“Between Fireplace and Horizon”

Stories on the element fire, in relation to man and definition of place.

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Content

Preface

This thesis is presented to the Maastricht Master Interior Architecture. The study Interior Architecture has a distinct phenomenological approach and a profound intention to foster 'authorship'. The core of this master is the understanding of place in all its manifestations.

I'm not a writer nor a theorist, but an interior architect. That means that my approach in this thesis is focused on interior architecture. My interest in this subject arose from a study of the American architect Frank Lloyd Wright. My research began out of interest in the relationship between nature and architecture. F.L.Wright has designed a lot of buildings, This required a focus.

Frank Lloyd Wright's houses always center on a fireplace. So that means, the fireplace had some importance to his designs. My research started on the Edwin Cheney House, build in 1903-1904, Oak park, Illinois, United States. Known under the term Prairie Houses. In this house, he introduced a fireplace in the middle and the whole program of the house is surrounding this central point. According to Hildebrand,G. Wright was developing a pattern during his Prairie house time. The fireplace had an important meaning in this pattern. Making me curious what this meaning was and what importance it had in his designs.

Recently I've had the opportunity of visiting Frank Lloyd Wright's Taliesin West desert studio in Arizona. Here, one will find numerous fireplaces, in the studios, workspaces and even outdoor terraces. The fireplaces are used to provide heat for the rooms. But more importantly they project a sense of warmth and welcoming. The fireplaces arose directly from the floor, and they were very open. This was something new for me, living in a culture were fireplaces had a framework lifted them up from the floor, and rules that made an open fire in the interior impossible.

The fireplaces at Taliesin west looked primitive and characteristic. Huge boulder stones in combination with concrete, constructed the huge fireplaces. Making it look like a cave campfire. Being very close to the fire itself, hearing the crackling sound of the burning wood on the floor. This made me realize that not only the fireplace is important, but actually the element fire itself. I've got interested in the relation between fire and people.

Abstract

Wherever people have gone in the world they took two things with them, language and fire. In chapter one, I'm writing about a prehistoric family making its way through the landscape, searching a place to settle. We lived a nomadic lifestyle, dwelling form place to place. By selecting a place and creating a fire they begun to do architecture. The first settlements begun when people switched to an agricultural society. Searching for places close to water. From this point on cities expended, and architecture began to increase.

In chapter two I'll describe the history of fire in architecture. Vitruvius states that the origin of human society stemmed from the discovery of fire. In the classical world, fire had an extraordinarily significant role concerning the city and the home. Hestia, the Greek goddess of the hearth, was the focus of the internal space of the city. The 'home you start from'. Her fire burned in the hearth of the city as a symbol of community and power. In this chapter I will show the changes and alternations the fireplace had undergone in history.

The relation between fire and humans is very complex. Simultaneously about origin and destruction, fascination and fear. In the third chapter I'll introduce Gaston Bachelard's theory on the complex relationship of fire and humans. A story of humans living on and with a volcano explains this duality of the complex relation with fire. Living a live in unpredictable circumstances. Living in a constant struggle between gratitude and fear.

Fire has the power to destroy when it gets uncontrolled, yet we invite this element into our homes. In chapter four I'll explain that for Gottfried Semper, fire was the "first and most important, the moral element of architecture." The symbol of the soul of the city and of the house, it has become a fundamental element in the rituals of human beings.

Fire in our homes rooted out of functional reasons, but Fire has also a symbolical meaning. In the fifth chapter I'll introduce Frank Lloyd Wright, who has introduced the fire as a symbolical element in his designs. His houses always center on a fireplace. Grant Hildebrand researched on the so called repetitive pattern of Frank Lloyd Wright, where the fireplace is an important element. He introduced the fire back into the interior, as a symbol of a campfire, gathering around an open fire. Building interiors with atmosphere and a welcoming warmth.

I'll talk about my journey to Taliesin West. A journey that I've took to gather information for this thesis. Taliesin West has numerous fireplaces. They are used to provide heat for the rooms, which originally did not even have glass to close the openings, but more importantly, the huge rough fireplaces, arising directly from the floor, large enough for a person to enter, project an extraordinary sense of warmth and welcoming, both physical and psychological. Besides, they create points of focus and images of gathering together.

At Taliesin I've met Peter Haberkorn, an artist who lives at the complex. We were talking about my research, and he told me a story about Rudolf Schindler. He had lived in the King's road house, in California. Built as a residence house with a very particular program that interested me. Also here the fireplaces center the spaces. And the difference with Wright is that not only the chimney is declaring the potential of fire to the exterior, but here the fireplace can be used from the inside and the outside, giving the outside space an potential of an interior space. This fascination turned out to be the next step in my research.

An origin

1 Giesbertz.M., *Illustration wild humans producing a fire*

"The men of ancient times bred like wild beasts in woods and caves and groves, and eked out their lives with wild food. At a certain moment it so happened that thick, crowded trees buffeted by storm and wind, rubbed their branches together so that they caught fire: such men as witnessed this were terrified and fled. After the flames had calmed down, they came nearer, and having realized the comfort their bodies drew from the warmth of the fire, they added wood to it, and so keeping it alive they summoned others and pointed it out with signs showing how useful it might be. In this meeting of men sounds were uttered at different pitch, to which, through continued daily exercise, they gave customary value to the chance syllables. Then, by pointing to the things in most common use, they began to talk to each other because of this accident. Since the investigation of fire brought about the congress of men, and their counsel together and cohabitation, and since many people now met in one place, and had moreover been given a gift by nature about that of other animals, that they did not walk with their heads down, but upright, and could see the splendor of the world and the stars; and since they could make whatever they wished with their hands and fingers easily, some of that company began to make roofs of leaves, others to dig hollows under the hills, yet others made places for shelter in imitation of the nests and buildings of swallows out of mud and wattle. Then, observing the construction of others, and by their own reasoning adding new things, as time went on they built better dwellings. Since men were of an imitative and docile nature, glorying in their daily inventions, they would show each other the results of their building; and so, employment. At first, setting up forked posts, and putting withies between them, they finished their walls with mud. Others built walls out of dried clods, framed with wood, and covered with reeds and leaves to keep out rain and heat. When, during the winter, the roofs could not resist the rains, they devised gables, and smearing the inclined roofs with clay, they made water run off." [1]

1 Rykwert, J., *The Idea of a Town* 1976. p 105

A story of siting

2 Giesbertz.M., *Illustration wild humans hunting*

The greatest gift that mother nature gave to mankind, is Fire. Fire is a crucial human advantage. Every kind of society began with the cooking of meat over flame. The early humans probably experimented with fire. Very restless adventures species, and I can imagine it probably took a thousand of years, burnt fingertips before they figured out how to make fire and do something useful with it.

But when they did, it extended the daytime so that they could see each other at night, it kept away predators, it destroys bacteria, it makes food taste better, and more importantly it brakes down carbohydrates. [2] So it increases the amount carbohydrates going into the body. And these carbohydrates have a mature effect on the brain. It is the brain size that begins to increase from a million years ago when we have the first evidence of fire and humans to hundred thousand years ago when modern humans came on the scene.

When we started to cook around fire that means groups had to gather together. The gathering around the fire and cook their food, was the beginning of human society. The heat, the flame, the beginning of all conversations. Flame attracts people to talk to one another. When you sit around a campfire as a group, you are creating basically the first school ever, because storytelling is one of the best ways for groups to communicate. The storytelling was not just a comfort, the storytelling was a key to there survival. They learned from each other how to build and how to stay alive.

Imagine a prehistoric family making it's way through the landscape unaffected by human activity. They decide to stop, and as the evening draws on they light a fire. By doing so, whether they intend to stay there permanently or just for one night, they have established a place. The fireplace is for the time being the center of their lives.

Subsidiary to the fire, they make more places: a place to store fuel, a place to sit, a place to sleep, perhaps they shelter the sleeping place when it starts to rain. By selecting a place and creating a fire they begun to do architecture. The fire is a source of warmth, for cooking, a point of reference around which life revolves.

At Taliesin West I've met Cody Johnston, A Canadian student who wrote this little text for me. Explaining an example how important fire was to sustain our life's.

"To me, as a Canadian, a fireplace is very intimately related to survival. The fireplace was a very technical device, in which the builder would strive for performance, in so enabling maximum heating capacities for the shelter. My great grandparents were forced into a canvas tent for one Canadian winter upon their arrival to their newly homesteaded land, 100 years ago, and here is where they discovered the beauty of fire to sustain life. In short, a fireplace can take on several meanings, but, for me it means having the opportunity for life. As for all of us, if it not for the fire and a place for it, the fireplace, we would not be here today"[3]

Over 12,000 years ago, humans were hunter-gatherers. We lived a nomadic lifestyle, moving from place to place over the seasons and years. When humans first started to settle down, it was because we started to switch to an agrarian society. An agrarian society is a society where cultivating the land is the primary source of wealth, and the focus is on agriculture and farming. So naturally, the places we chose to live were the places that were best for the new life as farmers. Farming was absolutely revolutionary, when we discovered how to farm we suddenly increased the ability of the land to support us. Humans were extremely good at hunting, one of the problems is about eight to ten thousand years ago most of the large animals that humans were hunting died out. In most places where this happened, you had a choice of dying, moving, or settling down and trying to survive on plant live. Our ancestors were natural historians in there daily life and this was probably behind the domestication of plants, they probably noticed that if they took some of the seeds and rather than eating them left them on the ground, they grew. [4]

2 *http://www.history.com/shows/mankind-the-story-of-all-of-us* 24-11-2015

3 Johnston.C., *Student Taliesin West F. L.W. School of Architecture. written* 04-12-2015

4 *http://www.history.com/shows/mankind-the-story-of-all-of-us,* 24-11-2015

3 Giesbertz.M., *Illustration agrarian society, fishing, settlements close to water*

Farming rises in different places at the same time totally unconnected with each other. And that is the beginning of civilization. The farmers need good quality, fertile soil and a strong water supply. Both of these things can be found on the flood plains of rivers. So, it's not surprising that many of the first human settlements were along these rivers. This even influences us today - many of the oldest cities are along rivers, either because of those same farming reasons or because it allowed for boats to sail down the river, carrying goods to be traded.

Trade was a big part of how humans advanced, building more and more impressive architecture and things to make our lives easier. We had to come up with better tools, better ways to build our houses to protect our land and to make our clothing. We had new materials to use ,we had new plants to grow and we started to develop organized societies.

Farmers are invested in land. When there is more then one person farming this brings them into conflict with one another. Warfare follows farming as a natural sequence. You have stuff to loose, you have invested interest, and we have to create other thing to protect that. We build walls around our cities to protect our stuff. Protected ourselves with weapons.

The settlement close to the water had also statistic reasons. In warfare they could use the water with ships to attack and explore other settlements.[5] Explore new lands were they could settle. Wherever humans have gone in the world they carried with them, their language and fire. Fire to build new settlements and sustain their life, with light, warmth, and food.

"First, there was smoke , then the fire. Breathless , we looked up , we saw the thick smoke curling upwards slowly through the blue hole outside, unfolding and fanning out like a newly planted flag - yes indeed , we were settled" [6]

5 *Ibid. note 4*

6 Rosenboom, T., *Publieke werken* 2009. p 26

A history of fire

Vitruvius [7] quotes." The beginning of buildings, it is the discovery of fire that gives rise to human society. The collaboration between men, the communal life and coincidence of many in one place, and with it , the construction of the first shelters and huts."[8]

Vitruvius wrote 'De Architectura' (or 'Ten Books on Architecture'). It is the only contemporary source in its entirety on classical architecture we have today. In the 'Ten Books on Architecture' is written that the origin of human society stemmed from the discovery of fire. This evolved into the origin of the act of building for man with the primitive hut, and subsequently architecture and the individual dwelling. It was fire from which human society arose, the place of the fire was a communal place were people gathered.

"The close bond between construction and fire is clearly reflected when architecture is reduced to its most elemental and primitive form: on one hand, in stories about the origin of architecture and the rituals of urban foundation; on the other, in the infantile perception and the psychoanalysis of the house. In all beginning or origins, in myths and rituals as well as in the preconscious or unconscious mind, construction and fire are intermingled and intertwined."[9]

The speculation of our origin was of fundamental importance to Vitruvius. Rooted in the mythologies of several primitive societies and Epicurean evolutionism, Vitruvius' ideas remain relevant. Anthropologists connect the separation of man from his biological predecessors with his domestication of fire. Even now, signs of combustion are assured indications of human habitation.

Fire is intimately associated with construction not only in our immediate histories, but also in the myths of our origin, in which fire holds the rites of worship in urban and domestic foundations. In the classical world, fire had an extraordinarily significant role concerning the city and the home. For Greeks and Romans, the sacred fire in the center of the city was its prime altar, "the origin of its identity and the font of religious life. Hestia, [10] "the Greek goddess of the hearth, was the focus of the internal space of the city. The 'home you start from'." Her fire burned in the hearth of the city as a symbol of community and power.[11]

In Rome, Hestia was worshiped as the goddess Vesta. In her temples, the sacred fire was tended by the Vestal Virgins, who were "required to embody the virginity and anonymity of the goddess. Young girls, often under the age of seven, chosen to be the Vestal Virgins were taken to the temple. There, they were dressed the same and required to maintain chastity or face deathly consequences. Set apart from other citizens, they were honored and praised in the city. This tending of the hearth was a sacred duty performed by women, specifically the daughter of the house prior to her marriage. Hestia's function as goddess of the hearth is related to the permanency of her virginal status.[12]

Upon marriage, a newlywed couple ritualized their first new household fire, consecrating their new home. In marriages, the purity of the hearth is ensured through the "integration of the wife into the household of her husband."[13] They also honor Hestia as the symbol of fertility, in hopes of expanding their family with offspring. Marriage was not solely for purposes of commerce; rather it allowed men of a particular lineage

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7 Vitruvius; *An army engineer who served the Roman army under Julius Caesar, very little is known about his life. His work 'De Architectura' (or 'Ten Books on Architecture') is the only contemporary source in its entirety on classical architecture we have today. Written around 15 BC*

8 Fernández-Galiano, L., *Fire and Memory : On Architecture and Energy*. London 2000.) *p.212*

9 *Ibid note 7 p.8*

10 Hestia is one of the least known Olympians. She has limited mention in mythologies and the Homeric Hymns. She and her Roman equivalent Vesta, were "not represented in human form by painters or sculptors. Instead, the goddess was felt through a living flame at the center of the home, temple and city."

11 Fernández-Galiano,L., *Fire and Memory, p.12*

12 Vernant, J. P., *Myth and Thought among the Greeks*. 2006. p.131

13 *Ibid note 11p.146*

to “found a family and so ensure the continued survival of their house.” Marriage was viewed as almost a literal “ploughing of the soil, the woman symbolizing the furrow, and the man the ploughman.” [14]

Another Hestian ritual took place after a child was born: when the infant was five days old, he was carried around the hearth to symbolize admission into the family. Often, the naming of the child also occurred at this time.

The ritual consisted of two parts: first, a ring of people stood naked around the hearth holding the newborn in their arms. Next, they laying him directly on the ground near the fire. The two elements directly inform each other; “direct contact with the floor of the house completes the integration within the domestic space which is also brought about by the motion of the child describing a closed circle around the fixed hearth.”[15]

Additionally, holding the child over the flames to be purified is an attempt at immortality, but then placing him on the ground as a recognition of mortality.

Hestia’s symbol was the circle and her first hearths and temples were round. Neither home nor temple was sanctified until her presence was established. One could feel her through a sacred fire that provided warmth, illumination and heat. However, unlike other gods and goddesses, Hestia’s significance is found in rituals rather than myths and representations. Rituals symbolized by fire were required for major rites of passage throughout civilian lives. She marked the beginning of the importance of ritual surrounding fire; she established a symbolic presence and need for fire in home.

Vitruvius situates the origin of human society with the discovery of fire, which is the origin of man’s building activity. The bond between architecture and fire has undergone alterations and metamorphoses in history. In the earliest urban cultures, which sprang up in warm climates, the symbolical role of fire was more important than its functional role. The ritual continuity of the flame mattered more than its heating power. The right positioning and dimensions of windows and the thermal inertia of walls sufficed to make the house habitable in summer and during winter a coal brazier could supplement the fire that burned in the soot-stained atrium. [16]

In the Middle Ages, the Carolingian period constituted the greatest effort to recover the cultural unity that had been lost among the ruins of the classical world. In the plan of the Benedictine abbey St Gall the fireplace appears for the first time with the concept of individual and segregated thermal comfort. The fireplace spread throughout Europe during the twelfth, thirteenth and fourteenth centuries.

“Fire moves from the central hearth to the side fireplaces, conserving many of its culinary functions. Private space is linked to thermal comfort, and the fireplace becomes an instrument of segregation.” [17]

In the seventeenth and eighteenth centuries the fireplace underwent successive reforms. On the threshold of modernity, the fireplace had won the efficiency what it had lost in size and centrality, which it now tried to retrieve by ornamental frames. Removed from the center of the house, fire now multiplied and divided along the walls of different rooms. [18] While these developments were taking place in the urban dwelling, rural houses maintained the structure of the primitive hut, with a hearth on the ground that served alike for heating, cooking and drying.[19]

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14 *Ibid note 11p.140*

15 *Ibid note 11p.153*

16 Fernández-Galiano, L., *Fire and Memory 2000. p.214*

17 *Ibid note 15.p.217*

18 Two publications. Praz. M., *An Illustrated History of Interior Decoration*, 1982, and Thornton.P. *Seventeenth century Interior Decoration in England, France and Holland 1978*

19 Fernández-Galiano, L., *Fire and Memory 2000.p.223*

4 White J.P., *Designs for fire-places by C.H.B. Quennell in Bedford*.

Decentralized and reduced in the name of efficiency, the fire was putted away in a stove, what caused the disappearance from the view of the flame. Later on after a few experiments resembling the Roman hypocaust, whereby hot air was sent to a hollow space under the floor, and after a foray into steam, a system using hot water that became a standard by the mid-nineteenth century.

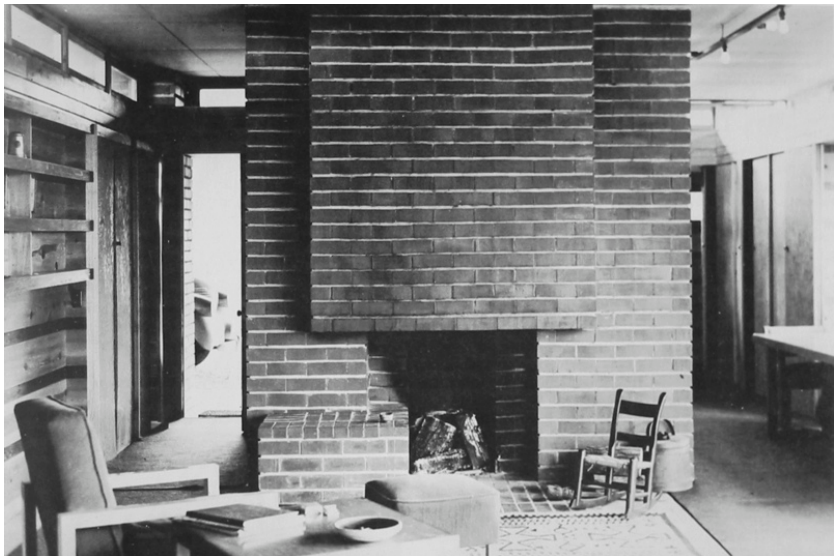
At that time in the south of the Netherlands and neighboring countries, there were coal mines. Until the 60s of the 20th century, many houses in the Netherlands and Belgium heated with coal stoves. The coals were brought in bags and dumped in coal lofts and cellars, where they were scooped into a coal-scuttle to use them . The rise of natural gas does eliminate the coal bucket in the living rooms. Fire was banished to the basement. [20] Buildings became cluttered with drains, valves and pipes, and wherever there was a fireplace, chances are that it was not used.

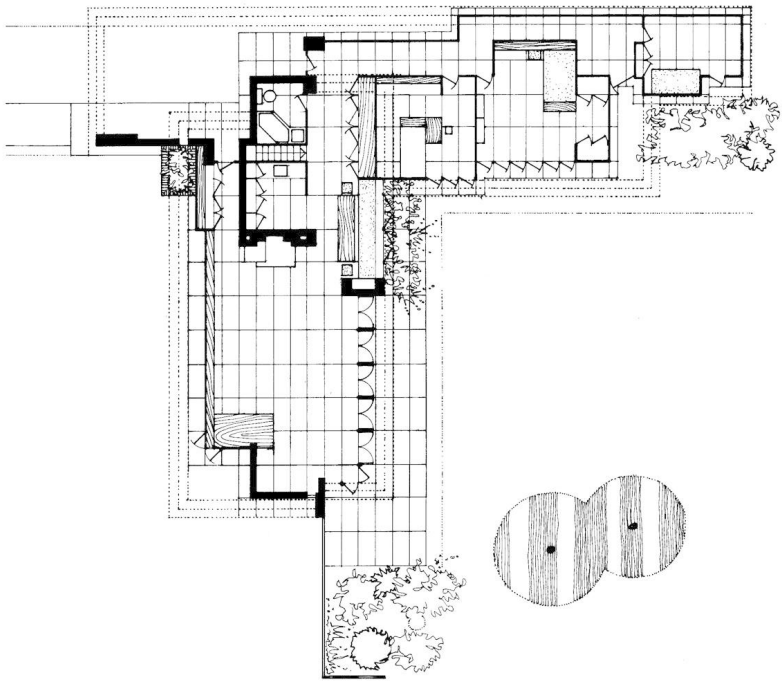
Frank Lloyd Wright was one of the architects who introduced the fireplace back into the interior again. During one of his journeys in Japan, he discovered underground heating systems, and from then on was an ardent defender of heating systems built into the floor slab, so much so that he later considered what he called “gravity heat” his most important technical contribution to architecture. His first American experience with this as in the Jacobs House, build in 1937. Although Wright tried to hide radiators and water pipes, he felt the need to make such atmospheric regulation visible in some way, so he introduced in the center of the house a voluminous fireplace. Once again the original fire inhabiting the heart of the architecture.

The need for fire is almost as fundamental as the need for water. Fire is an emotional touchstone, comparing to trees, other people, a house, the sky. But the traditional fireplace is nearly obsolete, and new ones are often added to homes as “luxury items” Perhaps this explains why these showpieces are always so badly located, stripped of the logic of necessity, they seem an afterthought, not truly integrated.[21] Of course, we must face the fact that in many parts of the world wood and coal fires are ecologically unsound. They pollute the air: they are inefficient for heating and the are a drain on wood reserves. If we wish to maintain the habit of burning fires in the home, we shall have to find a way of supplementing wood fuel.

20 *Ibid note 18.p.224*

21 Alexander,C, a.o., *A Pattern Language.1977 p. 839*





5 *Wright.F.L., Plan and picture, Jacobs house. Madison Wisconsin. 1937*

A story of dualism

6 Giesbertz.M., *Illustration house on fire*

The human relationship with fire is complex: A vacillation between function and symbol that leaves man unsure of the true perceptions of fire. We are fascinated and also feared by fire. [22]

In 'The Psychoanalysis of Fire', Gaston Bachelard observes the human relationship with fire. He analyzes the existence of fire, both as a literal presence in the history of mankind and as a literary and symbolic presence. Bachelard is focusing on the concept of fire, rather than fire itself. He is interested in the human conceptualization of fire, and our subjective responses to it. Bachelard begins by describing how our psychological problems arise from our perceptions of fire, and more than any other phenomenon, are charged with fallacies from the past.[23]

> *What we first learn about fire, is that we must not touch it.* [24]

Fire can be used to explain anything; it is both intimate and universal. It represents both good and evil. "It shines in paradise" and "burns in hell" Our understanding of fire comes from "social reality" rather than a "natural reality". Fire induces reverie; "Fire suggests the desire to change, to speed up the passage of time, to bring all of life to its conclusion, to its hereafter."

Bachelard examines how man created fire historically. Logically two sticks were rubbed together, creating a spark and eventually fire. However, this as a highly sexualized experience in that man associated the act of sex with the sensation of fire. The desire to create fire is perhaps a yearning to recreate a moment of euphoria, similar to a sexual act. Fire is used as a metaphor for sex and reproduction; a small (even dying) spark can lead to a vast blaze; a man can begin another generation.

An Egyptian myth of digestion claims that fire is an insatiable animal that feeds itself. Persians sacrificed to it, and during the Middle Ages, fire was food to the stars. Historically, scientists have been preoccupied with the notion that fire seems to have no limit to its power. Fire can grow, rapidly reproducing and dividing itself, all the while losing ritual and mythical content. When fire displaces itself from the center of the home, becoming untamed and violent, all myth and symbol is lost.

Are we so Fascinated by fire because we can control something that is powerful and destructible? Although fire is inherently dangerous, leading many animals to avoid it, for most of human history, mastery of fire has been critical to survival. Fire is colorful and dynamic. Its movement is gentle and soothing. It's not surprising that fire captures our interest. From a child's point of view, fire seems the perfect toy: colorful, animated, and responsive. Candles on birthday cakes and on our dinner tables during holiday meals, are harmless. Candles are a part of many religious ceremonies.

Children see fire in fireplaces in winter, and campfires and barbecues in the summer. Fire seems fragile. Most of the fires children see are small like candles, matches, lighters. They are easily extinguished with a puff of breath. Any child who watches an adult struggle to light the barbecue with old charcoal or start a campfire with damp wood can easily conclude that fire is hard to get started and easy to put out. But when the fire gets uncontrolled, their fascination turn into fear.

The human use of fire can be broken down into two elementary components, namely controlling fire and producing fire. Fire occurs naturally due to lightning strikes, volcanic activity, and concentrated solar radiation. In contrast, the artificial production of fire requires highly specialized tools, techniques, and materials. While this suggests that early hominids acquired the ability to control fire long before they were able to produce it.

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22 Bachelard, G. *The Psychoanalysis of Fire.1964.p.*

23 *Ibid note 20 . p.*

24 Cole.R.E. *Why Are Children Fascinated With Fire 2014. p.*

7 Stromboli., *picture of eruption. Italy 2005*

"The utility of fire for our hunter-gatherer ancestors and their predecessor species was likely multiplex. In addition to fire's obvious benefits as a source of warmth and light, fire played a key role in the evolution of the human diet, as cooking would have allowed our species to exploit a vastly expanded array of plant and animal foods Likewise, the control of fire allowed for applications in hunting, combating predators and hostile conspecifics, managing wild plant resources, and tool production. Of course, at no point in our species' history will fire have constituted an unadulterated good – together with the smoke that it produces, fire is a significant source of injury and death, a pattern reflected in most animals' wariness of fire. With a deep evolutionary history and a profound impact on fitness, there is every reason to believe that fire has been a source of recurrent and substantial selective pressures shaping human behavior and the psychological architecture that underlies it."[25]

The sun is the most fundamental fire that everything on earth is depending on, when this fire stops, live on earth won't be possible anymore. Underneath the skin of the earth the core exists out of liquid molted stone. Volcanic activity brings heat that is captured in the earth's core to the surface. The heat, gases and molted stone are making the mountains look like they are on fire. Next to the destruction and killing everything in its path "the mountain is actually rebuilding itself."

What fascinated me is how people live around volcano's. Living a live in unpredictable circumstances. Living in a constant struggle between gratitude and fear.

Stromboli is a twelve square meter island. It is also an active volcano that rises more than nine hundred meters from the Tyrrhenian Sea. Just on the edge, on a small piece of land, more or less by chance, people, and some small animals settled. Plus a lush, but fragile amount of vegetation that lives in the volcanic soil. Which abruptly ends at about four hundred meters. Where the black volcanic sand predominates.[26]

The volcano called Iddu , means everything to the island and its inhabitants , in positive and negative sense. Iddu determined everything here. There he stands fuming over our heads , but he's all around us, on the beach with black sand and the lava gravel laying everywhere. Even in the work of the people, in the paving and building materials. Everything is traceable back to the volcano, a simultaneously worrying and reassuring presence. That protects and supports , but also can take everything away as he wants.[27]

Stefano Cincotta 93 years old, says, " Stromboli was green. But then it was all black ." It was September and we were in the middle of the grape harvest, but there was nothing left of it. "Whoever could , left. " The eruption was the most violent since time immemorial and was followed by a tsunami that hit the coast of Calabria. Shocked and terrified residents moved away. There was something snapped in their relationship with the volcano. They felt betrayed, as a friend who turned his back on them." I stayed, and I'm still alive. Occasionally an eruption, but the volcano is my friend, I 'm not afraid of him. It gives us food, and tourists who come to see him.

The Stromboli is a volcano that has emerged from the sea about a hundred thousand years ago . In ancient times it was known as the " Lighthouse of the Mediterranean, its roaring fire was a reliable beacon for sailors. The Stromboli has been active since time immemorial. The eruptions in recent years have always found a way out through the Sciara del fuoco, a steep slope on the west side of the island, far from the houses in Stromboli. Every day glowing boulders rolling down the slope, often lava and other volcanic material is flowing towards the sea. The inhabitants praise themselves lucky that Iddu drops his hazardous munitions along the uninhabited Sciara emissions. "But it's always possible that the volcano some day will behave differently.

25 Fessler. D., *A Burning Desire. 2006. p.*

26 Pinno, M. *National geographic, magazine. 2015. p.124*

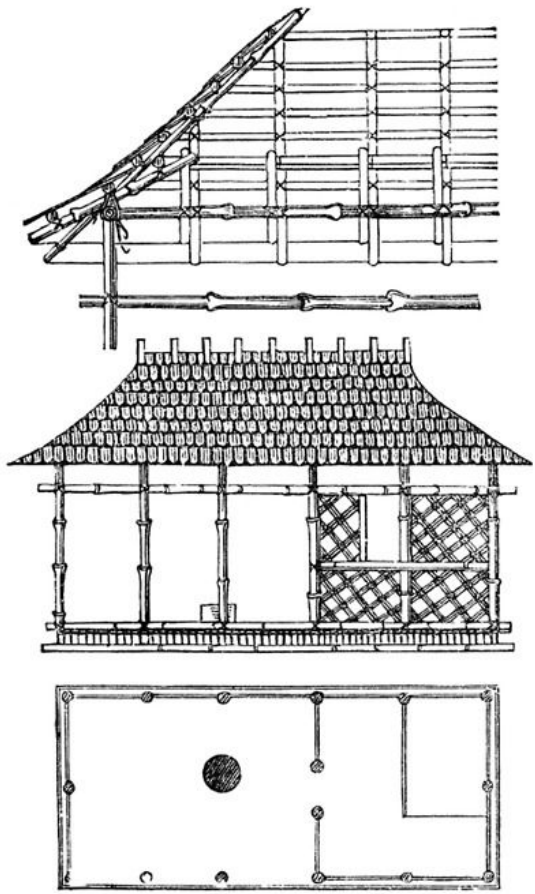
27 *Ibid.note 24 p.124*

Mario Zaia has been a mountain guide for decades. “ The volcano was the reason I came to live here once. I owe so much to that choice, my wife, my kids and my home. If I ‘m standing on top of the volcano , I’m perfectly happy.”

Daily Zaia takes tourists up into the mountain. “Everyone wants to feel that emotion , wants to experience what you’re not able to experience anywhere else. “ Although it is a steep climb, everyone comes back stronger, fire gives you energy. It comes to the perspective. If we leave here from the village , everyone feels sturdy and large. But at the top you realize that you’re nothing. “ We humans are piccolo , you realize when you’re eye and eye with the violence of eruption. All differences disappear, everybody feels the same fear.”

Feral fire is fearsome but this fire is also fascinating. We recognize fire as a sensational and tremendous element, and we are captivated by it. Fire is a threat, yet we invite it into the center of our homes. The implications of this cannot be ignored. When fire leaves its place at the center of the home, in an effort to consume it, fire becomes dubious and violent. The feeling of seeing your home ablaze is one of immense and overpowering fear. Regardless, a fire that large cannot help but evoke feelings of awe and reverence.

A story of symbols



8 Semper.G.,*'The Caraib Hut,' The great exhibition 1851*

Considering fire as the "first and most important, the moral element of architecture,' Gottfried Semper [28] identified three other elements of architecture; the roof, the mound and the wall. He concentrated his theory on these four elements and their corresponding material-functional categories: ceramics (the hearth), textiles (the wall), stereotomy (the mound), and tectonics-carpentry (the roof).

Semper challenges the notion of restraining architecture to essential construction and subsequently removing its ornament. "Architecture, like its great teacher, nature, should choose and apply its material according to the laws conditioned by nature, yet should it not also make the form and character of its creations dependent on the ideas embodied in them, and not on the material" [29] Through the selection of suitable materials, a building could fully express itself as a natural symbol of beauty and meaning. Anciently, however, this materialistic approach proves false as it overlooks several significant artistic developments. He returns to the primitive human conditions to propose the following:

"The first sign of human settlement and rest after the hunt, the battle, and wandering in the desert is today, as when the first men lost paradise, the setting up of the fireplace and the lighting of the reviving, warming, and food-preparing flame. Around the hearth the first groups assembled; around it the first alliances formed; around it the first crude religious concepts were put into the customs of a cult. Throughout all phases of society the hearth formed that sacred focus around which the whole took order and shape." [30]

The hearth centered the other elements. The roof, the enclosure, and the mound acted as protectors of the hearth's flame against the environment. Their arranged combinations varied according to climate, natural surroundings, and social relations allowing certain elements to develop while others receded into the background. This was directly related to mans developmental skills: ceramics and metal works around the hearth, water and masonry works around the mound, carpentry around the roof and its accessories. The primary momentum behind historical architecture was the central hearth and the creation of a shelter to surround it.

"The hearth is the first embryo of the social settlement. Around this hearth the first family groups gathered. It was here that the first treaties were made and the first religious rites practiced. The hearth is the holy center and the focus to which the different parts of a settlement were directed during all the periods of development of society. Even today it is the center of our domestic life and its higher meaning as an altar, the center of our religious institutions. It is the symbol of civilization and religion.

German architect Frederick Baumann, who was living in Chicago around this time, introduced Semper's theories to the public through lectures and forums. Recorded and published in local papers and journals such as "Inland Architect" and the architecturally progressive "News Record," the ideas circulated rapidly.

Several years after the publication of Semper's ideas, young progressives from the Chicago school of architects began to take notice, including recently arrived Frank Lloyd Wright. Featured in the World's Columbian Exposition in Chicago in 1893, scholars were impressed by the Ho-o- Den, the secular adaptation of a Japanese temple, which presented the integral elements of Semper's symbolic architectural system. "The basic elements of this Japanese structure were its shrine, which corresponded to Semper's hearth; its platform; its non-structural, sliding screen walls, which were analogous to Semper's wickerwork walls; and its broad, spreading roof."[31]

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26 Upon completing his studies in 1830 architecture at the University of Munich, Gottfried Semper traveled between Greece and Italy studying ancient architecture. By 1834, he had become a Professor of Architecture at the Dresden Academy of Fine Arts. The city of Dresden was thriving creatively during this time, and Semper had several of his building designs realized. Actively political, he took on a leading role in the 1849 May Uprising that took over the city. When the rebellion collapsed, he was convicted and forced fleeing the city for London. Though this was futile time professionally, it proved to be a fertile period for theoretical, creative and academic development. In 1851, he published The Four Elements of Architecture.

29 Semper, G., *The Four Elements of Architecture and Other Writings,* 1989.*p.101*

30 *Ibid note 27 .p.102*

31 Etlin, Richard A. *Symbolic Space 1994. p.27*

A story of atmosphere

9 Ruigt.R., *picture Taliesin West, designed by Frank Lloyd Wright*.

Frank Lloyd Wright[32] is considered the best architect of our time. He developed the modern organic architecture. And that is probably the pioneer spirit of building in America, always doing the first building on places where nothing was build before. Building in nature and being surrounded by it.

In America there is still wild nature. The environment we grow up in and that we live in really does effect our ways of understanding and relating to space, which than goes into the architecture we build. Space and the way its created is part of the modernist theory from the beginning. The organization of space, the way you choreograph the experience of that space, the circulation through the space, the structure of the space, the light, the audible quality, the textile quality, the materials that are used and the way they change. All of this was intended to create a in the person sensation, that by the time they experience them, it will improve their condition.[33]

Frank Lloyd Wright, began to develop a particular repetitive configuration in his houses, these were known under the term Prairie Houses. Prairie homes are known for their strong and comforting sense of shelter. One of the most essential functions of architecture is to provide shelter.

Wright recognized the importance of tapping into our primal needs and satisfactions through this type of architecture. He added a sense of shelter to each of Semper's elements of symbolic architecture. The platform was seen through a projecting base that made the house, along with its exterior walls, appear as if it rose from the ground. The "integral fireplace" was architecturally impressive, boasting an opening encased within a broad expanse of masonry, leading to a great chimney on the exterior. [34]

Grant Hildebrand[35] researched on the so called repetitive pattern of Frank Lloyd Wright. The key elements of this repetitive configuration are the entry, the fireplace, ceilings, solids and glazed walls, openings to adjacent interior and exterior spaces, and terraces. He introduces a study of a English geographer Jay Appleton. In the book; The experience of landscape, Appleton outlined what he has called prospect refuge theory. Prospect, by which he means a place with unimpeded opportunity to see; and refuge, by which he means a place of concealment. These are mutually complementary, and can be summed up as the dual characteristics in the phrase, "to see without being seen"

The essential conditions are that the setting must suggest and provide a refuge in which the occupant cannot easily be seen; that from the refuge the occupant must be able to identify and move to a prospect setting; and that the prospect setting must suggest and provide an unimpeded outlook over a considerable distance.

Hildebrand combines this theory to the repetitive configuration of Frank Lloyd Wright's designs. Especially in the prairie houses this theory comes clearly forward. The deep overhanging roofs, small windows and the fundament underneath the houses and the fireplace centrals the idea of refuge, clearly suggests Appleton's theory.

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32 Frank Lloyd Wright, Architect, Growing up near Madison, Wisconsin. Wright was uniquely qualified to see the changing face of America. Born two years after the assassination of Abraham Lincoln and the end of the Civil War, Wright lived to nearly ninety-two years of age. During his lifetime, he lived through the American Industrial Revolution, both World Wars, the invention of television... The list of innovations during the period are endless.

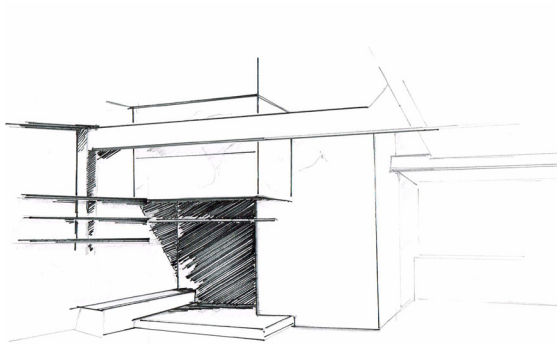
Studying under J.Lyman Silsbee and the firm Adler and Sullivan in his younger years, Frank Lloyd Wright learned skills that he used later in his work. J.Lyman Silsbee allowed him to improve on his sketches while gaining practical experience. Adler and Sullivan were at that time very known for their work, after the great Chicago Fire, that burned down almost the whole city, they were selected to built Chicago up again.

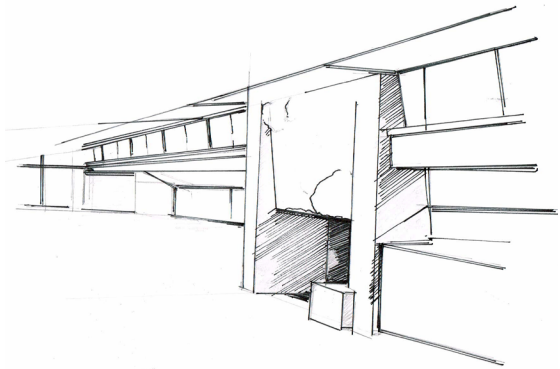
Later at a age of twenty-six Frank Lloyd Wright left the firm and launched his own practice. Over the Next seven years Wright produced a number of houses that demonstrated his abilities. These early houses were more a search than a discovery.

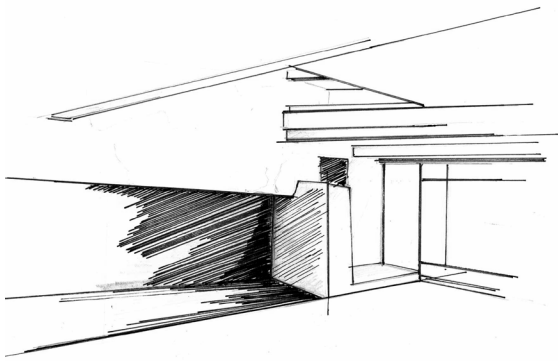
33 http://www.npo.nl/close-up/23-10-2012/AVRO_1564673

34 Lind, C., *Frank Lloyd Wright's Fireplaces. San Francisco 1995.p.9*

35 Hildebrand, G., *The Wright Space, Pattern and meaning in Frank Lloyd Wright's houses. London 1991.p. 35*







10 Ruigt.R., *drawing of Wright's bed-room fireplace at Taliesin West, designed by Frank Lloyd Wright.*

11 Ruigt.R., *drawing of Wright's living-room at Taliesin West, designed by Frank Lloyd Wright.*

12 Ruigt.R., *drawing of the cove fireplace at Taliesin West, designed by Frank Lloyd Wright.*

In Wright's houses the potential for fire is invariably indicated by a fireplace. An understanding that the typical western fireplace is actually a place for a fire certainly must be learned, surely only a person who knows western architectural conventions could interpret it for what it is. Nevertheless, within western tradition, there is equally no doubt that the meaning of the form is learned by virtually everyone, and at a very early age. It is likely, therefore, that in the western world the fireplace is pervasively understood, on an all but intuitive level, as a valued complement of refuge.[36] Of which the cave or its architectural surrogate is an example. Probably largely for this reason fireplaces have a widespread popularity, not only in Wright's work, where they are universal, but in western dwellings generally, long after the loss of their practical value as an essential heat source.

What distinguishes Wright's work in this regard is the unusually emphatic declaration of the potential for fire. For just as the cave inference of the Prairie houses is strongly declared both inside and out, so the potential for fire is also strongly declared, on the exterior by the over-scaled dominant chimney , on the interior by the strong modeling and generous dimensions given to the fireplace.

The prairie house takes advantage of the dual intentions of the chimney stack: rooted in the earth while rising towards the sky. Enclosing walls seemingly grow out of the earth, extending to the roof that soars through the sky while anchored to the chimney. "In both instances, the main poetic elements are earth and air, mediated by fire." For Wright fire was related to the sun. The most fundamental element for life on earth. For Wright the sun is heat more than light, a beginning more than a regulator, a factor of chance rather than of stability . His sun is a warm, chaotic, igneous sun: a cosmic fire.[37]

"A real fireplace at that time was extraordinary. There were mantels instead. A mantel was a marble frame for a few coals in a grate. Or it was a piece of wooden furniture with tiles stuck in it around a grate, the whole set slammed up against the plastered, papered wall. Insult to comfort. So the integral fireplace became an important part of the building itself in the houses I was allowed to build out there on the prairie. It comforted me to see the fire burning deep in the solid masonry of the house itself. A feeling that came to stay." [38]

He built fireplaces not only in living and dining rooms but also in bedrooms, solidifying the fireplace's presence in the home. Simple and straightforward planes of brick, surrounded a large opening which was wider than it was tall. Horizontal counterpoints were provided in each individual design through "artistic use of stone lintels, plinth blocks, wood decks, and wood banding." [39]

Wright's Prairie House typology expressed the homogeneity and thermal tranquility that characterized modern space. Simultaneously, his sensibility "reached down to deep layers of the human spirit, while he introduced ancient symbols that eloquently expressed architecture's intimate relationship with fire." [40]

Recently I've had the opportunity of staying two weeks at Frank Lloyd Wright's Taliesin West desert studio in Arizona, built in 1937-1938 as an 'architectural sketch', as the architect characterizes the project, and kept expanding it until his death.

This stay offered me enough time to get a sense of this building. The complex is build in the Sonoran desert, setting as if it has been there before the landscape. The building arises out of the ground following the hills in the background. The structures are sited and orientated in the landscape on landmarks, like the native Americans also did. The material Taliesin West is build with gives a primordial atmosphere. Large boulders and desert rocks combined with concrete form a landscape of walls, covered with a Cherokee red wooden construction. Between the wooden construction canvas sheets blends the sunlight in a very particular way

36 Ibid, note., p. 36

37 Fernández-Galiano.L., *Fire and Memory 2000. p.28*

38 Wright.F.L., *An Autobiography. (New York 1977.) p.138-9*

39 *Ibid. note 35 p.25*

40 Fernández-Galiano.L., *Fire and Memory 2000. p. 254*

into the interior. Huge fireplaces made out of the same desert rocks, rise out of the ground. Rooted in the earth while rising towards the sky. Enclosing walls seemingly grow out of the earth, extending to the roof that soars through the sky while anchored to the chimney. “In both instances, the main poetic elements are earth and air, mediated by fire.”

Taliesin West has numerous fireplaces. They are used to provide heat for the rooms, which originally did not even have glass to close the openings, but more importantly, the huge rough fireplaces, arising directly from the floor, large enough for a person to enter, project an extraordinary sense of warmth and welcoming, both physical and psychological. Besides, they create points of focus and images of gathering together.[41]

Working in the drafting studio I’ve had a view on a dominant fireplace integrated in the wall, arising directly from the ground, the fire touches the floor. Leaving black traces on the massive large desert rocks that were integrated in the volume. “This was the first large structure built in the camp: Graduated steps around the hearth in winter were covered with sheepskins and were a favorite gathering place for tent dwellers on cold winter nights. The large fireplace is in scale to the room and the large logs fed it.”[42]

On the 27e of November we celebrated Thanksgiving. With 50 people we gathered around a table in the dining-room, next to the dining-room outside there was a fire burning in the Breezeway. The Breezeway is a wide roofed patio connecting the diningroom with the livingquaters of Wright. Mr. Wright designed a long, low fireplace here to dramatize the space and have a fire here on cool evenings as needed during the winter.

“All of Frank Lloyd Wright’s homes have at least one, if not several, fireplaces within them, and they all represent a gathering place. This is also true of the many fireplaces present all around Taliesin West - Where I have lived and called my “home” for over two years now. Each is unique and special to its location at TWest, but they all have the defining characteristic of bringing people together. For me, it has always been associated with social occasions. The students will usually light a fire on occasion and just hang out and talk by the warm glow of the flames against the large rocks embedded into the fireplace itself. It bring together and lets us forget about everything else in that moment. This place would not have the same quality about it without these fireplaces.” [43]

41 Pallasmaa, J., *Oase magazine, 2014. p.55*

42 Nemtin, F. *Frank Lloyd Wright, Fireplaces Taliesin & Taliesin West p.22*

43 Mina P., *student Taliesin West, written. Nov 28-2015*

13 Ruigt.R., *Picture of the studio fireplace at Taliesin West, designed by Frank Lloyd Wright*.
14 Ruigt.R., *Picture of the breezeway at Taliesin West, designed by Frank Lloyd Wright*.

At Taliesin I've met Peter Haberkorn, He is an artist who lives at Taliesin West. We were talking about my thesis subject and he told me a story about Rudolf Schindler[44]. He had lived in the King's road house. Built as a residence house with a very particular program that interested me.

Rudolf Schindler was also an modern architect, learning from Frank lloyd Wright he called his own architecture space architecture, rather than modern architecture. He rejected the notion that architecture should be based on new methods of construction. Schindler said: reinforced concrete and steel actually free the architect to design in anyway he likes. Instead the architect will design with space, climate, light and mood. He was primordially interested in how those infected interior space.

The King's road house in California was a really radical idea, two couples lived there, each would have their own studio for living and working in. The idea of normal living, was really pushed in the background. Every studio had his own fireplace, fire's were built directly on the ground in this home.[45] And you're suppose to cook on the fireplace, just like as if you were camping. Minimum enclosure to the outdoor space, to be connected with nature.

Schindler had a fascinating approach to early modern architecture, he was ahead of his time. His ideals were different and thus, his house was too. The Schindler-Chace house was revolutionary because it experimented with the absence of a central heating system. While 1920's technology allowed for a comfortable mechanized indoor climate, the Schindlers opted for fireplaces.[46] The Schindlers and Chaces adapted to a lifestyle that conditioned them to minimize the bodily discomforts of the cool Los Angeles evenings, not only in the exposed rooftop sleeping baskets, but also in the unheated studios after the fires died.The camping lifestyle became more than just a temporary approach to life in Yosemite. It became a lifestyle choice that grew inside Schindler himself, and as any house should be, it became a reflection of life.

What makes Kings Road unique is Schindler's bohemian design. A graceful aura is captured by the structure, from the way insulite panels are "few, thin and removable," to the adaptive furniture.[47] The house's studios adapt to its users requests. Unlike other homes of the era, many rooms had no default program. The studios are left bare so that a novelist, artist, draftsmen or anyone else could find them accommodating for a creative lifestyle.[48] The user is free to turn the space into whatever they want. It's utterly breathtaking that the simplicity of these rooms is so hospitable. Today we adapt rooms for certain needs, add vents, shelves and other built-ins to push a program, to promote a certain type of work, but all we need is the bare essentials. Schindler understood that. He simply made space, and let one breath in it. Even the fireplaces were left minimal. Instead of a large hearth separated from the ground, Schindler's fireplace sits right on grade, allowing the flames to rise right from the floor. These are just a few of the details that display Schindler's ideas of a modern home, "a timid retreat."

The Schindlers stated that the house was intended to free them of a traditional work day, yet the house nonetheless required a lot of maintenance. The work required had to do with the way the house was built. The wooden surfaces were untreated, and the thin slits of glass fixed between concrete were always victim

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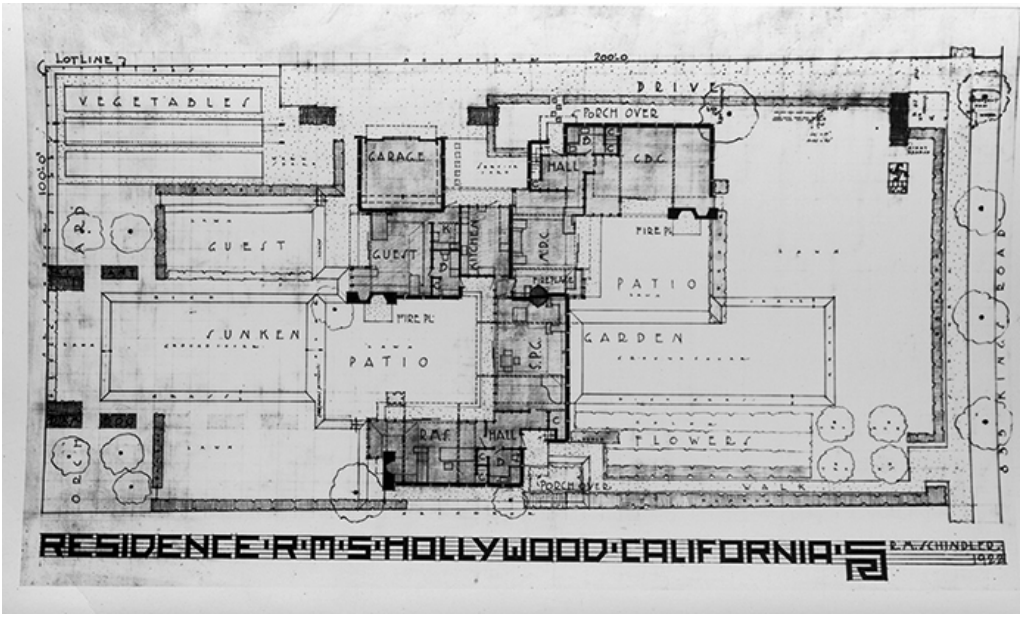
44 Rudolf Schindler, moved from Vienna to the United States in 1914 and began working for the firm of Ottenheimer, Stern, and Reichert. Schindler had began studying architecture at the Imperial Technical Institute in 1906, joining Otto Wagner's studio in 1910. Befriending and studying under such greats as Adolph Loos, Richard Neutra, he also worked for firm of Mayr and Mayer. "As a result of this progressive education and training, at an early date he rejected academic architecture in favour of an interest in industrial materials and methods, a simplification of form, and an awareness of architecture as the manipulation of space." On a vacation to California, Schindler stopped in New Mexico and Arizona along the way. He was becoming disenchanted by the stark commercial architecture of Chicago and upon seeing the multistoried homes of New Mexico, he had developed a deep enthusiasm for pueblos. The work of Frank Lloyd Wright appealed to Schindler so greatly, that he was cited as a main reason for his emigration; Schindler had a great ambition to work with Wright one day. Within the next few years, Schindler was invited by Wright to join him in Taliesin.

45 Sheine, J.R.M. *Schindler. London 2001 p.111*

46 Hines, T.S. *Architecture of the Sun . Los Angeles Modernism 1900-1970 p.244*

47 Smith, Darling, *The Architecture of R.M. Schindler 2001 p.124*

48 *Ibid note. 47 p. 21*



15 Schindler.R., *plan King's Road house in West Hollywood, California 1922*.

to cracking. [49] To the Schindlers, the idea of a house was grounded in the belief of constructing in a minimal or no refinement approach, or as Pauline Schindler liked to put it, "the essences." The essences avoided the practicalities of proper detailing. As a result, the house was always under threat from the elements.

The 1922 house was otherworldly for the time, it didn't conform to social expectations of a home. The Schindler Chace House uses a simple material palette and it promotes a simple life through lack of luxury. Yet at the same time, the inhabitants live lavishly knowing that they've got a completely original home.

"The Rudolph Schindler's King's Road house in West Hollywood, California simplifies the basic building materials to three: concrete, redwood, and canvas. The four studio spaces and guest apartment each have their own fireplaces as well as each of the two "outdoor living rooms". The central copper covered pair of fireplaces act as a central "spoke" from which the remain five fireplace are "spun" off into their independent spaces. What I discovered after living in the home for six years was Schindler's genius of creating the two exterior "living rooms", on opposite sides of the house, each with their own fireplace. The spaces are defined not only by their fireplaces but by the living hedges and the changes of topography, creating exterior, but private spaces for the residents to occupy. Interestingly, none of the fireplaces dominate their interiors, so typical of most designs, here they are very simple additions to the spaces, voids in the concrete mass, leaving the focus of the interior spaces to the views out into the gardens."[50]

49 *Ibid note 46*

50 Haberkorn,P. *artist at Taliesin West written on nov.28 -2015*

16 Schindler.R., *fireplace King's Road house in West Hollywood, California 1922*.

17 Ibid note.15

18 Schindler.R., *King's Road house in West Hollywood, California 1922*.

Epilogue

Our relationship to fire is ineffable; simultaneously about origin and destruction, fascination and fear. By inviting fire into our homes we have created a paradox. The fire is an element, which is destructible and powerful. That means that when it leaves the center of our home it becomes violent. That leaves man unsure of the true perceptions of fire.

It is an element that we have learned to control. The need for fire is almost as fundamental as the need for water. It is easy to forget what life would have been like without fire. The nights would be cold, dark and dangerous, forcing to wait for the sun. All our food would be raw.

According to Vitruvius, the making of fire was the beginning of buildings. This means that fire has not only a close bond to humans but also to architecture. Fire was our first form of energy, what evolved into banishing the fire to the basement, heating our homes through pipes and radiators.

According to Frank Lloyd Wright it was necessary to make such atmospheric regulation visible in some way, so he introduced in the center of the house a voluminous fireplace. An element which produces warmth and light, but also gives a symbolical dimension of gathering around the fire. I'm fascinated by the idea of Frank Lloyd Wright and Schindler to introduce the fireplace as source of light, warmth and atmosphere. The fireplace gives the spaces a particular quality. A quality what is lacking in most of the modern houses today. The fireplaces of today are often added to homes as "luxury items" Perhaps this explains why these showpieces are always so badly located, stripped of the logic of necessity, they seem an afterthought, not truly integrated.

Fire brings us together. We are attracted to the flame, and it is an element were we can always depend on. It is an element that made us who we are today. From the first campfire made by our ancestors, to the energy we still use today.

It would be beautiful, yet Utopian, to introduce a fireplace in every house again. We will use different energy but it also means that we probably have to destroy forests. And that wouldn't be so sustainable either.

We must face the fact that we are living in a critical time concerning climate change. The world is warming up, and we need to do something about it. Last November the world-top came together for the 21st climate conference of the United States, where joining countries are trying to find solutions for this problem. We have changed our energy source from using fire to using gas. To a large extent we owe our technological developments of fossil fuels, but by the second half of the 21st century we will have to continue without it. So where do we have to get our energy from here?

Literature

Books and Journals

Alexander, C, a.o., *A Pattern Language,* New York 1977

Bachelard, G, *The Psychoanalysis of Fire*, Boston 1964

Cole R.E., *Why Are Children Fascinated With Fire*, 2014

Etlin, Richard A. *Symbolic Space : French Enlightenment Architecture and its Legacy. Chicago: University of Chicago Press,* 1994.

Fernández-Galiano, L., *Fire and Memory,* London 2000

Fessler, D., *A Burning Desire*. London 2006

Hildebrand, G., *The Wright Space, Pattern and meaning in Frank Lloyd Wright's houses*. London 1991

Hines, T.S. *Architecture of the Sun . Los Angeles Modernism 1900-1970*

Lind, C., *Frank Lloyd Wright's Fireplaces*. San Francisco 1995

Nemtin, F., *Frank Lloyd Wright, Fireplaces Taliesin & Taliesin West*. Arizona 2000

Pallasmaa, J., *Oase magazine,* Amsterdam 2014

Pinno, M., *National geographic, magazine*, 2015

Praz, M., *An Illustrated History of Interior Decoration,* London 1982

Rosenboom, T., *Publieke werken*, Amsterdam 2009

Rykwert, J., *The Idea of a Town:The Anthropology of Urban Form in Rome,* London 1976

Semper, G., *The Four Elements of Architecture and Other Writings,* New York 1989

Sheine, J. R.M. *Schindler.* London 2001

Smith, Darling, *The Architecture of R.M. Schindler 2001*

Stoop,C,de., *Dit is mijn hof*. Amsterdam 2015

Thornton P., *Seventeenth century Interior Decoration in England, France and Holland*, New Haven 1978

Vernant, J.P., *Myth and Thought among the Greeks,* New York 2006

Wright, F. L., *An Autobiography,* New York 1977

Documentaries

NPO close up. Coast Modern. Architectuur aan de Amerikaanse westkust. *http://www.npo.nl/close-up/23-10-2012/AVRO_1564673*

History channel. Mankind the story of all of us. *http://www.history.com/shows/mankind-the-story-of-all-of-us* 24-11-2015

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