HOME IS WHERE THE HEARTH IS

The architectural development of the domestic hearth during the Industrial Revolution

by

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"*What is a house but a hearth?*"
(Fernandez-Galiano, 1991, p. 8)

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Abstract

Although the fireplace is strongly connected to architecture and dwelling, its appearance tends to fade away. Previous research has been done on the technical developments of the fireplace and also on its symbolic value, but the interaction between these two is also interesting to take a look at. What was the influence of the technical developments, mainly during the Industrial Revolution, on the symbolism of the hearth? Can it explain why we, on one hand, still incorporate the hearth, and on the other hand don't apply it as we used to? In this thesis the development of the fireplace during the Industrial Revolution is researched, combining it with analysis on architectural expression of its symbolic value during this period. The main findings are that the symbolic value of the fireplace saved it from going under when it could have been replaced by central heating systems, and the inevitable reduction of fireplaces has actually increased its specialty. The way we applied and decorated the hearth shows how we valued it, and it proves our intrinsic need for a central point in the domestic environment.

Keywords

Hearth, fireplace, architectural expression, Industrial Revolution

Contents

Introduction

The domestic fireplace went, very briefly, from an open fire in the middle of the room to a purely symbolic faux-fire hearth. These are fake fireplaces ready to be installed in your living room, with “mesmerising LED flame effects”, provided with “customisable high-end features” that make sure you can change the colour and the artificial crackling sounds remotely (Direct Fireplaces, 2022). Does this pass by the right of the hearth to exist, or does it say something about how we value the presence of the hearth in our domestic environments? What is it that upholds the hearth, still today?

In this thesis the history of the fireplace will be elaborated, focusing on its relation to architecture. The main question is about how the hearth and its symbolism in the domestic environment responded to the Industrial Revolution. The topic will be narrowed down by looking at the domestic environment mainly in the United Kingdom and the United States. Two sub questions will be answered, firstly looking at the influence of the technical developments of the hearth on the society and the symbolism of the fireplace. Secondly, the development in architectural incorporation of the hearth and its symbolism during the Industrial Revolution and its aftermath will be investigated.

Previous literature has already focused on the technical developments of the hearth, as well as the symbolic role of fire and hearths in architecture. But the interaction between those two aspects of the hearth is less developed, especially during the Industrial Revolution, when big technical developments made us rethink the symbolic value.

The methodology used in this thesis will be the execution of a desk research on the historical context of the hearth and fire in relation to architecture. Next to that, the architectural expression of the symbolic value of the hearth will be analysed, using architectural drawings and pictures. The first chapter will thus dive into the early history of the fire in relation to architecture and the fireplace in relation to building and living, and will function as background information. In the second chapter, the technical developments of the fireplace during the Industrial Revolution will be described, together with society’s response to that. In chapter three, the architectural expression and incorporation of the hearth will be looked into, in order to research the implications of all previous gained information on the expression of the hearths symbolic value in domestic architecture.

1. Fire and architecture - on the history of the hearth

Crucial to the hearth is the fire that burns in it. To imply the importance of fire to architecture, this chapter will dive into the history of the relation between those two. The focus will be on what well-known historical architects have written about fire and the hearth combined with architecture, since their thoughts are adopted over time as underlying theories of how we build the way we do. Next to that, the old Greek and Roman civilizations and the way they dealt with fire in their built environment will be studied.

It's Vitruvius who states that "*Therefore it was the discovery of fire that originally gave rise to the coming together of men, to the deliberative assembly, and to social intercourse*" (Thayer, 2009, book II chapter I). This social intercourse between people, made them work together to build shelters and huts to protect their beloved fire from the weather, thereby initiating architecture. A more contemporary influential architect that adopted these ideas on fire is the German architect Gottfried Semper. He wrote the book 'The four elements of architecture', where he tries to captivate architecture in one overarching theory that describes its origin. He considers fire, and thus the hearth, the first and moral element of architecture (Semper, 1989). Resembling Vitruvius but adding a little, he states the following:

> "*The first sign of 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 formed: around the hearth the first groups assembled; around it the first alliances formed; around it the first rude religious concepts were put into the customs of a cult. Throughout all phases of society the hearth formed that sacred focus around which took order and shape.*" (Semper, 1989, p. 102).

The three other elements of architecture discussed by Semper are the roof, the enclosure (wall) and the mound (soil). These three elements can in fact be considered secondary to the hearth, because they serve to protect the fire from extinguishing and keep the fire's warmth inside.

The previous describes how architecture finds its roots in fire, but how did the first known civilization deal with the fire then? How did they build their city around it? When looking at old civilizations like the Greek and the Romans, fire was clearly a holy aspect in everyday life. Cross (2020) describes how in Greek civilizations the hearth was the place in buildings where refugees would come and beg for their inclusion in society. Apparently, the hearth was connected to the act of receiving outsiders, as the hearth was the place where the society was rooted and where it was most probable to be accepted. It is of course also the place where there was warmth and peace; something that a refugee lacked.

In Greek and Roman mythology there is even a goddess of fire, respectively named Hestia or Vesta. In every Greek or Roman city, there was a burning fire in the centre dedicated to her, in order to call it a city. On the map in figure 1 the temple of Vesta

with the eternally burning fire is indicated in the centre of the city. Besides being the heart of the city, the temple contained a fire that symbolized the perpetuity of the Roman Empire. The symbolic role of fire in these early urban cultures was thus more important than the functional role (Fernandez-Galiano, 1991). This statement can be strengthened by the fact that even in Roman society they already had innovative ways of underfloor heating and solar heating (heliocamini) (Fernandez-Galiano, 1991), to keep houses and public buildings warm, but nevertheless the hearth remained. It is likely that its symbolic role justified this presence. Symbolism is the idea that something represents something else. In the sense of a hearth and fire, it could be said that the symbolic meaning of it has to do with the origin of architecture and our discovery of fire, crucial to our life. The fire helped us being how we are nowadays, developed into a sophisticated society.

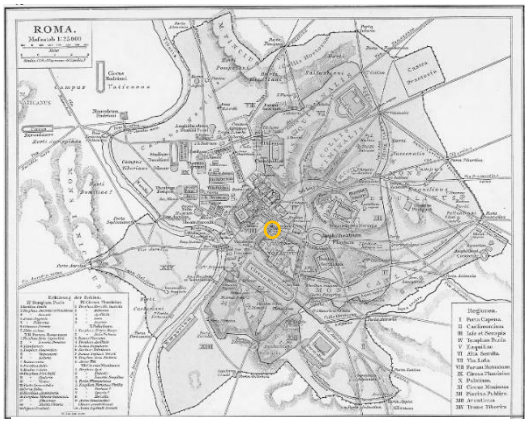

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Figure 1. Map of Rome in Augustan era, with the Tempel of Vesta circled in orange.

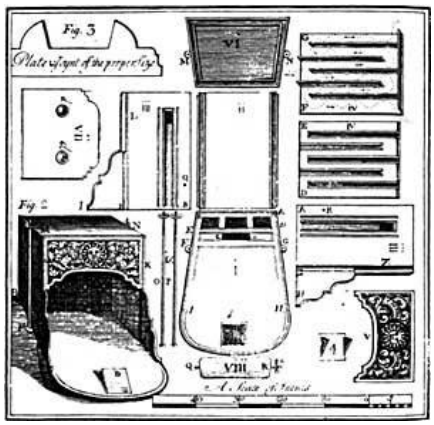
2. Technical developments and emotional resistance - on heating the home in the Industrial age

> "*Architecture goes from having installations to being an installation.*" (Fernandez-Galiano, 1991. p. 246)

The Industrial Revolution started early in the 18th century in Great Britain and ended in the early 20th century. In this chapter the technical developments of the hearth in this period are investigated, in combination with society's response to that. The time around the Industrial Revolution is not only interesting in terms of technical innovation, but also because of the population growth causing enlarged population densities. This accounted for a large number of open fireplaces in a relatively small area, causing people to rethink the functionality and efficiency of it. The open fireplaces made hearing, feeling and smelling the fire possible, but the large quantities of smoke that came together with that caused unhealthy living environments. The main question of this chapter is about how society dealt with the different technical developments that tried to solve this problem. In order to answer this question, some crucial technical adjustments are pointed out, while also indicating society's response to that.

2.1 Smoke doctors to the rescue – reticence to the new

To solve the problem of smoky indoor environments, so called 'smoke doctors' came to the rescue. One of them was Louis Savot, who invented the convection fireplace. He integrated the chimney in a better way, so that the smoke was easily drawn outside instead of inside the room. He also increased efficiency by adding air ducts around the hearth, in which air could be warmed indirectly and radiate heat back into the room (Fernandez-Galiano, 1991). These inventions kickstarted further developments by other smoke doctors. Benjamin Franklin invented the so-called Franklin stove (figure 2) on the eve of the Industrial Revolution in 1742. This stove was actually a marriage between a closed-off stove and a fireplace, since it was not fully closed off, but also made sure there was no smoke escaping inside the house. This iron "machine" efficiently warmed the interior by convection and radiation, highly reducing the amount of wood needed; something Franklin was trying to improve as well, since the amount of wood used to constantly heat every single home was reaching limits. The slower combustion of wood made sure there was also less smoke entering the environment through the chimney. Franklin wrote a pamphlet on his stove, stating the whole room would be equally heated and "*twice as warm using a quarter of the wood he had formerly consumed*", people did not need to "*croud*" [crowd] around the fire anymore, and he assured the potential buyers that they would not lose "*the pleasant sight of fire*" (Brewer, 2000, p. 29-30). With the industrial revolution blooming, coal and gas replaced wood as a fuel for the fireplace. This made John Latrobe develop his Latrobe stove in 1846 (figure 3), which he could design smaller to be fitted in the existing fireplace, thereby occupying less space in the room. It was a very efficient stove that, just like the Franklin stove, used radiation and convection to spread the heat through the room.



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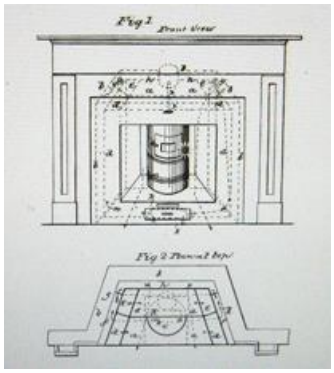

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Figure 2. Benjamin Franklin's stove, drawing that shows the technical properties.

Figure 3. Latrobe stove, drawing showing technical properties of placement into the existing open fireplace.

At the same time, open fireplaces were optimized, since the Franklin and Latrobe stoves were not immediately adopted by everyone. In 1796, Sir Benjamin Thompson (Count Rumford) wrote an essay on how to change the fireplace into the so-called Rumford fireplace such that the smoke would be abducted more efficiently as well as optimizing the usage of fuel and its focus on radiant heat. This was achieved by making the fireplace taller and shallower (Thompson, 1796). Rumford made the adjustments in such a way that they could be easily done in an already existing fireplace, thus making it easily applicable. But despite Rumford's improvements, the hearth was still not as smoke-less as the stove. The restraint in exchanging the hearth for the stove partially seems technologically grounded, since the stove reduced natural ventilation. The open fireplace made sure that air was always flowing through the rooms, leaving the house via the chimney together with the smoke. As Mosly (2003) states: "*Where Britain's working-class households were concerned, natural ventilation almost always meant open windows, open doors, and, not least of all, open fires*." Together with the fact that fire has always been known as an air purifier and thus essential to health (Campbell, 2023), the people's view of open fireplaces remained positive.

Answering the collective quest for open fireplaces, Pickering-Putnam (1881) wrote a summarizing essay – *The open fire in all ages* – on technical possibilities that will make the hearth way more efficient and therefore at least equal to central heating. First of all he states that heat from direct radiation is the best way of heating, because this is what nature also offers us in the form of the sun. He states that the sun is our big example, and if we "*endeavour to heat our houses after the same principles, these houses might be made as healthy as the open fields*" (Pickering-Putnam, 1881). Then, he also comes up with technical adjustments to make, so that the heat of the hearth will be more efficiently used. These technical adjustments involve an analysis of existing good and bad fireplaces and suggestions on what a good fireplace should look like. For example, he mentions ventilation and non-smoking chimneys as easy problems to solve thanks to a good fireplace. The essence of his writing is the message that an open fireplace should not be given up, but just be adjusted in order to continue to exist.

2.2 The house becomes a machine

Simultaneously during the Industrial Revolution, there were many innovations on heating the house without the use of an open fireplace or stove, or at least reducing the amount of them needed. In the early 19th century, at the same time Count Rumford improved the fireplace, Marquis de Chabannes pioneered in the concept of central heating. He used a hot water system to distribute the heat evenly through spaces, which reduced the amount of stoves needed (figure 4 shows his concept drawing). Due to high costs compared to the fireplace or stove, it wasn't widely used until the mid-nineteenth century, when it was standardized in greenhouses (Meade e.a., 1994). Frank Lloyd Wright pioneered with underfloor central heating in the domestic environment in his Usonian Houses in 1937 (Fouser, n.d.). He designed for people who could afford these new systems, but the common workers housing was not yet economically ready for it. Also the electric radiators, that became necessary to radiate the centrally generated heat across rooms, only came

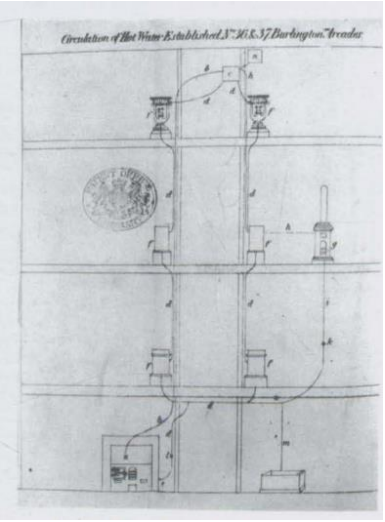

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Figure 4. Concept drawing of central heating system by Chabannes, showing how not every room/house has a hearth anymore, but here is just one central heater that distributes his heat through pipes to the rooms.

to the common domestic market somewhat in the late 20th century, by then relatively easy and cheap. Strangely enough they were already invented in 1855, a century earlier, by the Russian inventor Fran San Galli, together with the innovations made in the field of electricity. But was the slow adoption of central heating only economically grounded?

Peoples hesitant nature in the face of trying new things seemed to play a role as well. The lack of symbolic and sensory value of a crackling fire in the main room of the house was not easily digestible for many people (Mosly, 2003). People were scared that for example portable electric heaters would make it easier to hang out in your own heated room, which would drift apart families. The discontent of the average citizen was given voice by George Orwell, a well-known writer and journalist. Where Pickering-Putnam responded to the technical downsides, Orwell came up with family-construct related arguments as to why keeping the fireplace is a good thing. In his essay – *The case for the open fire* – he stated that open fires should not be the only form of heating the house, but there had to be at least one open fireplace where the family could gather around (Hitchens, 2011). He argues that the one-sided heating of an open fire, in contrast to the evenly spread heat when using central heating, forces people to crowd together near the hearth. This may be the most essential part as to why the hearth has become of such big symbolic value in domestic life; because it physically brings us together. And when physically close to each other, a family bond can be improved and strengthened. Orwell writes:

> "*To one side of the fireplace sits Dad, reading the evening paper. To the other side sits Mum, doing her knitting. On the hearthrug sit the children, playing snakes and ladders. Up against the fender, roasting himself, lies the dog. It is a comely pattern, a good background to one's memories, and the survival of the family as an institution may be more dependent on it than we realise.*" (Hitchens. 2011)

This summarizes very well the influence of the hearth on domestic life, and its symbolic role of bringing together families, like society was brought together with the discovery of fire. This symbolism made people hold tight to the open fireplace or the stove when having the means for it, instead of the 'machine-like' central heating. But with Industrial Revolution taking place, people lived closely together in cities. And although the hearths were optimized in order to produce less smoke inside the house, there was still a significant amount of smoke ending up in the outside environment. What was needed in order to get society adopting new ways of heating to prevent smoggy streets?

2.2.1 Smoke problem displaced – the need for legislation

The city of Manchester in 1892 showed this smog problem clearly (figure 5). The burning of coal in every single home and the fog that it caused, led Thomas Coglan Horsfall, member of the Manchester and Salford NVAA (Noxious Vapours Abatement Association), to make clear that it was not the pollution of industries, but of domestic fireplaces (Mosley, n.d.). After this clarification by Horsfall, nothing really happened yet. The problem became inevitable in 1952, when the Great Smog

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Figure 5. Smoke from domestic chimneys in Manchester during the Industrial Revolution.

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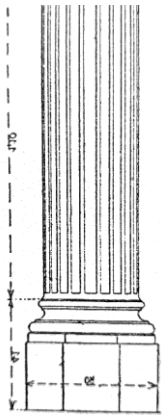

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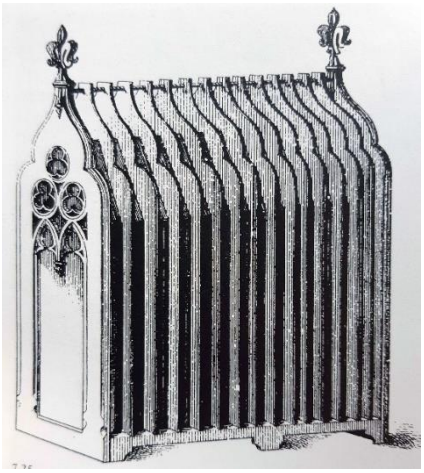

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Figure 6. 'Fake' hearth in office building with central heating system.

Figure 7. Doric heat producer in 1896.

Figure 8. Gothic radiator from 1864.

plagued London. There was an abnormal huge amount of coal smoke in the air, due to the cold and windless weather in the previous days which made people burn their inhouse fireplaces even more, ending up in a vicious circle. According to the Manchester Guardian of 1952, a Northern Housewife that moved from Manchester to London said: "*Never have I seen such grime since I left Manchester.*" The icy ponds seemed to be "*covered with graphite*" and the mortality rates for the early weeks of December 1952 exceeded the mortality rates of the cholera epidemic in 1866 (Stoddart,2005). It was not until after this event, in 1956, that there was a national law in England, the Clean Air Act 1956, that made it possible for the government to control the amount of smoke the households were producing. For example the maximum amount of burnt fuel per hour was established, as well as the minimum heights of chimney in order to prevent unhealthy amounts of smoke. Next to that, so-called 'smoke control area's' were established, giving local authority the chance to keep certain parts of the city clean (Legislation.gov.uk, n.d.). This might have forced people to look in other directions in order to heat their home for example with central heating systems. Apparently people need a catastrophe and legislation in order to change.

2.2.1 Keeping the dignity – copy-pasted symbolism

When people eventually took the leap into adopting new ways of heating the home, they tried to captivate the hearth's symbolism in another way. The most direct form of it was keeping the hearth as an object in a room, without its heating function. Figure 6 shows how an important meeting takes place in front of a fireplace, that is just there for its physical appearance and not its heating function, since the building was heated with a central heating system. Yet, a fireplace turned out to be an essential part of this office room (Fernandez-Galiano, 1991). In domestic life the fireplace still often had a real fire burning inside, not being main heater of the house, as there was just a central heating system.

Another way of keeping the dignity during this time of transition seems to be the decoration and ornamentation of already transferred objects. The radiators and heating objects connected to central heating systems, that were everything but a hearth, were decorated like the hearth would be. People were, and still are, able to buy 'gothic radiators' and 'doric heat producers' (figure 7 and 8), just to keep the dignity of how valuable heating our home actually is. Together with that, the heating object remains a bit of a central object that is given attention, so that the heart of the home remains. It is interesting to see how people were willing to change but still cautious; the looking-back at how the hearth used to be decorated hinted back to our intrinsic valuation of it.

To come back to the main question of this chapter – how did society deal with the technical developments in domestic heating during the Industrial Revolution? – it can be said that people were eager to keep the open fireplace, not only because of technical reasons, but also because of the symbolism it propagated. It was the main object in the house that brought families together. These issues were given voice by essays trying to turn symbolic feelings into words and coming up with possible solutions to how we can keep the hearth in a good way. The fireplace and the stove were thus for a long time used widely and frequently as heaters of the domestic

environment. Nevertheless, in the aftermath of the Industrial Revolution, central heating became the main way of heating our home, 'trapping' the heat of the fire in pipes and transporting it in order to spread it more efficiently and evenly. As stated by Fernandez-Galiano (1991), "*Architecture goes from having installations to being an installation*" (figure 9). The application of these installations was supported in Great Britain in the 1950's by disaster and legislation. To desperately hold on to the hearth's dignity, men decorated the radiators with ornaments, or even installed fake fireplaces to just enjoy their presence without them actually being functional. In the end heating the home became a technical sophistication to be proud of, but we nevertheless included the highly valuated fireplace in architecture. How did this architectural expression of this valuation develop? Did we succeed in combining the symbolic role of the hearth with efficient heating?.

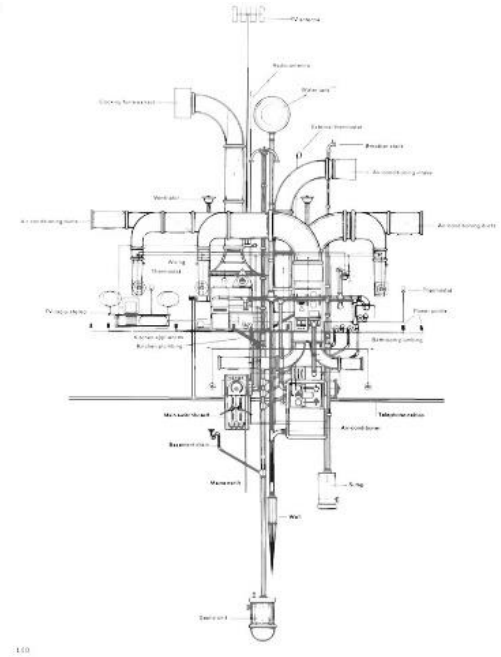

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Figure 9. The house reduced to installations.

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Figure 10. Saint Barbara depicted, doing sedentary activities made possible by the hearth.

Figure 11. A lady in her bath, using curtains to keep the heat inside and using the fireplace to warm up the water.

3. The space around the hearth – on architectural expression and development

In this chapter, the previous chapters are taken into consideration while investigating whether or not we succeeded finding a balance between the hearth's symbolism and its efficiency, and how this expresses itself in architecture. Of course, success is a subjective value, but looking at how the hearth and its surroundings evolved in its period of most change, namely the Industrial Revolution and its aftermath, can give the reader a view on this subject to be able to answer this question for himself. This chapter will start off by a compact investigation into behavior that has been influenced by the hearth, to support further statements about the influence of the fireplace on interior design. Subsequently, the fireplace's directly surrounding space will be looked into. Then, the position of the hearth pertaining to the spaces in the entire house will be investigated by involving designs of Frank Lloyd Wright in the analysis. The main question of this chapter is therefore how the hearth's symbolical value, that has undergone some tough times as seen in chapter 2, is expressed in architecture.

3.1 Heated bodies – how the hearth shapes behavior

> *"Clothing and furnishings contribute to the thermal comfort that fireplaces and braziers, noxious and inefficient, are not able to provide on their own"* – Fernández-Galiano, L. (1991).

Although the paintings shown in this paragraph are dating from the 15th and 16th century, they serve as important underlying information on how strongly the hearth gave domestic life a new dimension. It made the room with the hearth a pleasant room, where people could rest and take time for leisure activities instead of cooking and cleaning. The pleasant indoor climate made it possible to sit on a bench, read a book in the light of the fire and not wearing too much clothes. Image 10 shows the painting of the Master of Flémalle (1438), depicting Saint Barbara doing sedentary activities in front of the fire. Similarly, a century later in 1566 Francois Clouet painted Diane de Poitiers in her bath (figure 11). Bathing was made possible because of the hearth that could warm kettles with water, but the efficiency of it was not such that it could warm an entire room. That's why de Poitiers created a niche out of curtains, to keep the warmth inside. This shows how certain interior elements (benches, curtains) were needed and designed in order to serve the hearth. Fernandez-Galiano (1991, p. 218)) even states that "*thermal comfort requires the participation of furniture*".

3.2 Deepened decoration - from mantels and panels to bookcases and niches

Considering the symbolic value of the hearth and fire as discussed in chapter 1, it is not surprising that it's often decorated. Kaufman (1972) states in his book 'The American Fireplace': "*It is a truism of man's adjustment to his environment that problems of physical survival have to be solved before he can give much attention to aesthetic matters*". Thus, the first decoration practices have started around the hearth, not only because it was a beautiful and symbolic object, but also just

because the room around it was the most humane to be in. Automatically it becomes the place in a home where the dwellers put their biggest efforts in, where they have the possibility to not only see a home as a basic form of shelter but also a way of expressing their personality, their higher aspirations of being human, apart from the fundamental of surviving. Subsequently, when having visitors, the room with the hearth would be the place to receive, just like Greek civilization has shown us, likely because it reflects the passions and beliefs of the one receiving and it surpasses the house's function of giving shelter. The decoration of the hearth gradually extended its presence, starting with the mantel that embraces the chimneypiece.

3.2.1 The mantel – embracing the dignity of fire

According to Spiers (2023) the chimneypiece was often the "*most ornamental and most artistic feature of the room*". To underline the valuation that people had for their chimneypiece, image 12 shows a rather extreme design of a mantel that embraces the dignity of the fire, made by the Italian artist Giovanni Piranesi in the second half of the 18th century (Piranesi, 1769). The rich ornamentation makes the hearth an even more sacred element in the room than it already is, and underlines the aim to show wealth and valuation through it. Piranesi designed for Great Britain, thereby leaving a mark of priceless craftsmanship inspired by Egyptian and Tuscan architecture in English houses. The trade of these chimneypieces from Rome to Great Britain was booming, and the neoclassical architecture in England became a lot like that in Italy, thus partially supported by the fireplace mantels (Stillman, 1977).

3.2.2 The wall – extending the hearths importance

In the designs of Piranesi, we also see the extension of his decorations going up above the hearth, creating the so-called overmantel (figure 13). This is a place where mirrors or paintings could be integrated in the design, adding an extra dimension to the hearth. It almost becomes some sort of altar, where valuable objects are exhibited and honoured. In the rich households this is an integrated design choice, in the poorer households the use of the mantel as a 'holy' exhibition area also clearly appears, such as Evans (1973) captured in his photo of an "average apartment" in America (Figure 14). The decoration extended even further into the hearths surroundings than just the mantel and overmantel. In for example American homes in the eighteenth century, wooden craftsman panelling on the wall around the hearth was a way to architecturally integrate the fireplace in the entire wall (Kaufman,1972). It is interesting to see that the hearth was not merely a stand-alone object for heating, but was architecturally celebrated and incorporated.

3.2.3 Bookcases, benches and niches – how architectural elements point to the hearth

Also in the English craftsman homes designed by Gustav Stickley (Stickley, 2009), the special attention to detailing the hearth's surrounding comes to the fore. Instead of the purely decorative wooden panelling in the American houses, he always situates bookcases or seats next to the fireplace, to provide the dweller with

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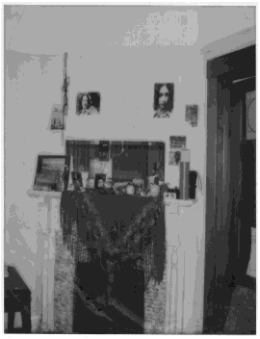

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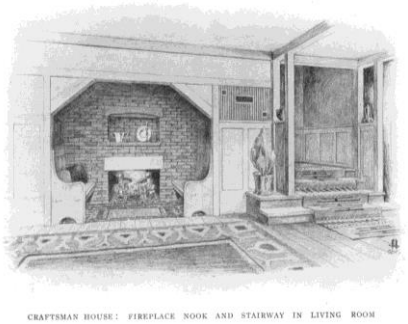
Figure 12. Design for chimneypiece by Piranesi, showing the rich ornamentation.

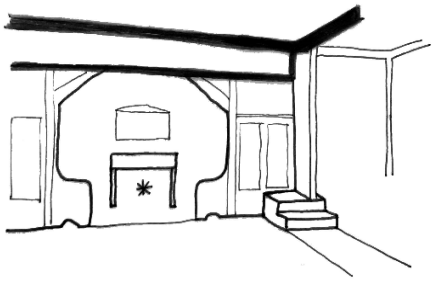
Figure 13. Design for chimneypiece by Piranesi, showing the extension of the ornamentation to above and the sides.

Figure 14. Apartment fireplace with decorations, showing our use of the hearth as our 'sacred' space to put our most beloved objects.

Figure 15. Wall panelling in an American 18th century house, architecturally incorporating the hearth into the entire wall.



CRAFTSMAN HOUSE: FIREPLACE NOOK AND STAIRWAY IN LIVING ROOM



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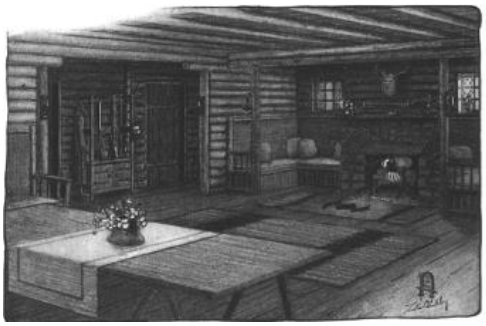

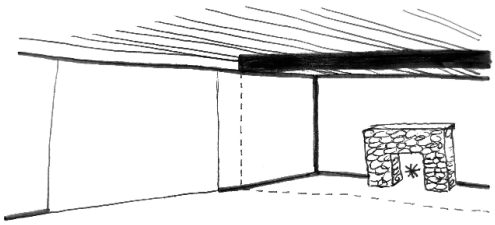

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Figure 16. The alcove that embraces the hearth, enlargening its meaning in the room. Analytical drawing shows how the alcove became the 'mantel' of the hearth.

Figure 17. The beams in the ceiling heighlight the hearth in the room, analytical drawing clarifying the crossbeam's effect on the hearths meaning to the room.

a space that is not only decorative but also useful. Not useful in the sense of survival-activities like cooking, but providing the dweller with a place where life can be celebrated. A place to relax, read a book, sit on the sofa and *enjoy* the warmth that the fire is giving, instead of just *using* it. Even more clearly, Stickley's placement of the fireplace in an alcove or 'fireside nook' shows how the decoration and functionality of just the wall around the hearth is (literally) deepened out into a more elaborate celebration of the hearth's surroundings. An example of one of Stickley's houses where he does that is house number XII, shown in the 'The craftsman' of 1905. Figure 16 shows how the ceiling is a little lower in the fireside nook, to give a warm and cozy feeling, and how the whole nook is actually an extension of the hearth, framed by wooden panels. In more craftsman houses, the distinction between the fireplace nook and the rest of the living room is often made by architectural elements like the beams in the ceiling or height difference in space (figure 16 and 17).

3.3 The fireplace representing the core of (the) dwelling

Having discussed the interaction of the hearth with its direct surroundings, what is the relation between the fireplace and the entire house? How does the hearth find its position? How is the symbolic role of fire in architecture carried by design? Some designs of Frank Lloyd Wright, who had himself actually inspired by Gustav Stickley (Craftsman homes of Austin, n.d.), are investigated in relation to this subject. Frank Lloyd Wright, just like Vitruvius and Semper, relates the origin of architecture strongly to fire and embraces its symbolism. And although he was one of the first architects to implement underfloor heating in the aftermath of the Industrial Revolution, he held strongly to the hearth. The design of his well-known Prairie Houses underlines the importance of one central space in the house with the fireplace. He thus reduced the multiple 'cheap-like', purely functional fireplaces in every single room to one fireplace in a central room. About this he said: *"It comforted me to see the fire burning deep in the solid masonry of the house itself. A feeling that came to stay*." (Wright, 1954). In Wrights famous Usonian houses like the Jacob's Houses I and II and Fallingwater, the hearth always has a main role in the house, the place where visitors will be received and where the house's primal function of shelter is surpassed.

In Jacobs House I (1936, figure 18), the hearth is serving the living space, but situated against the wall that separates the living from the workspace. This placement is interesting, because it is the actual center of the house. Placement of the hearth on the wall at the other side of the living area would have been possible either – it could still have served as gather-around area in the living - but Wright chose to put one in the middle of the entire house, representing the actual core. It is interesting to see that Wright was so dedicated to his underfloor heating – he invented and tested it himself for the building of Jacobs House I (figure 21) – but also held on to the hearth so strongly. I says something about his valuation of the hearth, serving the heart-of-the-home feeling. Apparently, his pride for underfloor heating didn't surpass his desire to incorporate a fireplace, as he combined them confidently. He considered the hearth and heating the home two different things.

In the floorplan of Jacobs House II (1946, figure 19) the hearth is also situated in the middle of the house, serving the living as well as the kitchen. Besides, the hearth's rounded shape makes it an architecturally integrated object. In figure 22 it is visible how the hearth is a place that's "*burning deep in the solid masonry of the house itself*". Wright does not add mantels nor decoration, he lets fire be fire. Mantels for him were an "*insult to comfort"* (Fernandez-Galiano, 1991, p. 29). .

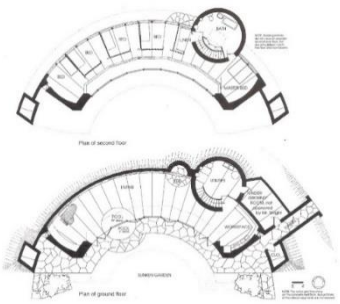
Wright's most famous house, Fallingwater (1936), is not just a house over a cascade, but also a "*fire over a rock*" (Fernandez-Galiano, 1991, p. 29). In figure 20 a section of the house is depicted, showing the hearth on the 'tipping point' of the house. The hearth comprises the transition-zone from 'fixed-in-rock' to 'flying-over-cascade'.

Concluding, the way in which the hearth shapes its surroundings seems through representing the symbolic and physical heart of the home by rich decoration and special attention. It is the place where everything happens around and where the dweller is attracted to as well, being able to transcend himself as a merely surviving human being. Besides shaping spaces, it thus also shapes our behavior. This, on one hand, has to do with its function of being the main heating object in the house, but, on the other, when this is not the case (when there is also a central heating system), the architect and the dweller tend to see the fireplace as the main object in the house that deserves celebration. When central heating gives us the possibility to reduce the amount of hearths to a single one, as Frank Lloyd Wright did, the symbolic value and specialty of it shines through even more clearly.

21.

22.

18.



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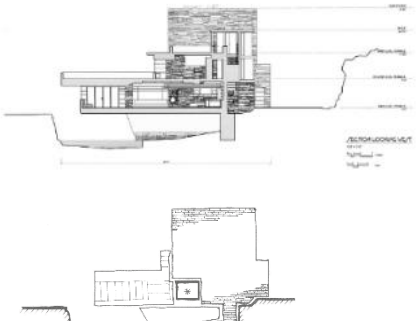

20.

Figure 18. Floorplan Jacobs House I, accompanied by analytical drawing on where the hearth lies; in the center of the house. Hearth is marked with star.

Figure 19. Floorplan Jacobs house II, with analytical drawing showing how the hearths design responds to architectural language of the entire house. Hearth is marked with star.

Figure 20. Section Fallingwater, with analytical drawing showing the hearth being "fire over a rock". Hearth is marked with star.

Figure 21. Wright testing his underfloor heating in Jacobs House I.

Figure 22. Hearth in Jacobs House II.

Conclusion

The main question in this thesis has been about how the hearth and its symbolism in the domestic environment responded to the Industrial Revolution. The Industrial Revolution not only made the physical function of the hearth questionable, but also brought its symbolic value at loose ends. In the end it is the symbolic value, that goes way back in history, that was strong enough to save the fireplace from entire disappearance. The architectural decoration and incorporation of the hearth in the home of the Industrial Revolution and its aftermath shows societies deep valuation for fire and heating the home, willing to let the hearth architecturally speak to and about the dweller. The way in which the honour is executed does not necessarily matter, it is more the execution per se that proves our intrinsic valuation for the hearth. From expensive and excentric decorations by Piranesi to more common exhibitions of personally valuable objects on the mantel; they all interact with and strengthen the hearth's symbolic meaning. Or architectural incorporation through craftsmanship or by Frank Lloyd Wright; it shows well the effort we are willing to spend on the fireplace, being a valuable object in interior design. Even when disaster and legislation forces us into using other forms of heating, we keep the hearth's dignity through decoration of these installations or through just using the hearth as an aesthetic object.

It can also be concluded that the Industrial Revolution actually made it possible to show and value the symbolism even more. The use of the fireplace as main heater in the house might have caused its symbolism to fade into the background due to focus on necessity and functionality, whereas central heating made it possible to focus on one single domestic hearth that could show the symbolic value again. The Industrial Revolution might have opened our eyes as to what is really important about the hearth: being the central place in a house, where people gather and where we can express our humanity. The overall history of the hearth can thus be described as a repetitive one. Starting with being a central, purely symbolic point in the entire city of ancient Rome (temple of Vesta) to being a more functional frequently occurring domestic heater, which Industrial Revolution brought down to one central domestic symbolic hearth again because heat could now be provided through central heating systems. Thanks to the hearth's historical symbolic role of bringing together families and societies, we held on to the hearth after Industrial Revolution and still today.

Discussion

Looking at the conclusions of this thesis and at the present day, some interesting things come to mind. When building a home nowadays (and having economical means), people frequently add a hearth into it, to give the house the home-feeling. This shows how the symbolic value has survived the 'machinification' of heating the home, even long after the Industrial Revolution. It will probably stand strong forever, as fire is an intrinsic value in architecture and dwelling. On the other, more pessimistic hand, the hearth by itself tends to turn into a machine, by 'flattening' its symbolism with fake flames and noises, or is not applied anymore at all. Just like the fake flames on the television screen, the symbolic and heartly value of the fireplaces becomes a projection of those values rather than the actual execution of it. When there is no hearth at all in a house, men create a central area in another way. For example you could argue the hearths replacement by the television. Have you ever seen a house without a television, centrally arranged in the living room, families around it? What is the difference with the hearth Orwell describes in his essay?

This significance of the conclusions in this thesis counts for our personal opinions of what architecture and dwelling means still today, but also in the area of laws and rules in the Industrial Revolution it counts for analogies with the present. It looks like history is repeating itself, thereby making the application of a hearth inside your house increasingly difficult. The Clean Air Act of 1956 in Great Britain shows interesting analogies with the Dutch policies on combustion of wood. The government has developed the so-called 'Stookwijzer' in order to prevent environmental pollution when the 'air quality index' and de wind forces are too low (Atlasleefomgeving.nl, 2025). When the value reaches a certain number, you are not allowed to burn your home fires anymore. We are becoming even more strict on how we treat our outdoor air, with Amsterdam's present-day Policies on Clean Air, keeping polluting cars out of the city centre. The fireplace is in this case replaced by the CO2-emitting vehicle (City of Amsterdam, n.d.). With these laws installed, the relevance of the conclusions in this thesis becomes even more clear. As this thesis points out, the symbolic value will probably never fade away, but we also contend with environmental and population density issues which make it hard to maintain a domestic hearth in every house. Maybe it is a good thing to let ourselves inspire by ancient history again, and put up one central hearth per neighbourhood like the Tempel of Vesta in Rome. This will then serve as core of society, and might bring people together, instead of individualizing them like the electric radiators seemed to do during the Industrial Revolution. In that way we can celebrate the fireplace's dignity and specialty *together*, since it won't be used as a purely functional object in every house.

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Figure 3. Latrobe stove. From *Forgotten history of Ellicot City & Howard CountyMD*, 2016, https://historichomeshowardcounty.blogspot.com/2016/10/john-h-b-latrobes-patented-

Figure 4. Concept drawing of central heating system by Chabannes. From *The Marquis the Chabannes, pioneer of central heating and inventor* by Meade e.a., 1994

Figure 5. Smoke from domestic chimneys in Manchester. From *The smoke nuisance and environmental reformers in late Victorian Manchester*, by Mosley, n.d .

Figure 6. Hearth in office building with central heating system. From *Fire and memory* by Fernandez-Galiano, 1991.

Figure 7. Doric heat producer in 1896. From *Fire and memory* by Fernandez-Galiano, 1991.

Figure 8. Gothic radiator from 1864. From *Fire and memory* by Fernandez-Galiano, 1991.

Figure 9. The house reduced to installations. From *Fire and Memory* by Fernandez-Galiano, 1991.

Figure 10. Saint Barbara. From *Museo del Prado*, by Master of Flémalle, 1438 (https://www.museodelprado.es/en/the-collection/art-work/saint-barbara/f21cfe3c-9f74-4b9c-bc10-f59d7a721d4d).

Figure 11. A lady in her bath. From Museo del Prado, by Francois Clouet, 1566 (https://www.museodelprado.es/en/the-collection/art-work/a-lady-in-her-bath-diane-de-poitiers/53802163-fa8b-4ff9-909d-a48f08dabb4a).

Figure 12. Design for chimneypiece by Piranesi. From *Diversi manière d'addornare i cammini*, by Piranesi, 1769.

Figure 13. Design for chimneypiece by Piranesi. From *Diversi manière d'addornare i cammini*, by Piranesi, 1769.

Figure 14. Apartment fireplace with decorations. From Met Museum, by Walker Evans, 1973 (https://www.metmuseum.org/art/collection/search/279774)

Figure 15. Wall panelling in an American 18th century house. From *The American fireplace* by Kaufman, 1972.

Figure 16. The alcove that embraces the hearth, enlargening its meaning in the room. Analytical drawing clarifying the height differences and architectural gestures. From *The Craftsman* by Stickley, 2009. Analytical drawing is own work.

Figure 17. The beams in the ceiling heighlight the hearth in the room, analytical drawing clarifying the crossbeam's effect on the hearths meaning to the room. From *The Craftsman* by Stickly, 2009. Analystical drawing is own work.

Figure 18. Floorplan Jacobs House I, accompanied by analytical drawing on where the hearth lies. 20th century architecture, by Wright, 1937 (http://architecture-history.org/architects/architects/WRIGHT/OBJECTS/1937,%20Jacobs%20House%20I,%20Madison,%20USA.html). Analytical drawing is own work.

Figure 19. Floorplan Jacobs house II, with analytical drawing showing how the hearths design responds to architectural language of the entire house. WikiArquitecture, by Wright, 1944

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Figure 20. Section Fallingwater, with analytical drawing showing the hearth being “fire over a rock”. From Library of congress, by Hisoric American Buildings Survey, 1933 (https://www.loc.gov/resource/hhh.pa1690.sheet/?sp=10&st=image) Analytical drawing is own work.

Figure 21. Wright testing his underfloor heating in Jacobs House I. From Frank Lloyd Wright building conservancy by Herbert Jacobs, 1937. (https://savewright.org/radiant-heating-101/)

Figure 22. Hearth in Jacobs House II. WikiArquitecture, by Wright, 1944 (https://en.wikiarquitectura.com/building/herbert-jacobs-house-2/)

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HOME IS WHERE THE HEARTH IS

The architectural development of the domestic hearth during the Industrial Revolution

by

Anna Tiemersma