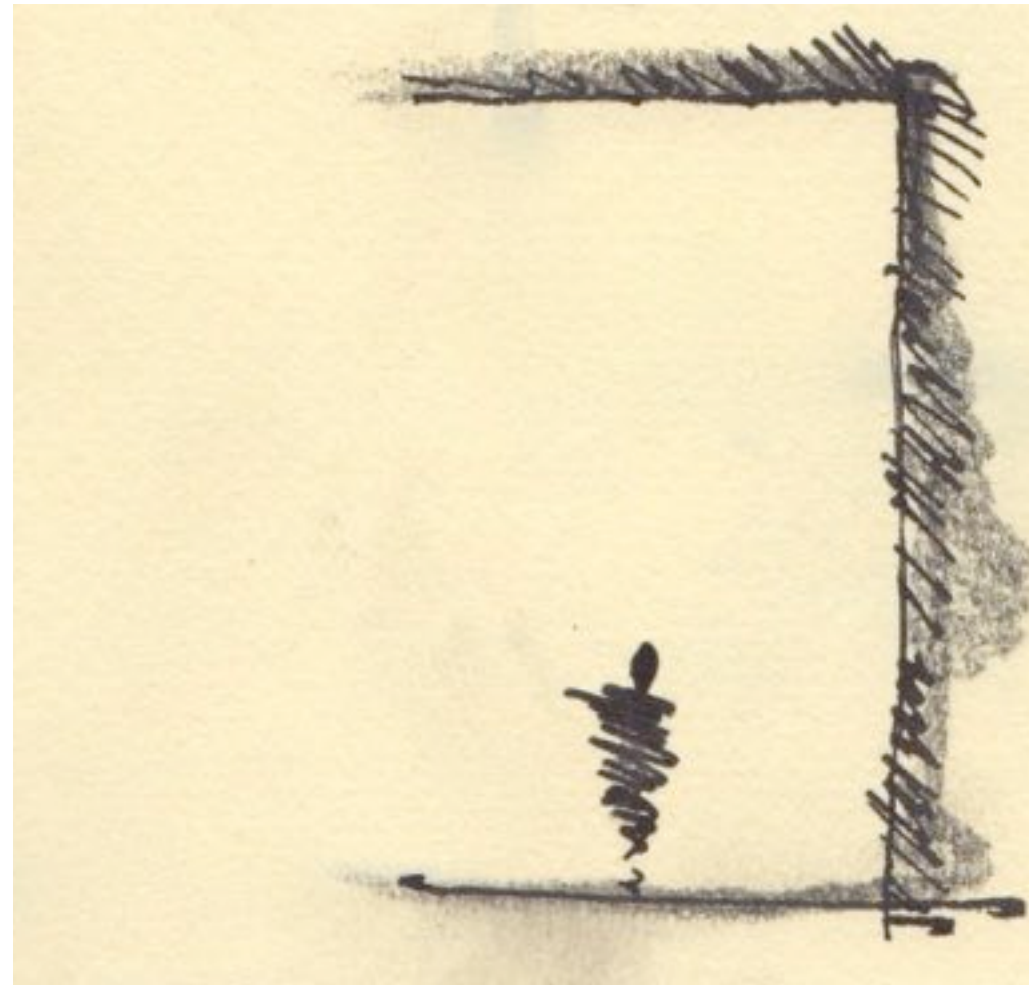
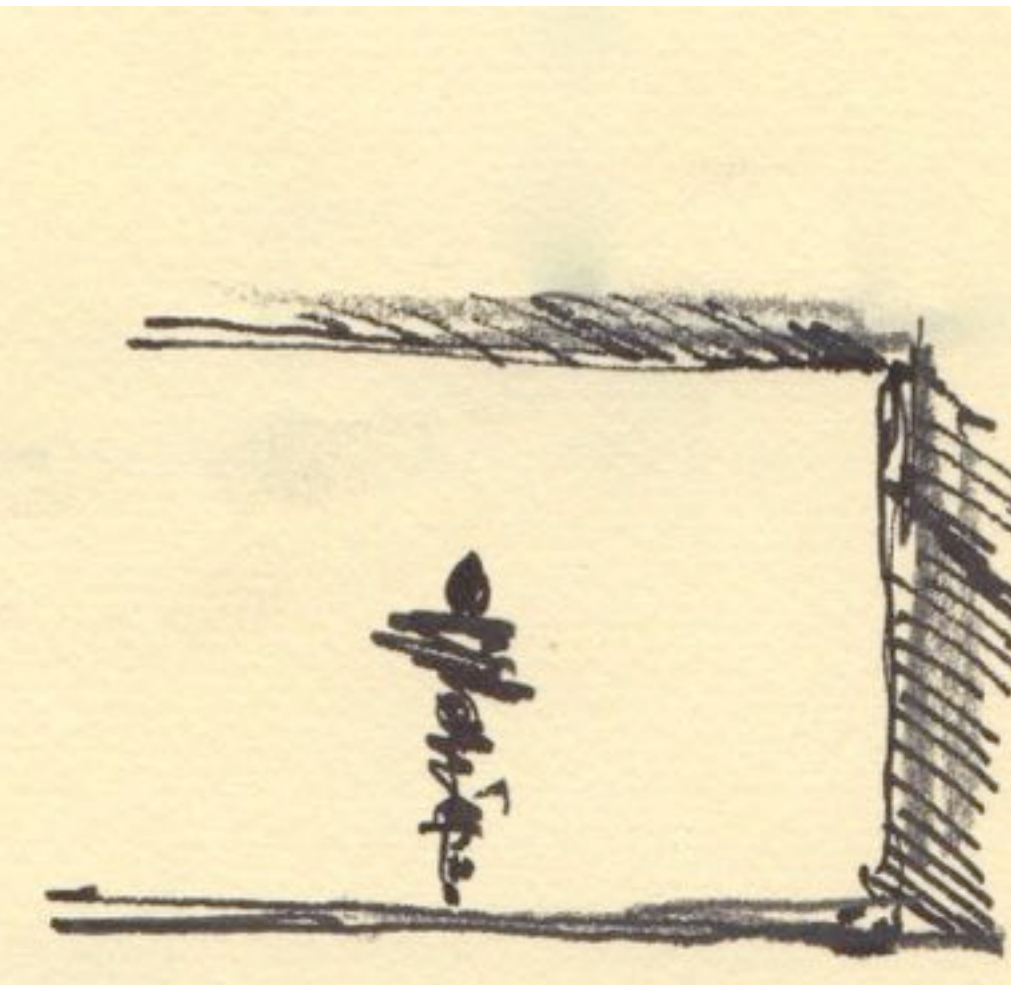


On the left the suggestion of the roof can be experienced on the outside.

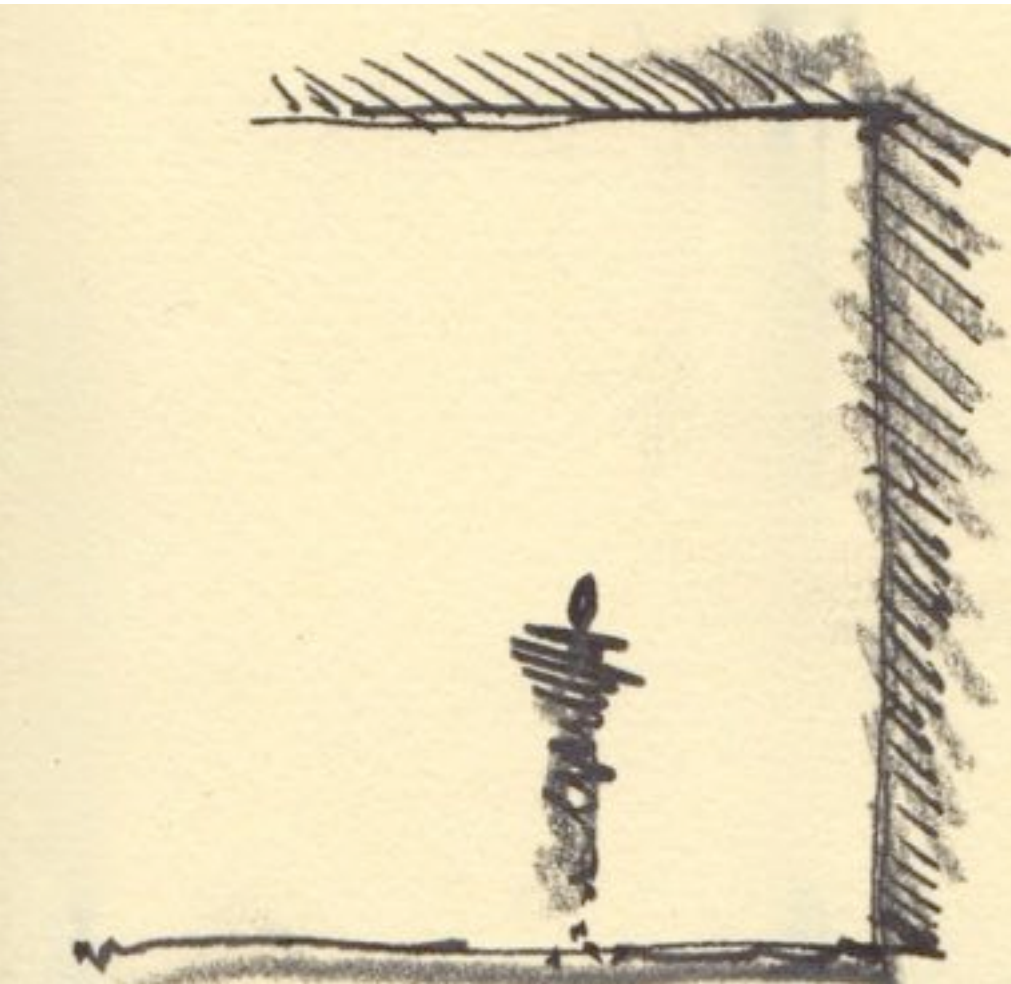
On the right a flat roof is extended out of the building. Even though it suggests shelter like a roof, do we experience it as a roof?



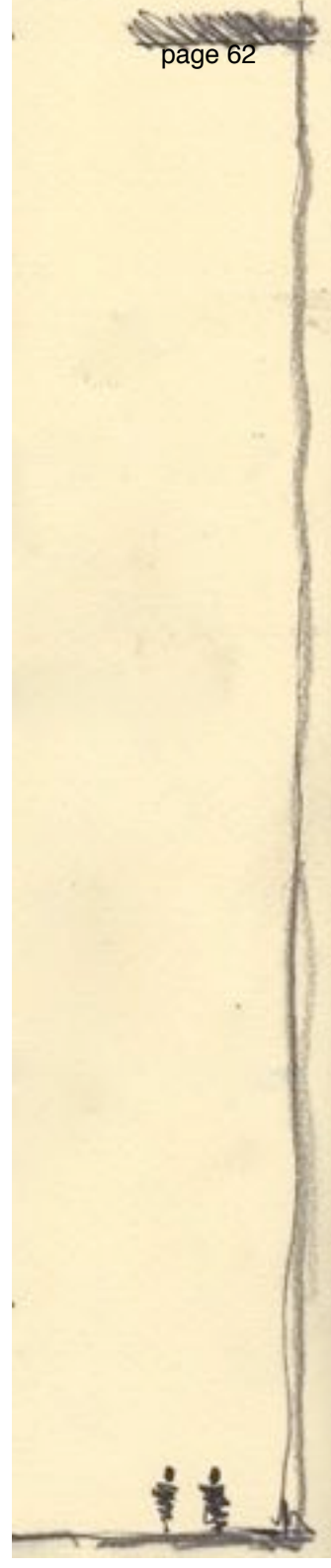
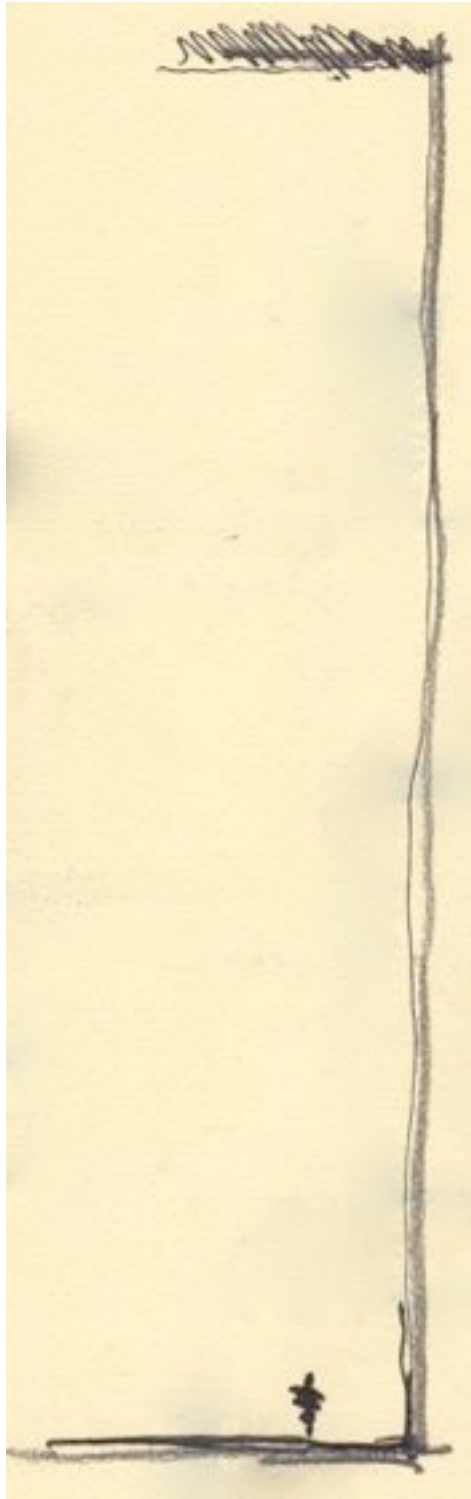
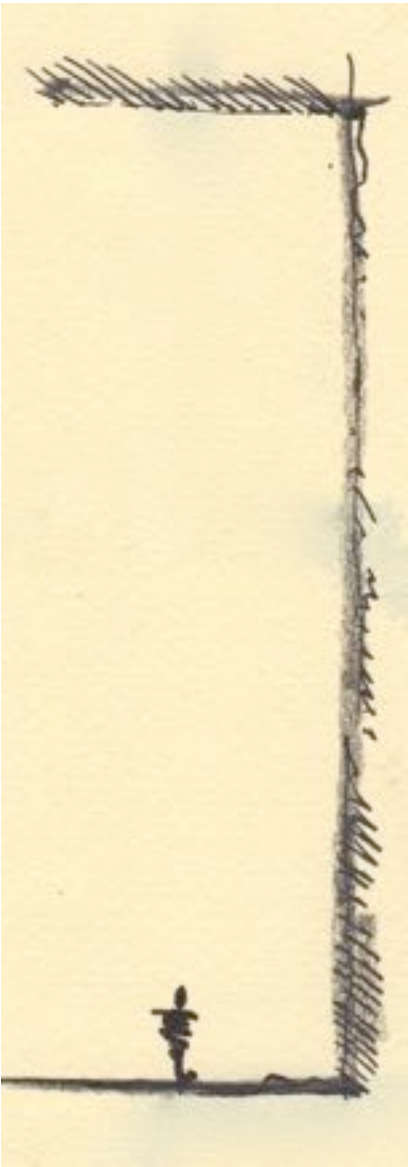
Ceiling height.....



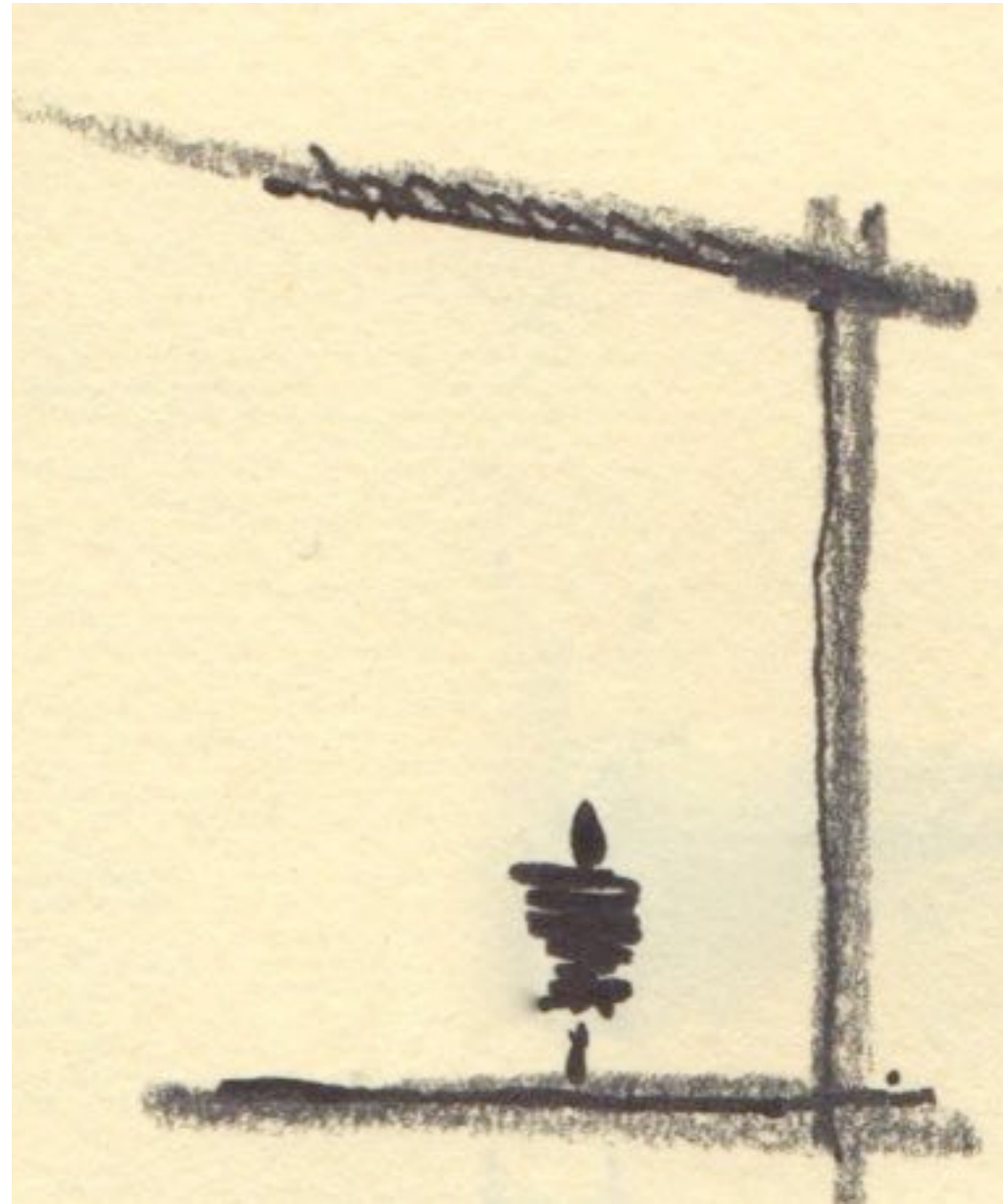
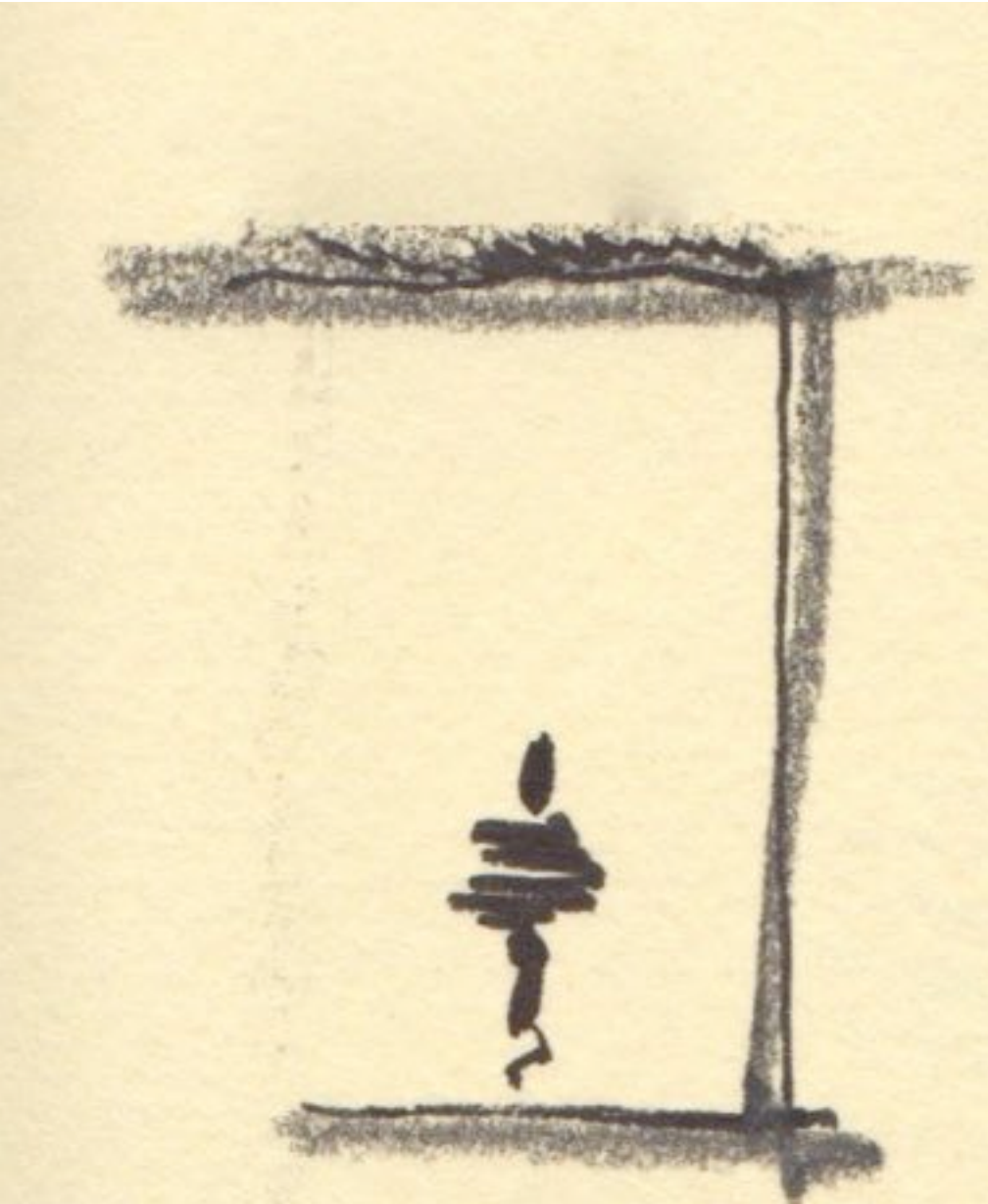
Relation of ceiling height and the experience of spaciousness.....



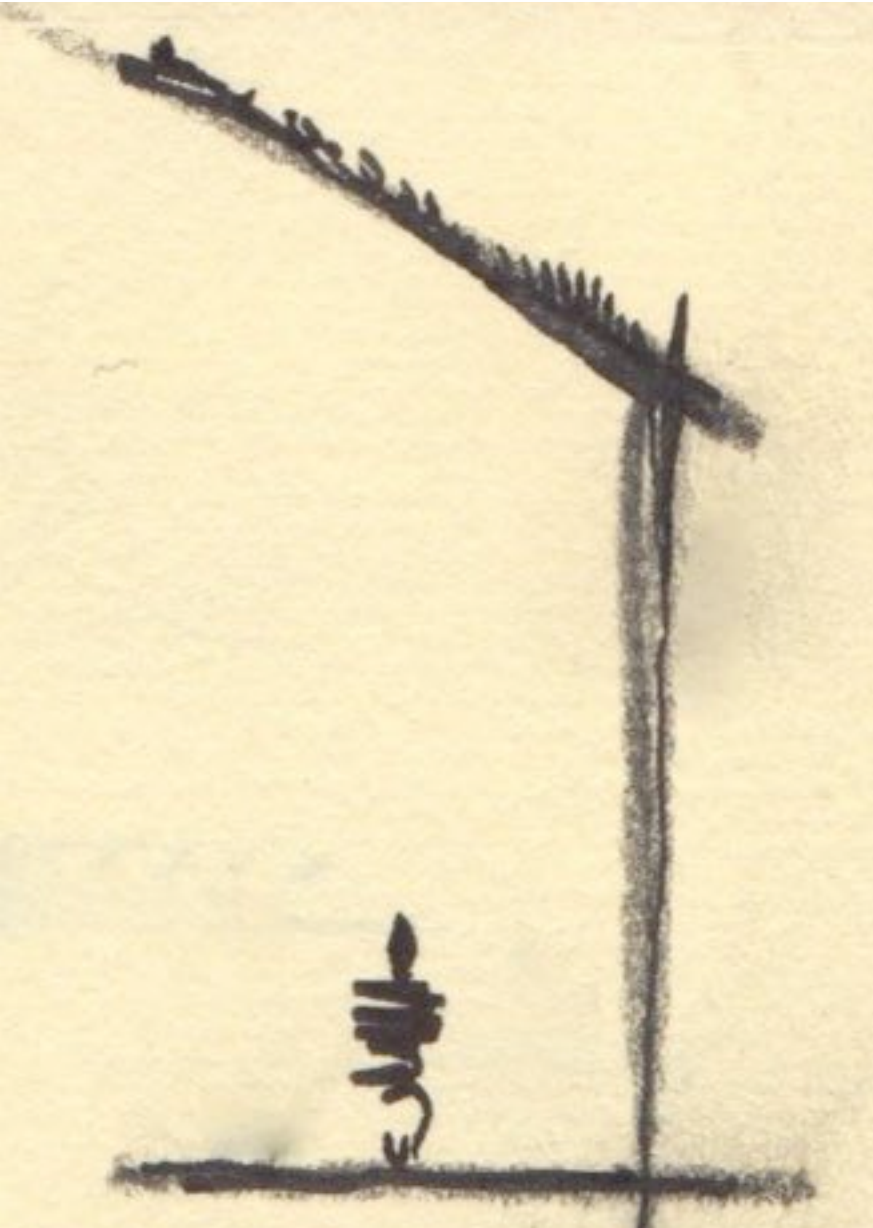
As the height of a ceiling increases it becomes non-defined and is experienced as part of the space, almost like the sky, losing the suggestion of a defined shape.....



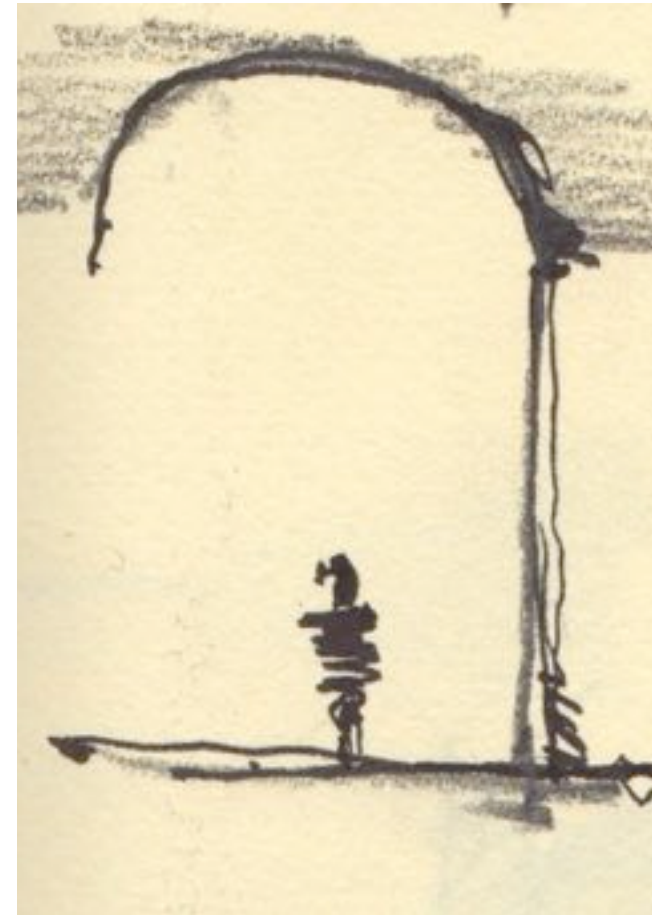
Flat versus sloped.....



As the pitch increases.....

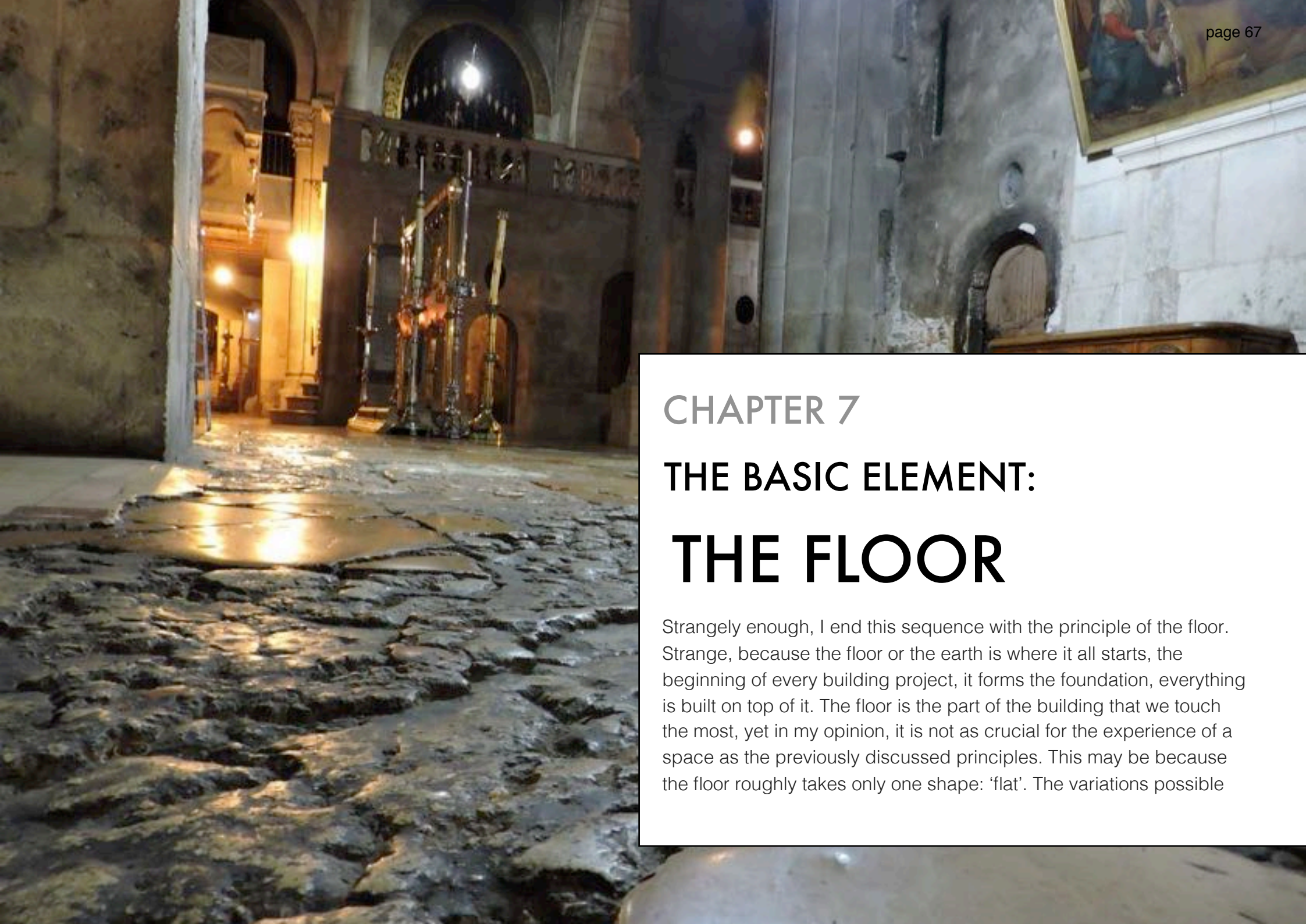


Interaction between ceiling and wall.....



Ceiling and wall merge to become part of a total design.....





CHAPTER 7

THE BASIC ELEMENT:

THE FLOOR

Strangely enough, I end this sequence with the principle of the floor. Strange, because the floor or the earth is where it all starts, the beginning of every building project, it forms the foundation, everything is built on top of it. The floor is the part of the building that we touch the most, yet in my opinion, it is not as crucial for the experience of a space as the previously discussed principles. This may be because the floor roughly takes only one shape: 'flat'. The variations possible



are in material, color and texture. The floor might be sloped but that is not the kind of subtlety that I am after with the exploration of these 5 architectural principles.

The floor, to me, does not hold major architectural secrets. That is not to say that the floor won't give the architect an other opportunity to add to the architectural experience and of course we do.

Modern house designs, for example, pay relative little attention to the details of the first 4 principles and, as a result, a major focus is put on the the physical expression of the fifth principle: the floor.

The architect can express many thing on the flat surface of a floor



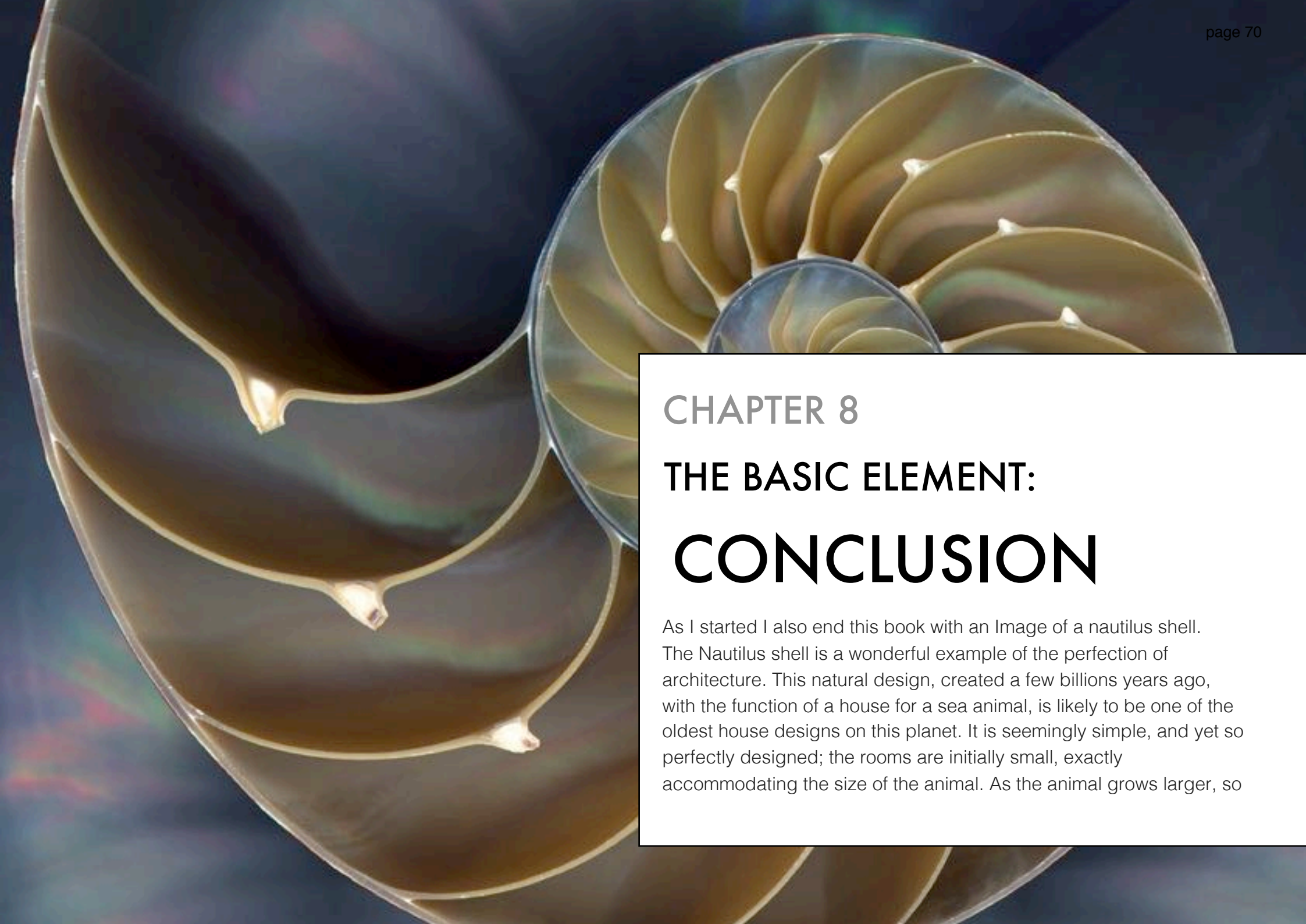


These modern house designs mainly focus on the sculpturing of raw space. Most of the material features have very little distinction. In such designs, the intangible space and the floor are the main expression of the architecture. And since the floor is the only tangible object, a great deal of attention is put into the material details of that floor.



The theory behind the intangible aspect of architecture, I will save for a next exploration.....

Portrait of Adele Bloch-Bauer I
By Gustav Klimt
sold for \$ 135.000.000



CHAPTER 8

THE BASIC ELEMENT:

CONCLUSION

As I started I also end this book with an Image of a nautilus shell. The Nautilus shell is a wonderful example of the perfection of architecture. This natural design, created a few billions years ago, with the function of a house for a sea animal, is likely to be one of the oldest house designs on this planet. It is seemingly simple, and yet so perfectly designed; the rooms are initially small, exactly accommodating the size of the animal. As the animal grows larger, so



do the rooms. Amazingly, the abandoned rooms are not wasted, they become air chambers allowing the grown animal to move up and down in the sea. The walls are made of the perfect material, they are thin but extremely strong, their coloring blends in with the color of the surroundings, protecting the animal from unwanted predators. The front entrance of the house is subtly decorated with a gleam of beautiful pearl, the overall shapes are round and follow an eye soothing pattern. No material or energy is wasted on this house. The fact that this design is unchanged for more than a few billion years, has proven its extreme sustainability.

Nature creates incredible architecture, It combines form and function in a way that for us human beings takes a lifetime to grasp. In the process of creating, nature is able to instill the form with beauty, balance and harmony and most of all it infuses matter with an invisible essence that I have called the soul.

Every natural creation is optimized for its function and it's adoption to every aspect of its environment and to follow an ingenious design of ruthless perfection and logic. It becomes evident that this level of integrity of the design of each creation is a pre-requisite for beauty, balance and harmony.

Architecture is a mysterious subject. As architects we have to take so many aspects into consideration yet the result seems so simple. In an attempt to create that same beauty, balance and harmony in the architecture of houses and buildings, it will not suffice to just imitate what we see in the natural environment. It becomes a quest for the architect to find within an understanding and recognition of that perfection found in nature and by means of abstraction, create a design method for himself.

I hope that, with this journey along some of the main principles of architecture, you have obtained a new understanding and maybe even an appreciation for the vast challenges of the architect.



CHAPTER 9

ABOUT THE AUTHOR:

Gijs Hooft Graafland (1962) was trained as an architectural engineer in the Netherlands. From an early age on he has been fascinated with building and design. He is both a builder and a philosopher, an artist and architect.

By starting his career at an architectural firm specialized in organic architecture based on the anthroposophical philosophies of Rudolf Steiner, Gijs has developed an interest in the meaning of architecture and how architecture can have an influence and an effect on the well being of people, the economy and the planet.

The focus of his work has shifted from the administrative and technical aspects of architecture to an approach from a creative angle. An organic process has thus developed in which the true experience of architecture gets the main stage and the administrative and technical aspects become integrated parts of the design. Through this transition and due to this development, Gijs has found a way to an integrated sustainable design approach that simultaneously addresses the aspects of people, planet, profit and beauty as true architecture emerges.