

Architecture and Fire
An Archival Approach to Architectural Conservation

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A thesis submitted to the Centre for Cultural Studies, Goldsmiths, University of
London, for the degree of Doctor of Philosophy, London, September 2012

Declaration

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London, September 21, 2012

A handwritten signature in black ink, appearing to read 'S. Zografos', written in a cursive style.

Stamatios Zografos

Acknowledgements

I would like to thank my first supervisor Professor Scott Lash, Director of the Centre for Cultural Studies at Goldsmiths University, for encouraging me to join the PhD course back in 2006 and for giving me positive and stimulating feedback since.

I am indebted to my second supervisor Dr Ben Campkin, Director of the UCL Urban Laboratory, who, since the beginning of our collaboration, has been exceptionally helpful and motivating with his consistent supervision and insightful comments.

I would also like to thank Professor John Hutnyk from the Centre for Cultural Studies at Goldsmiths University for his ongoing support throughout the years of my degree. Also, Professor Bernard Stiegler, Professional Fellow at the Centre, for his constructive comments on the final draft.

To my colleagues and friends from the Centre and particularly to Elena Papadaki, Paola Crespi, and Dr James Burton I owe many thanks for their help, inspiration, and the occasional coffee breaks!

I must also thank the staff at the London Fire Brigade Museum in Southwark for their generous assistance.

For many reasons, I would also like to thank my following friends: (alphabetically listed) Aidan Walsh, Aoife Donnelly, Blue Carry, Carla Garcia, Carlos Molina, Lee Palmer (Being), Nicola Collett, Saskia Fisher, Sebastian Hicks, and Stefania Scarsini.

Lastly, big thanks to my family for supporting and believing in me...

Abstract

The aim of this thesis is to develop an alternative conceptual understanding of architectural conservation, which overcomes inherent problems and paradoxes that its current theory and practice is commonly associated with. To achieve this, I explore conservation through the interdisciplinary approach of archival theory arguing that listed buildings comprise the official archiving of architecture. Through Henri Bergson's philosophy, however, I explain that archives are also sites of forgetting thus the function of conservation appears problematic. I, therefore, re-examine the fundamental relationship between architecture and memory by focusing on the memory of fire, as it is an element that is present from the birth until the death of architecture. Fire and its conflicting nature of temporality inform also the philosophical methodology of this research; I employ the philosophy of Gaston Bachelard who is known for his psychoanalytic work on fire, memory and fragmented time, and the philosophy of a theoretical opponent, Henri Bergson, who is famous for his work on memory and temporal continuity. Based on both philosophers, I first explore architectural evolution in regards to how buildings absorb fire, spanning from the flames of the ancient hearth to contemporary architecture, and then look into the critical moment of architectural evolution, which is its destruction by fire. Through this study, I comment on architecture in archival terms arguing that it carries with it either a reduced or a complete memory of its entire past, thus making the function of conservation fundamentally redundant. Finally, I develop a psychoanalytic approach to conservation based on Jacques Derrida's understanding according to which archives are associated with the Freudian unconscious, and argue that conservation can result in the repression of the death drive unless the latter is sublimated. This implies that conservation policy must be adjusted accordingly to allow destruction to be part of the agenda.

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Chapter 1 - Introduction

We can no longer afford to take that which was good in the past and simply call it our heritage, to discard the bad and simply think of it as a dead load, which by itself time will bury in oblivion. The subterranean stream of Western history has finally come to the surface and usurped the dignity of our tradition.

Hannah Arendt, *The Origins of Totalitarianism* (1951)

We speak so much of memory because there is so little of it left.

Pierre Nora, *Between Memory and History: Les Lieux de Mémoire* (1989)

On the 1st of February 2010, an East London based film company called 'Close-up' organised a film-screening event at the Bethnal Green Working Men's Club in London entitled 'Abandoned Archives and Forgotten Histories Remembered'. The trigger for this event was the accidental discovery of a few 16mm film reels in a disused fire station in London, which depicted major fire accidents that took place in the city. Two films were screened, one of which was 'Black Umbrella' by Luis Benassi. *Black Umbrella* features a 16mm film triptych that is fifteen minutes long and accompanied by a live score. All three films are discarded archive material, which depict the burning down of Crystal Palace in 1934, the flying bomb raids in Central and East London in the 1940s, and the fire at the Houses of Parliament in 1958.

Illustration 1: Stills from Luis Benassi's film triptych *Black Umbrella*.¹

The triptych was screened in a horizontal arrangement whereas the central film of the triptych was superimposed by the film of a lady walking in a city holding a black umbrella.

¹ Images given with the permission of the film director Luis Benassi.

Illustration 2: Still from the superimposed film in Black Umbrella ²

Benassi's superimposition of this iconic image of a person carrying a black umbrella is inspired by a common modernist experimental iconography, such as Magritte's surrealist paintings of people with hats and umbrellas or Francis Bacon's paintings produced between 1945 - 46.

Illustration 3: Hegel's Holiday, René Magritte, 1958 ³

Illustration 4: Figure Study II, Francis Bacon, 1945-1946 ⁴

In the event catalogue, Benassi writes:

[t]he umbrella acts as a portable architectural dome or roof providing shelter from the rain or sun, however in the context of the triptych the object is shielding 'our' young woman from the explosive, life threatening splinters produced by the flying bomb, the flying bomb, which incidentally could be seen as a metaphor for the heartless architects of displacement.⁵

² Images given with the permission of the film director Luis Benassi.

³ Accessed January 30, 2012, http://www.all-art.org/art_20th_century/magritte1.html

⁴ Accessed January 30, 2012, <http://freeartlondon.wordpress.com/category/archives/page/2/>

⁵ Extract from the event's catalogue.

Benassi's 'Black Umbrella' touches on various themes crucial to this thesis including one of my core arguments, which is the fact that the destruction of the archive is imperative for the preservation of memory. On this note, it contextualises also my research within the broader contemporary discussion of archives.

This thesis deals with architectural conservation. Inspired by the increasing interest in this field, I expose its inherent problematics and develop an unconventional, potentially controversial theoretical approach by re-appropriating essential concepts of archival theory and memory, of the psychoanalytic theory of the drives, and by reinstating architecture's origins in the element of fire. The contemporary attention to conservation is a direct reflection of a more general interest in memory that has been taking place during the last three decades. During this period, we have witnessed an increasing desire for the perpetuation of memories from the past and this applies to every aspect of our culture. There is a widespread investment in new museums, memorials, archives, in genealogical and biographical research, in the organisation of commemorative events and the revival of nearly extinct traditions, in the exploration of dark periods of history that have previously been suppressed and are now being brought to the surface, and so on. This desire does not manifest itself only on a collective level but also on an individual one. Regardless of age, origin or social group, it is a common practice amongst most people to record and preserve their personal moments on a daily basis. This is possible through the use of digital and analogue recording technologies, such as cameras, DVDs, CDs, films, as well as through the Internet and social media. In general, we are experiencing a period during which remembering has obtained an immense significance whereas forgetting is usually not considered as an option.

Reflecting on the notable decline of memory's prestige, Frances Yates, a notable scholar on memory issues, has expressed that "we moderns have no memory at all".⁶ One needs only to consider that nowadays remembering is a responsibility mainly assigned to computers, which, as modern mnemonic tools, record, save and retrieve data and thus replace human memory. Commenting on this remark, cognitive scientists claim that computer memory is virtually the same as human, with the only

⁶ Francis A. Yates, *The art of memory* (London: Pimlico, 2003), 20.

difference that the former does not fail. This statement is based on the fact that, before the invention of computers, the same work was accomplished by humans and specifically by women. Alan Turing's first computer was designed to replace women's computational work. Therefore, as the media theorist Warren Sack explains, "computer memory seems to be a good model of human memory because computer memory was modelled on human memory!"⁷ Nevertheless, compared to the human process of remembering, the function of computers comprises only part of the human process as "human memory has become self-externalised: projected outside the rememberer himself or herself and into non-human machines."⁸ The general attitude today favours remembering over the possibility of forgetting, which has led to a shift in the contemporary understanding of memory.

The French historian Pierre Nora attributes this contemporary tendency towards the perpetuation of memories from the past to the 'acceleration of history', which has brought about the complete collapse of 'real memory' and its subsequent equation with history. In his extensive work on national French memory called 'Realms of Memory', Nora explains how real memory has gone through many stages of degradation.⁹ Most crucial is the eradication of peasant culture, which once operated as a repository of collective memory. Peasant culture transmitted this collective memory, which for him is real memory, through the ritualistic, repetitive practice of quotidian activities.¹⁰ Contrasting memory and history, he writes that

[m]emory is life, borne by living societies founded in its name. It remains in permanent evolution, open to the dialectic of remembering and forgetting...History, on the other hand, is the reconstruction, always problematic and incomplete, of what is no longer. Memory is a perpetually actual phenomenon, a bond tying us to the eternal present; history is a

⁷ Warren Sack, "Memory" in *Software studies: a lexicon*, ed. Matthew Fuller (Cambridge, Mass.: MIT Press, 2008), 186.

⁸ Edward S Casey, *Remembering: a phenomenological study* (Bloomington: Indiana University Press, 2000), 2.

⁹ Nora claims that France was probably the first country to experience this obsessive 'memorialism' and he traces its emergence in the mid-1970s. According to him, there are three fundamental occurrences that led to the upsurge in memory during that period. These are "...the after-effects of the economic crisis, the fallout from the post-de Gaulle era, and the exhaustion of the revolutionary idea." Pierre Nora, "Reasons for the current upsurge in memory," *Eurozine* (April 19, 2002), <http://www.eurozine.com/articles/2002-04-19-nora-en.html>.

¹⁰ Pierre Nora, "Between memory and history: Les Lieux De Mémoire," trans. Marc Roudebush, *Representation* 26, *The Regents of the University of California* (Spring 1989): 8.

representation to the eternal past...Memory is absolute, while history can only conceive the relative.¹¹

As a consequence of the 'acceleration of history', Nora remarks that the present is no longer the link between the past and the future. Traditionally, the past was organised in anticipation for the future to come, which gave importance to the present. Nowadays, however, the lack of vision for the future urges for a frantic investment in the preservation of every memory possible from the past, which he calls *the duty to remember* (devoir de mémoire).¹² Nora adds that this upsurge in memory is also caused by the 'democratisation' of history, as minority groups, which are created by decolonisation, can now reaffirm their identity by uncovering and establishing their own past.¹³

A different view accepts that this tendency to record every single memory from the past reflects a prominent feature of globalisation, namely change, which comes to question, and often repeal, traditionally established socioeconomic and cultural structures. According to the British sociologist Anthony Giddens, globalisation is a dialectical process and is

...defined as the intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa".¹⁴

For the German sociologist Ulrich Beck, globalisation is associated with the period of post-modernisation, during which "we are witnessing not the end but the beginning of modernity – that is, of a modernity beyond its classical industrial design",¹⁵ and this is what he calls *reflexive modernization*. An unavoidable consequence of this late modernity is risk, which in previous eras was essentially personal, but now manifests itself on a global scale. For instance, current times are imminently threatened by ecological risks, such as environmental pollution, which affect every form of life on the

¹¹ Ibid., 8–9.

¹² Nora, "Reasons for the current upsurge in memory."

¹³ In *Reasons for the Current Upsurge in Memory*, Nora explains that there are three types of decolonisation that have taken place in contemporary society and has led minority groups to claim their identity. First is an *international* decolonisation that deals with minority groups that were once colonially oppressed, second is a domestic decolonisation that deals with sexual, religious, and social minority groups, and third is an *ideological* decolonisation that deals with minority groups from ex-totalitarian regimes, which are now free to reunite and revive old, lost, previously banned or destroyed memories and traditions.

¹⁴ Anthony Giddens, *The consequences of modernity* (Stanford, Calif.: Stanford University Press, 1990), 64.

¹⁵ Ulrich Beck, *Risk society : towards a new modernity* (London: Sage, 1992), 10.

planet. This is because risks have a *boomerang effect*, which assures that even the source that generates them will be equally harmed. Risks cannot be restricted either within nations or amongst the poor, for as Beck points out “poverty is hierarchic, smog is democratic”.¹⁶ In this sense, risks are both local and global, thus the ‘risk society’ we live in is a ‘world risk society’. Effectively, due to their scale and magnitude in the era of globalisation, risks are not easily controllable and calculable. The ‘risk society’, for both Giddens and Beck, has an imminent characteristic, which is its preparedness to deal with problems and hazards occurring as a result of reflexive modernization. As Beck claims, “risks have something to do with anticipation, with destruction that has not yet happened but is threatening...risks signify a future which is to be prevented.”¹⁷ Thus, in current ‘risk societies’ the past no longer determines the present but it is the future, or rather, the potential threats to the future, that determine the present actions of the ‘risk society’. This anticipation for an uncertain future and the fear for potential irreversible destructions bring about an increasing, sometimes even frenzied, reaction, which, although doubtful that it can lead to desired results,¹⁸ explains why there is an increasing investment in the perpetuation of memories from the past and present.¹⁹

The duty to remember manifests itself so frequently and intensely that nearly every aspect of this world must be archived. In a sense, the creation of an all-encompassing archive is reminiscent of Jorge Luis Borges’ imaginary concept of *The Aleph*. In this short story, Borges approaches a corner of his friend’s cellar and, looking up in darkness, he observes an Aleph. This Aleph, the diameter of which is no wider than an inch, is

...one of the points in space that contains all points...[it is] the place where, without admixture or confusion, all the places of the world, seen from every angle coexist.²⁰

Staring at the Aleph for a few moments, Borges witnesses “the inconceivable universe”²¹, which he finds impossible to describe fully and truly in words. This

¹⁶ Ibid., 36.

¹⁷ Ibid., 33.

¹⁸ Scott Lash and John Urry, *Economies of signs and space* (London; Thousand Oaks, Calif.: Sage, 1994), 10.

¹⁹ M. Shanks and C. Witmore, “Memory Practices and the Archaeological Imagination in Risk Society: Design and Long Term Community” in *Unquiet pasts : risk society, lived cultural heritage, re-designing reflexivity*, eds. Stephanie Koerner and Ian Russell (Burlington, Vt.: Ashgate, 2010)

²⁰ Jorge Luis Borges, *The aleph : including the prose fictions from the Maker* (London: Penguin, 2000), 126–7.

universe appeared before his eyes in a simultaneous occurrence thus a description of it can never be complete, for language develops in a successive order.²² Having experienced the Aleph, he realises that life is pointless because everything looks familiar. But later, he confirms that: “[f]ortunately, after a few unsleeping nights, forgetfulness began to work in me again”.²³ Borges’ approach to memory favours a balanced analogy between remembering and forgetting, which in essence contradicts the archival obsession of our times.

A similar approach to memory is also shared by Nietzsche. In his essay ‘On the Uses and Disadvantages of History for Life’ published in 1874, Nietzsche writes:

Consider the cattle, grazing as they pass you by: they do not know what is meant by yesterday or today, they leap about, eat, rest, digest, leap about again, and so from day to day, [are] fettered to the moment and its pleasure or displeasure...A human being may well ask [such an animal]: “Why do you not speak to me of your happiness but only stand and gaze at me?” The animal would like to answer, and say: “The reason is that I always forget what I was going to say” - but then he forgot this answer too, and stayed silent: so that the human being was left wondering. But he also wonders about himself, that he is not able to learn to forget and that he always hangs onto past things. No matter how far or how fast he runs, this chain runs with him. It is something amazing: the moment, in one sudden motion there, in one sudden motion gone, before nothing, afterwards nothing, nevertheless comes back again as a ghost and disturbs the tranquillity of each later moment. A leaf is continuously released from the roll of time, falls out, flutters away—and suddenly flutters back again into the man's lap. For the man says, "I remember," and envies the beast, which immediately forgets and sees each moment really perish, sink back in cloud and night, and vanish forever.²⁴

In this essay, Nietzsche suggests that a cow lives in happiness because it does not remember. And precisely because of this forgetfulness, there is no chance it can confirm its happiness, as it cannot recall its previous state. Therefore, on one hand happiness is achieved through an absence of memory, and on the other it is taken

²¹ Ibid., 131.

²² Ibid., 129.

²³ Ibid., 131.

²⁴ Friedrich Nietzsche, *On the Uses and Disadvantages of History for Life in Untimely Meditations*, trans. Hollingdale R. J. (Cambridge: Cambridge University Press, 1983), 60-1, quoted in Casey, *Remembering*, 1.

away in the same instance. Through this example, his intention is to emphasise the liberating power of what he calls 'active forgetfulness',²⁵ which is a possibility merely for humans and not for other animals.²⁶ The larger scope of his essay looks at the abandonment of certain aspects of the past, as the latter returns as a ghost and disturbs the peace of a later moment. His suggestion is a critical discourse on the past, which intends to keep only the knowledge and experiences that are beneficial for current and future life, whereas all unnecessary and disadvantageous elements should be left behind. Thus, active forgetting is selective remembering. The reason I refer to Borges and Nietzsche is precisely their closely related approach to memory. Both of them perceive memory's counter-manifestation of forgetting liberating, whereas the latter makes an additional point, which I want to bring up as it highlights a potential glitch inherent in our contemporary archiving culture. This is the fact that *the duty to remember* must be selective, or at least *not* totally inclusive, for

[w]hen an archive has to collect everything...it will succumb to entropy and chaos...In such cases the system begins to swing back and forth so violently that it finally collapses.²⁷

Although the broader scope of this thesis is the contemporary, potentially problematic obsession with the preservation of memories from the past, my focus is more specific. It deals with architecture and this is not accidental. My professional training as an architect justifies the interest in this field whereas my work experience in conservation confirms the inevitable obstacles and inherent contradictions associated with its practice thus urging the need for further theoretical research.

Currently, conservation research comprises a common aspect in most Western

²⁵ The *active forgetfulness* refers to the individual level. Regarding forgetfulness on bigger scale, in society, Nietzsche in the second essay in *On the Genealogy of Morals* which carries the subtitle 'Guilt', 'Bad Conscience' and *the Like*, approaches the problem of memory and forgetting in a very interesting way, which is the issue of morality. His reflections do not account and analyse directly the obvious side of this subject, the virtues, but rather deal with the dark side of morality, namely guilt and sin. Before his engagement with the problem of guilt (*Schuld*), he concentrates on the relationship developed between humans in relation to their debts (*Schulden*). In a remarkable fashion, he grasps a notion of functional memory residing in the relationship between a debtor and a creditor. Specifically, the creditor's pure interest is to remember the bargain he has offered. Only if he is overly too generous or soft-hearted can he forget what he is owed. On the other hand, the debtor could easily forget the amount he owes, however the danger of not finding a future creditor or losing his credit-worthiness obliges him to remember the promise he has given to repay his debt. In such a way, debts are items, which are constantly remembered. Equally, a similar sense of guilt is entailed within actions of sin. Guilt is an item to be remembered in the mind of the offender and it can only be forgotten after it has been legally established. For Nietzsche, this is the *willed forgetting* that takes place in society alongside *enforced remembering*, both of which want to persuade citizens to abide and conform to laws.

²⁶ *Ibid.*, 2–3.

²⁷ Sven Spieker, *The big archive : art from bureaucracy* (Cambridge, Mass: MIT, 2008), xiii.

nations' cultural agendas receiving considerable governmental attention, ongoing professional engagement, and broad public support. In England, for instance, English Heritage, which is a leading public organisation in the country acting as a "statutory adviser on the historic environment",²⁸ published a research strategy document in 2005 called 'Discovering the Past, Shaping the Future'. The intention of this document is not only to stress the conservation policies of the organisation for the following five years, but also to address their overall vision and ambition for conservation research in the country.²⁹ Currently, part of the English Heritage programme involves the reformation of their protection system, as "the current system has grown up piecemeal over the last 120 years, has become complicated to use and is not as transparent or efficient as it could be."³⁰ Other conservation research initiatives are the 'Framework Programmes', which are funded by the European Union since the last decade of the twentieth century. The most famous ones promote pan-European collaborations, which used to focus on architecture but today their range is more inclusive and diverse.³¹

Buildings with a certain degree of historical significance or value are designated as listed, which means that specific qualities and aspects of their past must be conserved and/or restored. Effectively, conservation aims to prolong a building's current state whereas restoration reinstates earlier stages of the building's life. In the last two decades, the scope and significance of architectural conservation have 'expanded' broadly for various reasons. Previously, it was only monuments from the eighteenth century that were preserved, whereas today it is nearly every built structure from that century.³² Architectural conservation is no longer restricted to the preservation of individual buildings but can also include entire neighbourhoods, villages or even whole districts, such as the case of Venice and its Lagoon.³³ In the United Kingdom, the establishment of conservation areas is a relatively frequent

²⁸ "English Heritage—Who we are", accessed 09/08/12, <http://www.english-heritage.org.uk/about/who-we-are/>.

²⁹ *Discovering the Past, Shaping the Future, Research Strategy 2005-2010* (Swindon: English Heritage, 2005), 5, <http://www.english-heritage.org.uk/publications/discovering-past-shaping-future/>.

³⁰ "Heritage Protection Reform", accessed January 04, 2011, <http://www.english-heritage.org.uk/professional/protection/heritage-protection-reform/>.

³¹ Peter Brimblecombe and Carlota M. Gross, "Scientific research into architectural conservation" in *Architectural conservation : issues and developments*, Vincent Shacklock, ed., (Shaftesbury: Donhead, 2006), 128.

³² "Listed Buildings", accessed February 8, 2012, <http://www.english-heritage.org.uk/caring/listing/listed-buildings/>.

³³ "Venice and its Lagoon", accessed February 8, 2012, <http://whc.unesco.org/en/list/394>

phenomenon. Although the first conservation area was designated in 1967, currently there are over 8.000 designations.³⁴ Another recent addition to the conservation agenda is the protection of cultural landscapes,³⁵ like the Royal Botanic Gardens in Kew, or the protection of certain historical ‘fakes’, like Dresden’s city centre, restored after its major destruction during the Second World War.³⁶ At the same time, conservation also deals with structures that are not only disused but have also been left to deteriorate to such great extent that they are beyond recognition. The architect and conservation theorist Jorge Otero-Pailos, commenting on the conservation of such a structure, a waterfront pier in Manhattan, writes that:

...when an object fails to satisfy the traditional categories of historical significance yet there is still public pressure to preserve it, preservationists are forced to confront that which they habitually repress: meaninglessness...Preservation provides the illusion that those buildings, which are condemned to the horror of disappearing, are beautiful in their act of disappearance.³⁷

Illustration 5: Pier D, Riverside Park South, Manhattan, New York.³⁸

Defending the broadly inclusive range of contemporary conservation, the American conservationist James Marston Fitch stresses the necessity of preserving the prototype

³⁴ “Conservation Areas”, accessed February 8, 2012, <http://www.english-heritage.org.uk/caring/listing/local/conservation-areas/>

³⁵ According to Article 1 of the 1992 World Heritage Convention, a cultural landscape reflects the “*combined works of nature and of man...They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal.*” Accessed February 8, 2012, <http://whc.unesco.org/en/culturallandscape/#1>.

³⁶ In June 2009, UNESCO deleted Dresden from the World Heritage List on the grounds that “*a four-lane bridge [was built] in the heart of the cultural landscape which meant that the property failed to keep its “outstanding universal value as inscribed.”*” Accessed February 8th, 2012, <http://whc.unesco.org/en/news/522>

³⁷ Jorge Otero-Pailos, “Editorial: Chance Architecture,” *Future Anterior* III, no. 2 (Winter 2006): v.

³⁸ Image accessed February 8th, 2012. <http://wirednewyork.com/forum/showthread.php?t=3059&page=5>

for the benefit of future generations.³⁹ Maintaining authenticity is imperative because, as the conservationist John Stubbs claims,

...there is no substitute for direct observation of the real thing, which represents the shortest distance in time and space that an object [or a place] and a viewer can have.⁴⁰

The integrity of prototypes is commonly threatened by various processes that take place in urban environments. Apart from the obvious impact of time and nature on buildings, architecture depends highly on the human factor too. Stubbs identifies the following three categories as threats to architecture by humans:

[the] ancillary effects of modern life (pollution, economic, religious, social or life-style changes); wilful calculations (vandalism, war or terrorism related destruction); and oversights (ignorance, neglect, profligate use of natural resources or insensitive or inadequate work).⁴¹

Out of all these threats, the consequences of modernisation on the urban environment are the hardest to resolve. Adding to the ancillary effects, the sudden housing demands that took place in cities early in the twenty-first century, the period coined by the urbanist Anthony M. Tung as 'The Century of Destruction',⁴² as well as the obliterating impact of the modern movement on the historic environment, changed dramatically the face of most cities.⁴³ Unavoidably, then, the role of architectural conservation today has become bigger and the discipline itself has won great popularity. I should also point out the political dimensions of conservation, which are partly responsible for its rise too. As Hannah Arendt has claimed:

[t]he reality and reliability of the human world rests primarily on the fact that we are surrounded by things more permanent than the activity by which they were produced, and potentially even more permanent than the lives of their authors.⁴⁴

³⁹ James Marston Fitch, *Historic preservation : curatorial management of the built world* (Charlottesville: University Press of Virginia, 2001), x.

⁴⁰ John H Stubbs, *Time honored : a global view of architectural conservation : parameters, theory & evolution of an ethos* (Hoboken, N.J.: John Wiley & Sons, 2009), 54.

⁴¹ *Ibid.*, 98.

⁴² "Anthony M Tung, Preserving the world's great cities : the destruction and renewal of the historic metropolis", accessed August 14, 2012, <http://www.anthonymtung.com/>.

⁴³ Stubbs, *Time honored*, 99.

⁴⁴ Hannah Arendt, *The human condition* (Chicago: University of Chicago Press, 1998), 95–6.

This means that our memory and sense of belonging depend directly on the safeguarding of our built environment. Inversely, and this is something famously accomplished throughout history with deliberate intent, the destruction of the built environment brings about enforced forgetting and disorientation.⁴⁵ It is in this sense, therefore, that the protection of the urban environment through conservation strategies can in fact be used as a tool of memory manipulation, which is what gives conservation a strong political character.

The contemporary interest in conservation is commonly expressed through professional and academic debates worldwide. A typical illustration is a recent lecture entitled 'Preservation/Destruction: OMA – Cronocaos' that was given in the 28th March 2011 at the Royal Academy of Arts in London. In this lecture, Ippolito Pestellini and James Westcott of Rem Koolhaas' *Office for Metropolitan Architecture (OMA)*, focusing on the 'Preservation' exhibition of their office that took place at the 12th International Venice Architecture Biennale 2010, developed their views regarding the present and future of architectural conservation. In the Biennale exhibition, OMA for the first time expressed publicly their interest in the past, conservation, and history. Specifically, they presented some of their projects, which addressed two conflicting tendencies of current times that deal with,

...the ambition of the global taskforce of 'preservation' to rescue larger and larger territories of the planet, and the –corresponding ?–global rage to eliminate the evidence of the post-war period of architecture as a social project.⁴⁶

In the second room of the exhibition, they highlighted the destructive effect conservation has on the linear evolution of time. The overall objective of the OMA's exhibition was to "document our period of acute CRONOCAOS."⁴⁷ Expanding on this concept, Koolhaas defines as *cronocaos* the contemporary experience of time in urban environments. In his manifesto 'Junkspace', he explains that contemporary cities stage simultaneously the new and the old, the permanent and the temporary. In these cities,

⁴⁵ Robert Bevan, *The destruction of memory : architecture at war* (London: Reaktion, 2006), 8.

⁴⁶ http://www.oma.eu/index.php?option=com_projects&view=project&id=1260&Itemid=10, accessed April 17, 2011.

⁴⁷ http://www.oma.eu/index.php?option=com_projects&view=project&id=1260&Itemid=10, accessed April 17, 2011.

parts of them “...undergo an Alzheimer’s-like deterioration as others are upgraded,”⁴⁸ and this is a defining aspect of Junkspace. The inhabitants, trapped in these environments, in Junkspace, can no longer distinguish the future, present, and past from each other as they have all merged creating “a short circuit in our concept of chronology”.⁴⁹

The OMA exhibition comprises an exemplary illustration of the contemporary interest in conservation and at the same time highlights a rather paradoxical phenomenon. This is the fact that conservation often consents to the eradication of buildings from the post-war period and thus exposes one of its weaknesses, which is precisely its failure to have a fixed agenda or policy for every building.⁵⁰ The reasons why post-war architecture often falls outside regimes of conservation are multiple and complex. They span from the lack of advanced technical experience and knowledge in repairing or replacing materials, many of which are modern and often experimental, to insufficient political agreement and public sympathy.⁵¹ On a different level, the conservation of post-war architecture finds many theoretical opponents as, the British architectural writer Owen Hatherley also reminds us, the mission of the modern movement was to detach from history, to “erase the traces”,⁵² therefore

...if we want to preserve what remains of Modernism, then we are necessarily conspiring with the very people that have always opposed it: the heritage industries that have so much of Europe in their grip.⁵³

As a reaction against all these obstacles that the conservation of post-war architecture faces, various international, national, and even local organisations have been founded. Characteristic examples are the international work of Do.Co.Mo.Mo. (Documentation and Conservation of Modern Movement) with numerous offices around the globe, the national operation of the C20 (Twentieth Century Society) based in London, or local initiatives like the Hackney Society based in the borough of Hackney in London.

⁴⁸ Rem Koolhaas, “Junkspace,” *October* 100, no. Obsolescence (Spring 2002): 180.

⁴⁹ “The cronocaos exhibit at the new museum: Rem Koolhaas says make no little plans”, accessed August 17, 2012, <http://newyorkcity.urbedezine.com/2011/08/10/the-cronocaos-exhibit-at-the-new-museum/>.

⁵⁰ The lack of a consistent conservation policy applies also to postmodernist architecture, which is surprising as postmodernism itself echoes the past.

⁵¹ Susan Macdonald, Kyle C Normandin, and Bob Kindred, *Conservation of modern architecture* (Shaftesbury: Donhead, 2007), 1–2.

⁵² Owen Hatherley, *Militant modernism* (Winchester, England; Washington, D.C.: O Books, 2008), 3.

⁵³ *Ibid.*, 5.

To date, the failure of architectural conservation to establish a fixed, common policy can also be attributed to other parameters, which are equally difficult, if not impossible, to resolve. Current conservation practice is based on what is exceptional and unique. This, however, ignores the significance, or perhaps simply the duty, of preserving something for its mediocrity and ordinariness. Approaching conservation from a global perspective, due to the demands of a globalising culture, exposes further difficulties in finding a common agenda. The Venice Charter, for instance, which outlines the internationally approved policy regarding the protection of architectural heritage, is based on Western attitudes neglecting, however, the fact that some cultures understand permanence and what should be permanent differently.⁵⁴ Lastly, looking at the evolution of conservation practice, one can point out that, whereas once it dealt with buildings from very distant eras, nowadays it includes also buildings from recent decades. A good example is the listing of the 1973 Sydney Opera House in Australia, which is the youngest ever building to enter the World Heritage List in 2007,⁵⁵ or the Lloyd's building in the City of London, which was thirty years old when it was listed in 2011.⁵⁶ Effectively, as Rem Koolhaas points out, “[f]rom retrospective, preservation will soon become prospective, forced to take decisions for which it is entirely unprepared.”⁵⁷ The inspiration for this research, therefore, is not only the current scale and significance attached to contemporary architectural conservation but also the lack of a consistent policy that accompanies it.

On a philosophical level, architectural conservation faces another major difficulty as it finds itself opposed to the linear evolution of time. Both conservation and restoration processes manipulate the impact of time on buildings; the former freezes time whereas the latter reverses it so that buildings return back to previous orders. In a sense, these processes can be likened with the philosopher Jeremy Bentham's concept of *Auto-Icons*. In one of his last essays, Bentham suggests that, after death, peoples' bodies should be preserved with chemicals and displayed in

⁵⁴ Seung-Jin Chung, “East Asian Values in Historic Conservation,” *Journal of Architectural Conservation, the International Journal for Historic Buildings, Monuments and Places*. 11, no. 1 (March 2005): 55–6.

⁵⁵ “Modern architecture under the microscope”, accessed August 12, 2012, <http://blogs.getty.edu/iris/modern-architecture-under-the-conservation-microscope/>.

⁵⁶ “Lloyd's building listed at grade I”, accessed August 16, 2012, <http://www.english-heritage.org.uk/about/news/lloyds-building-listed/>.

⁵⁷ http://www.oma.eu/index.php?option=com_projects&view=project&id=1260&Itemid=10, accessed April 17, 2011.

public buildings so that “every man would be his own monument”.⁵⁸ If the concept of the *Auto-Icon* is extended beyond the human body to include buildings, then conservation and restoration practice can be perceived as having a similar function, which is to ban buildings from maturity and decay so that they become permanent ‘exhibits’ of their fleeting, temporary selves. As a result, this *cronocao*s, or else the disturbance to the linear evolution of time, raises questions and dilemmas in regard to the criteria behind what is conserved, restored, or simply destroyed. In general, commenting on architectural conservation as a field, one can argue that it faces problems and contradictions, which are tricky to deal with and potentially difficult to overcome. The key objectives of this thesis, therefore, are to explore these issues by revisiting and reassessing long established key conservation principles and by developing an alternative conceptual approach and understanding, throwing light on the current *duty to remember* architecture.

The approach I take to explore architectural conservation is through a re-appropriation of archival theory, which is inspired by the emergence of a new academic field of studies called ‘memory studies’. This field recognises and promotes the fact that memory, including archives, are studied amongst many and diverse disciplines. Memory is no longer a subject of inquiry merely for philosophy, psychoanalysis, history, and literature but also for other disciplines such as law, architecture, politics, sociology, and anthropology. In other words, ‘memory studies’ is essentially a multidisciplinary field, and recently academics have started to pursue a more interdisciplinary approach.⁵⁹ Equally in this thesis, I approach the concept of memory in an interdisciplinary way with the aspiration to succeed what the American theorist Marjorie Garber has recently declared that our task “is to re-imagine the boundaries of what we have come to believe are disciplines and to have the courage to re-think them.”⁶⁰ Drawing on archival theory, I engage with psychoanalysis, philosophy, history, mythology, and architectural history and theory to build my arguments and examine architectural conservation. Yet, at this point, one may fairly

⁵⁸ Jeremy Bentham, *Auto-Icon; or, Farther Uses of the Dead to the Living: a Fragment* (London: Privately published, 1842), 3–4.

⁵⁹ H. L. Roediger and J. V. Wertsch, “Creating a New Discipline of Memory Studies,” *Memory Studies* 1, no. 1 (January 1, 2008): 9.

⁶⁰ Marlene Manoff, “Theories of the Archive from Across the Disciplines,” *Libraries and the Academy* 4, no. 1 (2004): 96.

argue that architectural conservation, or architecture in general, has already been associated with the concept of the archive.⁶¹ Commenting on the architecture of a city, for instance, the French philosopher Paul Ricoeur describes that it “brings together in the same space different ages, offering to our gaze a sedimented history of tastes and cultural forms. The city gives itself as both to be seen and to be read.”⁶² In this sense, just like in an archive where records are there to be seen and to be read, one may equally draw parallels between the architecture of a city and an archive.⁶³ A novelty of this research, however, lies precisely in the fact that I do not restrict myself to this mere association but rather make an active use of archival theory to explore architectural conservation, which agrees with the philosopher Jacques Derrida’s ambition for “a project of a general archiviology...[of] a general and interdisciplinary science of the archive.”⁶⁴ In this way, examining conservation through the theory of the archive, I overcome certain theoretical obstacles and inconsistencies related to conservation, and effectively open up new possibilities in an association that is normally considered static and unproductive.

This thesis is split into seven chapters. Following this introduction, the second chapter starts with an analysis of the concept of the archive. The predominant focus is on Jacques Derrida’s psychoanalytic understanding, which has brought about a fresh interest in the study of archives and a radical reevaluation of their concept.⁶⁵ In the second part of this chapter, I explain that architecture is experienced in two ways, both individually and collectively. Based on Henri Bergson’s and Maurice Halbwach’s theories of memory, however, I demonstrate that individual memory on one hand, and collective memory, on the other, can be perceived as operating with the same logic

⁶¹ Mark Wigley, “Unleashing the Archive,” *Future Anterior* II, no. 2 (Winter 2005): 12.

⁶² Paul Ricoeur, *Memory, history, forgetting* (Chicago [u.a.]: University of Chicago Press, 2004), 151.

⁶³ Commenting on the parallelism between buildings and archives, Kent Kleinman in *Archiving/Architecture* develops a different argument by distinguishing two modes of architectural existence: the built artefact and the representations of it, i.e. the drawings, models, and visualisations produced by the architect. For Kleinman, the representations of architecture comprise the true and original architectural archive, as they reflect the pure aspirations of the creator. On the contrary, for the built artefact is subject to changes caused by weather, aging, inhabitation, and so on, it faces issues of originality and authorship, thus it cannot be perceived as solid and complete as the representation of it. Moreover, based on Roland Barthes *The Death of the Author*, Kleinman draws parallels between a building and a document saying that the former is “a record every bit as open to, and in need of, interpretation as is a document housed in an archive”. [Kent Kleinman, “Archiving/Architecture,” *Archival Science* 1 (2001): 324.]

⁶⁴ Jacques Derrida, *Archive fever : a Freudian impression.*, trans. Eric Prenowitz (Chicago: University of Chicago Press, 1996), 34.

⁶⁵ Jennie Hill, ed., *The future of archives and recordkeeping : a reader* (London: Facet, 2010), 8–9.

thus the distinction between the two types of memory can be eliminated. Effectively, my reference to memory in architecture essentially implies both types.

In the third chapter, I develop the methodology of this thesis. As my intention is to re-evaluate basic concepts of architectural conservation, I must look into the fundamental relationship between architecture and memory through a fresh perspective. Yet, as the extent of such a study is immense, I deliberately narrow it down by limiting myself to the study of a single memory, which is the study of the 'element' of fire. The appropriation of this element lies in the fact that fire is considered by many architectural historians to be the beginning of architectural creation. It is also one of architecture's biggest threats, thus one can argue that fire is present from the birth until the death of architecture. In this chapter, therefore, I explain that one of the intrinsic qualities of fire is its ambivalent nature, which in actual fact informs my philosophical and methodological approach. In terms of the philosophical approach, I employ the philosophy of the French scientific philosopher Gaston Bachelard who is known for his extensive work on memory and his psychoanalysis of fire. However, the fire's conflicting nature of temporality dictates the simultaneous employment of an opposing philosophy, thus I deploy the work of one of Bachelard's main theoretical opponents, namely Henri Bergson. In other words, the contradicting notions of 'life and death' and 'eternal return' that fire is famously associated with⁶⁶ reflect the employment of the two opposing philosophies: Bachelard's fragmented time and Bergson's temporal continuity. In terms of a methodological approach, the conflict inherent in fire relates to Bachelard's model of knowledge production. According to this model, knowledge advances dialectically through opposition with existing knowledge, which I adopt as a methodological tool to investigate the relationship between architecture and memory. Following the discussion of this methodology, I look into fire's manifestation in mythology, old rituals, festivals, and science, and demonstrate that the obscure and very often confused knowledge that we hold of the element can be justified through an archival association.

In the fourth chapter, having established the philosophical and methodological approach, I look into architectural conservation. Drawing on archival theory, I make a

⁶⁶ Gaston Bachelard, *The Psychoanalysis of Fire. Preface by Northrop Frye* (Boston: Beacon Press, 1964), 7.

rather straightforward association of listed buildings with the function of archives on the grounds that they both come to securely withhold memories from the past. Accordingly, the moment of heritage designation signifies the official archiving of architecture. To support this parallelism, I first introduce key points in conservation history and theory, and focus on the English heritage protection system. Then I develop Gaston Bachelard's theory of time and memory, which I associate with the way English conservation is practiced. Later, following Bachelard's model for knowledge production, which is my methodology, I develop Henri Bergson's theory of time and memory and argue that archives can be considered as sites of forgetting. Equally, as listed buildings function as archives, they can be considered as sites of forgetting too, thus the major function of conservation, which is the perpetuation of memories, collapses. In this chapter, therefore, I expose and confirm an inherent problem to conservation and urge for its theoretical resolution.

As the role of conservation appears partially redundant, in the fifth and sixth chapters I take a step back by re-evaluating the relationship between architecture and the memory of fire. The fifth chapter explores how architecture has absorbed fire on its grounds. It studies architectural evolution and fire spanning from the flames of the hearth to contemporary architecture, and looks at it from two distinct perspectives. One examines the way architecture adapts itself to accommodate fire based on the thermal comfort it provides, whereas the other considers fire solely as energy thus explores its expansion in architectural space in energetic terms. The sixth chapter deals with a critical moment of architectural evolution, which is the destruction of buildings by fire. Overall, both chapters have a common objective, which is to comment on the archival properties of architecture. Accordingly, I conclude that architecture always carries with it either a reduced or a complete memory of its entire past, thus making the practice of conservation fundamentally redundant.

In the conclusion, I expand on the association of architecture with archives by drawing on archival theory and specifically on Derrida's psychoanalytic interpretation. According to Derrida, the archive is associated with the function of the Freudian unconscious, thus it can be considered to carry life and death drives. I develop this association in parallel with architecture and explain that the life drive reflects the material aspect of architecture as it pushes towards its creation whereas the death

drive, or archive fever, is usually neglected. Based on this parallelism, I comment on architectural conservation and argue that its function, which is the protection of the material aspect of architecture, results in a mere repression of the death drive. This, according to Freud, can be problematic as it can lead to masochism, thus the death drive must preferably be externalised and channelled creatively. In regard to conservation, this implies that its policy must be adjusted accordingly to allow destruction to be part of the agenda.

Chapter 2 - Archives

The objective of this thesis is to develop a novel theoretical understanding of architectural conservation, which overcomes problems and paradoxes that its contemporary theory and practice is associated with. In order to reach this objective, I draw on archival theory and investigate a basic relationship, which is the one between architecture and memory, without, however, restricting myself within the obvious realm of memorial architecture, but considering every structure in the built environment. Before I proceed with this task, the first section of this chapter comprises an introduction to the concept of the archive, focusing primarily on Jacques Derrida's psychoanalytic approach to it. In the second and last section, I look into one of the obstacles that the study of memory in architecture faces. This is the fact that architecture is experienced on two levels simultaneously, individually and collectively, where the latter refers to memory associated with social groups, e.g. whole nations, families, and so on. There is a long tradition in Western thought of associating the function of the archive with the memory of the individual. As my thesis deals with memory in architecture, however, I intend to shift from this tradition and examine architecture as a carrier of collective memory too. Through archival theory, I explain that individual and collective memory coexist in a sense that one type of memory can be understood in accordance with the other, thus the distinction between the two can be eliminated. Effectively, my reference to memory in architecture in the following chapters will implicitly refer to both types of memory.

- **The concept of the archive**

They are planning a 'City' for Moscow..., corresponding to London's belly of capitalism. In the suburbs they are building 'pleasant estates' and suchlike for the workers. Where are such paltry Utopias born? In the archives!

When they came to design a new Kemenny Bridge over the Moska River for their projected Utopia..., they dispatched a gravedigger to 'carry out a thorough excavation in the archives, to unearth a historical reference to the Kamenny bridge'... Now we have had the opportunity of becoming acquainted with the forms resulting from this search in the archives...⁶⁷

El Lissitzky, *The Catastrophe of Architecture* (1921)

Nothing is less reliable, nothing is less clear today than the word "archive".⁶⁸

Jacques Derrida, *Archive Fever, A Freudian Impression* (1995)

In a dialogue between Socrates and Phaedrus that is delivered in Plato's *Phaedrus* (c 370BC), the former narrates the myth of the Egyptian god Theuth, who had just discovered writing. Theuth approached the Egyptian king Thamus to introduce his discovery and explain to him why writing should be learnt by everyone in Egypt. Theuth justified his discovery as a potion (*pharmakon*) of memory and wisdom, however, in return Thamus argued that writing would bring about the opposite result and lead to oblivion. Writing for Thamus would replace the function of memory, as people would depend on something external and on signs, thus the attained result would be an appearance of wisdom as opposed to its reality. In the narration of this myth, there is an ambiguity arising in the meaning of the word *pharmakon*. According to Derrida in 'Plato's Pharmacy' (1981), *pharmakon* could imply either a remedy or a

⁶⁷ "El Lissitzky's, The Catastrophe of Architecture", accessed February 1, 2012, <http://modernistarchitecture.wordpress.com/2011/06/23/el-lissitzkys-%E2%80%9Cthe-catastrophe-of-architecture%E2%80%9D-1921/>

⁶⁸ Jacques Derrida, *Archive fever : a Freudian impression.*, trans. Eric Prenowitz (Chicago: University of Chicago Press, 1996), 90.

poison, and this ambivalence is not accidental.⁶⁹ Derrida argues that Plato's discourse is consistent with these sort of ambiguities. In this sense, Thamus' response may also have the opposite meaning, which is *pharmakon* as a remedy. This ambiguity in regard to writing and what Plato really means may also be further revealed in a consideration of his understanding of the function of memory. As seen in the *Theatetus*, memory operates by inscribing or imprinting the divine Ideas upon the wax of the soul, which in this case writing is treated as a remedy. Commenting on the ambiguity produced through the use of the word *pharmakon*, Paul Ricoeur in 'Memory, History, Forgetting' comments that "Plato's *Phaedrus* [is] the mythic birth of the writing of history...must we not ask whether the writing of history, too, is a remedy or a poison?"⁷⁰ In effect, my introduction to archives, which themselves comprise the place where written records, or the writings of history, are sheltered, is coloured with this ambiguity, as archives carry within their very substance the notion of *pharmakon*, either as a remedy or a poison.

An archive is most commonly perceived as the space destined for the storage and preservation of records. In this space, records are arranged in an orderly fashion and found in a state of stasis. They are accessed intentionally or randomly, and their content depends upon the researcher's interpretation and critical judgement. In current times, everything seems to be archived, and so this task of interpreting and judging the archive's content is of major significance. What material is important or relevant in somebody's research? Is there an end to this research? Does the material found in an archive reflect the truth? These are just some of the dilemmas one may come across going through records in an archive. The same confusion in regard to archives is expressed through Ilya's Kabakov's character in 'The man who never threw anything away' (1988).⁷¹ Throughout his life, the character collects every useless object and hangs it from the ceiling with a string. At the end of the string, a small piece of paper explains where the object was found, in an attempt to connect it back to his memory.⁷²

⁶⁹ Jacques Derrida, *Dissemination*, trans. B. Johnson (London: Continuum, 2004), 71–2.

⁷⁰ Paul Ricoeur, *Memory, history, forgetting* (Chicago [u.a.]: University of Chicago Press, 2004), 141.

⁷¹ This installation by Kabakov was for the first time set up in London between 1985-1988, whereas now is part of the permanent collection in Nasjonalmuseet for Kunst in Oslo, Norway.

⁷² Sven Spieker reminds that the '*stringing up*' of objects was one of the most ancient forms of filing, and the English word '*file*', which is derived from the French *fil* (string), originally meant "to line something up on a piece of string".

...[T]his is the memory associated with all the events connected to each of these papers. To deprive ourselves of these paper symbols and testimonies is to deprive ourselves somewhat of our memories. In our memory everything becomes equally valuable and significant. All points of our recollections are tied to one another. They form chains and connections in our memory, which ultimately comprise the story of life.⁷³

Later in the story however, he finds himself amongst all these useless objects and exhausted questions:

...does the dump and its image summon my imagination over and over again, why do I always return to it? Because I feel that man, living in our region, is simply suffocating in his own life among the garbage since there is nowhere to take it, nowhere to sweep it out – we have lost the border between garbage and non-garbage space.⁷⁴

The confusion of Kabakov's character eloquently reflects the ambiguity attached to archives, which, either as a remedy or a poison, can be beneficial or complicating respectively. The perception of archives as static depositories of ordered records has prevailed since the early British archival theorist Hilary Jenkinson's publication of 'A Manual of Archive Administration' in 1922. For Jenkinson, archives

...themselves state no opinion, voice no conjecture; they are simply written memorials, authenticated by the fact of their official preservation, of events which actually occurred and of which they themselves formed a part...[and provide] an exact statement of facts.⁷⁵

In other words, archives are understood as passive, disinterested, and fixed entities that reveal *one truth*. The temporal dimension of their existence is unique and linear as they rise from stillness to movement until they return back to their original place for storage. More recent debates on archival theory, however, disregard this sole truth behind archives. In the light of postmodernism, the world cannot be adequately explained and justified in a single, unified approach thus this *one truth* must become 'a series of contingent truths'.⁷⁶ For instance, Roland Barthes' 'Death of the Author'

Sven Spieker, *The big archive : art from bureaucracy* (Cambridge, Mass: MIT, 2008), ix.

⁷³ Ilya Kabakov, "The man who never threw anything away" in *The archive*, ed. Charles Merewether (London; Cambridge, Mass.: Whitechapel ; MIT Press, 2006), 33.

⁷⁴ *Ibid.*, 35.

⁷⁵ Hilary Jenkinson, *A Manual of Archive Administration* (London: Percy Lund, Humphries & Co. Ltd, 1965), 4.

⁷⁶ Jennie Hill, ed., *The future of archives and recordkeeping : a reader* (London: Facet, 2010), 7.

(1967), which accepts that the author's intention is detached as soon as writing begins, comprises one of the first postmodern concepts to clearly confront Jenkinson's *one truth*. Yet the most influential person to determine the future of archives is the French philosopher Jacques Derrida.⁷⁷

The Derridean archive

In the book 'Archive Fever', Derrida has made a very critical and intense study of the notion of the archive drawing on Freudian psychoanalysis. 'Archive Fever' (1995) is a translation from the French of a lecture that Derrida gave at an international colloquium called 'Memory: The Question of the Archives' that took place at the Freud archives in 1994 in London. In this book, Derrida revisits topics that he was previously preoccupied with, especially in 'The Post Card' (1980). 'The Post Card' starts off with *Envois*, which narrate the story of Derrida one day in Oxford accompanied by Jonathan Culler and Cynthia. That day Derrida enters a bookshop where he comes across a postcard with the work of Matthew Paris' thirteenth century fortune-telling book. This postcard depicts plato, whose name is spelt with a small *p*, and Socrates.

Illustration 6: Matthew Paris' postcard ⁷⁸

Being impressed by this postcard, Derrida buys every single copy that the shop holds and starts sending them to a person very close to him. During the reading of the *Envois*, the reader gradually understands that these postcards are sent to a woman Derrida is

⁷⁷ Ibid., 8–9.

⁷⁸ Image accessed January 24, 2012, <http://www.medienaesthetik.uni-siegen.de/index.php?id=295>

in love with, thus the postcards are in essence love letters. Derrida recommends that the reader considers these postcards

...as the remainders of a recently destroyed correspondence. Destroyed by fire or by that which figuratively takes its place, more certain of leaving nothing out of the reach of what I call the tongue of fire, not even the cinders there are [*s' il y a là cendre*] ⁷⁹

According to him, these postcards/love letters comprise some sort of archive that carries the memory of a broken up correspondence, which appears to be of a confused and heated nature. On the 6th of June 1977, a section of an envoi reads:

If you had listened to me, you would have burned everything, and nothing would have arrived. I mean on the contrary that something ineffaceable would have arrived, instead of this bottomless misery in which we are dying. But it is unjust to say that you did not listen to me, you listened closely to the other voice (we were already a crowd in that first envelope) which asked you not to burn, to burn in order to save. Nothing has arrived because you wanted to preserve (and therefore to lose), which in effect formed the sense of the order coming from behind my voice, you remember, so many years ago, in my first "true" letter: "burn everything". You had answered me the next day, and this is how your letter ended: "The letter ends on the exigency of this supreme pleasure: the desire to be torn by you"..."I am burning. I have the stupid impression of being faithful to you...I am waking up. I remember the ashes. What a chance to burn, yes yes⁸⁰

In this section, Derrida exposes a very peculiar aspect of archives, which he expands on a few years later in 'Archive Fever'. This aspect deals with a contradiction inherent in them according to which memory is not only preserved in archives but also burnt and destroyed. By nature, therefore, archives can be considered as carrying this trauma, which gives one a feverish compulsion, an *archive fever*, to look into and find the origin of memory.⁸¹ Commenting on the relationship between 'The Post Card' and 'Archive Fever', Herman Rapaport describes the former as the "phantom limb, something

⁷⁹ Jacques Derrida, *The post card : from Socrates to Freud and beyond* (Chicago: University of Chicago Press, 1987), 4.

⁸⁰ Ibid., 23.

⁸¹ Derrida, *Archive fever*, 91.

important that has been cut off and that haunts.”⁸² The difference between them is that *The Post Card* deals with an archive of a private correspondence, between lovers, whereas *Archive Fever* deals with Freud’s public archives.

Following ‘The Post Card’ and having detected a problem of an inherent contradiction in archives, Derrida elaborates his thoughts and develops a consistent theory in ‘Archive Fever. In the opening note of ‘Archive Fever’, Derrida discusses the etymology of the word ‘archive’, which refers to the Greek word *αρχή* (*arkhe*). This word has two meanings, one as *commencement* and one as *commandment*. *Commencement* refers to the origin, or as Derrida calls it, it has sequential implications, whereas *commandment*, or else giving orders, refers to the law. Both *commencement* and *commandment* take place simultaneously under one word, *arkhe* [*αρχή*]. The word archive derives from the Greek *arkheion*, which refers to the building where the *arkhons* resided. Part of the *arkhons*’ political power was to give orders, to command, and it was at their residencies, in the *arkheia*, where documents were kept safe and in order.⁸³ It is thus through the very physicality of the archive, that the archive itself comes “[t]o shelter itself and, sheltered, to conceal itself”.⁸⁴ Derrida approaches the notion of the archives from a novel perspective and deconstructs a central function of it, which is the one of inscription. Initially, he discusses the entirety of Freud’s work on psychoanalysis as an archive of his legacy. During his career as a psychoanalyst, or even after his death, Freud’s archive was constantly challenged to legitimise his work. Derrida also comments on printing processes that take place in archives and associates them with Freud’s *Mystic Writing Pad* [*Wunderblock*] and the unconscious. In the 1926 paper ‘A Note about the ‘Mystic Writing Pad’’, Freud draws parallels between our perceptual apparatus and the *Wunderblock*. He writes that the *Mystic Writing Pad* is a small apparatus, which is different to paper and slate in a sense that it “can really deliver both components: an always ready receptive surface and lasting traces of the notations made.”⁸⁵ For Freud, the function of the perceptual apparatus involves an internal printing process on some external, virtual substrate, or as Derrida explains,

⁸² Herman Rapaport, “Archive Trauma,” *Diacritics* 28, no. 4, Trauma and Psychoanalysis (Winter 1998): 68–9.

⁸³ Derrida, *Archive fever*, 2.

⁸⁴ *Ibid.*, 3.

⁸⁵ Sigmund Freud, *Beyond the pleasure principle*, ed. Todd Dufresne, trans. Gregory C Richter (Peterborough, Ont.: Broadview Editions, 2011), 129.

the perceptual apparatus “integrates the necessity, inside the *psyche* itself, of a certain outside”.⁸⁶ Commenting on this function, Derrida adds that *‘the theory of psychoanalysis is not only a theory of memory but also a theory of the archive.’*⁸⁷

Derrida does not restrict himself only to this archival understanding of Freudian memory⁸⁸ but also examines private inscription. Specifically, he discusses Freud’s circumcision, as an inseparable aspect of his Jewish inheritance, and a gift that Freud was given by his father, Jakob, on his thirty-fifth birthday in Vienna in 1891. This gift was the same Bible that Freud studied as a child with the only difference that it had a new leather binding. Derrida explains that Freud’s circumcision and his father’s gift comprise the original archive as they carry the mark that is both exterior to him and inscribed on his body, thus permanently with him.

One of the characteristics of archives, Derrida explains, is violence. This violence occurs as soon as something is archived, as this act implies the establishment of a law and also its enforcement, which is the same as “the violence of power (*Gewalt*) which at once posits and conserves the law.”⁸⁹ In this sense, an archive is the place where power is exercised. A visit to a library, for instance, demands knowledge of how books are categorised and where they are stored, what books can be borrowed and what books are for reference only. Certain parts of the building may not be accessible to the public whereas other parts may have limited accessibility. At once, a visit to the library will reflect the archive’s institutional function, its law. Furthermore, the moment of

⁸⁶ Derrida, *Archive fever*, 19.

⁸⁷ *Ibid.*

⁸⁸ In his writings, Freud makes use of the term ‘archive’ only once. The most common association that he makes is between psychoanalysis and archaeology. In *Constructions in Analysis* (1937), Freud writes: “[the psychoanalysts] work of construction, or, if it is preferred, of reconstruction, resembles to a great extent an archaeologist’s excavation of some dwelling-place that has been destroyed and buried or of some ancient edifice. The two processes are in fact identical, except that the analyst works under better conditions and has more material at his command to assist him, since what he is dealing with is not something destroyed but something that is still alive-and perhaps for another reason as well. But just as the archaeologist builds up the walls of the building from the foundations that have remained standing, determines the number and position of the columns from depressions in the floor and reconstructs the mural decorations and paintings from the remains found in the debris, so does the analyst proceed when he draws his inferences from the fragments of memories, from the associations and from the behaviour of the subject of the analysis.” (Freud, S. (1953) *Constructions in Analysis. SE, vol.23.* (p.259) London: Hogarth Press and the Institute of Psycho-Analysis.) In the same paper, however, he points out the fundamental difference between archaeology and psychoanalysis, which is the fact that in the case of the former, if an archaeological object is destroyed, there is no way that we can get hold of it. On the other hand, when it comes to the psyche of the person “[a]ll of the essentials are preserved; even things that seem completely forgotten are present somehow and somewhere, and have merely been buried and made inaccessible to the subject. Indeed, it may, as we know it, be doubted whether any physical structure can really be the victim of total destruction.” [Freud, S., *Constructions in Analysis. SE, vol.23* (London: Hogarth Press and the Institute of Psycho-Analysis, 1953), 250-60]

⁸⁹ Derrida, *Archive fever*, 7.

preserving the past is violent in a sense that certain aspects relevant to the archive are only then exposed. The archive decides what is worth remembering.⁹⁰ This selection process, however, automatically determines what is there to be forgotten too. On one hand, therefore, this violence can be perceived as positive as it opens up the ground, broadens the boundaries, and gives freedom to the archived material, to memory. On the other hand, the same violence can also be perceived as negative as it restricts memory by ignoring part of it. This is what Derrida refers to as an *archontic* quality of the archive, which is always followed by the *anarchontic*.⁹¹ Lastly, reminding of Michel Foucault's understanding of the archive,⁹² Derrida makes a further association between archives and political power claiming that

...[t]here is no political power without control of the archive, if not of memory. Effective democratization can always be measured by this essential criterion: the participation in and the access to the archive, its constitution, and its interpretation.⁹³

Based on this, new media archives in particular are emerging today as powerful and efficient tools of democratisation as they allow broad public access and participation.⁹⁴

In my earlier reference to 'The Post Card', I mentioned one of archives' main intrinsic qualities, which is the archive fever. Derrida elaborates this in 'Archive Fever' describing eloquently what it entails:

⁹⁰ Schwartz and Cook point out that archives are associated with power since the mnemons of ancient Greece. [Joan M. Schwartz and Terry Cook, "Archives, Records, and Power: The Making of Modern Memory," *Archival Science* 2 (2002): 3.] The mnemon was a person trained to memorise and keep tracks of the proceedings in law courts, as writing was still to be invented. In mythology, the mnemon represented a servant of heroes whose mission was to remind them of the divine orders. For example, Achilles was constantly accompanied by a mnemon who was assigned to make sure that the former would never kill a son of Apollo, otherwise he would lose his life. However, the myth unfolds in such a way that the reminder fails to function and the mnemon himself is put to death. "*Memorisation in the Archaic period was therefore more than a mere device for keeping facts straight- more than an efficient storage and retrieval system. It was a way of getting (and staying) in touch with a past that would otherwise be consigned to oblivion; it was a fateful fending off of forgetfulness*". [Edward S Casey, *Remembering : a phenomenological study* (Bloomington: Indiana University Press, 2000), 12.]

⁹¹ Derrida, *Archive fever*, 10–1.

⁹² In *The Archaeology of Knowledge* (1969), Foucault makes the first attempt in archival theory to dissociate the archive from its spatial dimensions and the common definition as a static repository of memories. Foucault's theoretical approach to the archive is abstract and deals with "*the first law of what can be said, the system that governs the appearance of statements as unique events*." [Michel Foucault, *The Archaeology of Knowledge* (London: Tavistock Publications Limited, 1972), 129.] The archive reflects the "system of discursivity" thus decides on the limits of what can be said. Therefore the archive does not reproduce but rather produces meaning thus it can be perceived as an instrument of power.

⁹³ Derrida, *Archive fever*, 4, note 1.

⁹⁴ "The New Media and Human Rights", accessed June 29, 2012, <http://www.nancho.net/fdlap/newmedia.html>.

It is to have a compulsive, repetitive, and nostalgic desire for the archive, an irrepressible desire to return to the origin, a homesickness, a nostalgia for the return to the most archaic place of absolute commencement.⁹⁵

He draws parallels between this desire to return to the origin, to the primordial memory, and the Freudian death drive, a focal point in Freud's psychoanalytic theory, which is commonly neglected or disputed.⁹⁶ I will first, therefore, outline Freud's understanding of the death drive as explained in his most philosophical essay called 'Beyond the Pleasure Principle' (1920).⁹⁷ This essay examines the reasons why the mind impels us towards unpleasant, and often painful, experiences. He focuses on the dreams of shell-shocked veterans from World War I who suffered from 'traumatic neurosis'. Their dreams were

...characterized by their reintroducing the patient again and again into the situation of his accident, a situation from which he awakens with renewed fright,...fixations...familiar to us in hysteria.⁹⁸

Freud's main interest is why these dreams repeat themselves on a daily basis and assumes that they "seek to master the stimulus by developing anxiety, the lack of which was the cause of traumatic neurosis".⁹⁹ Through the re-enactment of a traumatic event in dreams, he explains, the mind tries to create the anxiety that was lacking during the original event. During this process, the mind ignores the emotional stability and well-being of the person in the present and goes beyond pleasure, to the core of the traumatic event. This compulsion to repeat a traumatic event, or else known as a 'repetition compulsion',¹⁰⁰ has an inherent quality to always point towards the past, which is something that fascinated Freud as "new and radical"¹⁰¹ in regard to the nature of drives in general. Freud remarks that, whereas most commonly drives are perceived as urges that point towards change and development, in actual fact they do the opposite; organic drives point towards the restoration of a previous state, thus

⁹⁵ Derrida, *Archive fever*, 91.

⁹⁶ In post-Freudian psychoanalysis, the concept of the death drive has received major criticism. According to the theorist Duncan Barford, there are three categories of critics of the death drive, which perceive it as simply redundant, immaterial or morally objectionable. [Duncan Barford, "in Defence of Death" in *The death drive : new life for a dead subject?*, ed. Rob Weatherill (London: Rebus Press, 1999), 12.]

⁹⁷ Gilles Deleuze, "Sadism, Masochism, and the Death Instinct" in *Beyond the pleasure principle*, Freud, 238.

⁹⁸ "Beyond the Pleasure Principle" in *Beyond the pleasure principle*, Freud, 56.

⁹⁹ *Ibid.*, 72.

¹⁰⁰ Freud used for the first time the concept of repetition compulsion in 1914 in the article *Remembering, Repeating and Working-Through* and referred to the acting out of some memory that the patient had forgotten.

¹⁰¹ Weatherill, *The death drive*, 15.

they are conservative and regressive.¹⁰² Commenting on this nature of organic drives, Freud adds that if

...every living being dies for *internal* reasons, returning to the inorganic, then we can only say that *the goal of all life is death*, and, looking backwards, that *the nonliving existed before the living*.¹⁰³ [original italics]

The drive, therefore, that pushes a person towards extinction, towards an inanimate, inorganic state, is the death drive (*thanatos*), which, through repetition compulsions, appears in opposition to, but also in balance with, the life drive (*eros*), the drive that is concerned with the creation and preservation of life. When Freud first introduced the concept of the death drive in 'Beyond the Pleasure Principle', he had doubts in regard to its theoretical validity as a "'false profundity or mysticism"¹⁰⁴ but later on in 'Civilization and its Discontents' (1930), he admits: "[my views of the death drive] have taken hold of me so strongly that I can no longer think in any other way."¹⁰⁵ Based on the theoretical hypothesis of the death drive, Freud proceeds further giving an explanation to certain clinical illnesses. He claims that the death drive can be expressed in two ways; one that is outwards as a sadistic aggression and another one that is internal and expressed as masochism. He further suggests that the necessity for externalising aggression is imperative, as the same aggression can be directed inwards and cause self-destruction.¹⁰⁶ This, effectively, implies that sadistic behaviour is normal and also beneficial for the organism.¹⁰⁷ Coming back to Derrida, the archive fever, or else the desire to return to the first memory, to the absolute beginning, is fundamentally linked to the Freudian death drive that points towards an inorganic state, towards the destruction of memory. This association, therefore, implies that the death drive, through repetition compulsions, operates as a self-contradictory force that simultaneously generates and destroys the archive.

¹⁰² Freud, *Beyond the pleasure principle*, 76.

¹⁰³ *Ibid.*, 77.

¹⁰⁴ *Ibid.*, 76.

¹⁰⁵ "Civilization and its Discontent" in *Beyond the pleasure principle*, Freud, 132.

¹⁰⁶ Sigmund Freud, *The Economic Problem of Masochism, Part XI (Addenda A, B, and C)*. *Standard Edition* (London: Hogarth Press, 1924), 164.

¹⁰⁷ Sigmund Freud, *Volume XXII (1932-1936) New Introductory Lectures on Psycho-Analysis and Other Works, translated from the German under the General Editorship of James Strachey*, (London: Vintage, The Hogarth Press and the Institute of Psycho-Analysis, 2001), 211.

Archives and the city

The British historian Patrick Joyce in an article entitled 'The Politics of the Liberal Archive' reflects on Derrida's statement that the archive is a place where power is exercised, and makes a very interesting inquiry into how archives are adjusted to accommodate changes that take place on national and social levels. His essay focuses on the key role of the public library and the way it embodied and reflected the idea of the 'public' in nineteenth-century liberalism. He explains that the first truly public library appeared in the United Kingdom only after the Library Act 1850 was enforced. The Public Record Office, founded in 1938, or the British Museum's Reading Room, built in 1753, cannot be considered as public archives due to their limited access.¹⁰⁸ According to the Library Act 1850, the concept of the public library was redefined: the public library was for the first time open to everybody, to the *demos*, and its mission was to "civilize the working class by giving this class access to the public realm"¹⁰⁹ Nevertheless, the concept of the public library expanded further during the postwar period when an

...accessible network of well-stocked public libraries was celebrated as an important buffer against totalitarianism- a vital organ of democracy, which exemplified Britain's essential historic traditions of individual liberty and social empowerment.¹¹⁰

Joyce makes a remarkable observation on the centrality of the library in nineteenth-century liberalism, which is something that I reflect on again in chapter 5. Since the 1850 Act, the organisation of libraries started to put emphasis on the 'centre' and this has various interpretations. Firstly, public libraries followed the example of the British Museum Library, which applied a balanced cultural policy between the capital, which is the 'centre', and the rest of the country, or else between the local with the national.¹¹¹ In terms of the internal design and layout of libraries, there was a change too. Libraries adopted the concept of Bentham's Panopticon thus the 'public' was supervised by a member of staff, centrally located.¹¹² The British Museum Reading

¹⁰⁸ Patrick Joyce, "The Politics of the Liberal Archive," *History of the Human Sciences* 12, no. 2 (1999): 38.

¹⁰⁹ *Ibid.*, 39.

¹¹⁰ Richard Quentin Donald Hornsey, *The spiv and the architect : unruly life in postwar London* (Minneapolis: University of Minnesota Press, 2010), 169.

¹¹¹ Joyce, "The Politics of the Liberal Archive," 40.

¹¹² *Ibid.*, 42

Room, for instance, built in 1857, featured a centrally raised platform from which the staff ‘policed’ the ‘public’.

Illustration 7: The 1857 British Museum Reading Room ¹¹³

Lastly, Joyce points out the notion of the ‘Central Library’, which came to reveal “the local dimensions of liberalism”.¹¹⁴ Accordingly, central libraries occupied the physical centre of towns and cities to ensure equal accessibility to all patrons. Closing his essay, he expands further on the concept of the archive claiming that, in essence, it embodies something broader and more diverse, which is “the street and the built environment”,¹¹⁵ the city itself.

Joyce’s understanding of the archive, which is not spatially restricted in the grounds of the library but perceives the whole street, the city and its everyday life as a repository of memories, is not novel. In literature, for instance, Proust’s ‘In Search of Lost Time’ or ‘A la Recherche du temps perdu’ (1913-1927) is a powerful attempt to ‘recapture through memory traces, the richness of that everyday life’.¹¹⁶ Equal to Proust is Walter Benjamin’s famous ‘Arcade Project’ or ‘Passagenwerk’ (1927-1940) in which he narrates his memories of *flânerie*¹¹⁷ in nineteenth-century Paris or a less

¹¹³ Image accessed February 27, 2012, <http://www.superstock.com/stock-photos-images/1895-24302>.

¹¹⁴ Joyce, “The Politics of the Liberal Archive,” 44.

¹¹⁵ Ibid., 47.

¹¹⁶ Mike Featherstone, “Archiving Cultures,” *British Journal of Sociology* 51, no. 1 (March 2000): 170.

¹¹⁷ Featherstone explains that the flâneur “is not just the stroller in the city...*Flânerie* is a method for reading texts, for reading the traces of the city. It is also a method of writing, of producing and constructing texts.” [Mike Featherstone, “The Flâneur, the City and Virtual Public Life,” *Urban Studies* 35, no. 5–6 (May 1, 1998): 910.

known essay of his called 'Naples' (1924) that he wrote with his lover Asja Lacis.¹¹⁸ For both Proust and Benjamin, the city and its everyday life operate like an archive; they provide material to be retrieved and then carefully assembled into a textual form.

Documents versus monuments

For Paul Ricoeur, the archive signifies the moment that the historiographical process is written, and follows the stage of the testimony. Testimony for him opens up this process and archives come to capture it. In 'Memory, History, Forgetting', Ricoeur wonders that if writings comprise the main material held in a library and written testimonies the main collection of it, then everything can be archived. His doubt, however, arises in the transition between the first two stages of the historiographical process, from testimony to archive, or else, from oral to written. This doubt refers to the transition from a living memory to a written record, which, as a *pharmakon*, can be either a poison or a remedy. In a different essay in 'Time and Narrative', Ricoeur is reminded by the French historian Jacques Le Goff that in past centuries archives were associated with 'monuments', such as the *Monumenta Germaniae Historica* of 1826. He explains that monuments, which are in most cases created by the state, express an ideology and carry upon them collective memory. Archives, on the other hand, which are associated with documents whose intention is different to that of monuments, must be independent to an ideology, freed by subjectivity. For Ricoeur, however, the association of archives with the notion of the document was never really made in that sense. In fact,

¹¹⁸ This 'city portrait' sketched in 1924 depicts the unfolding of vivid memories and experiences that both authors obtained in that city and is presented to us in a form of a very rich, enjoyable and highly descriptive travel reportage. It consists of a series of snapshots or, as Benjamin calls them, 'flashes of light' [*aufblitzen*] from this trip. In *On the Concept of History*, he gives an example of the image of the 'flash'. "*The true picture of the past flits by. The past is held back fast only as an image that flashes up at the moment of recognition, never to be seen again*". [David S Ferris, ed., "Walter Benjamin : theoretical questions" (Stanford, Calif.: Stanford University Press, 1996), 6.] The flash is not an image of the past, but rather it is the moment that refers to the cognition of that image. For Benjamin, images have a 'historical index'. This 'historical index' does not merely refer to a certain point in time that an image belongs to, but also the point in time when the image enters into legibility, when it first becomes readable. This moment of recognition is what Benjamin calls the 'now of recognisability'. This event establishes a particular relationship between the past and the present. History cannot belong to the past but rather belongs to the present. It becomes legible and 'readable' through a relation of 'what was' with 'now'. Citing his own words, "*it is not that the past casts its light on what is present or that what is present casts its light on what is past; rather, an image is that in which what was comes together like a flash of lightning in a constellation with the now.*" [Ibid.]

[the documents] attack against the conditions of historical production and its concealed or unconscious intentions...we must say with Le Goff that once its apparent meaning is demystified, 'the document is a monument'.¹¹⁹

The document and its inherent power are major points of concern in archival theory, yet not everyone who deals with archives shares the same opinion. Schwartz and Cook point out that although both cultural theorists and information technologists agree on the prime function of archives, which is the storage of information, the former admit and reflect on the significance and power attached to them whereas the latter perceive them merely as static and neutral repositories of information.¹²⁰

The digital archive

Closing my introduction to the concept of the archive and adding more to its apparent ambiguity, I must refer to a key topic in contemporary archival discourse that deals with digital archives. Today, information technologies have advanced to such degree that recording is possible on various formats and is easily accessible to everyone to the extent of becoming an obsession. According to Featherstone "to be is to record"¹²¹ whereas for Mackenzie "to die is to be disconnected from access to the archives, not jacked-in or not in real time."¹²² Digital archives transmit information through network channels, and this has an unavoidable impact on the nature of knowledge that is produced as according to Derrida "archivization produces as much as it records the event."¹²³ Digital data is stored in hard drives in the form of 1s and 0s, which can be accessed in seconds from different locations around the globe through online networks. This has an impact on the traditional understanding of how knowledge is distributed as well as what a document really is. The physicality of the traditional, static archive, in a sense of a library or a museum, has dissolved and the

¹¹⁹ Paul Ricoeur, *Time and Narrative, Volume III.*, trans. K. Blamey and D. Pellauer (Chicago: University of Chicago Press, 1988), 118.

¹²⁰ Schwartz and Cook, "Archives, Records, and Power: The Making of Modern Memory," 5.

¹²¹ M. Featherstone, "Archive," *Theory, Culture & Society* 23, no. 2–3 (May 1, 2006): 591–6.

¹²² Adrian MacKenzie, "The Mortality of the Virtual: Real-Time, Archive and Dead-Time in Information Networks," *Convergence* 3, no. 2 (June 1997): 66.

¹²³ Derrida, *Archive fever*, 17.

centrality attached to it is rather undermined. Instead, digital archives are fluid, dynamic, and decentred.¹²⁴

- **Individual and collective memory**

Following the introduction to the concept of the archives and anticipating the upcoming study on architectural conservation, in the remaining paragraphs of this chapter I look into the two types of memory that architecture is experienced in. I focus on both individual and collective memory, and through an archival association I prove that both types operate with the same logic, thus the distinction between the two can be eliminated. Through this conceptual merger, the intention is that my later reference to memory in architecture will imply both types.

Memory in ancient Greece and Rome

An archive is formed through three functions. The initial one is inscription or writing, which provides the material of the archive. The second function is to store this material, whereas the third one is to provide the space where someone can retrieve it from. This three-faceted operation of archives -writing, storing, retrieving- is to be found in the function of memory too. As Pierre Nora confirms in 'Realms of Memory':

[m]odern memory is first of all archival. It relies entirely on the specificity of the trace, the materiality of the vestige, the concreteness of the recording, the visibility of the image.¹²⁵

The archival understanding of memory follows a long tradition in Western thought and is usually approached from the point of the individual. This tradition stretches back to the dawn of philosophy with the introduction of the Platonic universe of Ideas in the fifth century B. C. In the 'Theaetetus', Plato likens memory to a block of wax that exists in our souls. Every time we perceive something with our senses, we hold this wax under our thoughts and perceptions, and imprint them upon it. Knowledge is

¹²⁴ Although digital recording technologies have developed immensely, their long-lasting archival qualities are not confirmed yet. In fact, Jeff Williams explains that digital archives have "already shown significant levels of decay" [Tacita Dean, Nicholas Cullinan, and Tate Modern (Gallery), *Tacita Dean : film* (London: Tate Pub., 2011), 1.]

¹²⁵ Pierre Nora, *Realms of memory : rethinking the French past*, trans. A. Goldhammer (New York: Columbia University Press, 1996), 8.

something already possessed. There are forms of Ideas in our memories, which the Soul has been acquainted with since time immemorial, yet everything is forgotten as soon as one is born. Birth indicates forgetting. True knowledge can be achieved by fitting the imprints from 'sense impressions', which themselves are reflections of a higher reality, on the prime mould or imprint of this reality. In this sense, knowledge can be re-attained from within.¹²⁶ In the 'Phaedrus', Plato tries to convince that all knowledge is an attempt to remember the things that all souls once witnessed. In this respect, attaining knowledge is remembering something forgotten, which gives this inquiry a recollective character (anamnesis).¹²⁷ Later in the history of philosophy, Aristotle (384-322 B.C.) offers a treatise that brings about the complete secularisation of memory, yet memory is still perceived as functioning as an archive. His theory on memory and reminiscence is developed in his work *De Anima*, according to which imagination is the first to be aroused by the five senses. Imagination acts as a catalyst between the stage of perception and the formation of thought. The perceptions brought in are manifested in the form of *images* and all knowledge that one acquires stems from sense impressions which are functions occurring in the soul. Aristotle denies the possibility of human thought without the employment of *mental images*.¹²⁸ In the 'De Memoria et Reminiscencia', he further relates imagination to memory. The difference between them is traced to the element of *time*. Whereas imagination is a sense impression of things in the present, memory deals with sense impressions obtained in the past. He likens mental images with paintings and, in a similar fashion to Plato, the formation of mental images is perceived as a movement, like the movement of creating a seal on wax. Regarding the differences between memory and recollection, Aristotle defines that recollection is the recovery or recapture of sense impressions that one perceived in the past and this is a conscious effort of the inquirer.¹²⁹

In ancient Rome, memory was perceived as an art, was called *mnemonics*, and was mainly practiced by orators. It was a trained skill and comprised one of the only ways of retrieving past information, as typing was still yet to be invented. This art of memorisation was not a blind recitation of a pre-fabricated speech. Instead, orators

¹²⁶ Timothy D. J Chappell and Plato, *Reading Plato's Theaetetus* (Indianapolis: Hackett Pub. Co., 2005), 172.

¹²⁷ Francis A. Yates, *The Art of Memory* (London: Pimlico, 2003), 51.

¹²⁸ *Ibid.*, 46–7.

¹²⁹ Anne Whitehead, *Memory* (London; New York: Routledge, 2009), 25, <http://site.ebrary.com/id/10263556>.

had the ability to *invent* their speech and deliver it eloquently *ex tempore*. Mnemonics was not a 'static' art but rather a compositional one, which relates to what in current times is called imagination and creativity. The art of memory was a spatial art. Memorisation was accomplished through the placement and storing of mental images [*imagines*] upon certain mental places [*loci*] that were very familiar to the artist, such as his house or part of a city. The retrieval of a 'stored' memory image was a matter of 'strolling' within this mentally constructed building or landscape in an attempt to locate this image. Since memory images held distinct positions within this construction, their recollection could be delivered without forgetting and in the correct order. The art of memory was practiced up until the early modern period, after which there is a notable change.¹³⁰

Memory during the modern period

The approach to the concept of memory in the early modern period was different to the classical one in a sense that a process of remembering was not conceived merely as a blind reproduction of a memory from the past, but was also coloured by the individual's engagement in this process. John Locke, for instance, introduced a new concept of memory according to which remembering was highly affected by the interest of the inquirer. Memory, for Locke, was quite similar to the Aristotelian model. In the 'Essay', he draws a parallel between an infant's mind and a white paper, empty of characters and ideas. Memories are imprinted on this white paper (the mind) through empirical processes, or in other words, memories are acquired throughout life.¹³¹ In this sense, however, even during the early modern period, memory, although enhanced by the adaptations and appropriations of the individual, was still thought of as functioning with archival processes.

The association of memory with the function of the archive is equally predominant in relevant discourses in late modernity. As I mentioned earlier, Freud's psychoanalytic work on memory, which aimed to cure symptoms of hysteria, is reminiscent of the Platonic model. On one hand, it relates to the Socratic method of accessing knowledge from the past as found in the 'Meno' and on the other hand as

¹³⁰ Yates, *The Art of Memory*, 22–4.

¹³¹ Whitehead, *Memory*, 54.

Freud's unconscious is thought of operating in the same fashion as Plato's block of wax. To be more specific, in a dialogue between Meno (a young aristocrat) and Socrates, the latter demonstrates that knowledge is an innate recollection, which can be attained by the soul of the inquirer through a dialectic process. In regard to Freud's psychoanalytic approach, memory is not passive, for remembering comprises an activity that takes place in the present and can be attained through dialectic guidance with the analyst. In a comparison between Freud's approach to memory and Plato's function of recollection, the philosopher Edward Casey comments that:

Plato's doctrine of recollection...shows considerable affinity with Freud's view of memory. Much as abreactive recollection becomes possible only through dialectical confrontation in psychotherapy, philosophical recollection or *anamnesis* arises after a process of dialectical cross-examination.¹³²

The second aspect of Freud's work on memory that relates to Plato's doctrine is the former's approach to the understanding of the unconscious. For Freud, memory is not stored in a physical part of the brain or elsewhere in the body. For him, memory is registered in consciousness through external stimuli and eventually imprinted in the unconscious, in the same way as Plato's memory is imprinted on a block of wax.¹³³

Halbwach's concept of collective memory

I have so far explained that memory, from Plato up until recent years, is mainly perceived to function as an archive based on an individual's point of view. As my interest, however, is focused on architecture, which is experienced on a collective level too, then I should also refer to the opposing, relatively recent discourse that deals with the concept of collective memory, which still appears to function as an archive. The following inquiry in collective memory focuses on the work of the French philosopher and sociologist Maurice Halbwach, who introduced the concept that memory is a social phenomenon. Halbwach's work on memory was evidently influenced by the Durkheimian school of thought. At the same time, it carried resonances of one of his early mentor's philosophy, the work of Henri Bergson, regardless of the fact that the latter's theory on memory was approached from an

¹³² Casey, *Remembering*, 302.

¹³³ Whitehead, *Memory*, 94.

individual's point of view. I shall, therefore, refer briefly at this stage to Bergson's notion of memory to create the background of and contextualise my introduction to Halbwach's notion of collective memory.

Henri Bergson intended to give new dimensions to the metaphysics of memory, thus his project opened up new directions in contemporary thought. One of Bergson's innovative contributions was his attempt to establish a philosophical world-view that reflected the climate created by Einstein's Theory of Relativity.¹³⁴ Philosophical thought, up to that point, was preoccupied with space rather than time, for space was regarded as a conceivable prerequisite inherently native to our senses. In regard to memory, Bergson considered that there are two types: *habit memory* and *pure memory*. *Habit memory* refers to the automatic behaviour of the body acquired through repetition, like having a certain habit. As in a habit, one has to deconstruct an action into parts, memorise them individually through repetition, and then reconstruct all its parts in a whole and put it into action. In the instance of learning a text by heart, the memory of each reading creates an individual image, however when the text is finally learnt, it *emerges* as a composite of all previous recollections, which is the habit memory. The other type of memory, *pure memory*, refers to a function that stores *all* personal experiences to something external. Specifically Bergson writes that,

...[pure memory] records, in the form of memory-images, all the events of our daily life as they occur in time; it neglects no detail; it leaves to each fact, to each gesture, its place and date.¹³⁵

Pure memory, as opposed to habit memory, does not have a utilitarian character and it manifests itself spontaneously. Coming back to Maurice Halbwach's theory of memory, however, which is opposed to Bergson's pure duration, time can only be perceived in association with society. Specifically, he claims that "[t]ime is real only insofar as it has content, insofar as it offers events as material for thought."¹³⁶ Equally, memory for him depends on the social environment, in which it is created. This understanding of memory is formulated as a reaction against psychological treatises of that period, which treated humans as isolated units. For Halbwach, society is the medium that

¹³⁴ Henri Bergson, *Duration and Simultaneity, Bergson and the Einsteinian Universe* (Manchester: Clinamen Press, 1999), v.

¹³⁵ Henri Bergson, *Matter and Memory*, trans. M. N. Paul and S. Palmer (New York: Dover Publications, 2004), 92.

¹³⁶ Maurice Halbwachs, *On collective memory*, trans. Lewis A Coser (Chicago, Ill.: University of Chicago Press, 1992), 127.

provides memories. Recollection takes place in this society, and in effect memories obtain a locale. Whereas for Bergson recollection occurs as a leap of the individual in the past, for Halbwach it demands a leap in the social framework of a society. To contextualise his theory of memory as a construct within a social framework, his book 'On Collective Memory' starts off with a chapter on dreams. Dreams, for him, are composed of random images containing various memories or not, all mixed up, that do not correspond to the essence of a real memory. Dreams, therefore, are very different to memory, as they do not have social context. This approach is diametrically opposite to Bergson's approach to dreams, in which pure memory finds its ultimate self-manifestation. In fact, as Whitehead notes, Halbwach's detachment of memory and dream implies that "'individual memory'...represents...a paradoxical formulation, because memory itself collapses once we enter into a state of isolation."¹³⁷ The past according to Halbwach's theory is not preserved in a sense that it can recur, but it is reconstructed in the present. In this sense, as memories of the past refer to social contexts of previous times, they come to appear different in the present, lacking in the original essence. He illustrates this argument with a parallelism between past memories and the stones of certain Roman houses, according to which "their antiquity cannot be established by their form or their appearance but only by the fact that they still show the effaced vestiges of old character."¹³⁸ So, as the reconstruction of past memories takes place in the present, then the present social framework affects the process of recollection too. In a later discussion, he comments that memories can be classified in different periods of our lives, not because they happened to occur in these specific periods, but because at that time we were part of certain social groups. In this sense, where recollection relates to a particular social framework as opposed to a specific time, there is no difference between recent and old memories. A social group could be the family, school, work, social class, religion etc. and each of these groups has particular memories that belong to them only. Throughout human life span, memories are being received and stored, and the mind, in the present, constantly reproduces them. Through them, according to Halbwach, "as by a continual

¹³⁷ Whitehead, *Memory*, 127.

¹³⁸ Halbwachs, *On collective memory*, 47.

relationship, a sense of our identity is perpetuated.”¹³⁹ In regard to old people and their gradual failure of recollecting certain memories from the past, he argues that this is because the social group to which these memories belong starts to disappear. As members of this social group die, the memories that are associated with it die too. In this respect, his idea of collective memory relates to the span of a social group’s living memory. After that, history comes to replace collective memory. However, Paul Connerton in ‘How Societies Remember’ questions that if, according to Halbwach, social memory relates to a social group but this memory actually fades as the members of this group disappear, then how does the collective memory pass on from generation to generation? To answer this question, Connerton indicates what Halbwach did not clarify, which in turn reflects the common ground between Halbwach’s theory in memory and Bergson’s. Connerton explains that images and knowledge from the past are transferred to the present through the practice of commemorative ceremonies and bodily practices. For him, the repetition of commemorative ceremonies, as forms of rituals, brings about continuity with the past. What counts is not the form of the ritual practiced but the content it carries with it. In effect, the repetition of a ritual in the present leads to the re-enactment of actions that are rooted in the past. Rituals transmit knowledge from the past through the specific language, postures, gestures and movement that take place during their practice. In the same fashion, bodily practices in general carry habitual memories within their very substance. As Connerton claims,

[m]any forms of habitual skilled remembering illustrate a keeping of the past in mind that, without ever adverting to its historical origin, nevertheless re-enacts the past in our present conduct. In habitual memory the past is, as it were, sedimented in the body.¹⁴⁰

Therefore, the conceptual gap between Halbwach’s collective memory and its ability to pass on from generation to generation can be filled in through Connerton’s clarification, which in essence reflects the Bergsonian model of habit memory. In this

¹³⁹ Ibid.

¹⁴⁰ Paul Connerton, *How societies remember* (Cambridge [England]; New York: Cambridge University Press, 1989), 72.

respect, as Whitehead points out, the notion of collective memory cannot stand alone, independent to the long tradition of individual memory.

Yet, for Halbwach memory does not merely reflect the mental space of a social group. Memory is equally associated with the material space in which it is created. In *The Collective Memory*, he explains that in the social framework of a family, the objects of a house recall the members of the family. In case one lives on his own, the objects found in the house recall the fact that there are no other members to associate with and in effect reflect what distinguishes him from others. For Halbwach, material objects are themselves unique elements of a society, as they circulate within social groups recalling notions of the past. He specifically describes that

...each object appropriately placed in the whole recalls a way of life common to many men. To analyze its various facets is like dissecting a thought compounded of the contributions of many groups.¹⁴¹

He puts particular emphasis on the form of material objects, as this is what transmits meaning to the present. He claims that objects are motionless only in the way they appear, and this appearance of stillness lasts for long periods, which is effectively what gives the feeling of stability and consistence to the social group. As material space is intimately associated with the social group that inhabits it, then a spatial investigation can reveal aspects of and give clues about the structure of the society. In regard to his urban views, Halbwach believes that in small cities, where tradition is strong and the social structure stable, although social groups evolve in time, the material composition of the city changes very slowly. However, if the material composition of the city changes drastically, this will have an effect on the group.¹⁴²

Assmann's concept of cultural memory

The aspect of collective memory in Halbwach's theory that fades away when social groups start to disappear, or else the transition from collective memory to history, has also been criticised by Jan Assmann. Assmann recognises two types of memory. On one hand, there is communicative memory, which includes everyday communication, and is very closely linked to what Halbwach calls collective memory;

¹⁴¹ Maurice Halbwachs, "Chapter 4, Space and the Collective Memory," in *The Collective Memory*, 1950, 1, <http://openpdf.com/ebook/maurice-halbwachs-pdf.html>.

¹⁴² *Ibid.*, 3.

it equally relates to social frameworks and has an expiry date of 80-100 years (3-4 generations). In response to Halbwach's contradiction between a collective memory from the distant past and a social group that is not present any longer, Assmann introduced a new notion of memory, the cultural memory, which

[i]s characterised by its distance from the everyday...Cultural memory has fixed points; its horizon does not change with the passing of time. These fixed points are fateful events of the past, whose memory is maintained through cultural formation (texts, rites, monuments) and institutional communication (recitation, practice, observance).¹⁴³

So, whereas Connerton referred to Bergson's habit memory as the medium that perpetuates collective memory throughout generations, in this case Assmann assigned a new type of memory, cultural memory.

Collective memory in Halbwach's theory and cultural memory as defined by Assmann entail archival functions in a sense that processes of inscribing, storing and retrieving still take place. Whereas in individual memory this set of processes is purely internal, in the case of collective and cultural memory, archival processes are interlinked either with social and mental frameworks or with cultural formations and institutional communications. Expanding further on the function of individual and collective memory, if an individual needs to memorise something, an internal archiving process takes place; memories are externalised into a repository realm (wax tablet, memory places, unconscious etc.) to be used later upon recollection. At the same time however, one may fairly claim that this function is just as external as the function of collective and cultural memory, which demand objects and practices to refer to. In this sense, the distinction between individual and collective memory seems to disappear, which comes to enhance Connerton's earlier association between Halbwach's collective memory and Bergson's habit memory.

In this chapter, I started off with an introduction to the concept of the archive focusing on Derrida's psychoanalytic approach to it. My intention is to prepare the theoretical background so that I can next use this concept to build my arguments and study architectural conservation. In the second part of this chapter, through a short inquiry into key philosophical theories in regard to individual memory, I drew parallels

¹⁴³ Jan Assman, "Collective Memory and Cultural Identity," trans. J. Czaplicka, *New German Critique* 65 (1995): 129.

between the function of memory and archives. Then, I referred to the concept of collective and cultural memory, and showed that they both function with an archival logic too. Lastly, I explained that, through an archival association, individual memory on one hand and collective/cultural memory on the other intersect, thus the distinction between the two can be eliminated. The key intention for doing so is that, in the following chapters, my reference to memory in architecture can include both concepts under one word.

Chapter 3 – Fire

▪ The methodology of fire

“Above all we must recognise the fact that new experience says no to old experience, otherwise we are quite evidently not up against a new experience at all.”

Gaston Bachelard, *The Philosophy of No* (1940)

The key objective of this research is to develop an alternative theoretical understanding of architectural conservation by revisiting and commenting afresh on the relationship between architecture and memory. As a way to narrow down the scope of my research, I focus on the memory of a particular ‘element’, namely fire, and the way architecture accommodated it throughout the years. The appropriation of this ‘element’ lies in the fact that fire is considered by many architectural historians to be the first aspect of architecture, it therefore comprises architecture’s first memory. Historically, fire catastrophes are also one of the major reasons for architectural destruction. In regard to historic buildings particularly, fire accidents are a potent threat¹⁴⁴, whereas for vacant ones, they are the biggest threat.¹⁴⁵ One can, therefore, argue that fire is present from the moment architecture is created up until its final destruction.

My interest in the memory of fire leads me to particular philosophical sources. This is primarily the work of Gaston Bachelard who is famous for his writings on memory and fragmented time, as well as his psychoanalytic approach to fire. Reflecting, however, on fire’s conflicting temporality, which carries concurrently notions of ‘life and death’ and ‘eternal return’,¹⁴⁶ leads to the necessity of deploying a philosophical rival. In light of this, I have chosen to employ the theory of Henri Bergson. This is primarily because Bachelard strongly opposes the temporal continuity in

¹⁴⁴ Iain McCaig, “Editorial: a Potent Threat to Historic Buildings,” *Context, Institute of Historic Building Conservation*, March 2010.

¹⁴⁵ “Security for Heritage Building”, accessed September 12, 2011, <http://www.buildingconservation.com/articles/security/security.htm>

¹⁴⁶ Gaston Bachelard, *The Psychoanalysis of Fire. Preface by Northrop Frye* (Boston: Beacon Press, 1964), 7.

Bergsonism.¹⁴⁷ On a different level, the theoretical *conflict* between Bachelard's fragmented time and Bergson's temporal continuity is not accidental, but rather reflects Bachelard's model for knowledge production, which I employ as a methodology.

Bachelard's model of knowledge production

In his book 'The New Scientific Spirit' (1938), Bachelard develops his theory of the formation of objective knowledge that can be achieved through modern sciences. He disregards natural sciences and alchemy as precursors of modern sciences, claiming that they are products of the imagination and, therefore, irrational creations of the mind.¹⁴⁸ These creations function like obstacles to the establishment of objective knowledge, therefore the mind has to overcome them. Yet this constant attempt to overcome them is what generates scientific knowledge itself. This may not be an easy task, as it often requires an 'aggressive' attitude that could potentially shake the foundations of a whole discipline. In fact, a solidly established discipline may require a radical re-structuring and a break with its own past.¹⁴⁹ This is what Bachelard calls an 'epistemological rupture'. Commenting on the nature of new knowledge, in 'The Dialectics of Duration' he writes:

All knowledge taken at the moment of its constitution is polemical knowledge; it must first destroy in order to make room for its constructions. Destruction is often total and construction never completed.¹⁵⁰

His views towards the formation of knowledge through an 'epistemological rupture' came about during his work experience as a secondary school teacher and later on as university professor. Since the early years of his teaching career, Bachelard opposed the French education system of the time. In fact, he argued that

...the humanistic *culture générale* of French pedagogy did not stimulate pupils to research: it gave the impression that knowledge was already established and that past texts were the most authoritative.¹⁵¹ [original italics]

¹⁴⁷ Gaston Bachelard, *The dialectic of duration.*, trans. Mary McAllester (Manchester: Clinamen, 2000), 28.

¹⁴⁸ Bachelard distinguishes two types of imagination. One that is inspired by novelty and deals with the unexpected, and the other that explores the depths of being's primitive and eternal aspects. Imagination can find its ultimate expression through poetry.

¹⁴⁹ Gaston Bachelard, *The new scientific spirit.*, trans. Arthur Goldhammer (Boston: Beacon Press, 1985), 173.

¹⁵⁰ Bachelard, *The dialectic of duration.*, 34–5.

His answer to this problem was the formation of a 'new scientific spirit' that could be attained through the study of positive sciences such as physics and chemistry, for these sciences were practiced with polemic dynamism that opposed past knowledge. Specifically, Bachelard writes that

...the scientific spirit is essentially a way of rectifying knowledge, a way of broadening the horizon of what is known. Sitting in judgement, it condemns its historic past. Its structure is its awareness of its historical errors. For science, truth is nothing other than a historical corrective for common and primary illusions. The intellectual life of science depends dialectically on this differential of knowledge at the frontier of the unknown.¹⁵²

He traced the emergence of the 'new scientific spirit' in 1905, the period in which Einstein published the theory of relativity, and juxtaposed it with the existing scientific spirit of the times, which was usually knowledge acquired through textbooks; with the latter ignoring the individual passions, interests, and creativity of the researchers, as well as the collaboration between them. In effect, Bachelard perceived the 'new scientific spirit' as a product of a 'dialogued philosophy' that was very different to the monologue that took place within the closed world of philosophy.¹⁵³ Cristina Chimisso explains that Bachelard's comparison between the dialogue of science and the monologue of philosophy exposes two of his main philosophical theses:

[f]irst, science is the product of the dialectic between theory and practice: concepts need to become technical to be precise and to develop, and technical applications are performed according to theoretical procedures and on scientific objects, that is, objects created by science. Second, the dialogue between theory and practice is a dialogue between human beings: science is necessarily social.¹⁵⁴

On one hand, scientific knowledge advances by negating the work of the imagination, which is for Bachelard an epistemological obstacle. On the other hand, as the imagination negates rational knowledge, it effectively negates science too. Therefore, scientific knowledge is produced dialectically through a ceaseless *no* to its own past,

¹⁵¹ Cristina Chimisso, *Gaston Bachelard : critic of science and the imagination* (London; New York: Routledge, 2001), 71.

¹⁵² Bachelard, *The new scientific spirit.*, 172.

¹⁵³ For Bachelard, science that does not engage with theory is pointless whereas theory that does not engage with practice is metaphysical, thus he insisted on the dialogue of scientific philosophy.

¹⁵⁴ Chimisso, *Gaston Bachelard*, 72.

that is a negation to negation, a dialectic reminiscent of Hegel.¹⁵⁵ The dialectics in Bachelard's philosophy nevertheless are understood in two different ways, both as a philosophical dialectic and as a dialogue. For instance, in his book called 'Le Rationalisme appliqué' (1949), as yet to be translated into English, Bachelard applies his scientific dialectic for the advancement of knowledge to an ideal school environment. Through dialogue in teaching, the untaught pupil, as a mind full of imagination, on one hand receives a certain degree of knowledge, while on the other hand, the teacher's knowledge becomes more reflective than ever before. At the same time, this practice initiates a philosophical dialectic as knowledge clashes with its negation that is either the pupil's primary imaginative state of mind, or the teacher's previous experience.¹⁵⁶ This understanding of dialectic is different to the Socratic dialectic, the method of Maieutics. The latter aims at revealing knowledge that already exists whereas the former perceives knowledge as a product of the human mind therefore is historically produced. In this example, the pedagogical obstacle functions like the scientific one as it is employed to produce knowledge by negating the creations of the imagination, which for Bachelard comprise irrationalities of the mind. Yet, as according to him, "one can study only what one has first dreamt about",¹⁵⁷ this means that the very core of science is dream. The first things that the human mind dreamt about, Bachelard explains, are natural objects, like fire, water, earth, and air, and these are clearly manifest in classical cosmology, natural philosophy, poetry, and literature. Specifically, in 'The Psychoanalysis of Fire' he writes that "[t]he fire confined to the fireplace was no doubt for man the first object of reverie, the symbol of repose, the invitation to repose."¹⁵⁸ Consequently, the starting point of science and, therefore, the essence of scientific knowledge, which for him is the 'real' knowledge, is fire. I have referred to Bachelard's model of knowledge production, which takes place dialectically through a polemic with existing knowledge, in order to introduce it as a methodology for this thesis.¹⁵⁹ My exploration of the relationship between

¹⁵⁵ The Bachelardian dialectic is reminiscent of Hegel's 'negation to negation' dialectic, yet Bachelard claimed that the process that takes place within Hegel's dialectic is closed and determined.

¹⁵⁶ Chimisso, *Gaston Bachelard*, 88–9.

¹⁵⁷ Bachelard, *The Psychoanalysis of Fire. Preface by Northrop Frye*, 22.

¹⁵⁸ *Ibid.*, 14.

¹⁵⁹ Bachelard's model of knowledge production is inspired by the advances in the scientific world and therefore associated with the advancement of scientific knowledge. Nevertheless, the application of this model is not

architecture and memory is therefore based on and generated by the conflict of two opposing philosophical theories, Bachelard's and Bergson's. The conflict between them, as demonstrated above, carries the memory of fire within itself, because fire, according to Bachelard, is to be found in the very essence of knowledge.

Vernant's interpretation of the Promethean myth

Approaching conflict from a different perspective, the French historian and anthropologist Jean-Pierre Vernant in 'At Man's Table: Hesiod's Foundation Myth of Sacrifice' (1979) confirms, as does Bachelard, that it carries resonances of fire, and reveals implicitly the link between fire and knowledge. His approach is based on the analysis of the myth of Prometheus as delivered by Hesiod (8th century BC) in *Theogony* and *Works and Days*. According to this myth, the Olympian gods received a sacrificial meal as a gesture to reconcile themselves with the mortals, however the titan Prometheus played a trick against the god Zeus. Zeus had to choose between two of Prometheus' offerings: one that contained ox meat hidden inside the animal's stomach, thus having a displeasing exterior, and the other contained bare bones covered in fat and aromatics, therefore having a pleasing exterior. The god chose the latter and, from then on, mortals received only meat whereas the gods received the bones from every sacrifice. This trick enraged Zeus who, in retaliation, hid fire from the mortals. In return, Prometheus went up to Mount Olympus, lit a torch from the sun and brought fire back to them. As a consequence, Zeus sent the humans a counterpart to fire, a "'trap' ...a gift no less ambiguous";¹⁶⁰ this was the first woman, made out of clay by Hephaestus, called Pandora. Overall, Vernant suggests that this myth must be read as a single, unified story as opposed to an aggregate of isolated episodes. If one does so, the Promethean fire, which is the first gift offered to humans, can be perceived as a memory of the initial conflict between the titans and the gods. Then, Vernant adds, Zeus' offering of Pandora, the second gift in the myth, is made to counterbalance the theft of fire, as it "can compensate for fire and provide the balance because she herself is a kind of fire, which will burn men alive by consuming their

restricted merely to this field. Bachelard himself applied it to philosophy; *The Dialectic of Duration* is a competing philosophy that says *no* to the old philosophy of Bergsonism.

¹⁶⁰ Jean-Pierre Vernant, "At Man's Table: Hesiod's Foundation Myth of Sacrifice" in *The cuisine of sacrifice among the Greeks*, eds. Marcel Detienne and Jean Pierre Vernant, (Chicago: University of Chicago Press, 1989), 23.

strength day by day.”¹⁶¹ Pandora is, therefore, offered to intensify the conflict between Prometheus and Zeus, and, together with fire, establish the mortal status of the human condition.¹⁶² Vernant explains that:

[t]he myth connects the ritual of sacrifice to primordial events that have made men what they are, mortal creatures living on earth in the midst of countless ills, eating grain from the fields that they have worked, and accompanied by female spouses.¹⁶³

In other words, fire and its ‘counter-manifestation’, women, carry the memory of the divine conflict, which sets the boundaries of human nature, and therefore also its difference from the gods. Commenting further on this myth, Vernant explains that Zeus’ initial action of hiding fire from humans aimed to deprive them of cooked food, yet Prometheus gave it back to them. Cooking meat, he points out, distinguishes humans from animals, as only the latter consume raw food, therefore the Promethean fire “represents culture as opposed to wildness”.¹⁶⁴ The possession of this fire, which is different to the fire of the gods in the sense that the former is perishable and needs to be constantly fed, demands a *technics*, “a technique of transporting, conserving, and lighting the fire, part of the know-how inseparable from human life”.¹⁶⁵ In this way, Vernant creates the link between fire and knowledge, as it is through the former that humans recognised their technical ability.

Heraclitus’ cosmology

The omnipresence of fire in knowledge and conflict can also be confirmed by the ancient philosopher Heraclitus of Ephesus, who, as Bachelard, is preoccupied with natural elements and particularly with fire. Known to us as the philosopher of fire, Heraclitus’ work stretches back to the period of 500 B.C., a few years before the Golden Age of Greece, when issues such as the origins of human nature, the world, the divine presence, the social and economic order etc. were explained according to the culture of religious myths. The rise of Natural Philosophy marked the beginning of a

¹⁶¹ Ibid., 66.

¹⁶² Commenting on Pandora’s use in the myth, the contemporary French philosopher Bernard Stiegler in *Bernard Stiegler’s Pharmacy: A conversation* explains that this example is very important as the condition of human mortality is associated with *desire*. This, Stiegler explains, allows one to study mortality psychoanalytically.

¹⁶³ Vernant, “At Man’s Table: Hesiod’s Foundation Myth of Sacrifice”, 24.

¹⁶⁴ Ibid., 38.

¹⁶⁵ Ibid., 39.

new movement of thought according to which philosophy was considered both as investigation and instigation. The Natural Philosophers, as investigators, examined natural phenomena thoroughly and tried to give a 'natural' explanation to the existing order. At the same time, as instigators, their role was to awaken the sleeping mind of people and elevate their spirit to a higher level of consciousness. Our knowledge of Heraclitus' original doctrine is limited. This is because his writings were offered as a gift to Artemis and deposited in the precincts of her Temple in Ephesus but were eventually burnt by Herostatos. Nevertheless, his philosophy has received extensive reference by other ancient philosophers; thus the latter's writings comprise the main sources of his work. Heraclitus' thought was concerned with questions very familiar to us today. His main inquiry revolved around the way the One manifests itself in the Many and the way the Many obtain within themselves the One. This concept of unity, or of the One, appears in the cosmos as an interaction of four fundamental elements: fire, earth, air and water, with emphasis on fire as a transforming and generative energy. Specifically,

*“Πυρός τροπαί πρώτον θάλασσα, θαλάσσης δέ τό μὲν ἡμισυ γῆ, τό δέ ἡμισυ
πρηστήρ, θάλασσα διαχέεται, καί μετρέεται εἰς τόν αὐτόν λόγον, οἰκίος πρόσθεν
ἦν ἢ γενέσθαι γῆ”*

[fire's alternations: first as sea, and of sea half earth and half lightning dispersed as sea, and measured in the same proportion as existed before it became earth]¹⁶⁶

While the significance of fire as the common element of the cosmos is revealed in a different fragment stating that

*“Κόσμον τόνδε, τον αὐτόν ἀπάντων, οὔτε τις θεῶν οὔτε ἀνθρώπων ἐποίησε, ἀλλ’
ἦν αἰεὶ καί ἐστιν καί ἐσται πῦρ αἰζῶνον, ἀπτόμενον μέτρα καί ἀποσβεννύμενον
μέτρα”*

[this cosmos (the unity of all that is) was not made by immortal or mortal beings, but always was, is and will be an eternal fire, arising and subsiding in measure]¹⁶⁷

Through these last words, we come to conceive the eternal nature of fire, or of the Logos¹⁶⁸, and we are introduced to another fundamental topic of his philosophy, the

¹⁶⁶ Richard G Geldard, *Remembering Heraclitus* ([Hudson, N.Y.]: Lindisfarne Books, 2000), 158, fragment 25.

¹⁶⁷ *Ibid.*, 158, fragment 24.

one of 'measure', or *μέτρον* [metron], which is the power that maintains order in the flux of the cosmos, the balance of forces keeping the earth in constant orbit. Referring to the notion of the *μέτρον* [metron] as a harmonising, balancing force, Nietzsche's Madman asks:

What did we do when we detached this world from its sun? Where is it going now? Where are we going? Far from all the suns? Are we not just endlessly falling? Backward, side-ways, forward, in every direction? Is there still an up and a down? Are we not being borne aimlessly into an endless void?¹⁶⁹

In this respect, it is the workings of this *μέτρον* [metron] that gives us the impression of stillness in motion.

For Heraclitus, fire is associated with the concept of time and is constantly in movement, it is eternal. However, this movement is not linear, but circular; hence its eternal nature. Also, the three elements of the fourfold - earth, air, water - are constantly present and predominate more within space, however, fire is the element that brings them into visibility, that reveals them. Fire, which is in Nature, prefers to hide also because

“φύσις δε κρύπτεσθαι φιλεί” [Nature prefers to hide]¹⁷⁰

Fire's supremacy is distinct, and when it appears, its most divine and polemic manifestation is lightning, as

“τά πάντα οιακίζει ο κεραυνός” [lightning directs everything]¹⁷¹

At this point, it is critical to emphasise the controversy around Heraclitus' thought. As Kostas Axelos has mentioned,

Heraclitus himself is the actualisation of the unity of the opposites.¹⁷²

Famously, Heraclitus supported the idea that

“πόλεμος πάντων μὲν πατήρ ἐστι, πάντων δὲ βασιλεύς. Ειδέναι δὲ χρὴ τον πόλεμον εόντα ξυνόν, καί δίκη ἔριν, καί γινόμενα πάντα κατ' ἔριν καί χρεώϊ”

[conflict is universal and that strife is right, and that all things happen through strife and necessity.]¹⁷³

¹⁶⁸ For Heraclitus, the Logos is fire, this amazing source of energy that brings people together for warmth and light and “it is the one that joins all, the being of all, the being of beings as a whole” [Kenneth Maly and Parvis Emad, *Heidegger on Heraclitus : a new reading* (Lewiston, N.Y.: E. Mellen Press, 1986), 38.]

¹⁶⁹ Denis Hollier, *Against architecture : the writings of Georges Bataille* (Cambridge, Mass.: MIT Press, 1992), 59.

¹⁷⁰ Geldard, *Remembering Heraclitus*, 157, fragment 15.

¹⁷¹ *Ibid.*, 157, fragment 27.

¹⁷² Κώστας Αξελός, *Ο Ηράκλειτος Και η Φιλοσοφία* (Αθήνα: Εξάντας, 1976), 38. (the writer's translation)

For him, the universality of conflict and strife is central to human nature, cosmic motion and the workings of nature. The opposites, their opposition and their unity, are manifested in a constant motion as in the case of a river.

*“Ποταμοίσι τοίσιν αυτοίσιν εμβοίνουσιν έτερα και έτερα ύδατα
επιρρεί...σκίδνησι και πάλιν συνάγει...και πρόσεισι και άπειρι. Ποταμοίς
τοίς αυτοίς εμβαίνομεν τε και ουκ εμβαίνομεν, ειμέν τε και ουκ ειμέν”*

[New and different waters flow around those who step into the same river. It disperses and comes together...flows in and out...towards us and away... all things are in process and nothing stays still, and we cannot step twice in the same river.]¹⁷⁴

The image of the river is a predominant feature in Heraclitus' work. We can see it but we cannot dominate it, as it comes towards us and goes away.

In Heraclitus' ancient philosophy, the cosmos emerged and evolved through the divine interaction of the elements of the fourfold - fire, earth, water, air – with fire as the guiding force. The Heraclitean cosmos is in a perpetual flux, for if there is no movement, it ceases to exist. Yet what keeps the world moving is conflict that is in all cases necessary. The conflict of opposites is the force that leads to the creation of something new, it generates life. This universal and life-giving aspect of conflict is associated with the eternal nature of fire where lightning is its supreme and most polemic manifestation. In this respect, fire and conflict are interrelated and are to be found in every dimension, eternally and universally.

I have drawn on Bachelard's views on the advancement of knowledge, Vernant's interpretation of the Promethean myth, and Heraclitus' ancient philosophy in order to elaborate the theoretical background for the methodology on which I build my research on architecture and memory. This methodology is based on oppositions that emerge during the dialectical process of knowledge production, through the polemic of new with existing knowledge, and it is used to illuminate dark areas that have not been previously looked at.

¹⁷³ Geldard, *Remembering Heraclitus*, 158, fragment 18.

¹⁷⁴ *Ibid.*, 158, fragment 21-2.

▪ **The archive of fire**

In 'The Psychoanalysis of Fire', Bachelard explains that the answer to the question 'What is Fire?' is in essence quite vague, and in this he concurs with the art historian Alan Krell's proposition. The latter also argues that our knowledge of the element has always been ambiguous, and he points out that its ancestry, and particularly through its manifestation in mythology and religion, is "largely overlooked".¹⁷⁵ The definition of the element has fallen into a reality where its potential objectivity is merged with elements that are coloured with personal intuitions and scientific knowledge.¹⁷⁶ Considering the amount of information in regard to fire cited in scientific books nowadays, he realises that there is hardly any, if at all.¹⁷⁷ Whereas once it used to be a fundamental concern for scientific research, nowadays it appears to lack significance, having entered a zone in which its status is taken for granted, that is, our knowledge of fire is already given. Yet, one may also argue that an individual in contemporary society learns how to deal with fire from a very young age. Fire has been an integral part of human life since the early years of mankind to the extent that both have "come to resemble one another such that the tread of one tracked the tread of the other."¹⁷⁸ The moment in history when it becomes part of civilisation marks the arrival of a gradually easier and safer life. At the same time, this arrival implies the beginning of a process where humans start to accommodate such a change to their lives; therefore this point in history also marks the beginning of fire's civilising process. From a sociological point of view, in the course of becoming fully human every individual goes through a civilising process. During this process, people ...learn, largely from others, how to regulate their own sense impressions and impulses, how to behave and how to think. This we may call the civilising process at the individual level.¹⁷⁹

Concerning the dangers of fire, it is a knowledge passed down to us by our elders. We first come to know that we should not touch it; later these prohibitions become a result of our direct experience with the element itself. It is in this sense that "fire is

¹⁷⁵ Alan Krell, *Burning issues : fire and art in the social imagination*. (London: Reaktion Books, 2011), 51.

¹⁷⁶ Bachelard, *The Psychoanalysis of Fire*. Preface by Northrop Frye, 3.

¹⁷⁷ Ibid., 2.

¹⁷⁸ Stephen J Pyne, *Fire : a brief history* (London: British Museum Press, 2001), 25.

¹⁷⁹ Johan Goudsblom, *Fire and civilization* (London; New York: Penguin Books, 1992), 7.

more a *social reality* than a *natural reality*.”¹⁸⁰ Our acquaintance with fire, on the level of natural experience, occurs, as Bachelard successfully describes, in the same way that Prometheus stole fire from Zeus to give it to the mortals on earth. Regardless of the elders’ prohibitions, the child will steal fire to experiment, play with it and thus possess knowledge of it. This, according to Bachelard, is the Prometheus complex, which “enables us to understand the interest that is always aroused by the rather trite legend of the father of Fire.”¹⁸¹ The remaining section of this chapter, therefore, attempts to recover and elucidate certain aspects of fire that are commonly perceived as obscure and confused, or that are sometimes even taken for granted. Starting from the first evidence of people’s acquaintance with fire, which is sourced from mythology, old rituals, and festivals, and comparing it later with the scientific understanding of fire, I look at how humans have embraced and appropriated it within their lives, their thought and culture as an element, a substance, energy, and concept. Then, drawing on Bachelard’s model for knowledge production and archival theory, I explain why our knowledge of fire today is muddled.

What is fire?

Fire is most commonly defined in modern encyclopaedias as a process of combustion, which manifests itself as heat and light. It is an extraordinary phenomenon. Compared to earth or water, fire “is not a substance as such, but a variable combination of substances in a particular and unusual state caused by a chemical reaction.”¹⁸² The impact of fire may be considered catastrophic, as the final products of combustion can never re-possess their initial forms and structures; combustion is an irreversible process. The spread of fire has no rules either, for whatever is flammable will be consumed. Fire causes heat, and heat in turn causes fire in the same way as the mythical Phoenix is consumed by flames and then reborn out of its own ashes.

The element of fire carries within it a very peculiar dimension, which does not allow anyone to express a definite opinion or a particular feeling in regard to its status.

¹⁸⁰ Bachelard, *The Psychoanalysis of Fire*. Preface by Northrop Frye, 10.

¹⁸¹ *Ibid.*, 11.

¹⁸² Philip Ball, *The elements : a very short introduction* (Oxford; New York: Oxford University Press, 2002), 14.

For instance, its impact may be considered catastrophic as highly organised matter is reduced to a lower state of organisation or integration. At the same time, however, its effects are also conducive to processes of reorganisation and reintegration.

Destruction by fire provides ground for life to re-emerge. In general, both good and evil values can be attributed to its presence because:

It shines in Paradise. It burns in Hell. It is gentleness and torture. It is cookery and it is apocalypse. It is pleasure for the good child sitting prudently by the hearth; yet it punishes any disobedience when the child wishes to play too close to its flames. It is well-being and it is respect. It is a tutelary and a terrible divinity, both good and bad. It can contradict itself; thus it is one of the principles of universal explanation.¹⁸³

This ambiguity of emotions and attitudes that accompanies the element of fire is what Bachelard calls as the *Empedocles complex*. Fire is self-generating. Through heat generated by combustion, flammable materials within the vicinity will ignite as long as there is enough oxygen. Based on this property, early civilisations made distinctive efforts to proliferate fire as soon as it came under their control. People found a medium, which provided warmth and light, brought them together and also kept predatory animals away, helped them to clear lands and consequently develop agriculture, and also produced more edible and tasty food better suited to human consumption. Thinking of the first men acquainted with fire, Bachelard senses that this element must have been the first object of reverie and a perfect reason for repose. In fact, he claims that a philosophy of repose, Bachelard's philosophy of instants of creations, is inconceivable unless there is a reverie in front of fire.¹⁸⁴ He believes that a child sitting and contemplating in front of a fireplace in our days is an attitude that originates from the past; the child of an early civilisation also sat and contemplated in front of the burning flames. This contemplation in both cases is a reverie and not a dream. For Bachelard, the dream develops in a linear way and gradually fades away. The reverie, on the other hand, focuses and reflects on a specific object, it "works in a star pattern. It returns to its centre to shoot out new beams."¹⁸⁵

¹⁸³ Ibid., 7.

¹⁸⁴ Ibid., 14.

¹⁸⁵ Ibid.

Fire and myths

It is often speculated that fire burnt for the first time on Earth roughly 400 million years ago, during the early Devonian period. Before that, the planet did not carry any land plants and was thus incapable of hosting combustion on its grounds.¹⁸⁶ Regarding the period in which humans appear to be acquainted with methods of kindling fire, our knowledge is rather unclear. The only evidence that we have of this moment in history can be traced to the stories narrated by different civilisations. These stories contain no recollection of the actual event, but rather comprise speculations on the origins of human society. Alan Krell claims that the earliest stories of fire relate to the life of Indigenous Australians, which stretch back roughly 50.000 years ago and are linked with Dreaming.¹⁸⁷ The Australian curator Wally Caruana explains that Dreaming is

... the period from the genesis of the universe to a time beyond living memory...[and] focuses on the activities and epic deeds of the supernatural beings and creator ancestors...who, in both human and non-human form, travelled across the unshaped world, creating everything in it and laying down the laws of social and religious behaviour.¹⁸⁸

For James George Frazer (1854-1941), an early social anthropologist who conducted extensive research on mythology and religion, the stories about fire are myths, which according to him

...[they] deserve to be studied; for, while myths never explain the facts which they attempt to elucidate, they incidentally throw light on the mental condition of the men who invented them; and, after all, the mind of man is not less worthy of investigation than the phenomena of nature, from which, indeed, it cannot be ultimately discriminated.¹⁸⁹

In the 'Myths of the Origin of Fire', Frazer, who undertook the first substantial anthropological research on this topic, collected a very broad yet detailed record of myths from all over the world, which can be classified into three categories. The first category refers to the time when mankind was not aware of fire at all. According to the myths of that age, primitive men suffered from cold weather and their food was eaten

¹⁸⁶ Pyne, *Fire*, 3.

¹⁸⁷ Krell, *Burning issues*, 52.

¹⁸⁸ Wally Caruana, *Aboriginal art* (New York: Thames and Hudson, 1993), 10.

¹⁸⁹ James George Frazer, *Myths of the Origin of Fire : an Essay* (New York: Barnes and Noble Books, 1996), 1.

raw. For instance, the Masingara tribe in British New Guinea fed exclusively on bananas and sun-dried fish. Similarly, the Shilluk people by the White Nile also dried their food in the sun; the males of the tribe consumed the upper part of the food- that was somehow cooked - whereas the raw part was given to the females.¹⁹⁰ The second category refers to the myths of the period when mankind acquired fire whilst kindling methods were yet to be invented. These narrations consider lightning as the initial source of fire, which was sometimes regarded as a divine gift.¹⁹¹ Myths from this period also refer to the fire created by the branches of trees that are rubbed against each other by the wind. These myths coincide with the description of the origin of fire given by the Roman poet Lucretius.¹⁹² Other myths talk about fire being acquired from the sun, the moon and the stars, hence the Greek myth of Prometheus, who stole fire from the sun with a torch to pass it onto the mortals on earth. Fewer references than what one would expect are made to volcanic eruptions; while there are also a vast number of myths that refer to the first fire given to humans as a result of an animal's effort or through the cooperation of many.¹⁹³ Lastly, the third category of myths deals with narrations referring to the period when kindling methods were finally invented. Frazer distinguishes three methods of igniting fire: *the fire-drill, the fire saw, and the fire-plough (or stick-and-groove)*. The fire-drill is the method of producing fire where one stick, held upright with its point resting against another that is laid on the ground, is put in motion through the palms of the hands. The rotating motion of one stick gradually creates a hole through the resting one. After a prolonged effort, the heat created through this friction generates fire in the dry leaves that are placed around the stick.¹⁹⁴ The fire-saw is a similar method of igniting fire where one stick is rubbed against another in a motion like using a saw, while the fire-plough refers to the method of rubbing stick into the groove of another.¹⁹⁵ Considering these three methods of igniting fire, there is a general assumption that could potentially explain the peculiarity or abstraction of certain other myths, which refer to fire being produced by the sixth finger of a woman's hand. Other myths, also, draw parallels

¹⁹⁰ Ibid., 202.

¹⁹¹ Ibid., 203–5.

¹⁹² Ibid., 205.

¹⁹³ Ibid., 212.

¹⁹⁴ Ibid., 218.

¹⁹⁵ Ibid., 222–3.

between the production of fire through the above-mentioned methods and sexual intercourse between two people. The stick in motion represents the phallus, whereas the one at rest represents the female genitalia. This parallelism is embraced up until our days and is performed in ritual practices between the Brahman fire-priest (*Agnihorta*) and his wife to ignite the sacred fire; a tradition that was initiated by the priests of the Vedic religion, an historical predecessor of Hinduism.¹⁹⁶

In general, myths comprise a body of memories that has survived the passing of time. This body of memories, however, is not the memory of the actual event but rather a reflection of it. A clear illustration of the relationship between myth and memory can be found in ancient Greek mythology, and specifically, in the myth of memory itself. In Archaic Greece, memory had a mythological dimension with two manifestations. These were remembering and forgetting, and were conceived as a function that worked hand-in-hand. It was a twofold of equal parts that united into a single One as a dissociable pair; the simultaneous working of the mythological deities of *Mnemosyne* and *Lesmosyne*. According to Plato, *Mnemosyne*, the mother of all Muses and the divinity of Memory, is the Goddess who

...first makes [poets] inspired, and then through these inspired ones others share in the enthusiasm, and a chain is formed; for the epic poets, all the good ones, have their excellence not from art, but are inspired, possessed, and thus they utter all these admirable poems. So is it also with the good lyric poets.¹⁹⁷

Yet *Mnemosyne* is not merely a source of inspiration; she is also a source of knowledge, "in principle omniscient",¹⁹⁸ as through her workings poets can access innate knowledge. On the other hand, *Lesmosyne* or *Lethe* (forgetfulness) originates from the race of the Night, whose mother is Discord, and comprises the dark element in her family. According to Greek mythology, *Lethe* is also the name of one of the rivers in the underworld that brings forgetfulness to the dead.¹⁹⁹ Depending on the version of the myth, dead souls either drink water from the *Lethe* or bathe in it upon their arrival to

¹⁹⁶ Ibid., 217.

¹⁹⁷ Plato, *Ion* 533e quoted in Edward S Casey, *Remembering: a phenomenological study* (Bloomington: Indiana University Press, 2000), 12.

¹⁹⁸ Ibid., 13.

¹⁹⁹ According to the ancient Greek geographer Pausanias, *Lethe's* spring is located in Boetia and flows very close to *Mnemosyne's* spring.

the underworld. Through this process of purification of past memories, souls are prepared to re-emerge in new bodies.²⁰⁰ In this respect, forgetfulness is associated with the image of water. Lethe or Lesmosyne

...makes everything disappear that belongs to the dark side of human existence. It is only both the elements- giving illumination and letting disappear, Mnemosyne and her counter-pole, Lesmosyne- that make up the entire being of the Goddess, whose name comes solely from the positive side of her field of power. This [is a] union of the opposites under the dominion of the positive.²⁰¹

Illustration 8: *The River Lethe*, Dore, G. (c.1880s), *Antique Religious Engraving Purgatory*.²⁰²

The image that Memory in Archaic Greece is presented or embodied consists of two natures, perceived diametrically opposite, whose simultaneous occurrence makes up the entirety of its concept. *Mnemosyne's* enactment on behalf of remembering and *Lesmosyne's* on behalf of forgetting take place simultaneously, tending towards opposing directions. Yet the contradictory elements, which reside within them create Memory's complete dimension, which is the mother of all Muses. These mythological figures are closely related to art, for they comprise a component that encompasses the totality of our cultural legacy. They are a merging of complex histories and cultures, which are presented in the form of an image/figure. In fact, they can be considered as works of art because of the effect they have upon language and thought; they are

²⁰⁰ Charles E Scott, *The time of memory* (Albany: State University of New York Press, 1999), 33.

²⁰¹ Karl Kerényi, "Mnemosyne-Lesmosyne: On the Springs of 'Memory' and 'Forgetting'," *Spring* (1977): 129–30.

²⁰² Image accessed September 5, 2007, <http://www.vintage-views.com/home.php?cat=401>

employed as a medium to achieve the disclosure of things, like a *techne*. According to Martin Heidegger, myths let 'things' appear,

..they open to occurrences that are otherwise obscure or silent in the absence of words to say them. Myths present to us in 'passing light' things that come before us in their own events and that call us to engage perceptively with their events.²⁰³

This intrinsic quality of myths, for Heidegger, is equal to poetry. Poetry for him is projective, it is

...the saying of the world and earth, the saying of the arena of their conflict and thus of the place of all nearness and remoteness of the gods. Poetry is the saying of the unconcealedness of what it is.²⁰⁴

Illustration 9: Mnemosyne, Rossetti, D.G. (1881)²⁰⁵

Illustration 10: The Muses, Rottenhammer, H (1564-1626)²⁰⁶

²⁰³ Scott, *The time of memory*, 36.

²⁰⁴ Martin Heidegger, "The Origin of the Work of Art" in *Poetry, language, thought.*, trans. Hofstadter (New York: Harper & Row, 1971), 74.

²⁰⁵ Image accessed September 5, 2005, <http://www.rossettiarchive.org/docs/3-1880.s261.raw.html>

²⁰⁶ Image accessed September 5, 2005, <http://homepage.mac.com/cparada/GML/000Free/000MUSES/source/3.html>

Regarding the image of these mythological figures, *Mnemosyne's* intention is to '*first make the poets inspired*'. Poets in turn disclose their memory of her in their songs and chants, and these reflections are her own children, the Muses. In this respect, the divine self-presentation of *Mnemosyne* seems to lose her image and she comes to be perceived indirectly through this loss. On the other hand, *Lethe*, the river that flows next to the waters of the *Mnemosyne* in the underworld, refers to human forgetfulness and therefore relates to the latter's temporal dimension. However, in comparison with *Mnemosyne*, *Lethe's* image remains visible as her counter-pole disappears to reveal her entirety. In this sense, the (imagistic) memory of *Mnemosyne* suggests that there is always forgetfulness in the process of remembering. In the context of the current discussion however, the memory of the event that the myths narrate reaches us through the simultaneous workings of *Mnemosyne* and *Lethe*. What we effectively receive is the product of *Mnemosyne's* inspiration, which is the myths of the origin of fire, and *Lethe's* counteraction, which is the forgetfulness of the actual event.

Fire and festivities

The memory of fire does not manifest itself merely in myths but is also expressed in old rituals and festivities. Early historical records that stretch back to the Middle Ages indicate a direct relationship with fire festivals that took place in ancient times, long before the spread of Christianity. As described by Frazer in 'The Golden Bough', peasants all across Europe kindled bonfires and danced around them since time immemorial. Most commonly, these bonfires were lit on certain dates: in the spring (on the first day of Lent, Easter Eve, May Day), midsummer, in the winter on Halloween, Christmas Day, and the Eve of the Twelfth Day. All these set celebrations had the character of festivals, as they involved a lot of singing and dancing, and sometimes also drinking and dressing up. The ceremonies most often required the procession of fire around villages and fields, the burning of wicker-work effigies,²⁰⁷

²⁰⁷ The ritual of burning effigies during fire-festivals, which derives from an earlier ritual that incorporated human sacrifice, aims to get rid of wicked people through imitative magic. In this way, the destruction of the effigy brings about the destruction of the targeted person. In *The Golden Bough*, Frazer recounts the Beltane fires in the Highlands of Scotland, according to which, out of all the Celts, these peoples were remote and had no influence from other cultures, and up until the 19th century, they managed to maintain their old heathenism. Descriptions provided by Julius Caesar account human sacrifices performed by the Celts of Gaul. His observation on Celtic culture

which on many occasions were associated with the fertility of the land and cattle, as well as the destruction of witches. Apart from periodical fire-festivals, there are also records indicating similar celebrations at irregular intervals. In general, all fire-festivals share common characteristics. Their practices are reminiscent of each other and they serve a universal purpose:

The fire is believed to promote the growth of the crops and the welfare of man and beast, either positively by stimulating them, or negatively by averting the dangers and calamities, which threaten them from such causes as thunder and lightning, conflagration, blight, mildew, vermin, sterility, disease, and not least of all witchcraft.²⁰⁸

Commenting on the reasons for the celebration of these fire-festivals, Frazer gives two explanations. One of them supports the argument these festivals are imitative magic, where the production of fire on earth is intended to recreate the heat and light of the sun in the sky, thus ensuring an endless supply of sunlight on earth. The other theory addresses questions of purification, and perceives the production of fire on earth as a means to eliminate demons, witches and monsters, or to clear the air. This theory is also shared in the testimonies of people who celebrate the fire-festivals; solar theory has positive attributes, as it is concerned with creativity, whereas the purificatory theory is negative, as it aims at destruction.²⁰⁹

Through the myths of the origin and use of fire in rituals and festivities, my intention is to look into the confused, ambiguous, and uncommon nature of the element. I have referred to Frazer's work in this field as he conducted the first and most extensive study on this subject matter. Bachelard, however, disputes the validity of Frazer's ethnological studies as the latter's sources are based on texts as opposed to field observations.²¹⁰ In 'The Psychoanalysis of Fire', he criticises Frazer claiming that

agreed also with the report provided by a Greek explorer called Posidonius. According to this evidence, the sacrificial victims of the Celts were criminals or captives from wars. Their sacrifice was a festival occurring every five years, and the number of victims put into fire was analogous to the degree of fertility to be achieved. The ritual was performed by the Druids or priests, and the victims were burnt inside enormous wicker-work images. Apart from humans, the same ritual also included the sacrifice of animals, as they were thought to be disguised witches (familiar). Regardless of who the victims were, the purpose of burning them alive was that this was the most efficient method of elimination and purification. On these grounds, therefore, the accounts of the Celtic human sacrifices suggests that the fire-festivals may have their roots in those years. [James George Frazer, *The Golden Bough : A Study in Magic and Religion* (Hertfordshire: Wordsworth Editions Limited, 1993), 653–4.]

²⁰⁸ Ibid., 642.

²⁰⁹ Ibid., 641–3.

²¹⁰ Chimisso, *Gaston Bachelard*, 167.

the explanations that he gives are utilitarian. Commenting on the Scottish Fires of Beltane, for instance, Bachelard writes that Frazer's explanation that the ashes of the bonfires were used to fertilise the fields

...introduces a sort of *unconscious rationalization* which misleads a modern reader who is easily convinced of the usefulness of carbonates and other chemical fertilizers.²¹¹ [original italics]

Bachelard believed that it is wrong to read primitive practices from the perspective of the modern eye, as these interpretations are in most cases wrong. Therefore, as he is not satisfied with a rational and utilitarian interpretation of myths and festivities, he approaches them psychoanalytically. Apart from Frazer's obvious utility, therefore, he detects an intimate dream,

...the dream of fertility in its most sexual form. The ashes of the bonfires make fertile both animals and fields, *because* they make women fertile. It is the experience of the flame of love which forms the basis for the objective induction.²¹² (original italics)

He suggests further that if the psychoanalytic approach is adopted more broadly, then many other inconsistencies and curiosities of myths and festivities in regard to fire can easily be explained. Cristina Chimisso claims that Bachelard's attack on Frazer centres on his view that Frazer perceived primitive and modern mentalities as homogeneous. This, however, contradicts Bachelard's writings on 'epistemological rupture' according to which the scientific that is modern has to be discontinuous with the pre-scientific that is primitive.²¹³ Bachelard understood that the practices of primitive societies were guided by desire and imagination, which comprised the 'epistemological obstacles' that the scientific mind fought to overcome. For Bachelard, anything that originates before the beginning of the nineteenth century, to when he traces the rise of modern science, is primitive. In the context of the current discussion, and following Bachelard's model of knowledge production, all the knowledge that we hold of fire that originates from before the advancement of scientific knowledge, is primitive.

²¹¹ Bachelard, *The Psychoanalysis of Fire*. Preface by Northrop Frye, 32.

²¹² *Ibid.*, 33.

²¹³ Chimisso, *Gaston Bachelard*, 168–9.

Fire and modern science

The 'epistemological rupture' in regard to our knowledge of fire occurred two centuries ago when 'pre-scientific' theories were rejected by radical scientific advancements. Up until two centuries ago, there was a general belief, similar to that of ancient times, that heat was a substance. This prevailed until Antoine Laurent Lavoisier, a natural philosopher from the 18th century Enlightenment, conducted for the first time studies in combustion that contradicted the thinking of the era according to which fire's substance was called phlogiston. Phlogiston was considered to be a fundamental ingredient of burnable objects that was released into the air during combustion, and some objects contained more phlogiston than others. The theory of phlogiston was assembled by Georg Stahl towards the end of the 17th century as a result of a series of experiments with gases conducted by Robert Hooke, Otto von Guericke, and Robert Boyle.²¹⁴ The misconceptions regarding phlogiston's validity were mainly shaped due to imperfect laboratory conditions. However, Lavoisier proved that the products of some chemical processes that occur through combustion, instead of being lighter due to the release of phlogiston in the air, are heavier. His theory was further developed by isolating what up until then was called phlogiston, and proving that it was just oxygen; the oxygen involved in a burning process was then thought to give weight to the end product. Through his experiments, Lavoisier was the first to draw attention to a new concept that considered heat weightless.²¹⁵ Later on, Benjamin Thompson, otherwise known as Count Rumford, made a significant step in developing this concept. Through careful experimentation at a cannon factory at the Munich arsenal, he demonstrated that heat is a manifestation of motion. Specifically, he conducted one experiment by measuring the amount of heat produced through the friction of a dull borer and a cannon barrel, which were placed in water. He observed that after a certain amount of time, the water reached its boiling point.

²¹⁴ Louis-Bernard Guyton de Morveau et al., eds., *A scientific correspondence during the chemical revolution : Louis Bernard Guyton de Morveau and Richard Kirwan, 1782-1802* (Berkeley: Office for history of science and technology, University of California, 1994), 24.

²¹⁵ *Ibid.*, 27–8.

Illustration 11: Rumford's equipment to bring water to boil with heat of friction.²¹⁶

In his work published in 1797 he stated that:

It's hardly necessary to add that anything which is insulated body, or system of bodies, can continue to furnish without limitation, cannot possibly be a material substance; and it appears to me to be extremely difficult, if not quite impossible, to form any distinct idea of anything capable of being excited and communicated in the manner in which heat was excited and communicated in these experiments, except it be motion.²¹⁷

The experiments of Count Rumford, and later on those of James Joule, who provided an accurate theory regarding the amount of heat produced in accordance with the amount of work spent, comprised the starting point upon which the scientists of the 19th century were to eventually construct the basis for the theory of thermodynamics. These were initially Sadi Carnot's theory of the macroscopic manifestations of heat in large masses of material, and later, Ludwig Boltzmann, James Clerk Maxwell, and Josiah Willard Gibbs' work which associated the behaviour of large masses with the microscopic movement of atoms and molecules. At the beginning of the 20th century, Max Planck and Albert Einstein, with the theory of quantum mechanics, filled the gaps with their theories of the radiation of light and heat.²¹⁸

²¹⁶ John W Lyons, *Fire* (New York: Scientific American Library, 1985), 15.

²¹⁷ John W Lyons, *Fire* (New York: Scientific American Library, 1985), 14.

²¹⁸ Enrico Fermi, *Thermodynamics* (New York: Dover Publications, 1936), ix-x.

Fire and thermodynamics

One of the advancements that the theory of thermodynamics brought about concerns the notion of energy. According to the first law of thermodynamics, which agreed with the pre-existing classical idea, energy is conserved throughout its transformations. However, the second law of thermodynamics introduced a new concept called entropy, which created discontinuity with classical mechanics, and is the quantitative measure of the amount of thermal energy unavailable for work within a closed system. Entropy refers to the ability of energy to produce work, and as the latter tends to gradually become minimum, the entropy of a system tends gradually to a maximum. In effect, the concept of entropy applied on a cosmic scale implies that the entropy of the universe tends to a maximum until its 'heat death'. In 1948, in a paper called 'Mathematical Theory of Communication' the American mathematician Claude Shannon introduced a new approach to the concept of entropy as it was linked to *missing information*. Shannon, based on Maxwell's associations of entropy and a system's disorder, explained that

...information is a measure of one's freedom of choice when one selects a message...Shannon's mathematical formalisation of information (H) on the basis of such "probabilities of choice" yielded an "entropy-like expression", an equation strikingly analogous to Boltzmann's logarithmic formula for thermodynamic entropy:²¹⁹

Illustration 12: Claude Shannon's equation

When the concepts of energy and information were linked together, new directions in the development of information theory, computation and media technology were opened. However, what is fundamentally important is that the conceptual merging of energy and information enabled science and technology to become part of the discourse in other disciplines, such as the humanities and social sciences, as nature and culture were for the first time interrelated. This merging is also crucially significant

²¹⁹ Bruce Clarke and Linda Dalrymple Henderson, eds., *From energy to information : representation in science and technology, art, and literature* (Stanford, Calif.: Stanford University Press, 2002), 26.

for the current research, as memory in architecture can later be examined in energetic terms.

In this chapter, I have explained that my research on architecture and memory focuses on a particular element, which is fire. My reasons for focussing on fire are that it is present from the creation to the destruction of architecture. Furthermore, on a conceptual level, the philosophical approach that I take to the study of the relationship between architecture and memory is based on the theoretical conflict between Bachelard's fragmented time and Bergson's temporal continuity, which carries with it notions of birth, death, and eternal return; notions commonly associated with the element of fire. The fact that I base my research on a theoretical conflict is not accidental but follows Bachelard's conceptualisation of knowledge production. According to this, scientific knowledge, that is pure knowledge, advances dialectically through a constant attempt to overcome the 'epistemological obstacles' that are created by imagination. Science says *no* to its own past; it creates an 'epistemological rupture' to re-organise itself and progress. Bachelard's model for knowledge production was inspired by the advancements that took place in the scientific world thus it referred to the advancement of scientific knowledge. Nevertheless, it cannot be restricted merely to the domain of science. As science says *no* to old theory, philosophy must do the same.²²⁰ In fact, Bachelard himself used it in his own philosophical work. For instance, 'The Dialectics of Duration' said *no* to an established theory of the times, that of Bergsonism. It is in this way, therefore, that I have chosen to employ Bachelard's model of knowledge production as my methodological tool. By referring to Vernant's interpretation of the Promethean myth and to Heraclitus' cosmology, I made a further connection between conflict and fire. In all cases, fire is always present in conflict; thus my methodology of conflict is justified as a methodology of fire. Finally, I carried out an investigation of fire, from the myths of its origin up until the present time, to reveal and comment on the knowledge that we hold of it. According to Bachelard's model of knowledge production, an

²²⁰ Looking back to Bachelard's evolution of thought, it is evident that an 'epistemological rupture' took place in his own philosophy. Whereas his philosophy was initially scientific, later he started to deal with metaphysics. Picart explains that this rupture happened "*without collapsing the disciplines into an amorphous mass. Both science and literature require not only their own "differential ontologies", but their own epistemologies as well.*" [Caroline Joan S. Picart, "Metaphysics in Gaston Bachelard's 'Reverie'," *Human Studies* 20, no. 1 (January 1997): 71.]

‘epistemological rupture’ occurred during the eighteenth century in studies of combustion, and this brought about a radical advancement in our knowledge of the element. Looking into this model through archival theory, one can associate pre-scientific and scientific knowledge of fire with two separate bodies of knowledge, two distinct archives. As I explained in the previous chapter, however, archives, although they are repositories of memory, are also sites of forgetfulness. This is because, according to Derrida, archives manifest violence, “the violence of power (*Gewalt*) which at once posits and conserves the law.”²²¹ Therefore, whatever is remembered in the archive determines also what must be forgotten. In this sense, the ‘epistemological rupture’ in the Bachelardian model of knowledge production occurs when an old archive is replaced by a new one, which is when the former enters gradually into the realm of oblivion. Commenting further on this ‘epistemological rupture’ in our knowledge of fire through archival theory, this explains why “our intuitions of fire—more perhaps than of any other phenomenon—are heavily charged with fallacies from the past.”²²² Fire appears to carry with it resonances of pastness that stretch back to ancient times, when it was first discovered, but it also emerges as a farrago of scientific material and social inhibitions that are passed from generation to generation, which together lend fire a sense of heritage. Yet, as the nature of heritage is the conservation of memory, fire can in fact be considered as an archive. This archival association allows for a further conceptual leap; fire can be examined psychoanalytically, for according to Derrida “[t]he theory of psychoanalysis...becomes a theory of the archive and not only a theory of memory.”²²³ This coincides with Bachelard whose approach to fire is also psychoanalytic. In ‘The Psychoanalysis of Fire’ Bachelard claims that the study of memory cannot be objectively approached as

...the initial charm of the object is so strong that it still has the power to warp the minds of the clearest thinkers and to keep bringing them back to the poetic fold in which dreams replace thought and poems conceal theorems.²²⁴

This claim reveals that the difficulty in understanding fire is psychological, which, further bolstered by the fact that this element is no longer a concern for science,²²⁵

²²¹ Jacques Derrida, *Archive fever : a Freudian impression.*, trans. Eric Prenowitz (Chicago: University of Chicago Press, 1996), 7.

²²² Bachelard, *The Psychoanalysis of Fire*, 3.

²²³ Derrida, *Archive fever*, 19.

²²⁴ Bachelard, *The Psychoanalysis of Fire. Preface by Northrop Frye*, 2.

justifies Bachelard's move to study it through psychoanalysis. A psychoanalytic approach to the fire-archive can therefore confirm certain aspects commonly associated with the element. For instance, the concurrent life and death drives that archives are associated with reflect fire's conflicting and obscure qualities of life and death, purity and sin, and creation and destruction respectively.

²²⁵ Ibid.

Chapter 4 – Heritage

In the previous chapter, I developed the philosophical and methodological approach, which I will now employ to investigate architectural conservation. According to this approach, I first base my arguments on Bachelard's philosophy and then juxtapose them with Bergson's. The conflict between these two contradicting philosophies is not accidental but follows Bachelard's own model for knowledge production according to which knowledge advances dialectically through oppositions. For Bachelard, the theoretical conflict creates an 'epistemological rupture', which is necessary for knowledge to re-organise itself and progress. Therefore, in this chapter I start my research on architectural conservation by focusing on an obvious association. I look into architectural heritage as an archive on the grounds that its task is the perpetuation of memory. After a short reference to the history and theory of architectural conservation, I draw on Bachelard's theory of fragmented time and memory, which I then associate with the way the English heritage protection system operates. Then, following my methodology, I explore architectural conservation through a Bergsonian perspective and explain that archives, and therefore heritage, can be perceived as sites of forgetting thus their prime function as perpetuators of memory collapses. Looking into architectural heritage through an archival association, my intention is to emphasise the need to develop an alternative theoretical approach to conservation.

▪ ***The official archivisation of architecture***

During the last three decades, architectural conservation has witnessed an exceptional recognition. Whereas once the protection of historical buildings and sites was "an esoteric interest of a few antiquarians and advocates",²²⁶ today it has developed into an international movement supported by millions of people regardless of age, profession, or social status. The author Eric Russell Chamberlin perceives this recent interest in conservation as

²²⁶ John H Stubbs, *Time honored : a global view of architectural conservation : parameters, theory & evolution of an ethos* (Hoboken, N.J.: John Wiley & Sons, 2009), 8.

...almost obsessional...[and points out that] preservation for religious reasons is as old as the first rudimentary tomb. Preservation for aesthetic reasons is as old as civilization. But 'preservation for preservation's sake', because an object is old, regardless of its religious or aesthetic content, is a thing very much of our day.²²⁷

Partly, this rise in interest can be attributed to the emergence of international organisations, such as ICOMOS²²⁸ (International Council on Monuments and Sites) in 1965 and the establishment of UNESCO's World Heritage Convention in 1972.²²⁹ It is crucial to point out, that, although it is internationally acknowledged, conservation practice is a phenomenon of the West, as it essentially reflects Western values.²³⁰ The Venice Charter, which outlines the internationally accepted policy in regard to the protection of architectural heritage,

...drew heavily on the European background of many of its original authors and focused on the concept of the 'monument', a term that encompassed the great historic sites and buildings of antiquity.²³¹

The concept of the monument, however, does not reflect the values of everyone around the globe, as some societies do not produce monumental architecture nor necessarily aim to erect permanent structures.²³² In fact, only since UNESCO's 1994 Nara Document on Authenticity, assembled in Nara, Japan, conservation discipline

²²⁷ E. R Chamberlin, *Preserving the past* (London: Dent, 1979), ix.

²²⁸ Icomos is the only non-governmental organisation "... which is dedicated to promoting the application of theory, methodology, and scientific techniques to the conservation of the architectural and archaeological heritage. Its work is based on the principles enshrined in the 1964 International Charter on the Conservation and Restoration of Monuments and Sites (the Venice Charter). ICOMOS is a network of experts that benefits from the interdisciplinary exchange of its members, among which are architects, historians, archaeologists, art historians, geographers, anthropologists, engineers and town planners. The members of ICOMOS contribute to improving the preservation of heritage, the standards and the techniques for each type of cultural heritage property : buildings, historic cities, cultural landscapes and archaeological sites" [<http://www.icomos.org/en/about-icomos/mission-and-vision/mission-and-vision>, accessed July 3, 2012]

²²⁹ The significance of UNESCO's World Heritage Convention is "...that it links together in a single document the concepts of nature conservation and the preservation of cultural properties. The Convention recognizes the way in which people interact with nature, and the fundamental need to preserve the balance between the two." [<http://whc.unesco.org/en/convention/>, accessed July 3, 2012]

²³⁰ It is interesting to point out, however, that in the past not everyone in the West had the same views on permanence. In *From periodical obsolescence to eternal preservation*, Florian Urban remarks that during most of the twentieth century in East Berlin buildings had a pre-determined lifespan. This was decided by politicians and urban planners who proclaimed that buildings do not only deteriorate within a few decades but also become obsolete therefore they had to be demolished and re-built. [Florian Urban, "From Periodical Obsolescence to Eternal Preservation," *Future Anterior* III, no. 1 (Summer 2006): 26.]

²³¹ Graham Brooks, "The Burra Charter: Australia's methodology for conserving cultural heritage," *Places* 8, no. 1 (1992): 59.

²³² Seung-Jin Chung, "East Asian values in historic conservation," *Journal of architectural conservation, the international journal for historic buildings, monuments and places*. 11, no. 1 (March 2005): 59.

recognises that non-Western cultures may hold different attitudes with regard to what heritage is and how it is treated. Specifically, paragraph 7 states:

All cultures and societies are rooted in the particular forms and means of tangible and intangible expression which constitute their heritage, and these should be respected.²³³

An illustrative example is in Japan, where the ritual dismantlement and reconstruction of Shinto shrines in twenty-year periodic intervals contradicts the Western understanding of heritage and permanence.²³⁴ Further, in Sub-Saharan Africa cultural heritage is to be found in oral histories, which are transmitted from generation to generation and as a result are gradually disappearing, thus their survival is now part of the conservation agenda.²³⁵ Architectural heritage attained additional importance after the two World Wars as many cities and monuments were badly damaged. As a common practice following the aftermath of wars and to enhance nationalistic feelings, cities and monuments were often rebuilt from scratch and that was sometimes accomplished only through photographic evidence.²³⁶ A great example is the reconstruction of the historic centre of Warsaw, the biggest part of which was destroyed by the Nazi troops in August 1944.²³⁷ After World War II, in consideration of the great losses to heritage UNESCO established the Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict in 1954, which came to strengthen the significance attributed to architectural heritage. Following the World Wars and as a result of rapid industrialisation, many historical European city centres, in considerably rundown condition, went through radical transformation. Transportation and commercial developments combined with extensive urban regeneration schemes paid little respect to the conservation of these centres. In fact, many districts were demolished and rebuilt entirely out of scale, failing to match the surrounding context. The modern movement, in an attempt to establish a new architectural language freed from the past, disregarded anything that dealt with

²³³ "The Nara Document on Authenticity", accessed April 28, 2011 http://www.international.icomos.org/naradoc_eng.htm, Paragraph 7.

²³⁴ Jukka Jokilehto, *A history of architectural conservation* (Oxford, England; Boston: Butterworth-Heinemann, 1999), 278.

²³⁵ "Oral traditions and expressions including language as a vehicle of the intangible cultural heritage", accessed July 4, 2012, <http://www.unesco.org/culture/ich/index.php?pg=00053>.

²³⁶ Aylin Orbasli, *Architectural Conservation principles and practice* (Oxford; Malden (Mass.); Carlton: Blackwell Science, 2008), 21.

²³⁷ "Historic Centre of Warsaw", accessed April 30, 2011, <http://whc.unesco.org/en/list/30>.

historic buildings and their conservation. Consequently, modernist architecture brought about a radical distinction between new and old built structures, which further led to a clear distinction between two disciplines: one that dealt exclusively with newness, namely architecture, and one that dealt with oldness, namely conservation. In effect, the scope of the first discipline was limited in the exploration of space whereas the second dealt with the investigation of time. The blind disrespect for heritage caused public reaction that was expressed in the 1970s with demonstrations and the emergence of campaign organisations such as ‘Save Britain’s Heritage’ and ‘Save Europe’s Heritage’.²³⁸ More recently, the widening of the cultural heritage remit, which can now include the conservation of whole towns and villages, industrial districts, twentieth century architecture as well as the architecture of the modern movement, has brought about a new wave of interest in heritage.

The process of designation

The historical significance or value of buildings (or areas) is typically established through designation. The purpose of designation is the public acknowledgement of the building’s endurance in time, whereas the language of designation, according to Jorge Otero-Pailos,

... is utilitarian: it names buildings and sites as historic resources, as stocks or reserves to be drawn upon when necessary for the purposes of making history... Designation simply names and commits an object to a history yet to be written.²³⁹

In this sense, listed buildings can be used as historical resources for the making of history, and one can further claim that they also function like archives. Part of the process of designation is the issue of a report, which in current times comprises a lengthy document that brings together vast amounts of information in regard to the architectural, historical, and cultural significance of a building or a whole area. This information is collected in various ways and most recently through the implementation of innovative technologies. For instance, a current project run by the London based company ScanLAB uses ‘pointcloud’ infrared laser scanning technology

²³⁸Orbasli, *Architectural Conservation principles and practice*, 25..

²³⁹Jorge Otero-Pailos, “Mnemonic Value and Historic Preservation” in *Spatial recall : memory in architecture and landscape*, ed. Marc Treib (New York; London: Routledge, 2009), 245–6.

to create 3D models of any spaces. According to the founders William Trossell and Matthew Shaw, this technology “creates detailed pointcloud of 3D information about a site to an unparalleled degree of accuracy...It provides information that can help preserve our cultural heritage.”²⁴⁰ The intention of ScanLAB is to produce a permanent virtual archive of any built environment before and after conservation. A different type of technology that is currently being used in conservation is the geocoding of buildings. This technology makes use of *Geographic Information Systems* (GIS) through which the location of any object, and in this case of any building, can be converted into a simple x,y coordinate. English Heritage uses GIS technology to confirm the accuracy of old maps or to identify the changes that have taken place in the historic environment when they are compared with the precise location of geocoded buildings.²⁴¹ A more recent use of technology in conservation is the ‘tagging’ of buildings with *Quick Response Codes*. *QR Codes*, which are “a type of two-dimensional barcodes that can be read using smartphones and dedicated QR reading devices,”²⁴² are displayed on buildings to provide easily accessible information about them. An example of this is a project taking place in Stamford, United Kingdom, called ‘The QR Code Project’ according to which over 600 listed buildings in that area are ‘tagged’. The aim is to provide passing tourists with any relevant information about these buildings, which “can be delivered as straightforward text, or enriched with graphics, photos, videos, audio, or maps, depending upon what's appropriate.”²⁴³ All of these technologies have a common purpose, which is to generate and/or archive information associated with the built environment, and some are used for the creation of designation reports. In general, the outcome of these reports is the transformation of a building (or an area) into a shared document: “in the strict sense of a physical resource from which the public may withdraw the facts of its history.”²⁴⁴ The designation report, therefore, in that it comprises a written public document that recounts the building’s history, clearly draws the parallel between listed buildings and

²⁴⁰ Merlin Fulcher, “ScanLAB Video: The AJ Office in 3D,” *The Architects Journal* 233, no. 24 (June 30, 2011): 8.

²⁴¹ “English Heritage – Using GIS to understand England’s unique historic environment”, accessed August 14, 2012, <http://gis-services.net/?p=17#more-17>.

²⁴² “What is a QR Code”, accessed August 14, 2012, <http://www.whatisaqr.com/>.

²⁴³ “The QR Code Project – Discover more about Stamford”, accessed August 14, 2012, <http://www.huntsbrewery.co.uk/the-qr-code-project.html>.

²⁴⁴ *Ibid.*, 247.

archives. As a matter of fact, the only difference that can be traced between listed buildings, or generally between the historic environment, and a written archive is that “‘reading’ some parts of it can only be achieved through the destruction of the primary record.”²⁴⁵ Although this statement applies mainly to the excavation of buried archaeological sites, it can also be applied to the physical investigation of buildings’ structures or other concealed elements.

The official archiving of architecture takes place as soon as a building is designated. At that moment, the listed edifice becomes part of a country’s cultural heritage. In general, heritage refers to the historic environment that is created as a result of the human interaction with its immediate surroundings. According to the principles of English Heritage, the historic environment

...reflects the knowledge, beliefs and traditions of diverse communities. It gives distinctiveness, meaning and quality to the places in which we live, providing a sense of continuity and a source of identity. It is a social and economic asset and a resource for learning and enjoyment.²⁴⁶

It is thus imperative in this context that every generation respects the historic environment they inherit, as this will benefit themselves as well as the generations to come; heritage exists to educate and inspire its audience. Equally, whenever decisions are taken that affect the historic environment, they must be inclusive; not only must experts be involved in this process but everybody. The management of decisions and actions taken to sustain the heritage values of a historical setting is called *conservation*.²⁴⁷

Change in life, thus also in architecture, is inevitable. After years, the impact of time on buildings is evident. When tenants or owners are not satisfied with the building they occupy, they move to a different one. In general, if a building fails to work for its users, certain measures are often taken to adjust it to a suitable level. For instance, the façade can change to accommodate a more contemporary look. This is a fairly common practice in commercial buildings according to which the outer skin is replaced to attract more visitors and gain higher rental value. Equally, the services of a

²⁴⁵ Paul Drury and Anna McPherson, *Conservation Principles, Policies and Guidance*, English Heritage, 2008, 54, principle 123, <http://www.english-heritage.org.uk/publications/conservation-principles-sustainable-management-historic-environment/>.

²⁴⁶ Ibid., 19, principle 1.2.

²⁴⁷ Ibid., 22, principle 4.2.

building can change, such as the air-conditioning and ventilation systems, to reach certain contemporary standards and expectations, and furniture can shift or be replaced. The aspects of buildings that in principle do not change, mainly due to financial restrictions, are the structure and site. Yet, exceptions do occasionally take place. An exemplary illustration is the relocation of St Pancras *Waterpoint* in London, a 350-tonne Grade II listed brick water container. This structure faced demolition under the Channel Tunnel Rail Link Act, yet English Heritage demanded its relocation to a site 600 metres to the north from its current location.²⁴⁸

Illustration 13: The relocation of Waterpoint in St Pancras, London

Another example is the moving of a 750-year-old church to a new site in Germany in 2007.

²⁴⁸ "Supporting Columns", accessed April 10, 2012, http://www.ihbc.org.uk/context_archive/74/stpancras/stpancras.html

Illustration 14: The relocation of a church in Germany²⁴⁹

Probably one of the most striking examples is the relocation of the Temples of Ramses II at Abu Simbel and the Sanctuary of Isis at Philae organised by UNESCO in the early 1960s so that they were saved from the rising waters of the river Nile.

Illustration 15: The Temples of Ramses II²⁵⁰

The only buildings that are destined not to change are historic-house museums, such as the Charles Dickens museum and Sir John Soane's museum in London, as their function is to specifically freeze change. These edifices comprise a tiny percentage of the contemporary building stock and their purpose is to constantly point back to past periods when they had a particular use. Commenting on this frozen, ghost-like presence of historic-house museums, Paul Eggert claims that, although societies are not in need of too many of these museums, they are

...important for they potentially give our embodied lives a sense of chronological amplitude, of connectedness with a continuous history of domestic, civic or grander living than our own.²⁵¹

Generally, buildings that function adequately for their inhabitants are the ones that in most cases survive. In any other occasion, buildings are usually made redundant and eventually are demolished. Nevertheless, the same does not apply to listed buildings. In this case, 'change' can only take place after special permission is granted. This permission follows a relevant body of conservation legislation that pertains to certain qualities and aspects of the building's past that must survive.

²⁴⁹ Photograph taken by Susanne Ludwig, in Rut Blees Luxemburg, "Faith in Infrastructure," *The Architectural Review*, April 2009, 106.

²⁵⁰ "Nubian Monuments from Abu Simbel to Philae", accessed May 3, 2011, <http://whc.unesco.org/en/list/88/>.

²⁵¹ Paul Eggert, *Securing the past conservation in art, architecture and literature* (Cambridge; New York: Cambridge University Press, 2009), 21.

- **Towards the establishment of a modern conservation theory**

The understanding of objects and structures of the past as heritage and the subsequent application of measures to protect and save them have evolved in parallel with modernity. However, basic restoration ideas and maintenance works took place as early as in the ancient times.²⁵² John Stubbs assumes that conservation started as an instinct, which dates back to the period when humans “began creating objects and structures that could be used continually.”²⁵³ During the early years of Christianity, there is evidence of basic restoration ideas according to which Roman temples were restored and converted into churches. An example is the church of San Lorenzo in Miranda, Rome, that was originally consecrated as a temple to the late Faustina, wife of Emperor Antoninus Pius in 141 AD.

Illustration 16: The church of San Lorenzo in Miranda, Rome ²⁵⁴

The first tangible evidence of organised conservation, however, dates back to the Northern Song Dynasty in China (960 to 1127BC) during which collection and documentation of ancient bronzes took place.²⁵⁵ In any case, the modern conservation movement was founded upon fundamental concepts and practices that were born and put into practice during the age of the Enlightenment. During this period there was a sudden wave of nostalgia for the historic past, as Western societies started to change radically due to industrialisation.²⁵⁶ To outline the main events that took place, the philosopher Alexander Gottlieb Baumgarten (1714-62) introduced and appropriated the word ‘aesthetics’ in German philosophy, which referred to the relation between art

²⁵² Orbasli, *Architectural Conservation principles and practice*, 16.

²⁵³ Stubbs, *Time honored*, 25.

²⁵⁴ “Antoninus and Faustina”. Accessed April 30, 2011, http://www.euratlas.com/Atlas/rome/forum_antonin_faustine.html.

²⁵⁵ Stubbs, *Time honored*, 25.

²⁵⁶ *Ibid.*, 57.

and nature as perceived through the senses. Later, towards the end of the eighteenth century, Immanuel Kant developed the theory of aesthetics, according to which beauty was no longer a matter of perfection but rather an empirical sensation.²⁵⁷ Johann Joachim Winkelmann (1717- 1768) made a distinction between an original artwork and its replica thus formulating an important condition of later conservation principles. Moreover, D' Alembert and Diderot's 'Encyclopédie' (1751-77) represents an outstanding example that illustrates the thirst of man to document and organise his knowledge by archiving it. At the same time, libraries became more popular and inclusive than ever before, and the quality of printing material improved. The modern conservation movement was also influenced by the early aesthetic theories of the *sublime* and the *picturesque*. The *sublime*, the meaning of which was first introduced in England after the translation of Dionysius Cassius Longinus's treatise 'On Sublime', referred to the

...“greatness of conception, elevation of diction and emotional intensity”. It was linked with great, wild, awe-inspiring, and stupendous elements in natural scenery.²⁵⁸

The *picturesque* was initially traced in depictions of Italian landscapes and was later associated with the emergence of English gardens. Traditionally, English gardens had geometric shapes creating room-like enclosures, however, with the emergence of the *picturesque*, which, following the aesthetics discourse, reflected the freedom to perceive art through the senses, they started to obtain an irregular shape and their vegetation was allowed to grow naturally and freely.²⁵⁹ Later on, both the *picturesque* and the *sublime* were to be found in ancient architectural creations and natural sceneries respectively, thus their conservation was urged.

Violet-Le-Duc and restoration

The modern conservation movement emerged during the years of the French Revolution. During that period, clearly influenced by the concepts developed during the years of the Enlightenment, art objects and structures from the past were considered as national heritage. They were accredited educational character and as a result they

²⁵⁷ John Macarthur, *The picturesque: architecture, disgust and other irregularities* (London: Routledge, 2007), 3–4.

²⁵⁸ Jokilehto, *A history of architectural conservation*, 50.

²⁵⁹ Macarthur, *The picturesque in modernity*, 4.

had to be protected by the state. Part of Napoleon's political agenda was to placate himself as emperor of a regime in the same tradition as the Roman Empire, thus the protection of antique monuments was heralded as a testament to the past Roman glory.²⁶⁰ In general, the history of conservation is intimately linked with war. The 1863 *Lieber Code* in the United States came about in order to resolve the integrity and the future of captured enemies' properties.²⁶¹ The modern conservation movement was expressed towards two different directions: the restoration movement with Eugène Emmanuel Violet-Le-Duc (1814-79) as a leading figure and the conservation movement with John Ruskin (1819-1900). Since the beginning of the nineteenth century, there was a great enthusiasm for restoration. In France, this passion for restoration was evidently manifest and was followed by constant debates regarding the limits of restoration work, and whether historical buildings, that have suffered a certain degree of damage as a result of the French Revolution and the Napoleonic Wars, should be repaired or not. As a result, inventories were created, conditions surveys took place, and the role of the historic buildings and monuments in town-planning decisions was re-established.²⁶² In regard to the heritage value of churches, which were the main restoration targets, they were compared to ancient Roman monuments with the only difference that the latter

...were part of a distant civilisation, - "a closed chapter" in history- [that] should be preserved in their present state as a document or as a fragment of a document.²⁶³

The churches on the other hand, as they related to a living tradition of the society, namely the Christian religion, should be restored so that their full functioning can be secured. The architect and theorist Violet-Le-Duc, the most famous restoration personality in France whose work includes Notre-Dame de Paris and La Madeleine at Vézelay²⁶⁴, in his 8th Volume of Dictionary (on Restoration) published in 1866 describes that

²⁶⁰ Jokilehto, *A history of architectural conservation*, 69.

²⁶¹ "Debate: Preservation, Contemporary Art, and Architecture," *Future Anterior* IV, no. 2 (Winter 2007): 75.

²⁶² John H Stubbs and Emily Gunzburger Makas, *Architectural conservation in Europe and the Americas : national experiences and practice* (Hoboken, N.J.: John Wiley & Sons, 2011), 41.

²⁶³ Jokilehto, *A history of architectural conservation*, 150.

²⁶⁴ La Madeleine at Vézelay entered the UNESCO heritage list in 1979

...the term restoration and the thing itself are both modern. To restore a building is not to preserve it, to repair it or to rebuild it; it is to reinstate it in a condition of completeness, which may have never existed at any given time.²⁶⁵

Although Viollet-Le-Duc had an exceptional knowledge and understanding of architectural history and practice, he developed his core principles of restoration on medieval churches.²⁶⁶ For him, the function of the building as well as the history of its façade were particularly significant and worth protecting. Occasionally, the restoration of a building to its original condition demanded the destruction of later additions, which themselves were historical. Respectively, the principles Viollet-Le-Duc had composed in regard to restoration were not clear-cut but rather depended upon the architect's critical judgement and interpretation, education, and talent as a designer. If, for instance, the existing structure of a building could be improved by replacing it with a stronger, more rigid one, or if advanced materials could be used, which could in theory prolong the life of the building even further, then the restoration architect should proceed with these interventions and leave the building *in a condition of completeness, which may have never existed at any given time*. This example of restoration work took place in the new sacristy in the south side of Notre-Dame where the timber structure of the roof was replaced by a steel one.²⁶⁷ The French restoration principles did not remain merely within France but were widely adopted in many other countries. Equally, Viollet-Le-Duc became internationally famous; he became an honorary member of the RIBA (Royal Institute of British Architects) in England (1855), member of the Academy of Fine Arts in Milan (1858), and was later honoured by numerous other institutions around the globe.²⁶⁸

Restoration in Britain

In Britain, restoration was practiced mostly between 1840 and 1860. Between 1840 and 1873, specifically 7,144 churches were restored, out of which about half were

²⁶⁵ Viollet-Le-Duc, "On Restoration", from *Dictionnaire Raisoné de l'Architecture Française du XIe au XVIe Siècle*, vol 8, as cited in M. F Hearn, ed., *The architectural theory of Viollet-Le-Duc : readings and commentary* (Cambridge, MA: MIT Press, 1992), 269.

²⁶⁶ Stubbs, *Time honored*, 215–6.

²⁶⁷ Jokilehto, *A history of architectural conservation*, 155.

²⁶⁸ *Ibid.*

medieval.²⁶⁹ The most important work was commenced by the Cambridge-Camden Society founded by John Mason Neale and Benjamin Webb in 1839. As in the French restoration movement, their attention was initially focused on churches, spanning from the way they practiced religion to church building and restoration. Accused for restoration popery, the society was re-formed under the name of the Ecclesiological Society, concentrating mainly on the restoration of English churches to their former glory. Their principles were published in the *Ecclesiologist* in 1842. Specifically, they pronounced:

We must, whether from existing evidence or from supposition, recover the original scheme of the edifice as conceived by the first builder, or as begun by him and developed by his immediate successors; or, on the other hand must retain the additions or alterations of subsequent ages, repairing them when needing it, or even carrying out perhaps more fully the idea which dictated them...For our own part we decidedly choose the former; always however remembering that it is of great importance to take into account the age and purity of the later work, the occasion for its addition, its adaptation to its users, and its intrinsic advantages of convenience.²⁷⁰

The most famous British restoration architect was George Gilbert Scott. He mainly practiced church restorations in a very similar fashion to Viollet-Le-Duc and published his principles in a paper called *A plea for the faithful restoration of our ancient churches*.²⁷¹ Scott and Viollet-Le-Duc were the two most influential restoration architects, however in both cases their principles seemed to contradict their work.²⁷²

John Ruskin and modern conservation

Following the increasing practice of restoration and as a reaction against it, a new approach to the treatment of historic artefacts came about, according to which, instead of being restored, they were protected, conserved, and maintained. John Ruskin's publication of 'The Seven Lamps of Architecture' in 1849 was a direct attack on the destruction of historic buildings caused by restoration, and comprised the initial

²⁶⁹ Eggert, *Securing the past conservation in art, architecture and literature*, 24.

²⁷⁰ The *Ecclesiologist* (1842) I:65. In 6.

²⁷¹ George Gilbert Scott practiced restoration according to the function of the building. Churches, the function of which is to house God, had to be restored to the best way possible. Less restricting restoration principles applied to other old structures that do not have their original function and refer to previous civilisations.

²⁷² Jokilehto, *A history of architectural conservation*, 162.

principles of the conservation movement. Through the seven lamps -sacrifice, truth, power, beauty, life, memory, and obedience- Ruskin recognises the moment of an artefact's original creation, however, as this moment is unrepeatable, the practice of restoration is thus inappropriate and must be forbidden. Specifically, in Aphorism 31 in the Lamp of Memory, he denounces restoration as

...the most total destruction which a building can suffer: a destruction out of which no remnants can be gathered: a destruction accompanied with false description with the things destroyed. Do not let us deceive ourselves in this important matter; it is *impossible*, as impossible as to raise the dead, to restore anything that has ever been great or beautiful in architecture.

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When it comes to historic buildings, therefore, Ruskin detests restoration. For it is "a Lie from beginning to end", ²⁷⁴ he proposes, instead, to look at buildings as they stand at the time of inquiry. By saving the building's integrity, the personal sacrifice of everybody involved in its creation is respected too. Equally, its beauty, which in essence is man's understanding of the beauty in nature and reflects God, is saved. Ruskin also expresses boldly that the glory of a building is to be found in its age, thus by restoring it, its true age, and also its glory, will vanish.²⁷⁵ Thus, as he confirms,

*[w]e have no right whatever to touch them. They are not ours. They belong partly to those who built them, and partly to all the generations of mankind who are to follow us.*²⁷⁶ [original italics]

It is, therefore, imperative that historic buildings are conserved. On the other hand, however, buildings constructed in our times can be freely and righteously destroyed, as we are both their creators and destroyers. Ruskin's principles on conservation were 'digested' slowly. Initially, the protection of historic buildings comprised an effort initiated and funded by individuals. In Britain, Ruskin's focal conservation points were exposed further to the public in 1877 by Sidney Colvin, the Slade Professor of Fine Arts at Cambridge in his publications 'Restoration and Anti-restoration'. Later in the same year and as a result of this exposure, the 'Society for the Protection of Ancient

²⁷³ John Ruskin, *The seven lamps of architecture* ([S.I.]: Elibron Classics, 2005), 353.

²⁷⁴ *Ibid.*, 355.

²⁷⁵ *Ibid.*, 339.

²⁷⁶ *Ibid.*, 358.

Buildings' was founded by William Morris.²⁷⁷ Morris' views on conservation can be summed up in his term 'anti-scrape' according to which buildings are like living beings, thus their lifespan is limited and their decay is unavoidable. If, however, repairs are necessary, then the building should be protected with a minimum effort without any restoration works.²⁷⁸ Other individual groups that were formed in an attempt to protect historic buildings are 'The Ancient Monuments Society', 'The Georgian Group', and 'The Victorian Society', which are still active in current days. The first time a law was enforced to protect historic buildings passed on the 18th of August 1882. This was *The Ancient Monuments Act* and dealt with pre-historic monuments such as Stonehenge.²⁷⁹ It was only after 1947 however, when the World War II was over, that listing comprised the means to protect historically significant buildings. In France, the conservation movement was equally becoming popular, and was supported by famous personalities, such as Anatole France, Victor Hugo, and Proust attacking Violet-Le-Duc' s restoration practice.²⁸⁰ As a result, the first law dealing with the protection of historic buildings was passed on the 30th of March 1887. In general, the reaction of the British conservation movement against the restoration of buildings spread to the rest of Europe and since then, the United Kingdom has been the leading force in architectural conservation theory and practice.²⁸¹

Ruskin's anti-restoration movement, which was the prime force that brought about public dissatisfaction in regard to restoration, gave negative connotations to the term 'restoration' in the English language, thus the practice of dealing with historic buildings in general has since been called conservation.²⁸² There is a contradiction, however, if one considers that in Latin languages, the word 'restoration' (*restauro* in Italian, *restauration* in French etc.) has an almost equivalent meaning to the word 'conservation' in English. There are other schools of thought, the relativist theorists, who support that there are two possible definitions of conservation; on one hand, conservation in the Ruskian sense that opposes restoration, and on the other hand,

²⁷⁷ Jokilehto, *A history of architectural conservation*, 175.

²⁷⁸ Jonathan Rée "Auto-Icons" in *Conservation, Principles, Dilemmas and Uncomfortable Truths*, Alison Richmond and Alison Bracker eds. (London: Elsevier Ltd. & Victoria and Albert Museum, 2009), 1–2.

²⁷⁹ Jokilehto, *A history of architectural conservation*, 156.

²⁸⁰ Stubbs, *Time honored*, 215.

²⁸¹ Stubbs and Makas, *Architectural conservation in Europe and the Americas*, 59.

²⁸² Jokilehto, *A history of architectural conservation*, 174.

conservation as an activity that includes restoration amongst other practices and aims at protection.²⁸³ To avoid potential confusion, in more recent years, there has been a reassessment of the words restoration and conservation, and also of the relationship between them. Some scholars have proposed a new, combined term, the term restoration-conservation, which was for the first time introduced by an Italian historian called Alessandra Melucco Vaccaro. In North America, the term restoration has come to imply the reintegration of lost styles therefore the actual term has been changed to historic preservation.²⁸⁴ In the current research, my reference to the concept of conservation refers to how it has come to be understood and practiced in England, which I will discuss later in this chapter.

The restoration versus conservation dispute of the nineteenth century was followed by two major events that determined the way conservation is practiced today. This is the publication of Alois Riegl's essay 'The Modern Cult of Monuments' in 1903 and, almost a century later, the establishment of 'The Krakow Charter 2000'.²⁸⁵ Both cases are an attempt to unite the opposing practices of restoration and conservation into a single strategy. Riegl's essay is a study that explores the differences between monuments. Monuments are accordingly split into two categories, the intentional and the unintentional ones. An intentional monument is

... a human creation, erected for the specific purpose of keeping single human deeds or events (or a combination thereof) alive in the minds of future generations²⁸⁶

whereas unintentional is a monument the meaning of which is attributed to a modern understanding and setting, and not to its creator's initial intention. Commenting on this distinction, Riegl also points out that intentional monuments may at some point also become unintentional and this is when they survive longer than what they were destined for by their creators. A further characteristic of monuments refers to their values. Monuments, and specifically the unintentional ones, can have historical value, age value, use value, and intentional commemorative value. The historical value refers

²⁸³ Salvador Muñoz Viñas, *Contemporary theory of conservation* (Oxford; Burlington, MA: Elsevier Butterworth-Heinemann, 2005), xii.

²⁸⁴ Nicholas Stanley-Price, Mansfield Kirby Talley, and Alessandra Melucco Vaccaro, eds., *Historical and philosophical issues in the conservation of cultural heritage* (Los Angeles: Getty Conservation Institute, 1996), xiii.

²⁸⁵ Martin-Hernandez Manuel, "Architecture from Architecture: Encounters between Conservation and Restoration", *Future Anterior* (Volume IV, Number 2, Winter 2007): 62

²⁸⁶ Alois Riegl, "The Modern Cult of Monuments: Its Character and Its Origin [1903]," *Oppositions* 25 (Fall 1982): 26.

to a monument's inherent capacity to point back to a particular time in history and "[its] objective...is...to maintain as genuine as possible a document for future art-historical research."²⁸⁷ In this sense, the historical value implies that affected parts must be restored so that the monument's function remains intact. The age value of a monument, on the other hand, contradicts the historical one as it celebrates its decay and degeneration. Riegl explains that the age value becomes directly visible and sensed, and comments that its consideration automatically disregards conservation practice.²⁸⁸ The contradiction between these two values, which in essence is the same as the previously mentioned debate between restoration and conservation, is resolved on the grounds that if the integrity of the monument is threatened, then the age value can be overwritten by the historical one thus allowing interventions to take place.²⁸⁹ In other words, restoration is sometimes in favour of conservation when the building itself is threatened. Furthermore, if the intention of the monument's creators is its permanence and longevity throughout the years, which is what Riegl called intentional commemorative value, then both conservation and restoration processes are allowed for the monument's revival. Unintentional monuments can have one more value that is called use value, and refers to their usability. Riegl points out that as long as the monument's integrity is not affected, then any use can be attributed to it. There are exceptions, however, when "use value may also require the destruction of a monument; for instance, if decay endangers human life."²⁹⁰ In other words, use value legitimises design interventions upon heritage. In terms of art value, all monuments possess it as long as they respond to the *Kunstwollen* (artistic will), which is characteristic of each era and subject to contemporary discussions and critiques. In general, Riegl attempts to reconcile the debate between restoration and conservation by attributing values to monuments, which would in effect determine any potential interventions in them.

The Charter of Krakow 2000 is the latest international document that deals with the same debate. It is the latest Charter on conservation to be implemented following up and revising the objectives outlined in the Charter of Athens 1931 and

²⁸⁷ Ibid., 34.

²⁸⁸ Ibid., 32–3.

²⁸⁹ Ibid., 34–8.

²⁹⁰ Ibid., 39.

the Charter of Venice 1964. It is the result of the joint participation at the 'International Conference on Conservation 'Krakow 2000'' of conservation specialists, academics, government officials, and institutions like ICOMOS and ICCROMM (International Centre for the Study of the Conservation and Restoration of Cultural Heritage). The urgency for the creation of the Krakow Charter is outlined in the preamble and is attributed to the current state of Europe which

...is characterised by a cultural diversity and thus by the plurality of fundamental values related to the mobile, immobile and intellectual heritage, the different meanings associated with it and consequently also conflicts of interest.²⁹¹

In this Charter, the point where the practice of restoration meets the one of conservation acting as a single approach is in Article 6 in which

[t]he purpose of conservation ...is to maintain [the historic buildings' and monuments'] authenticity and integrity, including internal spaces, furnishings and decorations according to their *original appearance*. Such conservation requires an appropriate 'project of restoration' that defines the methods and aims. In many cases, it also requires an appropriate use, compatible with the existing space and significance.²⁹² [italics added]

In other words, the practice of conservation justifies restoration interventions to take place as long as the *original appearance* of the treated building is achieved.

Conservation and restoration are thus interrelated and interdependent activities.

When it comes to the conservation in urban scale, like in historic towns and villages, and as opposed to the previous two Charters, the Krakow Charter gives the freedom for design interventions to take place without being negatively criticised as a mere stage set design. To be more specific, the Athens Charter and later on the Venice Charter perceived the relationship between the old and the new as incompatible, thus the distinction between the two had to be visible. Referring to this distinction, Manuel J. Martin-Hernandez observes that in some southern European countries like Spain, Italy, or Greece, conservation laws, manifestly relevant to these Charters, have brought about pure façadism to historical districts, and as a result the districts come

²⁹¹ "The Charter of Krakow 2000, Principles for Conservation and Restoration of Built Heritage", accessed December 6, 2010, <http://lecce-workshop.unile.it/Downloads/The%20Charter%20of%20Krakow%202000.pdf>

²⁹² "The Charter of Krakow 2000, Principles for Conservation and Restoration of Built Heritage", accessed December 6, 2010, <http://lecce-workshop.unile.it/Downloads/The%20Charter%20of%20Krakow%202000.pdf>

across looking dull and being dysfunctional. Commenting further, he appropriates this tendency equal to what Cesare Brandi, one of the most influential personalities in modern conservation theory, has defined

... as a crime of 'falsification', a process in which cultural norms force interventions to "cover up" with stylistic elements taken from architectural history.²⁹³

More recently, however, Article 8 of the Krakow Charter perceives the city as an organic entity, which is "in the process of continuous evolution and change"²⁹⁴ thus it frees interventions from referring to stylistic elements from the past. Simply, the only requirement for interventions is that, upon completion, they must comprise a *connecting element* with the city's organic unity, *and this is meant in terms of distinctive dimensions, and technological, spatial, decorative and chromatic characteristics.*²⁹⁵ Overall, the Krakow Charter 2000 and Rieg's essay share a common aspiration, and this is to create a single method of approach, evaluation, and intervention in heritage.

Bachelard and contemporary conservation in England

This section comprises an introduction to the English heritage protection system, which I next associate with Bachelard's notion of time and memory. The reason for choosing the English system is mainly because it is internationally accepted as one of the most effective systems and is therefore used as a prototype in many other countries.²⁹⁶ Being evidently influenced by the Krakow Charter 2000 and Rieg's essay, contemporary English Conservation practice follows the indications of two documents, the 'Principles, Policies and Guidance' by English Heritage and the 'PPS5 Planning for the Historic Environment: Historic Environment Planning Practice Guide' by the Department for Communities and Local Government. The primary intention of the English Heritage document is

²⁹³ Manuel Martin-Hernandez, "Architecture from Architecture: Encounters Between Conservation and Restoration," *Future Anterior* IV, no. 2 (Winter 2007): 66–7.

²⁹⁴ "The Charter of Krakow 2000, Principles for Conservation and Restoration of Built Heritage", accessed December 6, 2010, <http://lecce-workshop.unile.it/Downloads/The%20Charter%20of%20Krakow%202000.pdf>

²⁹⁵ "The Charter of Krakow 2000, Principles for Conservation and Restoration of Built Heritage", accessed December 6, 2010, <http://lecce-workshop.unile.it/Downloads/The%20Charter%20of%20Krakow%202000.pdf>

²⁹⁶ "Heritage Protection Reform", accessed January 04, 2011, <http://www.english-heritage.org.uk/professional/protection/heritage-protection-reform/>

...to formalise an approach which takes account of a wide range of heritage values...Although developed primarily to guide the activities of English Heritage staff...[they] commend these Principle, Policies and Guidance for adoption and application by all involved with the historic environment and in making decisions about its future.²⁹⁷

Alternatively, the PPS5 document is based on the principles of English Heritage but in a more concise and simplified way it provides guidance and assistance to local authorities, owners, applicants and other interested parties.²⁹⁸ In this sense, both documents deal with the same objectives yet their subtle differences occur simply as a result of the latter's simplification. English Heritage assesses an historic artefact according to its *values* (aesthetic, communal, historic, evidential), which is reminiscent of Riegl and the way he distinguished monuments, whereas the PPS5 document deals with the *level of significance* of heritage assets²⁹⁹ and takes into consideration its architectural, historic, artistic or archaeological interest.³⁰⁰ Regardless of the way of assessment, as soon as the historical significance of an artefact is established, designation takes place. In regard to buildings, which comprise the majority of designations, there are three categories of listing:

- Grade I buildings are of exceptional interest, sometimes considered to be internationally important; only 2.5% of listed buildings are Grade I
- Grade II* buildings are particularly important buildings of more than special interest; 5.5% of listed buildings are Grade II*
- Grade II buildings are nationally important and of special interest; 92% of all listed buildings are in this class and it is the most likely grade of listing for a home owner.³⁰¹

As a common rule, the older a building is, the more chance it stands to be listed. In general, all surviving buildings erected before 1700 are listed, as well as the majority of these that were built up until 1840. Listing criteria become tighter for post-war buildings whereas the earliest a building can be considered for designation is when it is

²⁹⁷ Drury and McPherson, *Conservation Principles, Policies and Guidance*, English Heritage, 67, principles 160,164.

²⁹⁸ PPS5: *Planning for the Historic Environment: Historic Environment Planning Practice Guide*, TSO, 2010, 6, principle 1.1, <http://www.communities.gov.uk/publications/planningandbuilding/pps5>.

²⁹⁹ "The elements of the historic environment that are worthy of consideration in planning matters are called 'heritage assets'. This term embraces all manner of features, including: buildings, parks and gardens, standing, buried and submerged remains, areas, sites and landscapes, whether designated or not capable of designation" in *Ibid.*, 7, principle 10.

³⁰⁰ *Ibid.*, 12, principle 8.

³⁰¹ "Listed Buildings", accessed February 02, 2011, <http://www.english-heritage.org.uk/caring/listing/what-can-we-protect/listed-buildings/>

over thirty years old.³⁰² If alterations on listed buildings must take place, *Listed Building Consent* must first be given whereas carrying out work without permission is a criminal offence. The listing status of a building determines how easily consent can be given; for Grade II buildings, alterations and part demolitions may be easily permitted but when it comes to Grade II* and Grade I buildings, decisions for consent are more complicated. In regard to designation, there are occasions when whole areas are protected; these are called conservation areas and they are designated by the local councils for their architectural and historical interest. Respectively, interventions and alterations in conservation areas can take place only after local authorities grant permission. Depending on the listing level of a designated building, certain conservation actions may be allowed to take place: this can be a periodic renewal of the building's elements, various repairs that do not affect the current state and look of the building, interventions that may increase knowledge of the past, and restoration practices that will clearly give to the building more heritage value than what it currently holds. Effectively, conservation practice can 'freeze' the impact of time on a building, can 'reverse' time to a previous order, or perform both actions at the same time. It is rather important to point out at this stage that conservation practice, as opposed to most common interpretation, does not always reveal aspects that were already made *visible* in a building by its architect. In fact, very often conservation comes to expose certain architectural qualities that were not at first intended. Commenting on this, Jorge Otero-Pailos explains that conservationists operate as 'creative agents' who challenge the notion of the architect-author.³⁰³ Thus, architecture comes to be defined by the contribution of many authors, of the creative agents, whereas the original architect is just one of them. Coming back to the focal point of inquiry in this section, conservation practice manipulates the impact of time and effectively the way memory is archived through architecture. Based on this particularity, I next refer to Bachelard's notion of time and memory and associate it with the practice of English Conservation in a sense that they can both be perceived as products of human imagination and creativity.

³⁰² "Listed Buildings", accessed February 02, 2011, <http://www.english-heritage.org.uk/caring/listing/what-can-we-protect/listed-buildings/>

³⁰³ Jorge Otero-Pailos, "Editorial: creative agents," *Future Anterior* III, no. 1 (Summer 2006): ii–vii.

Bachelard is famous for his work on poetics and the philosophy of science. Although his theory on time and memory is sparsely manifest throughout most of his work, the book that broadly develops this issue is 'The Dialectic of Duration' (1936). This, one of his early books of his career, is a direct attack on one of the most popular theories of that period, namely Bergson's theory of duration. Bachelard accepts everything about Bergsonism apart from continuity.³⁰⁴ His attack is evident in the title of the book, which implies that duration must be reduced to discontinuous time, and therefore be composed of at least two instants, to have a dialectic. One of the main ideas presented in this book is his philosophy of repose, which is developed in opposition to Bergson's duration that cannot be broken down to instants, points, and intervals. According to the philosophy of repose, Bachelard proposes the need to punctuate duration and effectively develop a discontinuous Bergsonism. When it comes to human evolution for instance, duration is marked by instants of creations, resulting from the dialectic between being and non-being, nothingness. In *Creative Evolution*, Bergson gives priority to positive actions by saying that no truly negative actions exist. Therefore, when it comes to words, negative ones have significance only in relation to the positive words they negate.³⁰⁵ Bachelard, however, whose understanding of dialectics goes back to Hegel, rejects this imbalance of the dialectic by referring to the example of fullness and emptiness. He explains that according to Bergson, the word *empty*, the meaning of which comes from the verb, the action, *to empty* can be considered describing a positive action when the emptiness it brings about is simply the imaginary or actual disappearance of a substance, whilst the disappearance itself, *the emptiness*, has no significance in the understanding of the action. Bachelard however argues that something can be emptied only if it was previously full, and inversely something can be filled up only if it was previously empty. In other words, both actions can be understood only in relation to each other, and therefore the dialectic of fullness and emptiness are in perfect balance. Commenting on the evolution of philosophy, the duration of which is also marked by creative instants of being and non-being, Bachelard argues that "[p]ure thought must begin by

³⁰⁴ Gaston Bachelard, *The dialectic of duration.*, trans. Mary McAllester (Manchester: Clinamen, 2000), 28.

³⁰⁵ *Ibid.*, 30.

refusing life. The first clear thought is the thought of nothingness.”³⁰⁶ Developing out of nothingness, philosophy, and knowledge in general, unfolds in time with alternating periods of affirmation and negation. Therefore for Bachelard,

...there is a fundamental heterogeneity at the very heart of lived, active, creative duration, and that in order to know or use time well, we must activate the *rhythm* of creation and destruction, of work and repose. (my italics)³⁰⁷

The perception of time is thus a matter of following the rhythm of instants created by periods of work and repose. The concept of rhythm for Bachelard is very different to Bergson’s. Whereas for the latter rhythm in music and in life is used as an analogy to explain duration, for Bachelard rhythm exists so that evolution can take place. Rhythm is

...driven by the will to perpetuate or “copy” ourselves. However, each time we set ourselves to this task, we must exceed or improve on this “copy”, or else it will dissolve itself...The moment of remaking breaks the flow of time- repetition, to survive, must involve a negation, as well as an affirmation, of previous repetitions. Rhythm is not an “eternal return”, but an “eternal reprise”.³⁰⁸

Based on studies of the phenomenology of rhythms by the Brazilian philosopher Pinheiro dos Santos, Bachelard explains how matter has wave and rhythmic characteristics. For instance, the exchanges of energy between different types of chemical matter unfold in time undulating to the rhythms of specific frequencies. He further claims that through kinetic theory, solids are stable due to conflicting rhythms:

Our houses are built with an anarchy of vibrations. We walk on an anarchy of vibrations. We sit down on an anarchy of vibrations. The pyramids of Egypt, whose function is to contemplate the unchanging centuries, are endless cacophonies.³⁰⁹

So, for solids are composed of vibrations, this implies that if they stop vibrating, they stop existing. Nevertheless, it is not just matter that vibrates, but time too. Effectively, when matter is resting in time that vibrates, it has energy even in repose.³¹⁰ Rhythm is not just present in matter but in life too. In fact, due to its complexity, life is more

³⁰⁶ Ibid.

³⁰⁷ Ibid., 29.

³⁰⁸ Russell Conrad, “Fictive Time: Bachelard on Memory, Duration and Consciousness,” *Kronoscope* 5, no. 1 (2005): 7.

³⁰⁹ Bachelard, *The dialectic of duration.*, 137–8.

³¹⁰ Ibid., 138.

discontinuous and rhythmic than matter. And amongst all life energies, mental energy “given its fragility and complexity, is ...the closest to undulating and quantic energy, the most marked by vibration and rhythm.”³¹¹

In regard to memory, Bachelard is influenced by the work of Maurice Halbwach and Pierre Janet. Memory for Bachelard is discontinuous and defined by consecutive breaks. We remember events of the past as a series of decisive instants. Therefore, narrating our personal history is in essence a narration of our disconnected actions, which make up our past. The association of memory with narration is influenced by the French psychologist and philosopher Pierre Janet who claims that: “What has created humanity is narration, and not by any means recitation.”³¹² For Janet, recitation refers to the beginning of human memory according to which a memorised scene of something existing is recited so that relevant information can be transmitted to the interested parties. Narration, on the other hand, is very similar to recitation but it refers to events that have already finished and disappeared. In any case, both recitation and narration demand the practice of memory so that they can take place. On occasions of having difficulty to recall memories, one has to pay more attention to the instant, the framework, in which these specific memories are fixed. In the ‘Poetics of Space’ (1958), Bachelard writes:

Memories are motionless, and the more securely they are fixed in space, the sounder they are. To localize a memory in time is merely a matter for the biographer and only corresponds to a sort of external history, for external use, to be communicated to others.³¹³

At this point, Bachelard draws on Halbwach’s theory of memory according to which memory is a construct within a social framework. As previously mentioned, the past for Halbwach does not recur in the same way it happened but is reconstructed in the present. However, as the present social context is different to the context in which memories of the past were fixed, then these memories can never reconstruct the past as it was. The framework is therefore fundamentally crucial when it comes to recollection. Effectively, when it comes to the preservation of memories, attention has

³¹¹ Conrad, “Fictive Time: Bachelard on Memory, Duration and Consciousness,” 8.

³¹² Ibid., 64.

³¹³ Gaston Bachelard, *The poetics of space* (Boston: Beacon Press, 1994), 9.

to be paid to the actual fixing of memory. Memories cannot relate to their frameworks, if

...there is no spoke, expressed, or dramatised fixing...Reflection must construct time around an event at the very moment when the event takes place so that we can rediscover the event in the memory of time that has disappeared.³¹⁴

Memory is also affected by deferred behaviour when actions are postponed for a later moment. Bachelard's view on memory and deferred action is also influenced by Pierre Janet, who claims that postponing an action for a later moment in time comprises in fact the very origin of human memory. Furthermore, according to Janet postponing an action also reveals memory's social aspect. To illustrate this argument, Bachelard uses Janet's example of sentries in military camps. If a sentry witnesses the invasion of an enemy, he defers the fact, the invasion, by suspending it in his memory until he runs back to the camp to let the rest of the soldiers know about it. The deferral of an action implies that its beginning and end are controlled by us thus its duration is relative. Commenting on deferred actions, Bachelard's writes that "we remember an action much better by linking it to what follows it rather than to what precedes it."³¹⁵ The deferral creates a temporal void before the action takes place. Equally, a void is also created by the expectation of desired events; time feels empty waiting for these events to take place. Generally, these temporal voids create the framework for new memories to be acquired and fixed. In this respect, the deferral of actions and anticipation of events make memory discontinuous as it is composed of temporal breaks or voids. It is in this sense that Conrad Russell argues that Bachelard's memory, compared to Bergson's photographic record of pure memory, "is more cinematic, with jumps, cuts and editing."³¹⁶ Commenting further, one can claim that Bachelard's memory is *fictive*³¹⁷ as it is "creating or created by imagination"³¹⁸. In order to remember, one has to actively pay attention to the frameworks in which memories are fixed. The same happens with narrations; one has to practice with his memory before he narrates past events in the correct order. Equally, the discontinuity created by the temporal voids of deferred actions and the anticipation of events demand the

³¹⁴ Bachelard, *The dialectic of duration.*, 62.

³¹⁵ *Ibid.*, 61.

³¹⁶ Conrad, "Fictive Time: Bachelard on Memory, Duration and Consciousness," 11.

³¹⁷ As opposed to "fictitious", which implies something imaginary or fabricated.

³¹⁸ Definition taken from the Concise Oxford English Dictionary.

work of a creative mind, which, like in cinematographic processes, jumps, cuts and edits so that memory can be formed. Active creativity is also found in time. The dynamism of Bachelardian time is a result of the rhythm of instants that are created by periods of work and repose, and this is a product of human imagination too. In general, for Bachelard, imagination is a product of the creative faculty of the mind, which is different to the simple reproduction of perception. Whereas traditionally imagination is the faculty that deals with the formation of images, in Bachelard's philosophy imagination is the faculty that deforms and effectively liberates us from the initial images of perception. Commenting on Bachelardian imagination, Edward Kaplan explains that

...[t]his freedom from a mental imitation of reality - e.g., sight - Bachelard calls the "function of the unreal," the imaginative force which enables man to create new images instead of adjusting to reality as given.³¹⁹

During his philosophical work, Bachelard's views on the imagination change significantly. Initially, in 'The Psychoanalysis of Fire' (1938), he explores the concept of imagination through Freudian psychoanalysis. In later works, as he finds psychoanalysis a restricting experience, he distinguishes it from psychology³²⁰ and turns towards

...the zone of active imagination, where man is a thinking, willing being, an openness is retained. "Here the depths are not so fearful nor the heights so unattainable." Here we can retrace, reclaim, retrieve, relive, and even transform experience in our imaginative selves.³²¹

Like any other process that unfolds in time, imagination occurs as a result of dialectics: "a dual participation of desire and fear, a participation of good and evil, a peaceful participation of black and white."³²² In 'Water and Dreams' (1942), Bachelard distinguishes two types of imagination. One that is inspired by novelty and deals with the unexpected and the other that explores the depths of the human's primitive and eternal aspects. In philosophy, this is what he calls formal and material imagination

³¹⁹ Edward Kaplan, "Gaston Bachelard's Philosophy of Imagination: An Introduction," *Philosophy and Phenomenological Research* 33, no. 1 (September 1972): 2–3.

³²⁰ Caroline Joan S. Picart, "Metaphysics in Gaston Bachelard's 'Reverie'," *Human Studies* 20, no. 1 (January 1997): 63.

³²¹ Gaston Bachelard, *Water and dreams : an essay on the imagination of matter* (Dallas: Pegasus Foundation, 1983), viii.

³²² *Ibid.*

respectively.³²³ For example, when it comes to water, one has to look beneath the imagination of its form and meditate upon the imagination of the substance itself. Then this person experiences what is “not infinity ... but depth.”³²⁴ For Bachelard, the way to meditate on an object is to be in a state of reverie, which allows for interchanging states between the real and the imaginary. During a reverie, imagination finds its ultimate and unlimited expression through poetry. Operating, therefore, as a “phenomenon of freedom”,³²⁵ imagination disconnects us from the past and present and looks at the future. Later, in ‘The Poetics of Space’ (1958), he clearly distances himself from psychoanalysis and psychology, and approaches the study of imagination through phenomenology hence the image is no longer treated as a reduction of what it really is but as an exaggeration.³²⁶ This method entails a prolonged exaggeration of the image so that one can enter into it. Accordingly, Bachelard examines the image of the ‘oneiric house’ and some other images, such as images of drawers, chests, wardrobes, nests, and shells, which are all similar between them in a sense that they ‘are interrelated in their common evocation of a relationship of intimacy and refuge’.³²⁷ Finally, in one of his latest works, ‘The Poetics of Reverie’ (1960), he treats imagination through a Jungian perspective. Based on Jung’s androgynous nature of the human psyche, the *anima* and the *animus*, Bachelard explains that the reverie, through which imagination finds its ultimate expression, reflects the feminine aspect of the human psyche for both sexes, and is different to the dream that is masculine. To emphasise this, he points out the difference in gender of the words ‘dream’ and ‘reverie’; the former *le reve* or *le signe* are masculine whereas *la reverie* is feminine. Commenting on Bachelard’s approach to imagination, there is a radical shift, or, in Bachelard’s own terms, an ‘epistemological rupture’, according to which his epistemological interests are replaced by metaphysical ones. The same shift occurs in his understanding of reverie, which comprises a key concept in his philosophy. Reverie, which is the creative daydream, is initially treated with ‘malign vigilance’ but then develops into ‘a joyous and admiring...poetic reverie’³²⁸

³²³ Ibid., 1.

³²⁴ Ibid., 8.

³²⁵ Bachelard, *The poetics of space*, xxvii.

³²⁶ Ibid., 107.

³²⁷ Picart, “Metaphysics in Gaston Bachelard’s ‘Reverie’,” 66.

³²⁸ Ibid., 70.

reminiscent to Husserl's phenomenology. Coming back to the discussion of Bachelard's memory, I want to put emphasis on its *fictive* aspect, which is 'creating or created by imagination', as I next associate it with the contemporary practice of English Conservation.

As I mentioned earlier, the degree and kind of interventions that can take place in a designated building are dependent on its listing level. Accordingly, elements of the building may be subject to periodic renewal. Repairs that do not affect the state or look of the building and interventions that increase the knowledge of the past may be permitted to take place. Restoration work that gives more heritage value to the building may also take place. In other words, any of these actions has a profound impact on time, as they tend to either 'freeze' and/or 'reverse' it, which further affects the way memory functions. To be more precise, conservation and restoration work can be perceived as a set of actions that punctuate the evolution of a building at specific points in time; conservation maintains a current aspect of the building whereas restoration recreates earlier aspects of it or even the moment when it was first erected. As its evolution is, therefore, broken down to certain instants, the building's 'duration' becomes discontinuous, which conforms to Bachelard's understanding of time. Furthermore, according to Bachelard, matter also has wave and rhythmic characteristics. The same can be applied to buildings too. In this sense, conservation practice comes to capture and preserve the building's vibration at a certain point in time, for if this vibration stops, the building will stop existing. Conservation practice, therefore, exposes the decisive instants of a building's evolution and this introduces discontinuity, which, according to Bachelard, triggers memory. Besides, conservation aims at fixing memories in specific frameworks, instants, in which they can be kept motionless, as "the more securely they are fixed in space, the sounder they are."³²⁹ Since the soundness of memories depends on their secure fixing in frameworks then the substantiality of the latter is of major significance. Effectively, conservation practice can meet its target and cue memories once attention is paid to the successful conservation of these frameworks, which in this case are the buildings. To illustrate this further, the conservation of buildings from

³²⁹ Bachelard, *The poetics of space*, 9.

the past century or earlier is usually considered to be an easy task; this is because materials and methods of conservation have already been tried out. Problems arise however when it comes to the conservation of more recent buildings, such as those of the Modernist movement. For their implementation demanded the employment of new building technologies, ranging from revolutionary construction methods to new, experimental materials, their conservation cannot be based on previous practice and knowledge. There are cases when certain building components are no longer being manufactured or when the reversibility of particular materials, like a flawless concrete surface, can no longer be restored unless it is built from scratch. Other times, materials may have been proved to be inappropriate or even dangerous, such as the use of asbestos. In other cases, although conservation can indeed take place, it does not, as it is an unprofitable process in the long run compared to demolition and new build construction. A celebrated conservation project of a modernist building is the Isokon building in Hampstead, London, designed by Wells Coates in 1933-34, which is considered to be “one of the most rigorous modern housing projects in Britain with its emphasis on simplicity, progress and cleanliness.”³³⁰

Illustration 17: The Isokon building in Hampstead, London.³³¹

This apartment building, which has a reinforced concrete structure and plywood fittings, was neglected for many years after the war until 2000 when the local council announced a competition for its restoration. The restoration works took place in 2003 and overall they were considered successful. The repair works on the concrete surface

³³⁰ “Good modernist restoration practice”, accessed August 20, 2012, <http://narkomfin.ru/Eng/Architecture/Practice.aspx>.

³³¹ “Lawn Road and the Isokon building”, accessed August 20, 2012, <http://www.geograph.org.uk/photo/673726>.

were exemplary,³³² however, the insulation of the whole building had to be replaced with new one whereas the windows could not be restored, thus they were replaced with copies. Coming back to the main discussion, all of the problems that the conservation of modernist architecture can potentially face pose a broader philosophical dilemma: how can architectural frameworks be *genuinely* conserved so that the sound fixing of memory can in actual fact take place? In any case, once memories are fixed in these frameworks, the spectators need to actively pay attention to these fixings by employing their imagination. Memory's *fictive* aspect is thus revealed, as the work of creative minds is necessary, which, like in cinematographic processes, jumps, cuts and edits so that memory can be accessed and remembering can occur.

The Bergsonian archive and the need to reassess heritage

At the beginning of this chapter, I made an association between listed buildings and archives, which allowed me to argue that the moment of designation signifies the official archiving of architecture. Then, I referred to some central points in the history and theory of architectural conservation, and focused on the way English Conservation is practiced. I discussed how it manipulates the impact of time on buildings, by either freezing or reversing it, and explained how this *chronocautic* function of conservation can be understood in accordance with Bachelard's philosophy of fragmented time and memory. Drawing on my methodology, however, in the final section of this chapter, I develop Bergson's theory of time and memory, which Bachelard criticised persistently in his work. Through Bergson's philosophy, my intention is to demonstrate how archives, and therefore also heritage, can also be considered as sites of forgetting. Effectively, the prime function of heritage, which is the conservation of memory, collapses, thus there is an urge for an alternative conceptual approach.

During his life, Bergson developed a body of work that by the 1920s became one of the most influential philosophies in Europe. His radical and novel views on time, memory, evolution, and difference were embraced widely to such an extent that

³³² Ian Brocklebank, "The Problem with Reinforced Concrete," *Context, Institute of Historic Building Conservation*, July 2005, 30.

as John Mullarkey notes “he was at one point held to be both ‘the greatest thinker in the world’ and ‘the most dangerous man in the world’”.³³³ Although Bergson’s main concepts were absorbed in later philosophical movements, such as in phenomenology and structuralism, Bergsonism, as an overall philosophy, gradually lost its momentum, until the 1990s, at which time there was a sudden revival attributed mainly to the work of Gilles Deleuze. One of the fundamental points in Bergson’s philosophy, attacked in Bachelard’s ‘The Dialectic of Duration’, is the concept of duration or temporal continuity. Whereas for Bachelard time is fragmented, for Bergson there are two types: homogenous time, or the time of physics, that is made up of instants and which we measure in space, and the ‘real’ time, or duration, which is heterogeneous and can only be grasped with the method of intuition. More specifically, Bergson, in ‘Time and Free Will’, his doctoral thesis, explains that reality can be perceived in two ways. On one hand, we can experience a homogenous reality, namely space, which is: “clearly conceived by the human intellect, enables us to use clean-cut distinctions, to count, to abstract, and perhaps also to speak.”³³⁴ Space, which is a homogenous medium, is measurable. Equally, if time is projected in space, it can also be measured; it can have a number. Yet, for Bergson this is not ‘real’ time, it is just a human construct perceived in space. The ‘real’ time, duration, takes place in the second kind of reality; a reality that is heterogeneous and comprises a multiplicity of states of consciousness or of sensible qualities. In *Duration and Simultaneity* Bergson manages to elucidate the difference between duration and measurable time by using an example of someone drawing a line on a piece of paper. If this action is performed with the eyes shut, the motion is perceived from within, as something of his own flow. This is duration. Repeating the same example with the eyes open, one can actually see the line being traced on the piece of paper. This line is perfectly dividable and measurable, and time is measured in space through the intermediary of motion.

³³³ Frédéric LeFevre, “Une huere avec Maurice Maeterlinck, Les Nouvelles Littéraires” (7 April 1928), 8, quoted in R. C. Grogin, “The Bergsonian Controversy in France 1900-1914” (9calgary, The University of Calgary Press, 1988), 61 quoted in *The new Bergson*, ed. John Mullarkey (Manchester; New York: Manchester University Press, 1999), xvii.

³³⁴ Henri Bergson, *Time and Free Will* (London: Elibron Classics, 2005), 97.

Duration, or 'real' time, is perceived with intuition. The latter is a method that Bergson adopted in his movement of thought as a methodology. Referring to intuition, Deleuze in 'Bergsonism' writes that

...[intuition] is neither a feeling, and inspiration, nor a disorderly sympathy, but a fully developed method, one of the most fully developed methods in philosophy. It has its strict rules, constituting that which Bergson calls "precision" in philosophy...Intuition presupposes *duration* [original italics].³³⁵

Intuition is a method of division and is inspired by the Platonic model.³³⁶ The latter divides a composite into halves, which implies that in the selection process one of the two halves must be isolated. In this sense, not knowing which correct half to choose and having no other alternative, the Platonic model of division can be considered insufficient and ineffective. The Bergsonian model, however, splits composites into tendencies. As a result, on one hand we have duration, which includes all the differences in kind, and on the other hand we have space, which bears all the differences in degree. In other words, the Bergsonian model makes a qualitative division overcoming the dilemma of the Platonic model. In general, the division of a composite is not an easy process. If one considers the composite of experience, for instance, and divides it into its conditions, one will find that perception and recollection always interpenetrate each other. In other words, perception and recollection differ only in degree and not in kind, quantitatively and not qualitatively. Therefore, to achieve the *pure division* of experience, the composite must be split into its qualitative and quantitative tendencies, which are duration (time) and expansion (space) accordingly: the famous Bergsonian dualism.³³⁷ Pure duration implies a continuous unfolding, a process that is purely internal, whereas space implies an external articulation that bears no continuity. In this respect, this is what an experience from the past suggests; it is a recollection of a space of a conscious mind

³³⁵ Gilles Deleuze, *Bergsonism* (New York: Zone Books, 1988), 13.

³³⁶ *Ibid.*, 22.

³³⁷ The influence of Bergson's method of intuition as a philosophical methodology that requires the split of a composite into its tendencies can be also traced into Walter Benjamin's 1917 essay *Painting, or Signs and Marks*. In this essay, Benjamin explains that a mark differs from a sign in a sense that the latter is printed on surface, whereas the former emerges from it. Also, a mark usually appears on living beings, yet it can manifest itself on lifeless objects too. For Benjamin, the extraordinary quality of a *mark* emerges when it comes to reveal a characteristic inherent in living beings, such as guilt or innocence. For instance, when it comes to blushing, which is a sign most commonly related to guilt, this reaction tends to uncover basic components of one's own personality. In this sense, the line traced on a piece of paper in Bergson's example may be considered as a *mark*, which allows one to reveal the composite's (hidden) tendencies.

that endures. Bergson's method of intuition succeeds to seek experience at its source, trace its pure essence and reveal a difference in kind.³³⁸ Yet intuition is not a duration itself, it is;

...the movement by which we emerge from our own duration, by which we make use of our duration to affirm and immediately recognise the existence of other durations, above or below us.³³⁹

It is in this sense that Bergson uses intuition as a methodology: to access philosophical knowledge. This is because through the time of physics, or the Bachelardian time of instants, one can only acquire scientific knowledge, as instants are scientific constructs. The problem of scientific knowledge Bergson explains is that, although it is a product of the intellect, it is insufficient to explore and understand life, thus philosophy cannot rely on it. Precisely, he writes that “[t]he intellect is characterized by a natural inability to comprehend life.”³⁴⁰ Instead, the intellect can comprehend only a segment of reality that is inert matter. In *Creative Evolution* he adds that “the intellect is never at ease, never entirely at home, except when it is working upon inert matter, more particularly upon solids.”³⁴¹ Bergson claims further that the intellect cannot perceive any organised, fluid or animated matter. He states that in the process of understanding movement and fluidity

...[the intellect] starts from immobility, as if this were the ultimate reality: when it tries to form an idea of movement, it does so by constructing movement out of immobilities put together.³⁴²

It will, therefore, perceive it immobile, thus any fluidity or movement will just escape it.

I have so far referred to some of Bergson’s main concepts, namely duration/space and intuition, with the intention to prepare the ground upon which I

³³⁸ For Bergson, every person’s physical state reflects his whole personality. In *An Introduction to Metaphysics*, he claims that the philosophers’ attempt to reconstruct somebody’s personality with his physical states leads the discipline to an unavoidable confusion. One’s feeling contains virtually the whole of his past and present. In this sense, if a psychologist for instance wants to detach a mental state in order to examine it as a separate entity by itself, he must use a method of abstraction or of analysis thus neglecting the full range of shades that the examined personality has. In other words, “[they] mistake partial notations for real parts, thus confusing the point of view of analysis and of intuition, of science and metaphysics” [Henri Bergson, *An Introduction to Metaphysics.*, trans. T. E. Hulme (Indianapolis: Hackett Publishing Company Inc, 1999), 34.]. For this reason, every composite like memory and experience should be divided into their initial articulations through the method of intuition.

³³⁹ Deleuze, *Bergsonism*, 33.

³⁴⁰ Henri Bergson, *Creative Evolution.*, trans. A. Mitchell (New York: Henry Holt and Company, Camelot Press, 1911), 94.

³⁴¹ *Ibid.*, 89.

³⁴² *Ibid.*

can develop his views on memory. Although the topic of memory is resonant in most of Bergson's work, one of his early books, 'Matter and Memory' (1896), probably his major work, deals with it in more detail. Based on this particular book, I explain how archives, thus heritage too, can be perceived as sites of forgetting. I, therefore, attribute further significance to a book that, as Burton points out, has not yet been fully appreciated in fields that deal with the topic of memory at their core.³⁴³ In 'Matter and Memory', Bergson makes a clear distinction between memory and perception in a sense that the former must no longer be considered a 'loose' manifestation of the latter. He specifically writes that

...if we make recollection merely a weakened perception, we misunderstand the essential difference between the past and the present, we abandon all hope of misunderstanding the phenomena of recognition and more generally the mechanism of the unconscious. But inversely, if recollection is regarded as weakened perception, perception must be regarded as a stronger recollection.³⁴⁴

Yet, the reason that the two get mixed up is the fact that they comprise the tendencies of a composite that is consciousness. Describing the relationship of these tendencies, he writes that

[t]he two acts, perception and recollection, always interpenetrate each other, are always exchanging something of their substance as by a process of endosmosis.³⁴⁵

Bergson examines the relationship between memory and perception in the context of the living body. When senses are open, they perceive matter, which is an aggregate of images. Yet, amongst all images, there is one, the image of the body, that we know not only because we can perceive it as matter but also because of our affections, we know it from within. The body-image is different to other images, which we can call image-objects, in a sense that the former deals with movement; it can move or be moved by image-objects. Thus the body is considered the centre of action.³⁴⁶ Respectively, the relationship between body, matter, and perception is that

...matter [is] the aggregate of images, and perception of matter *these same*

³⁴³ J. Burton, "Bergson's Non-archival Theory of Memory," *Memory Studies* 1, no. 3 (September 1, 2008): 323.

³⁴⁴ Henri Bergson, *Matter and Memory*, trans. M. N. Paul and S. Palmer (New York: Dover Publications, 2004), 72–3.

³⁴⁵ *Ibid.*, 72.

³⁴⁶ *Ibid.*, 5.

*images referred to the eventual action of one particular image, my body.*³⁴⁷

[original italics]

Therefore, as the perception of matter, or else the image-objects, depends on the body, then perception itself is limited. This is because the body-image cannot absorb the totality of image-objects, as this would imply a pure perception, but only a fraction of it that is of its interest and dictated by its past experience, memory.³⁴⁸ Therefore, perception filters out the totality of image-objects based on memory, and as a result this affects consciousness too.

For Bergson, there are two main types of memory: the habit and representational memory. The former deals with a memory that is acquired through the repetition of an action, as if it were a habit. This action, like learning a text by heart, ... demands first a decomposition and then a recomposition of the whole action...it is stored up in a mechanism which is set in motion as a whole by an initial impulse, in a closed system of automatic movements which succeed each other in the same order and, together, take the same length of time.³⁴⁹

Representational memory, on the other hand, is a memory that

...records, in the form of memory-images, all the events of our daily life as if they occur in time; it neglects no detail; it leaves to each fact, to each gesture, its place and date.³⁵⁰

In order to produce a memory-image in the present, one needs to trace it amongst the totality of all memory-images that his memory has absorbed and 'recorded', and bring it forth into the present. In other words, recollection is the actualisation of a memory-image from a virtual 'place' or substratum. In 'Bergsonism', Deleuze illustrates graphically how representational memory takes place, which is like a detachment from the present with a leap in the past. Through a process of adjustment, like the focusing of a camera, we approach certain regions of the past when gradually this virtual state of the recollection becomes actual. Or, in other words, from the general past we leap into a particular past; for in the same way that our perception of things depends upon the place where these things are, equally the past can only be perceived in the place where it exists, which is in the past itself and not in our present. Thus the recollection

³⁴⁷ Ibid., 8.

³⁴⁸ Ibid., 34.

³⁴⁹ Ibid., 89–90.

³⁵⁰ Ibid., 92.

of a memory-image appears as if it came out of some sort of storage place. But as James Burton points out “[t]his is...a false impression...it is only in the process of recall that memory images acquire this status, being made to look like they have come from an archive.”³⁵¹ Commenting on the production of representational memories, John Mullarkey claims that Bergson’s memory is therefore not dualistic but in fact tripartite. This third type of memory is called *pure* memory and refers to the totality of memory-images found in a virtual state. In this sense, as soon as our needs and interests dictate the tracking down of a particular memory, the filtering out that takes place in this process of actualisation can in fact be perceived as a process of forgetting!³⁵²

Pure memory is one of the most radical aspects in Bergson’s philosophy. It suggests that the entirety of our experience is constantly being ‘recorded’ in some sort of a virtual substratum whereas this ‘record’ bears no materiality and occupies no physical space. For the body-image endures, memory-images are always virtually present; the Bergsonian concept of ‘real’ time, or duration, collapses the distinction between past and present, thus memory-images are to be found in a continuous, ongoing lingering until the moment they become actualised. The mental process of recollection occurs with a movement from the virtual to the actual hence the illusion that memory-images are ‘archived’ somewhere in the brain. Burton remarks that

...when we *recall* something we are writing it on a wax tablet, rather than when we wish to memorize it, since it is only in making the recollection a part of the present that we actualize it.³⁵³ [original italics]

It is in this sense therefore that the Bergsonian theory of memory is non-archival, for memory is no longer associated with the recording and storing of information. The reversal in this conventional understanding of memory has implications in the nature of archives too; if memory is imprinted *only* in the process of recall, when it becomes actualised, then archives appear *only* when memory is actualised, during the process of recollection. Effectively, the totality of memory does not reside in archives, but elsewhere, therefore whatever is to be found in archives is merely a reduction of memory. In this sense, archives are sites of forgetting.

³⁵¹ Burton, “Bergson’s Non-archival Theory of Memory,” 326.

³⁵² *Ibid.*, 327.

³⁵³ *Ibid.*, 330.

The same understanding in regard to archives can equally be applied to heritage. Whereas the aim of conservation is the protection of the building's memory, if considered in Bergsonian terms, this does not apply. Conservation practice comprises a body-image that, according to its needs and interests in the present, filters out or contracts the totality of memory-images, which is the complete past of a building, and preserves only an aspect of it. Thus the very process of listing architecture, or archiving it, is illusive in a sense that the building's memory vanishes. This shift in the understanding of archives may have further implications in regard to the nature and politics of memory-images that have been actualised. One can reasonably question the interests of the body-image (i.e. heritage) and the criteria of filtering out the past.³⁵⁴ As a result, one can further make an inverse question that deals with the memory-images that have been forgotten, not actualised, during the archiving process: is there a way to access them or even restore them?

In this chapter, I drew parallels between listed buildings and archives in a sense that they both provide the physical space to store and perpetuate memories. Initially, I developed Bachelard's theory of time and memory and associated it with the way English Conservation is practiced. Then, following Bachelard's methodology on the advancement of knowledge, which is based on theoretical conflicts, I developed Bergson's opposing theory of temporal continuity and memory, and demonstrated how archives, thus also heritage, can be perceived as sites of forgetting. In principle, this contradicts the key function of conservation and raises questions in regard to its theoretical validity and sound practice. Having established the problematics of conservation through archival theory, in the following chapter I explore the key relationship between architecture and memory through which I intend to develop a fresh theoretical approach to conservation.

³⁵⁴ Ibid., 336.

Chapter 5 - Architecture and Fire

This thesis explores a recent global tendency that deals with the perpetuation of memories from the past and focuses on a particular aspect, namely architecture. In chapter 2, I introduced the concept of the archive. I drew parallels between listing, which is a process that aims at the preservation of a building's memory, and the function of an archive. In chapter 4, I concentrated on the way English conservation is practiced, which I associated with Bachelard's notion of fragmented time and memory. Then, through Bergson's theory of temporal continuity and memory I demonstrated how archives are perceived as sites of forgetting, thus listed buildings, which comprise the official archiving of architecture, can be considered as sites of forgetting too. This contradicts the fundamental function of heritage and at the same time reveals the objective of this research, which seeks for an alternative theoretical approach to the way architectural heritage is understood and practiced. In order to reach this objective, in the following two chapters I reassess the key relationship between architecture and memory, and comment on it in archival terms. However, as the study of memory in architecture is a very broad subject, I concentrate on the study of a specific element, which is the element of fire. The reason behind this choice is that fire is agreed by many historians to be the first aspect of architecture, and therefore architecture's first memory. At the same time, it is one of the major causes of architecture's destruction. One may argue, therefore, that this element is appropriate to the study, for fire is present from the birth to the death of architecture. On a different level, the methodology that I employ to study the relationship between architecture and memory is based on the theoretical conflict between Bachelard's fragmented time and Bergson's temporal continuity. This, as I explained previously, carries with it notions of birth, death, and eternal return, which are notions commonly associated with the element of fire. Additionally, the fact that I base my argument on a theoretical opposition reflects Bachelard's own understanding of the advancement of knowledge. According to him, knowledge advances dialectically by saying *no* to existing knowledge. This opposition brings about new knowledge, which sometimes leads to a 'rupture' with its own past. It is for this reason, therefore, that the following study in architecture and memory develops dialectically and is generated by the opposition of

two contradicting theories; I first develop the relationship between architecture and memory according to Bachelard, which, I argue, reflects a conventional understanding, and then juxtapose it with Bergson's philosophy. In other words, through Bachelard's model of knowledge production I contradict Bachelard's own philosophy to elucidate further the relationship between architecture and memory.

In this chapter, I look at architectural evolution in relation to fire through two perspectives. Spanning from the sacred fire of the hearth to contemporary architecture, I first examine how architecture adapts itself to accommodate fire based on the thermal comfort it provides. Through these adaptations, I draw conclusions with regard to how architecture stores memory. The other approach considers fire solely as energy and thus considers its expansion in architectural space in energetic terms. This investigation gives further clues about architecture's ability to absorb and record memory. Both approaches follow a conventional understanding of Western thinking that perceives evolution in sequential stages. At the same time, it also agrees with the methodology I employ according to which the relationship between architecture and memory is examined initially through a Bachelardian perspective. For Bachelard, evolution is discontinuous. It starts out of nothingness and is made up by instants of creation, which are the result of a dialectic between being and non-being. In this case, the co-evolution of architecture and fire develops out of nothingness and unfolds in time with alternating periods of affirmation and negation. As evolution needs to be broken down to instants of creation to be perceived and therefore studied, equally, in this research I have broken down architectural evolution into significant instants as dictated and shaped by the demands for thermal comfort.

Thermal comfort

Before I proceed with my study of the relationship between architecture and memory, however, I must first introduce the concept of thermal comfort. Thermal sense is a bodily function. Whereas people have a sense for warmth and coolness, thermal sense is not included in the five senses. In most cases, it is considered as part of the sense of touch, as this is normally how one can identify the temperature of an object. Nevertheless, our ability to understand if our body is getting cooler or warmer is attributed to a certain function of our nervous system. Thermal sense, along with

the five senses, provides information about the world we inhabit. In general, we can identify the temperature of hot objects through heat exchange. Our nervous system is programmed to react to changes in the environment, rather than to steady states. In this respect, when we enter a warm room directly from a cold environment, we initially notice the heat through our thermal sensors until the body adapts to the new conditions. The thermal sensors are also not distance receptors. We cannot perceive the heat of a room until we find ourselves inside it. For this reason, we use other senses to provide us with clues in advance. Furthermore, the more senses we employ to experience our environment, the more complete our perception of it becomes. In this statement, the element of fire becomes particularly fascinating due to:

...the totality of its sensory stimulation. The fire gives a flickering and glowing light, ever moving, ever changing. It crackles and hisses and fills the room with the smells of smoke and wood and perhaps even food. It penetrates us with its warmth. Every sense is stimulated and all of their associated modes of perception, such as memory and an awareness of time, are also brought into play, focused on the one experience of the fire. Together they create such an intense feeling of reality, of the 'here and nowness' of the moment, that the fire becomes completely captivating. We are likely to feel that we could spend hours mesmerised by it.³⁵⁵

Thermal sense is absorbed and integrated into our culture in the form of an unconscious everyday practice. One tends to realise differences when visiting a country with different weather conditions to the country of their origin. On these occasions, customs and activities relating to weather become objects of observation. In regard to our everyday life, people develop thermal associations in various areas within their own environment. For instance, in hot summer days we tend to retreat to cooler parts of a building which are not located directly in the sun. The fondness we develop for certain places in regard to the thermal comfort they provide is also manifested, in most cases, with a great attention to their actual decoration. During the Middle Ages for instance, hand-woven carpets and tapestries hung on walls exceeded the common functional

³⁵⁵ Lisa Heschong, *Thermal delight in architecture* (Cambridge, Mass.: MIT Press, 1979), 29.

appreciation, which is the fact they kept the cold out of the house. They became objects of affection, and comprised one of the highest forms of art.

Philippe Rahm's *Digestible Gulf Stream*

Taking into consideration the necessity and fondness for thermal comfort and turning it into a design objective, the contemporary Swiss architect Philippe Rahm developed an experimental architectural installation called 'Digestible Gulf Stream', which was presented at the Venice Architecture Biennale 2008. For Rahm, "[a]rchitecture should no longer builds spaces, but rather create temperatures and atmospheres."³⁵⁶ As a result, this installation consists of two horizontal metal planes placed on different heights. The temperature of the lower one is at 28° whereas the temperature of the upper one is at 12°. The difference of temperature between the two planes creates a small-scale Gulf Stream phenomenon, as there is a constant flow of warm air through convection. In other words, Rahm exposes an invisible meteorological parameter, namely temperature, and manipulates it accordingly to define architectural space.

Illustration 18: Site specific installation by Philippe Rahm Architects in the Corderie at the Arsenale, Venice Architectural Biennale 2008. The inhabitants experience a small-scale Gulf Stream effect, which aims at increasing their thermal comfort.³⁵⁷

³⁵⁶ Accessed March 1, 2012. <http://www.philipperahm.com/data/projects/digestiblegulfstream/index.html>

³⁵⁷ Accessed march 1, 2012. <http://www.designboom.com/weblog/cat/9/view/3951/venice-architecture-biennale-08-digestable-gulf-stream-by-philippe-rahm-architects.html>.

Fire and architectural evolution

Coming back to the main inquiry of this chapter, the beginning of architectural evolution correlates with fire, as it is believed by many architectural historians and theorists that the primitive hut was erected around it.³⁵⁸ This view implies that architectural evolution has a starting point, which is in the centre of architectural space. It also agrees with general notions of centrality assigned to the element in early life and thought, and at the same time implies that fire is the first memory we hold of architecture. The Roman architect and writer Vitruvius, in his book 'De architectura' (27 B.C.) explains that the primitive man, who lived in the wild, was initially terrified by accidental fires that started by branches of trees being rubbed together, but slowly observed and appreciated the comfort of standing in front of the flames. He wanted to prolong his comfort and this was achieved by adding more wood to the fire. The accidental discovery of fire was, according to Vitruvius, what "originally gave rise to the coming together of men, to the deliberative assembly, and to social intercourse."³⁵⁹ More recently, the German architect and writer Gottfried Semper confirms that the fire of the hearth is the "first and most important, the moral element of architecture,"³⁶⁰ around which three other elements came to emerge, namely the roof, the enclosure and the mound. Specifically, he explains that the first signs of human settlement coincide with the lighting up of fire for revival, warmth and the preparation of food. Reinforcing Vitruvius' description, Semper confirms that the fire of the hearth was the initial assembly point of primitive man. According to him, it also comprised the point where alliances were formed for the first time and religious concepts were initially practiced. In general, "throughout all phases of society the hearth formed the sacred focus around which the whole took order and shape."³⁶¹ Fire

³⁵⁸ In one of his recent essays called *Primitive, the word and the concept*, Adrian Forty questions the concept 'primitive' in architecture. According to him, this concept is different to how it is understood in painting, for instance, as the latter never relied on its origins to justify itself. Forty points out that since the years of the Roman architect Vitruvius, architectural theory refers to the word 'primitive' but it does not have the same meaning as today. Equally, Semper's understanding of the primitive hut, which is the Caribbean hut, does not refer to our contemporary understanding of the word. In all cases, 'primitive' referred to the word 'original' until the beginning of the twentieth century. Then, Forty explains, the word obtained a new meaning and he uses as an example Adolf Loos's essay called *Ornament and Crime*. According to Forty, "[f]rom Loos's time onwards, the word "primitive" has been taken up positively as a model to follow or negatively." [Adrian Forty, "Primitive, The Word and the Concept" in *Primitive, Original Matters in Architecture*, ed. Odgers Jo et al. (New York: Routledge, 2006), 6.]

³⁵⁹ Vitruvius Pollio and Thomas Gordon Smith, *Vitruvius on architecture* (New York: Monacelli Press, 2003), 38.

³⁶⁰ Gottfried Semper, *The four elements of architecture and other writings* (Cambridge [England]; New York: Cambridge University Press, 1989), 102.

³⁶¹ *Ibid.*

is intimately associated with construction in the myths of origin too. In ancient Greece, *Hestia* was the goddess of the hearth and her fire used to burn in the *prytaneion*, the town hall, as it represented the centre of city life. In Ancient Rome, the goddess was called *Vesta*, and

...ruled both the household fire of the individual family and the civic hearth of the city. Hers was the fire which warmed and nourished, a benign and fertilizing power. But Vesta was an earth-bound power, who tied the household to the house, the people of a city to its soils.³⁶²

According to the architectural historian and critic Joseph Rykwert, the founders of Rome, when the city was initially erected, dug a round hole in the ground called *mundus*. The *mundus* had a central position in the city and represented the mouth of the Underworld. On the top of this hole they had built a stone altar, where a fire burnt ceaselessly. Every time a new city was founded, they created a new *mundus*, which burnt fire taken from the initial altar in Rome. Fire symbolised the beginning of creation and always occupied a central position in space. In this sense, fire also comprises the first memory we have of the built environment. Before that, there is dark empty space, void, and oblivion.

In principle, one can assert that fire's proliferation in architecture occurred as a result of observation, experimentation, and, unavoidably, accidents too, which act as milestones in the latter's evolution. To illustrate this argument with some concrete examples, in early Europe for instance, an open fire burnt in the middle of rooms. This indoor hearth, which was very common up until the sixteenth century, consisted of a shallow pit lined with stones, whereas a higher stone, or "reredos", with a hollow surface was placed behind it acting as a fireback. The heat and smoke escaped from a hole on the gable roof that was located directly above the fire. The thermal radiation of its flames was beneficial only when people sat directly in front of it, whereas the building itself hardly heated up as hot air escaped through the hole. Examples of this primitive form of fireplace, which are possibly the earliest to survive, can be found in the Orkneys and the Shetlands.³⁶³

³⁶² Joseph Rykwert, *The idea of a town : the anthropology of urban form in Rome, Italy and the ancient world* (London: Faber and Faber, 1976), 104–5.

³⁶³ L. Wright, *Home Fires Burning: The History of Domestic Heating and Cooking* (London: Routledge and Kegan Paul Ltd, 1964), 6.

Illustration 19: A 'reredos' placed behind the hearth and iron hanger suspending a pot from above.³⁶⁴

The first step towards the invention of chimneys was made in the late thirteenth century during which the hole of the gable roof was gradually covered with louvres to keep the rainwater away.³⁶⁵ A typical example of a central hearth can be found at Penshurst Place, a 1341 mansion in Penshurst, England.

Illustration 20: Interior of the Baron's Hall at Penshurst Place, England. In the middle of the hall, there is an octagonal hearth. There is no hole in the roof for the smoke to escape, however the gable windows have unglazed round openings.³⁶⁶

The chimney was introduced for the first time relatively late and then it was only used as a means to direct smoke out of the house. Its function to create draughts was yet to be invented. The earliest evidence of chimneys in England goes back to the late thirteenth century.³⁶⁷ Equally, the earliest written reference to chimneys dates back to 1347 when an earthquake in Venice destroyed a big number of them (*molti camini*).³⁶⁸

³⁶⁴ "The evolution of the fireplace", accessed March 7, 2012.

<http://www.victorianweb.org/technology/domestic/fireplace.html>

³⁶⁵ Wright, *Home Fires Burning: The History of Domestic Heating and Cooking*, 19.

³⁶⁶ Photograph accessed March 7, 2012. <http://humphrysfamilytree.com/Sidney/penshurst.html>

³⁶⁷ Wright, *Home Fires Burning: The History of Domestic Heating and Cooking*, 19.

³⁶⁸ Johann Beckmann, *A History of Inventions and Discoveries, Volume 2*, trans. William Johnston (London: [s.n.], 1817), 103.

The construction of the first chimneys led to many disastrous fires, as they were made out of wood. Gradually, the knowledge acquired from previous accidents pointed towards a new direction, which was the use of stone or brick. This was not just safer, but also more efficient in terms of energy, as thermal radiation was absorbed into the material of the chimney during the fire, which was later reradiated back into the room. Based on this principle, medieval castles had thicker walls opposite fireplaces, so that they could absorb the heat and return it back into the room as soon as the fire was out.³⁶⁹ The great sixteenth century house no longer needed any fortification thus the hearth could move to a recess in the external wall.³⁷⁰ Gradually, the increasing consumption of wood for maintaining open fires had an impact on the quantity of the material available. At the same time, the demand for higher levels of thermal comfort urged for improved heating systems, which altogether led slowly to the creation of more advanced and sophisticated heating systems and equipment that appeared during the seventeenth and eighteenth centuries.

As this chapter looks at how architecture adapts itself to accommodate fire, it is very important to trace the moment in history when fire becomes easily available in every house. A revolutionary discovery that occurred accidentally in Hamburg, Germany, in 1669, was to change the course of fire's expansion within human society.³⁷¹ An experiment on urine conducted by an alchemist called Henning Brandt, in his attempt to find the philosopher's stone resulted instead in the invention of phosphorus (letter P in chemistry)³⁷², a discovery described by John Emsley as 'the devil's element'.³⁷³ The use of phosphorous on matches gave the freedom to the individual to start fire at home. Up until the invention of phosphorus matches, there were many attempts to create self-igniting ones. The most common practice involved wooden sticks with one end dipped in molten sulphur. The contact of sulphur with a hot surface or a spark created by the friction of flint on metal ignited the match. Sulphur matches were present in most kitchens of the 18th century. Chlorate matches

³⁶⁹ John W Lyons, *Fire* (New York: Scientific American Library, 1985), 47.

³⁷⁰ Wright, *Home Fires Burning: The History of Domestic Heating and Cooking*, 58.

³⁷¹ Stephen J Pyne, *Fire : a brief history* (London: British Museum Press, 2001), 124.

³⁷² The name of Phosphorus comes from the Greek word *Phos* which means light and the *Phoros* which means bringing.

³⁷³ John Emsley, *The shocking history of phosphorus : a biography of the Devil's element* (London: Macmillan, 2000), 4–5.

were another invention of the same period, which contained potassium chlorate, sugar and gum and ignited as a result of the chemical reaction with sulphuric acid. They were produced for the first time in France in 1805. In 1810, Henry Berry invented a similar product in London.³⁷⁴ This was a light box that was half filled with chlorate matches, whereas the other half contained a bottle with a piece of asbestos wool soaked in sulphuric acid. Generally, the danger of these matches was the demand for transporting sulphuric acid for ignition. In 1828, Samuel Jones provided a solution and this was the Promethean match.³⁷⁵ This match consisted of a glass tube that contained sulphuric acid and was wrapped with paper. One end of the paper was dipped in potassium chlorate, sulphur and sugar. As soon as the tube was cut and the acid was released from inside, the paper ignited. Attempts to use phosphorus on matches were also made, but the cost of producing it as well as its uncontrolled flammability, made it rather an undesirable alternative.

The turning point in the history of matches, and effectively in the development of human society, occurred once again, accidentally in 1825, by John Walker. Walker was a pharmacist who ran a shop in Stockton-on-Tees. When he was asked by his client to create a mix of potassium chlorate, antimony and gum, a mix widely used those days as a means of percussion, a sample of it fell on the hearth of his shop. Later, when the mix was dry and Walker trod on it, he observed that it ignited. This accidental discovery led to the invention of friction matches, which were sold for the first time by Walker in 1827.³⁷⁶ Samuel Jones, inspired by the lecture on this invention given by Michael Faraday at the Royal Institution in London in 1828, produced his own version of self-igniting matches called *Lucifers*, a name that was used for all self-igniting matches since.³⁷⁷ A following discovery by a Swedish mineralogist, according to which calcium phosphate can be found in bones, allowed the cheap production of phosphorus. As a result, a small quantity of this element was introduced to *Lucifers*, which led to the sudden advancement of the match industry. However, the new phosphorus *Lucifers* entailed different dangers. On one hand, the flammability of the wood, or the 'after-glow' of the match after the fire was out, led to many

³⁷⁴ Ibid., 67.

³⁷⁵ Jaime Wisniak, "Matches: The Manufacture of Fire," *Indian Journal of Chemical Technology* 12 (May 2005): 372.

³⁷⁶ Emsley, *The shocking history of phosphorus*, 69–70.

³⁷⁷ Wisniak, "Matches: The Manufacture of Fire," 372.

unpredictable domestic fires, and on the other hand the element was highly toxic and could ignite very easily. Anton von Scroetter, in Austria, provided an answer to these dangers with the invention of red phosphorus,³⁷⁸ after which the match industry developed dramatically on an international level.³⁷⁹

Illustration 21: Women and girls and a young boy at work in Bryant & May's match factory, Fairfield Road, Bow, London, (London, 1871)³⁸⁰

The invention of matches marked the moment in history when fire became easily available in every house. Later on, at the turn of the nineteenth century and after the introduction of gas and, later on, of electricity, fire was omnipresent on both domestic and industrial scale, and this brought about radical changes to the formation of architectural space.

These changes respond to certain advancements that took place during the first years of modernity. Although fireplaces became more efficient, they started losing their centrality, became smaller in size, multiplied and appeared along walls in various rooms throughout the houses. The Italian architect and writer Luis Fernández-Galiano attributes the final subordination of fire to the advancement of the first greenhouses.³⁸¹ Whereas stoves were initially used in greenhouses to add to the heat gained from the sun, later they were relocated to the basement. This was based on the idea that heating could be distributed uniformly from a different room, which accommodated the stove, through hidden water pipes that carried hot water along the perimeter of the greenhouse.

³⁷⁸ Ibid., 375–6.

³⁷⁹ Emsley, *The shocking history of phosphorus*, 77–8.

³⁸⁰ Image accessed March 15, 2010, <http://www.superstock.com/stock-photos-images/1746-853>.

³⁸¹ Luis Fernández-Galiano, *Fire and memory : on architecture and energy* (Cambridge, Massachusetts: MIT Press, 2000), 224.

Illustration 22: Greenhouse with a slow combustion iron stove, London 1873.

Illustration 23: Domestic greenhouse with a heating system using hot water, New York, 1889.³⁸²

Equally, the architect and architectural historian Thomas Markus, in his analysis of the social meaning of building typologies that emerged during the period of the Enlightenment and the French and Industrial Revolutions, attributes the advancement of heating systems, thus also the subordination of fire, to the mills, which are mainly responsible for the social and material changes that took place in the nineteenth century town.³⁸³ The first example he uses is the 'cockle' stove of the 1792-3 Derby mill, which delivered warm air through ducts to the entirety of the building. The second example is a multi-storey steam heating system, where the columns were used as steam pipes. This system was for the first time applied to a mill at Dornoch, Scotland, in 1799.³⁸⁴

³⁸² Ibid., 225.

³⁸³ Thomas A Markus, *Buildings & power : freedom and control in the origin of modern building types* (London u.a.: Routledge, 1993), 284.

³⁸⁴ Ibid., 281.

Illustration 24: Strutt's 'cockle' stove at Derby Infirmary (1806-10).³⁸⁵

Illustration 25: Snodgrass's proposal for using columns as steam heating pipes (1806)

At the dawn of the nineteenth century, advances in heating systems in mills were soon applied to large public buildings, like the Derby Infirmary (1806-10), the north Staffordshire Infirmary, the Wakefield and Nottingham lunatic asylums, and the Leek Parish Church.³⁸⁶ Fernandez-Galiano draws parallels between this upcoming thermal homogenisation and Jeremy Bentham's Panopticon as an example of the emerging modernity. Whereas the design of the Panopticon was conceived as a way to allow the warden, who was located centrally, to observe the prisoners without obstructions, equally its heating and ventilation systems were designed following the same principles and technology used in the greenhouses which

...guaranteed homogenous 'artificial warmth' that would safeguard the health of the bodies in the same way that the vigilant eye tried to reform the ways and safeguard the health of the souls. The Panopticon was therefore a panthermicon.³⁸⁷

³⁸⁵ Ibid., 280.

³⁸⁶ Ibid., 281.

³⁸⁷ Fernández-Galiano, *Fire and memory*, 229.

Illustration 26: Panopticon, revised version, Bentham 1791.³⁸⁸

Both Markus' and Fernandez-Galiano's interpretations share common grounds, which reflect a certain notion of centrality. For both, heating is produced in and distributed from a central point, the stove, throughout the extent of the building. This is in tune with a more general idea of centrality and power that prevailed during the first years of modernity, such as Patrick Joyce's remark on the centrality of nineteenth century libraries, which I referred to in the earlier chapter on archives.

The emergence of the model of central heating recalls also the function of Roman Baths according to which the water was first heated by a central fire and then was distributed throughout the entirety of the bath building. Specifically, the water was piped to the hottest bath chamber, the *caldarium*, and then to the *tepidarium*, a warm pool. Then, as the water was cold again, it was channelled to the *frigidarium*, which was a cold pool. The smoke and gases released by the combustion travelled under the *caldarium* in the hypocaust and up through the walls through which they were vented to the open air.³⁸⁹

In the second half of the nineteenth century, basement boilers distributed heat through a visible system of drains, valves and pipes. Fireplaces were still occasionally present, but in most cases for decorative use. Later, with the emergence of the modern movement, fire and architecture were finally divorced. This moment also marked a sudden break with history, which was expressed with a desire for an architecture of purity, expressed through amnesia and thermal silence. In 'Walls Have Feelings', Katherine Schonfield explains that the modern movement's architecture of purity reflects 'the idea of *the defence of the border*' according to which borders

³⁸⁸ Ibid., 230.

³⁸⁹ Lyons, *Fire*, 47.

define and withhold only whatever is pure. Modernist architecture is thus pure, for its borders are clearly distinguished and defined.³⁹⁰ The heating systems of modernist buildings are equally pure as the spaces they occupy are clearly defined too. This is the boiler room that serves the building through a highly sophisticated network of pipes concealed within walls and ceilings. Modern heating systems occupy their own space and are visually disconnected from the inhabitant; a space for pipes and a space for people. Commenting on the modernisation of domestic space, Helen Molesworth refers to the architectural historian Siegfried Giedion, who in his 1948 book called 'Mechanization Takes Command', describes that the twentieth century home

...developed a 'mechanical core' around the kitchen and the bathroom...the home was [also] re-structured around water availability in order to incorporate standardized plumbing, was wired for electricity, saw the rise of centralized heating and experienced the introduction of the phone.³⁹¹

Molesworth adds to Giedion's description that the overall experience of the mechanisation of domestic space was about 'absorption'. Accordingly, the home absorbed and reflected aspects of the industry, therefore the

...connected counter-top that ran around the perimeter of the kitchen, allowed for an easy incorporation of new tools and technologies to aid in the efficiency of household labor.³⁹²

Reflecting on Molesworth's statement, I argue further that similar processes of 'absorption' took place in heating systems, which in the long run altered our perception of thermal comfort. The advancements that took place in the heating of greenhouses and mills were first applied to large public buildings and then to smaller domestic environments. Later, the visible boiler-radiator heating system was absorbed into the structure of the building with concealed pipes running between floor slabs and floor finishing. We can still sense the heat radiated through them, however, the fact that we do not have direct visual contact leads to an abstract, decentralised appreciation.

³⁹⁰ Katherine Shonfield, *Walls have feelings : architecture, film, and the city* (London; New York: Routledge, 2000), 4.

³⁹¹ Molesworth, Helen, " Bathrooms and Kitchens: Cleaning House with Duchamp" in *Plumbing : sounding modern architecture*, eds. Nadir Lahiji and Daniel S Friedman (New York: Princeton Architectural Press, 1997), 76-7.

³⁹² Molesworth, Helen, " Bathrooms and Kitchens: Cleaning House with Duchamp" in *Plumbing : sounding modern architecture*, Lahiji and Friedman, 77.

Fire and sustainable design

Modernity marks the point in time when fire starts gradually to distance itself from architectural evolution. Processes of combustion still take place within the building, yet hidden away from the inhabitants. They occupy their own physical space and the energy they produce is distributed silently throughout the building. Today, in a period of global environmental awareness, the relationship between architecture and fire is subject to further alterations. Amongst various demands, 'sustainable' agendas aim to reduce drastically, or even end combustion in buildings. In the following paragraphs, my intention is to explore how architecture reflects the abolishment of fire so that it complies with the contemporary green spirit.

Advancement in science and technology has made possible the creation of habitable environments that can overcome the laws of nature with the simple movement of a switch. This is achievable by consuming high levels of energy, which are typically sourced from fossil fuels such as oil, natural gas and coal. However, fossil fuels are a natural source thus their supply is finite, whereas their consumption entails also economical, social and environmental implications. They are responsible for global warming, air and water pollution, land damage from mining and transportation, and are often dependent on foreign energy sources. The catastrophic impact on the environment begins from the moment when they are removed from the source until the point when they are consumed for energy supply.³⁹³ Since the International Conference on Climate Change held in Tokyo, Japan, in 1997, governments worldwide have focused on reducing environmental impact. The response of architecture is a 'sustainable design' approach, which is in essence a "revised conceptualization of architecture in response to a myriad of contemporary concerns about the effects of human activity."³⁹⁴ Compared to traditional design approaches, sustainable design considers buildings as systems within specific environments (manmade or natural ones), which can be affected by numerous variables. One of the difficulties, however, is that there is no limit to the number of these variables therefore sustainable design is

³⁹³ Yan Ji and Stelios Plainiotis, eds., *Design for Sustainability* (China: China Architecture and Building Press, 2006), 2–3.

³⁹⁴ T. J Williamson, Antony Radford, and Helen Bennetts, *Understanding sustainable architecture* (New York: Spon Press, 2003), 1.

to a certain degree “prognostic and anticipatory”.³⁹⁵ The variables that are always taken into consideration, however, are the site location, the existing vegetation and landscaping, the building orientation, the building envelope, the external glazed surfaces, the construction of walls and roofs, the insulation, the natural ventilation and lighting possibilities, and the construction materials.³⁹⁶ These variables are crucial to sustainability because they determine the levels of thermal comfort in a building thus also the levels of energy consumption.

Sustainable design targets the reduction, or, if possible, the abolishment of combustion. ‘Green buildings’ employ alternative energy sources, which are called Sustainable Energy Sources (SES) or Renewable Energy Sources (RES), and are the solar, wind and hydro energy, and the biomass. Energy is captured from existing natural flows, which are the sun, the wind, the flowing water, from biological processes, and the geothermal heat.³⁹⁷ In the following paragraphs, I will explain how architecture adapts itself to accommodate these alternative energy sources, which aim to replace the need for combustion.

The potential of solar energy in architecture has been explored since the ancient years. Xenophon (430-354 BC) in his ‘Memorabilia’ (Book III, Chapter VIII) cites Socrates who once questioned architecture’s adaptability to the sun:

In houses, then, that look to the south, does not the sun, in the winter, shine into the porticoes, while, in the summer, it passes over our heads, and above the roof, and casts a shade? If it is well, therefore, that houses should thus be made, ought we not to build the parts towards the south higher, that the sun in winter may not be shut out, and the parts towards the north lower, that the cold winds may not fall violently on them? To sum up the matter briefly, that would be the most pleasant and the most beautiful residence, in which the owner, at all seasons, would find the most satisfactory retreat, and deposit what belongs to him with the greatest safety.³⁹⁸

Since the ancient times, therefore, the effect of nature’s elements helped decide on the orientation and shape of buildings. More recently, Le Corbusier, one of the

³⁹⁵ Ken Yeang, “A theory of ecological design” in *Rethinking technology a reader in architectural theory*, eds. William W Braham, Jonathan A Hale, and John Stanislav Sadar. (London; New York: Routledge, 2007), 391.

³⁹⁶ Ji and Plainiotis, *Design for Sustainability*, 5.

³⁹⁷ “Alternative Energy”, accessed September 12, 2012, <http://www.altenergy.org/>.

³⁹⁸ “Xenophon’s memorabilia of Socrates”, accessed March 22, 2012, <http://thriceholy.net/Texts/Memorabilia2.html>

greatest European architects in the twentieth century canon, implements his design in accordance with the route of the sun and this is evident even at conception stage as witnessed in his sketchbooks.³⁹⁹

Illustration 27: Le Corbusier's 1954 sketch of the solar cycle in a sine wave as found in his notebook.⁴⁰⁰

Le Corbusier's *brise-soleil*, for instance, is an architectural adaptation of a design that responds to the impact of solar power. A typical *brise-soleil* system is composed of a horizontal projection, sometimes incorporating a set of movable louvers, and can be found on the facade of buildings exposed to the sun. At the *Unité d'Habitation* in Marseille, the *brise-soleil* system does not allow any sunrays to touch the glass during the warmest hours of the day between the spring and autumn equinox. In the rest of the year, when solar energy is beneficial as it can heat up the interior of the building, the *brise-soleil* allows sunrays through it.

Illustration 28: Le Corbusier's *brise-soleil* system at the *Unité d'Habitation* in Marseille.⁴⁰¹

³⁹⁹ Dominique Fretin and Gilda Collet Bruna, "Solar Energy: Harvesting the Sun. An Architectural Approach Through Le Corbusier's Groundings," *Engevista* 13, no. 1 (May 2011): 5.

⁴⁰⁰ Fernández-Galiano, *Fire and memory*, 27.

⁴⁰¹ Image accessed May 10, 2010, <http://www.essential-architecture.com/STYLE/STY-M10.htm>.

Passive solar design deals with compositional arrangements, such as the admittance of energy through correctly oriented windows or other glazed openings, and the storage of energy in the thermal mass (i.e. floor slabs or walls), which is then distributed to internal spaces through natural convection and radiation. Passive solar design techniques can also be applied to existing buildings and can reduce energy consumption by up to fifty percent. As opposed to active solar design, passive design resolutions do not demand the mediation of consuming devices, such as pumps, fans or any other electrical equipment, to distribute energy throughout the building.⁴⁰² In an active solar design, the energy of the sun is captured through the mediation of photovoltaic cell systems, which is then converted into electricity that can be used for any function in the building, such as heating and lighting. Active solar systems allow more flexibility in terms of design and installation, however, as their functionality incorporates many moving parts, they have higher demand for maintenance. A common active solar system is the thermosyphon. This includes a set of solar panels used to heat up a liquid that is present in a storage tank. The stored heat is then transmitted to a central heating device, which distributes the heat into radiators or under-floor heating systems.⁴⁰³ A building in the United Kingdom that meets high standards of sustainability is the *Beaufort Court Zero Emissions Building* (2003) designed by Studio E. Through a sophisticated active and passive design, this building aims to be carbon neutral and self-sufficient in energy. This can be achieved through the integration of five renewable energy sources, which are: “[a] wind turbine, photovoltaics, hybrid photovoltaic/thermal array and seasonal ground heat store, biomass heating and bore hole cooling.”⁴⁰⁴

Illustration 29: Beaufort Court Zero Emissions Building by Studio E (2003)⁴⁰⁵

⁴⁰² Ji and Plainiotis, *Design for Sustainability*, 11–3.

⁴⁰³ *Ibid.*, 15–6.

⁴⁰⁴ “Beaufort Court Zero Emissions Building”, accessed September 19, 2012, <http://www.studioe.co.uk/beaufort.html#>.

⁴⁰⁵ *Ibid.*

Apart from solar energy, sustainable architecture aims at the exploitation of other energy sources, which can be more beneficial in areas where sunlight, for instance, is limited. This is the use of geothermal energy, which derives from the radioactive decay found in the core of the planet. Equally to solar energy, this type of energy can be used for the generation of electric current and the production of heat.⁴⁰⁶ An exemplary building that makes use of geothermal energy is the 2002 *Norddeutsche Landesbank* in Hanover, designed by Behnish and Partner.

Illustration 30: Image and cross-section of Norddeutsche Landesbank.⁴⁰⁷

In this building, geothermal energy is used according to the season. During summer, the heat is absorbed through the ground and then stored so that it can be used during cold periods. This stored energy heats up the water that circulates in a pipe work, which is integrated in the structure of the building. During winter, this function is reversed. The heat from the building is directed into the ground through the same pipe work, cools down the water that is running in the pipes by the heat exchangers, and then circulates back to the building. The only non-sustainable energy that is needed for this heating/cooling system is electricity, which is consumed to run the circulation pump. In effect, the annual energy balance for the heat introduced and extracted from the ground is even.⁴⁰⁸

Sustainable design aims to utilise energy sources that have negative impact on the environment. The combustion of materials as a means to produce energy, such as fossil fuels, is reduced to minimum thus their need becomes to a certain degree

⁴⁰⁶ Ronald DiPippo, *Geothermal power plants : principles, applications and case studies* (Oxford; Heidelberg [u.a.]: Elsevier, BH, 2009), 20–1.

⁴⁰⁷ Ji and Plainiotis, *Design for Sustainability*, 56.

⁴⁰⁸ *Ibid.*, 61.

superfluous. Whereas during modernity, architecture offers fire its own space of inhabitation, in sustainable design, fire is extinguished. In regard to architectural evolution, the space fire once occupied, such as the boiler room, and building elements, such as fireplaces and chimneys, become redundant. The memory of fire is projected outwards and is replaced by external processes of universal order. The heat gained from the sun and the earth substitute combustion, and now the formers define architectural form through an oblivious process of the latter.

I have so far looked at key stages of architectural evolution in regard to its adaptability to accommodate fire based on the thermal comfort it provides. Starting from the flames of the hearth, I explained that once fire occupied a central position in space and people gathered around it. They had direct visual contact with it, as naked flames burnt constantly in the houses. This led gradually to the appearance of chimneys, fireplaces, and other basic heating systems and equipment. Nevertheless, during the first years of modernity, there is a noteworthy shift. Fireplaces give space to the emergence of complex heating systems, which occupy their own space, the boiler room, and deliver heat through a sophisticated network of pipes, radiators, and under-floor heating. As a result, the centrality that the hearth once had is lost and people find themselves surrounded by multiple centres. Fire is dislocated and burns occupying its own physical space; its movement takes place in silence and darkness, hidden away from people. Today, in a period of a compulsory environmental awareness, combustion in architecture is envisaged to stop. It is replaced by natural universal processes, which carry the potential to fuel any contemporary building, thus making the need for fire redundant. This redundancy, however, which is accompanied by the simultaneous employment of alternative energy sources, informs architecture further; new building configurations and technologies are necessarily created, whereas existing architectural spaces and services become merely superfluous.

Fire as energy

This chapter so far has dealt with the way architecture has accommodated fire neglecting purposely a significant aspect; the fact that fire is energy. As I mentioned in the previous chapter, one of the liberating achievements that followed the establishment of the theory of thermodynamics was the conceptual merging of energy

with information, which gave access to physics, science, to become part of the discourse in other disciplines. Based on this merging, the following section focuses on architectural evolution in relation to fire in energetic terms. Through an energetic inquiry, a building can be perceived as a composite of different energies, which give life and order to inanimate matter. It thus no longer remains a mute autonomous object, but rather comprises a material organisation that emerges in time. Through an energetic approach, architecture's frozen essence defrosts, becomes warm, and the building itself can justifiably be perceived as an animate, habitable space.

Commenting on the primitive hut, Fernández-Galiano explains that the man of those times built initially a wooden shelter, but also used the same material to light fire. In this respect, the wood can be perceived, both as a construction material as well as a combustible element. Regarding the fire that burnt in the first hut, it comprised energy that was initially accommodated and consumed within by its inhabitants; this is the energy of maintenance, which was later absorbed in the process of construction itself.⁴⁰⁹ If one considers architecture, or even the city in general, as an open thermodynamic system, then its material organisation on one hand and information, or memory, on the other can be linked. This association is confirmed through the ecologist Ramon Margalef who states that nature has the capacity to store information, and this is not restricted merely to the organic world. To illustrate his statement, he refers to the gradual and random formation of the river's path, and the complexity of the earth's crust throughout the years, which are both "information-storing devices in the same manner that the genetic systems are."⁴¹⁰ His main argument, however, is that the information concealed in nature "allows for a partial reconstruction of the past."⁴¹¹ Translating this into architecture, the building can be perceived as a store of useful memory. This memory is stored within materials, their properties and spatial arrangement, in technologies, in architectural and urban typologies, and so on, and stretches back to the construction of the first hut.

A building, or a whole city, can be perceived as an open thermodynamic system. According to the second law of thermodynamics, as the entropy of the system always

⁴⁰⁹ Fernández-Galiano, *Fire and memory*, 17.

⁴¹⁰ Ramon Margalef, *Perspectives in Ecological Theory* (Chicago/London: University of Chicago Press, 1968), 2.

⁴¹¹ *Ibid.*, 2–3.

increases and the system's ability to produce work decreases, energy from external sources must be introduced so that the organisation of the system is maintained. The necessity for an external energy (medium) as a means to maintain the organisation of an open system is described by Prigogine and Stengers in a comparison between a cell and a city. Specifically, they write that

...these systems are not only open but live in their openness, nourishing themselves with the flows of matter and energy reaching them from the outside world... If we decide to, we can isolate a crystal, but the city and the cell die quickly when separated from their mediums, for they are part of the worlds that nourish them and constitute a sort of local and unique incarnations of flows they never cease to transform.⁴¹²

Effectively, in regard to architecture, this implies that with the passing of time buildings cannot sustain their initial form. They carry the impact of time on them and manifest their decay. Thus an external energy needs to be applied, which can reverse decay and architecture can sustain its morphological organisation. This energy refers to the energy needed for the restoration of architecture.

The study of fire's proliferation in architecture presents an element that multiplies in number and magnitude. This increasing quantity of fire gives space simultaneously to a slow decrease of its quality, to the loss of its mythical and symbolic content, until the point when fire as energy is eventually divorced from architecture.

Reflecting on the significance of the element, Lisa Heschong assumes that

... fire was certainly the most lifelike element of the house: it consumed food and left behind waste; it could grow and move seemingly by its own will; and it could exhaust itself and die. And most important it was warm, one of the most fundamental qualities that we associate with our own lives. When the fire dies, its remains become cold, just as the body becomes cold when a person dies. Drawing parallel to the concept of the soul that animates the physical body of the person, the fire then, is the animating spirit for the body of the house.⁴¹³

Fire is the energy that gives life to a building. Nevertheless, throughout history humanity has witnessed cases when this energy, consumed to create a building, was

⁴¹² Ilya Prigogine and Isabelle Stengers, "La nouvelle alliance: Métamorphose de la science" (Paris: Gallimard, 1979), 142-3, quoted in *Fire and Memory, On Architecture and Energy*, trans. By Carino, G., Luis Fernández-Galiano (Cambridge, Massachusetts: MIT Press, 2000), 79.

⁴¹³ Heschong, *Thermal delight in architecture*, 72.

the same energy that caused its very destruction. Isolated fires burnt in incinerators to create materials for the construction of big cities; yet isolated fires that broke out on different occasions caused catastrophic damage in big districts or even throughout the whole extent of cities. The French writer Georges Bataille, who is known for his views “*against architecture*”⁴¹⁴ and against continuity of evolution,⁴¹⁵ comments on the energy of a living organism explaining that,

...in a situation determined by the play of energy on the surface of the globe, [the organism] ordinarily receives more energy than is necessary for maintaining life; the excess energy (wealth) can be used for the growth of a system (e.g., an organism); if the system can no longer grow, or if the excess cannot be completely absorbed in its growth, it must necessarily be lost without profit; it must be spent, willingly or not, gloriously or catastrophically.⁴¹⁶

Excess of energy can therefore be a reason for irretrievable damage. Based on this statement, Bataille draws parallels between the failure of absorbing the excess energy created by the growth of the industrial activity, and the breaking out of the World Wars. He explains that the excess of production that occurred due to the technical advancement of that period was difficult to be sustained. As a result, this satiety brought about the breaking out of World War II, whereas the intensity of the war itself was a direct result of the size of this excess. Yet, Bataille adds, excess is not always necessarily destructive. Life manifested as growth and reproduction would not exist if an organism did not consume the surplus energy available in a productive way. A plant absorbs the energy offered by the sun and uses it for its own growth. It will occupy all the available space towards any direction until growth reaches its limit. From this point onwards, if there is no more room for expansion, any further sum of energy absorbed becomes excessive.

In a sense, life suffocates within limits that are too close; it aspires in manifold ways to an impossible growth; it releases a steady flow of excess resources, possibly involving large squanderings of energy. The limits of growth being reached, life, without being in a closed container, at least enters into ebullition:

⁴¹⁴ Neil Leach, ed., *Rethinking architecture : a reader in cultural theory* (New York: Routledge, 1997), 20.

⁴¹⁵ Michael Richardson, *Georges Bataille* (London; New York: Routledge, 1994), 123–4.

⁴¹⁶ Georges Bataille, *The accursed share, volume 1* (New York: Zone Books, 2002), 21.

Without exploding, its extreme exuberance pours out in a movement always bordering an explosion.⁴¹⁷

To illustrate Bataille's argument with specific examples coming from nature, one only needs to consider plants, such as the lodge-pole pine in North America and the chamise or greasewood, a southern Californian shrub, which 'have evolved traits to stimulate fire'.⁴¹⁸ Fire in architecture, like the energy of a living organism, can equally become excessive. Cities are created and are sometimes later destroyed by fire. The delicate equilibrium of the technologically sophisticated network where fire inhabits - visually disconnected from the dweller between walls and floors - can reach a momentum where energy's growth has no more room to expand. On these occasions, it can take over the next adjoining space, which is the space destined for human inhabitation. Yet, everyone is aware of its presence, and particularly of its vicious and catastrophic power. Whereas once fire comprised an object of fondness, today there is an immense fear against it. Our experience with it is not direct unless fire reveals itself in accidents. However, the experience we have in most cases is not of the actual event, but rather of what fire leaves behind; the material end-product of combustion and the memory of the accident.

- **Architectural evolution and fire – a Bachelardian approach**

...of Bergsonism we accept everything but continuity.
Gaston Bachelard, *The Dialectics of Duration*

I have so far outlined key stages of architectural evolution in regard to the thermal comfort that fire provides. This inquiry follows a Bachelardian perspective, as evolution is perceived as discontinuous and broken down into instants of creation. This study is informative because it opens up a discussion of architecture's ability to record memory. Architecture appears to function as a porous entity that absorbs the needs and demands of its inhabitants. I have demonstrated that thermal comfort decides

⁴¹⁷ Ibid., 30.

⁴¹⁸ Pyne, *Fire*, 18.

upon the shape of future architectural forms. Furthermore, the knowledge gained as a result of *observation* on the success and failure of already existing built configurations is applied accordingly on future buildings, and the latter, as soon as they are realised, carry in actual fact the memory of these previous configurations. In other words, architecture functions as an archive of this knowledge, which is passed on as memory, and takes shape upon the architectural end product. When human needs and demands change, architecture adjusts itself accordingly through processes of *experimentation*. New building techniques, arrangements and materials are tried out, and according to their performance, they are either repeated or not in future structures. In this respect, architecture operates as a developing archive that reflects the spirit of its era.

This archival quality of architecture to adjust, record upon its very substance, and therefore, reflect the conditions of a society may also be confirmed through a broader discussion, which does not restrict itself solely to the relationship between architecture and fire. Raphael Samuel, in 'Theatres of Memory', claims that "the philosophy of a building...is the spirit of the age incarnate, bearing the impress of the dreams and the dilemmas of its time."⁴¹⁹ This may be well justified if one looks at the materiality of buildings erected during different eras and draws conclusions in regard to the memory they hold. In the example used by Samuel, for instance, the brick, as a building material, carries in it notions of pastness, which give clues about previous political, economic and cultural conditions. In the United Kingdom in 1666 since the Great Fire of London, brick (and stone) became compulsory materials and were widely used until the 1940s. Nevertheless, due to the post-war shortages of raw materials and labour, the demand for quick re-construction, and the advent of modernist architecture, construction turned to prefabricated building component solutions. Yet again, brick has recently revived and this, according to Samuel, comes as a direct result of some developers' aspirations to create a new housing class within city centres. Accordingly, this gentrification agenda aims at converting warehouses into luxurious properties and preserving period facades, as in both cases brick is the main material. In other words, the needs of this market legitimise the return to brick as a building

⁴¹⁹ Raphael Samuel, *Past and present in contemporary culture*. (London [u.a.]: Verso, 1999), 128.

material, as it essentially reflects notions of pastness. Through this investment, the warehouse becomes a cultural artefact, where its image as an urban ex-industrial space is entirely lost submitting to the “rules of the ‘picturesque’.”⁴²⁰

The archival quality of building materials to carry memories from the past has been a major tool for architects and developers to direct public opinion and sympathy according to their visions. In the United Kingdom, for instance, the clash in terms of urban continuity that the transition from the enormous, high-rise, concrete social housing of the 1950s and the 1960s to the small low-rise brick social housing of the 1970s onwards brought about was partly justified by the return to brick as a building material. This is because bricks refer to earlier building traditions that were much appreciated by the majority of the British public. In addition, brick, or any other building material, reflects aspects that relate to the cultural identity of a particular locality. So for instance, Samuel argues that “brick is the most ‘English’ of the building materials: honest and down-to-earth, plain and unvarnished, it reflects the national virtues.”⁴²¹

I have argued that building materials have the capacity to carry memory. Surprisingly, however, there is a contradiction rising if one considers that memorials in recent history are mainly built out of concrete whilst concrete itself is most commonly associated with the erasure of memory.⁴²² In ‘Concrete and Memory’, Adrian Forty quotes Henri Lefebvre’s view of concrete’s impact on the continuity of a city’s history: “Here I cannot read the centuries, not time, nor the past, nor what is possible.”⁴²³ Since the advent of modernist architecture, concrete has indeed been associated with oblivion, as modernism itself aimed at a break with history. For Forty, however, this is not true. He agrees that concrete is used, apart from obvious financial and structural capacity reasons, because it is associated with notions of radical change and improvement, regardless of its unsustainable nature. Commenting on a Nazi concrete memorial called *Maerzgefallenen*, Forty explains that its simple concrete form was perceived to reflect collective effort. The bond between the different components

⁴²⁰ Sharon Zukin, *Loft Living: Culture and Capital in Urban Change* (The Johns Hopkins University Press: Baltimore & London, 1982), 180.

⁴²¹ Samuel, *Past and present in contemporary culture.*, 129.

⁴²² Adrian Forty, “Concrete and Memory” in *Urban memory : history and amnesia in the modern city*, ed. Mark Crinson (London; New York: Routledge, 2005), 78.

⁴²³ Adrian Forty, “Concrete and Memory” in *Urban memory : history and amnesia in the modern city*, Crinson, 75.

found in concrete reflected the bond between individuals of the social regime, which altogether worked towards a common target, the unity within National Socialism. Looking at a different memorial in Rome, called *Fosse Ardeatine*, which is composed of concrete mixed with local aggregate and looks like a massive piece of stone, he comments further that concrete can imitate nature but can also reproduce it on a much bigger scale. Therefore, although concrete is not a traditional material in a sense that its association with modernism implies a break with history, it can definitely carry meaning with it.

The material composition of a building entails certain attributes, which lend archival properties to architecture. Architecture, as an ordered assembly of various building materials, reflects human thought and this thinking, according to Richard Sennett, “revolves around three key issues: metamorphosis, presence, and anthropomorphosis.”⁴²⁴ To contextualise this statement with the current discussion of architecture and fire, the gradual development of the heating system of houses for instance, from the open fire in the middle of the house, to the stove and fireplace and eventually to its replacement by a network of boiler and radiators, has been a long process, which, as previously mentioned, developed as a result of observation and experimentation. This is what Sennett calls metamorphosis, which itself can occur in three ways. Firstly, this process encompasses an evolution of a type-form, which is “a change [that] occurs through the elaboration of its species.”⁴²⁵ As soon as the technology of the stove produced no further negative results, heating methods moved towards new directions. What is fundamentally important in regard to the evolution of a type-form, therefore, is failure, as this decides upon the continuation of its evolution. In this respect, failure does not necessarily imply something negative, but rather a means for further improvement. Metamorphosis can also occur when different elements are integrated for the creation of new ones. For instance, the heating up of greenhouses was initially achieved by introducing a technology used on a residential setting (stove) combined with the already existing technology of a greenhouse (trapped heat). Later on, the advancement of heating up greenhouses

⁴²⁴ Richard Sennett, *The craftsman* (London: Penguin, 2009), 120.

⁴²⁵ *Ibid.*, 125.

(through the mediation of a basement stove and a network of pipes circulating water and distributing warmth throughout) was integrated in the technology of heating up houses, which resulted in the currently popular boiler-radiator heating system. This shift where one practice can be applied to a different area of interest is what Sennett calls a domain shift.

Architecture carries also the presence of its creators. In Roman times for example, every new city was founded around a stone altar, the *mundus*, which burnt fire from the initial altar in Rome. This fire symbolised the beginning of each new city, which referred back to their creator. A similar approach to fire as a means of relating back to the place of origin was repeated in modern history, during the Olympic Games of 1936 in Nazi Germany. As Hitler's propaganda aimed at relating Classical Greece as the forerunner to the Aryan race, the occasion of the Games appeared as a great opportunity. Initially, two renowned archaeologists, Theodor Wiegand and Carl Blümel, curated an exhibition called "*Sports of the Greeks*". However, the ultimate act of relating to Ancient Greece was devised by Dr Carl Diem who introduced the relay of the Olympic flame.⁴²⁶ In July 1936, the ritual took place for the second time⁴²⁷ in Ancient Olympia and since then it takes place at the beginning of every Olympic Game. Women dressed in white robes were gathered around a brazier. A torch was then lit by the heat of the sun captured in the brazier and runners, one by one, carried the flame from the ancient site, through Athens, all the way to Berlin.

Illustration 31: The opening scene of the lighting and relay of the Olympic flame. This epic film is about the Berlin Olympics in 1936. It was commissioned by Hitler and made by Leni Riefenstahl.⁴²⁸

Comparing past and present materials, in the ancient times bricks and stones often carried subtle marks indicating the name of their creator or the place of the

⁴²⁶ Nigel Jonathan Spivey, *The ancient Olympics : war minus the shooting* (Oxford: Oxford University Press, 2004), 247.

⁴²⁷ The ritual of the lighting of the Olympic flame was introduced for the first time during the 1928 Olympics in Amsterdam and referred to an ancient Greek ritual that commemorated the theft of fire from the Greek God Zeus by Prometheus.

⁴²⁸ Image accessed April 22, 2010, <http://oldhollywood.tumblr.com/post/7634093544/the-lighting-of-the-olympic-torch-in-olympia>.

latter's origin. In modern times, the presence of the creator can be assumed upon the degree of the material's formal imperfection. The homogeneity of a massively produced machined brick, for instance, implies a generic industrial production line, whereas the imperfection of a handmade one, although anonymous, refers to the hands of its creator.⁴²⁹ On a more abstract level, materials also feature anthropomorphic qualities. These qualities manifest themselves in language, in expressions like "an environmentally friendly material" or the "honest colour of a rendered wall", through which one can identify with.

Through the energetic study on fire and architecture, I pointed out that memory is not stored merely on buildings but is also present in people's minds. A memory like this is an architectural typology.

[Typology is an] approach that isolates the attributes of the architectural coherence, identifies them as characteristics, in order to then compare them with similarly abstracted attributes from other contexts and to define similarities or differences.⁴³⁰

The word typology derives from the Greek word *typos* (type), which means imprint. *Typos* is a concept with a long history that underlies human knowledge since the ancient times; Plato, for instance, perceived it as an idea whereas Aristotle as a shape. In architecture however, the term typology is used as in the sciences and refers to the result of a process that is based on observation, then classification of different types of individual units into groups, and later, on the comparison between them. This process comprises an attempt of man to gain knowledge of the world he lives in, and it can be either a concrete or a conceptual approach, although these two approaches are usually blurred.

During the eighteenth century, there was an increasing interest amongst natural historians in regard to identifying common characteristics between animals and plants. This interest led to the gradual creation of a theory of archetypes. The German school of Zoology called *Naturphilosophie*, with Goethe as a leading figure,

⁴²⁹ Currently, machined bricks can look handmade. Through a computer-generated process, they can look different to each other, yet this is not profitable, as the potentially infinite dissimilarity between handmade bricks cannot be reproduced.

⁴³⁰ Lack, P., "Bruno Reichlins gebaute Architekturkritik" (VDG Verlag and database for humanities, Weimar, 1995), 93 quoted in *Courtyard Houses: a Housing Typology, Volume 1*, trans. U. Engelmann, G. Pfeifer and P. Brauneck (Berlin: Birkhäuser Verlag AG, 2008), 8.

conducted research on various plants as they were fascinated by the fact that different types carried some many similarities between them, as opposed to differences. Their aspiration was to discover a pattern that was common amongst all plants, an archetype, and if that was possible, then expand the research and establish a common pattern amongst all species in nature. Goethe's initial approach was to create a universal plant-type, the *Urplanze*, according to which all plants were its derivative.

Illustration 32: Goethe's *Urplanze*.⁴³¹

This method of looking for common characteristics amongst species and categorising them accordingly was equally translated in and applied to architecture.⁴³² The first person to use the term typology in architectural history was Quatremere de Quincy in 1825. For him, typology was understood as a blend of reason, use and custom, thus applying it to architecture one can connect with nature, society and tradition accordingly. Before him, in 1819, Jean-Nicolas-Louis Durand gathered and grouped the plans of important historical buildings, such as theatres, stadia, and markets, drew

⁴³¹ Image accessed April 10, 2012, <http://www.goldrootherbs.com/2010/09/27/the-urpflanze-or-goethes-archetypal-plant/>.

⁴³² As the term typology in architecture is used in the same way as in the sciences, then one can explain the way architecture evolves in association with organic evolution and comment on the way memory is transmitted in biological terms. According to Alfred Lotka, human evolution manifests itself through two channels. On one hand, there are processes based on genetic material, which are called *endosomatic*, they occur within the body, and are based on the Darwinist theory of natural selection. There are other processes, on the other hand, which are external to the body, they are called *exosomatic*, and they are understood in a Lamarckian sense. Nevertheless, as Philip Steadman argues, human evolutionary theory can also be applied to artefacts, thus in architecture, and "[t]his is in the proposal that tools, or machines, or other implements, are in fact part of the evolution of one particular species of animal, i.e. man; that they are, so to speak, extensions of or substitutes for the various organs of his own physical body." [Philip Steadman, *The evolution of designs biological analogy in architecture and applied arts* (Cambridge: Cambridge University Press, 1979), 124.] A biological interpretation of an *endosomatic* process in architecture, or else a process that occurs *within* architecture itself, refers to the typology of a building, which, as I previously mentioned functions as memory that is present on buildings and in people's minds.

them in a common scale and presented them in his plates of 'Recueil et Parallel des Edifices'. Through this work, he wanted to explain the laws of composition on the basis of abstract models and at the same time to compare buildings that had the same use throughout different periods and areas. The way he classified them, however, was reminiscent of Goethe's work on plants, according to which types were generated by an archetype. Durand's intention was educational and, as Philip Steadman writes his students

... by studying types and their underlying principles of composition, [should] be enabled to cope with what would otherwise be a bewildering and endless variety of individual, unrelated problems...if the student were to devote himself to mastering general type-forms, then he would be in a position to modify these types appropriately, to respond to the particular exigencies of function, site, budget and the requirements of individual clients. ⁴³³

Illustration 33: Durand's systematisation of architectural knowledge. ⁴³⁴

Comparing Quatremere's and Durand's understandings of typology, the former believed that typology, although it refers to a single, unique object, when applied should be viewed in context with the relevant historical and cultural conditions, whereas the latter thought that typology can be applied with no reference to the original context. The way architecture was practiced in the nineteenth century, however, was according to Durand's indications. Models and examples of architectural objects were classified according to their function, and were to be found in manuals and handbooks, which architects followed faithfully.

The concept of typology was re-assessed within architectural theory in the 1960s after the publication of Giulio Carlo Argan's essay titled 'On the Typology of Architecture'. Whereas up until then architecture referred to typologies as compiled within manuals and books, the discontinuity with history as demanded by the modern movement made their use redundant. Architects perceived them as obstacles to creativity, for they referred to previous establishments. During modernity, architecture

⁴³³ Philip Steadman, *The evolution of designs biological analogy in architecture and applied arts* (Cambridge: Cambridge University Press, 1979), 29-31.

⁴³⁴ Image accessed September 18, 2012, <http://thecityasaproject.org/2011/03/jean-nicolas-louis-durand-the-systematization-of-architectural-knowledge-and-procedural-differentiation/>.

was aspired to be mass-produced based on the repetition of a contemporary ideal type (unit). However, as Raphael Moneo comments, “type had become prototype.”⁴³⁵ The prototype of the modern movement, or else the unit to be blindly repeated, was quite different to how typology was perceived in the past. Whereas Durand’s type allowed a degree of flexibility and adjustability depending on site and use, the modern prototype disregarded even that. Based on the break between type and architecture, Argan tried to re-establish the concept of typology and returned to Quatremere’s theory. He supported the idea that typology is not like an image to be copied and imitated, as this is the role of a model. Typology is vague, for it is an abstraction. It demands the elimination of every architectural element that is not common amongst the compared buildings. Therefore, when applied to the design, it does not affect it in the same way as the blind replication of a model does. As a mere reduction of the original, typology is also a mere reduction of history itself. In this sense, although typologies carry residues of the past, they are entirely up to the architect’s interpretation and ability to adjust them upon contemporary context. Defending his views on typology and the way it should be adopted within the spirit of modernism, Argan concludes that

[t]ypological and the inventive aspects of the creative process are continuous and interlaced- the inventive aspect being merely that of dealing with the demands of the actual historical situation by criticising and overcoming past solutions deposited and synthesized schematically in the “type”.⁴³⁶

In 1966, Aldo Rossi in ‘The Architecture of the City’ had a different approach to the concept of typology. For him, as types are to be found in all architectural creations, then they should be treated as cultural objects. In this sense, studying types is effectively a way to analyse architecture. He perceives types as a predetermined form, however, they do not manifest themselves in isolation, but in a constant dialogue with techniques, functions and styles. Therefore, for him, there are *only* variations of initial typologies, which are adjusted on contemporary settings. In effect, Rossi claims that

⁴³⁵ José Rafael Moneo, *Theoretical anxiety and design strategies in the work of eight contemporary architects* (Cambridge, Mass.: MIT Press, 2004), 33.

⁴³⁶ Argan, G. C. “On the Typology of Architecture, translated by Rykwert J.” in *Theorizing a new agenda for architecture : an anthology of architectural theory, 1965-1995*, ed. Kate Nesbit (New York: Princeton Architectural Press, 1996), 246.

...[t]ype is the very idea of architecture, that which is closest to its essence. In spite of changes, it has always imposed itself on the “feeling and reason” as the principle of architecture and of the city.⁴³⁷

In a different essay called ‘Typology and Design Method’, Alan Colquhoun presents a different interpretation of the notion of typology. For him, typology in architecture is necessary, for it comprises a means for communication. He makes the assumption that if a building makes no references to types from the past, then its form is effectively a new language of communication invented arbitrarily by the architect. Therefore, an architect can express meaning and ideology through his designs, regardless of a reference to types from the past or not.

This short reference to typology demonstrates a small aspect of the confusion that resides in the field of architectural history and theory in defining its concept. To return back to my discussion of the archival qualities of architecture, typologies, regardless of the way they are used or perceived as, share a common characteristic between them. One way or another, they all reflect some sort of memory that is present on buildings and in people’s minds. As Ruskin eloquently writes about architecture, “[w]e may live without her, and worship without her, but we cannot remember without her.”⁴³⁸ My view in regard to typology is based on the way one looks at architecture. If a building is perceived and classified as an autonomous, self-sustained *unique* object, then this does not allow any further reductions. It is classified through its own uniqueness. On the other hand, if a building is perceived as an ordered assembly of various smaller objects, then these objects are not unique, as they can be identified amongst other buildings too. In other words, architectural objects are there to be repeated. In this case, if one wants to recall a particular object, like a roof for instance, then in the process of recollection he will bring to mind a series of various types of roofs that he has previously seen. In this sense, the way memory operates is by typifying objects. This function participates in the way language functions too. The process of naming an object as a roof implies that this object has common characteristics with other roofs, which comes to be confirmed through memory, thus the nature of naming entails a typifying process in its very

⁴³⁷ Aldo Rossi, *The Architecture of the city* (Cambridge - Mass.& London: MIT Press, 1982), 41.

⁴³⁸ John Ruskin, *The seven lamps of architecture* ([S.l.]: Elibron Classics, 2005), 324.

essence. Typologies allow the possibility to group different objects together, and although they appear as a reduced memory of the whole building, at the same time, in the realm of memory, they encompass an entire group of other objects with the same characteristics. In this sense, typologies function as archives of either reduced or enhanced memories, and through repetition they carry these memories further.

This section dealt with fire's proliferation in architectural space commencing from the flames of the hearth to fire's redundancy in sustainable architecture. Through this study, I demonstrated how architecture is perceived as a porous entity that absorbs and responds to the needs and demands of the inhabitants and the society in general. Existing architectural establishments, technologies, materials, typologies, and so on carry the memory of these parameters and are further judged according to their efficiency and success. Through observation on their performance one acquires knowledge, which can be used to inform upon future architectural creations. Then, through processes of experimentation, new arrangements or techniques, which already carry the memory of previous adaptations, are tried out to either improve or substitute existing establishments. It is in this sense, therefore, that architecture emerges with functions equal to the ones of an archive. This approach to evolution and memory agrees with Bachelard who questions: "what remains of the historical past, what lasts from it? Only that which has reasons for beginning again."⁴³⁹ I have explored the duration of architectural evolution by breaking it down to instants of creation. Out of nothingness, architecture evolves ceaselessly in time with alternating periods of affirmation and negation. Evolution depends on the rhythm of these instants created by periods of work and repose. It is

...driven by the will to perpetuate or "copy" ourselves. However, each time we set ourselves to this task, we must exceed or improve on this "copy", or else it will dissolve itself...The moment of remaking breaks the flow of time- repetition, to survive, must involve a negation, as well as an affirmation, of previous repetitions. Rhythm is not an "eternal return", but an "eternal reprise".⁴⁴⁰

In this sense, whatever appears to be efficient and functional will be repeated in future architectural creations whereas failures are more likely subject to further

⁴³⁹ Gaston Bachelard, *The dialectic of duration.*, trans. Mary McAllester (Manchester: Clinamen, 2000), 20.

⁴⁴⁰ Russell Conrad, "Fictive Time: Bachelard on Memory, Duration and Consciousness," *Kronoscope* 5, no. 1 (2005): 7.

improvement or mere replacement. The memory that the architectural archive stores is useful knowledge. Following Bachelard's views on knowledge production, knowledge advances dialectically by overcoming obstacles of existing and past knowledge. Architecture emerges and evolves out of a ceaseless *no* to these obstacles because in general "everything comes alive when contradictions accumulate."⁴⁴¹ After a critical examination of buildings, new experimentations take place and this opens up a dialogue; a dialogue between buildings and people, and amongst people themselves, which confirms Bachelard's view that knowledge must be social to advance. At the same time, the fact that it is a product of a dialogue, it also indicates that this knowledge has an open-ended character thus it can never stay static. Lastly, as this knowledge reflects the memory of architectural evolution and the latter has been broken down to instants of creation, this implies further that knowledge is historically located. For Bachelard, the fact that knowledge is historical lends to it a dynamic character as "it advances through a tension between present and future, or between conservation and change...[knowledge] has an aim, 'it has a destiny'."⁴⁴² Through a Bachelardian understanding of architectural evolution, I have therefore concluded that architecture operates as an archive in which a reduced memory of its whole past is stored and recorded. This memory functions as a guide for future architectural creations and is constantly updated every time a new building is built.

- **Architectural evolution and fire – a Bergsonian approach**

Time is invention or it is nothing at all.
Henri Bergson, *Creative Evolution*

In the preceding paragraphs, I explored architectural evolution and commented on the archival qualities of architecture according to Bachelard's philosophy. This approach reflects a conventional understanding in Western thinking according to which entities are experienced and studied in isolation, statically, and in chronological

⁴⁴¹ Gaston Bachelard, *The poetics of space* (Boston: Beacon Press, 1994), 39.

⁴⁴² Cristina Chimisso, *Gaston Bachelard : critic of science and the imagination* (London; New York: Routledge, 2001), 124.

order. In this section, following my methodology, I contradict Bachelard's understanding of evolution with that of Bergson.

Bergson's theory of evolution is a reaction to the mechanism of neo-Darwinism and the finalism of neo-Lamarckism.⁴⁴³ Both mechanism and finalism perceive and evaluate evolution in the present and imply a constant invention of a product that must always be new. Bergson, on the other hand, perceives evolution in the same way as Nietzsche. Evolution for him is not merely a linear, mechanistic process during which an organ, for instance, responds and adapts itself to external conditions, but a dynamic process in constant flux. Every evolution is driven by *élan vital*, which is the vital force or impulse that keeps this process constantly changing. This process is thus not finite, for it has no end, it has no end product. In fact, Bergson's evolution, being clearly influenced by Lucretius' philosophy,⁴⁴⁴ is a creative, unpredictable, open-ended evolution with its own becoming or as Ansell-Pearson describes, Bergson's creative evolution, being close to Schelling, is "a play between process and product."⁴⁴⁵ As everything unfolds in time, the same evolution can never take place twice. In this sense, repetition of a process is impossible unless we refer to it in abstract terms.

⁴⁴³ In *Creative Evolution*, Bergson discusses the evolution of the eye as an organ. A mechanistic evolutionary theory perceives that this organ has evolved by choosing the best components to construct itself whereas a theory of finality perceives that this organ is the product of a preconceived plan which aimed at a specific end.

⁴⁴⁴ Lucretius (1st century B.C.) has made a very big contribution to philosophy, at least as it comes to be perceived in modern days, because of his early understanding of an evolution theory. Throughout his poem *De Rerum Natura* (On the Nature of Things), there are themes rotating around topics such as the universe and its creation, nature and cities, gods and humans, life and death. The philosophy of Lucretius is a propagation of the doctrines of Epicurus (341 B.C.). The Epicurean 'society' aims to acquire new friends through writing, hence Lucretius' poem to imperfect Memmius. The prime concern of Epicurus, inspired by the philosophical trend of that period, deals with issues of morality. For him, happiness is achieved through moral self-sufficiency (*autarkeia*) and lack of disturbance (*ataraxia*). This mental state is reached only if one's life is free of fears and desires; therefore the study of natural sciences is necessary. The fear of death, one of the main worries of humankind, can be eliminated as soon as scientific inquiry proves that the mind and spirit stop existing after death. Equally, scientific inquiry can also lead to the elimination of the fear of gods. The universe is composed of atoms and phenomena such as earthquakes or lightning, which are instigated by natural causes without any divine interference. The epicurean epistemology considers sensation as the basic criterion of truth. The mechanics of sensation are interpreted by physics. On occasions when our sense organs mislead us, it is not our senses to be blamed for, but the wrong interpretation of our sense impressions. For Lucretius, the universe is composed of two realities, matter and void, and can be explored through sensation. Matter consists of an infinite number of atoms that cannot be perceived individually due to their small size. They are in constant motion, however, as they are imperceptible, their movement in space cannot be perceived either. When the atoms traverse void, they fall down due to their weight. The variation in the compound objects' density, or else in the amount of matter in proportion to void, refers back to the atoms and specifically to their different shapes. The difference in the atoms' shape has a relevant impact on our senses too. The way we sense things is justified by contact. Whereas, in touch and taste, the contact with the object is direct, when it comes to sight, hearing and smell, the contact is indirect and depends on the physicality of the atoms that affect the relevant sense organs. The materialist poetry of Lucretius explains the universe through our perception of the invisible movement of atoms. Bergson, in his book *The Philosophy of Poetry: The Genius of Lucretius*, points out Lucretius evolutionary understanding of the universe according to which there is a vital continuity at play, reminiscent of Bergson's duration.

⁴⁴⁵ John Mullarkey, ed., *The new Bergson* (Manchester; New York: Manchester University Press, 1999), 149.

The understanding of Bergson's creative evolution presupposes a clear distinction between the two types of time in his philosophy. As I mentioned in a previous chapter, there is a homogeneous time, which is the fragmented time of physics, and a heterogeneous one, which is the 'real' time, or duration. The time of physics, which is the time Bachelard reflects on, is a spatialised time. We project it in space so that we can give it a number, to measure it. In 'Time and Free Will' Bergson discusses how numbers imply discontinuity. Every number is a single unit. Number 3, for instance, is a unit because it has a name, which is 3 or three. At the same, this number can also be considered as a multiplicity of other units that are identical to each other (1+1+1). The fact that we can count these units and add up to number 3 means that we do not perceive them as single units any longer, as this would lead to their merging into a single unit, but rather distinct to each other. In order to count these units, therefore, we have juxtaposed them in homogeneous space. Equally, the time of physics is counted in the same way that a number is counted. It is projected in space and split into an invented succession of homogeneous instants, which all of them added up give the measurement of time. 'Real' time, or duration, on the other hand is very different to the time of physics and can only be perceived with the method of intuition.

...[D]uration is not merely one instant replacing each other; if it were, there would never be anything but the present-no prolonging of the past into the actual, no evolution, no concrete duration. Duration is the continuous progress of the past which gnaws into the future and which swells as it advances.⁴⁴⁶

In 'Creative Evolution', Bergson explains that our consciousness consists of two interdependent tendencies; the instinct and the intelligence. Our inability to perceive the flow of duration, thus also the duration of evolution, lies in a problem of our intelligence. Whereas duration can be experienced instinctively, we tend to perceive it with our intellect thus we break it down to fragments, instants, as if it were the time of physics. Nevertheless, these instants are merely snapshots from the continuity of duration that the intellect has extracted.

⁴⁴⁶ Henri Bergson, *Creative Evolution.*, trans. A. Mitchell (New York: Henry Holt and Company, Camelot Press, 1911), 11.

Instinct and intelligence comprise one of Bergson's dualisms, the distinction of which can help one to understand his idea of evolution. Commenting on the evolution of plants and animals in general, Bergson claims that vegetative torpor, instinct, and intelligence are tendencies of the *élan vital* that are common in both plants and animals. In fact, he writes that

[t]he cardinal error, which from Aristotle onwards, has vitiated most of the philosophies of nature, is to see in vegetative, instinctive and rational life, three successive degrees of the development of one and the same tendency, whereas they are three divergent directions of an activity that has split up as it grew. The difference between them is not a difference of intensity, nor, more generally, of degree, but of kind.⁴⁴⁷

Vegetable and animal life are interdependent and their tendencies mingle. This means that in plants, one can detect traces of instinct and intelligence, in the form of mobility and consciousness accordingly, which can be awakened, whereas in animals, the potential of reaching a vegetative state is always a possibility. Equally, intelligence and instinct, which are tendencies amongst animals, interpenetrate each other and share characteristics of their common origin. The only difference is the proportions of each tendency from animal to animal. Bergson illustrates intelligence and instinct using examples from biology and gives a clear definition of them:

...instinct perfected is a faculty of using and even of constructing organized instruments; intelligence perfected is the faculty of making and using unorganized instruments.⁴⁴⁸

Both instinct and intelligence possess innate knowledge. The difference is that the former carries innate knowledge of things, of matter, whereas the latter of relations,⁴⁴⁹ which is the knowledge of how things relate to each other, of their form. At this point, Bergson questions if there is a possibility to have a knowledge that has a form but no matter. His answer confirms it and in actual fact he posits that this is the advantage of the formal knowledge of intelligence compared to the material knowledge of instinct. Bergson explains that

⁴⁴⁷ Ibid., 79.

⁴⁴⁸ Ibid., 82.

⁴⁴⁹ Ibid., 86.

[a] form, just because it is empty, may be filled at will with any number of things in turn, even with those that are of no use. So that a formal knowledge is not limited to what is practically useful, although it is in view of practical utility that it has made its appearance in the world. An intelligent being bears within himself the means to transcend his own nature.⁴⁵⁰

The intellect has a tendency to construct. Every fabrication it performs is on inert matter. Even if it fabricates on organic, living matter, the intellect will treat it as if it was inert. In other words, “fabrication deals only with the solid; the rest escapes by its very fluidity.”⁴⁵¹ The fact that our intellect deals with inert matter has an advantage. This is the freedom to divide this matter into as many parts as we please thus making it discontinuous. Nevertheless, this freedom of unlimited discontinuity that we can impose on matter gives us the impression of continuity. Yet, the reason that the intellect does it is because “[o]f the discontinuous alone does the intellect form a clear idea.”⁴⁵² It is a tendency of the intellect, therefore, to perceive fluidity, thus also the duration of evolution, as discontinuous. Only if movement is broken down to immobilities, then the intellect is able to understand it. This function of the intellect is for Bergson cinematographic.

Applying Bergson’s evolutionary thinking on architecture, it means that the totality of architecture’s past exists in the present pointing constantly towards the future. Past and present coexist whereas each present returns back to itself as past. In this sense, architecture, when perceived in duration, in constant flux, exists as a *virtual* multiplicity whereas it becomes an *actual* one only in the present through a necessity of our intellect to break down its continuity in immobilities to understand it. To illustrate the difference between virtual and actual multiplicities, Bergson in ‘Time and Free Will’ refers to the colours of the rainbow.⁴⁵³ According to Johan Normark:

The rainbow has a multiplicity of heterogeneous colours. There is a continuum of differentiated change in its spectrum. This characterizes a virtual multiplicity in time. The colours cannot be individuated since they constantly move into another colour. If we do define the colours, we separate them from each other, give them boundaries and a fixed spatial location.

⁴⁵⁰ Ibid., 87.

⁴⁵¹ Ibid., 88.

⁴⁵² Ibid., 89.

⁴⁵³ Henri Bergson, *Time and Free Will* (London: Elibron Classics, 2005), 66.

Then they become numerical, metric, homogenous and actual. These can be counted and analyzed according to our needs, but they are misrepresenting the true heterogeneous character of the colours of the rainbow.⁴⁵⁴

Illustration 34: Johan Normark's rainbow.⁴⁵⁵

In this sense, if one examines the duration of architectural evolution purely through a Bergsonian perspective, then architecture must be perceived as a virtual multiplicity for only then the totality of its past is preserved in the present. Otherwise, if architecture is perceived as a group of autonomous objects, of actual multiplicities like the colours of the rainbow individually, devoid of duration, this means that its evolution is broken down in immobilities, thus architecture's virtual past is erased. In other words, a Bergsonian understanding of architectural evolution confirms that a building perceived at any moment of its duration functions as an archive that withholds the totality of its past.

In this chapter, I looked at architectural evolution in regard to fire starting from the sacred fire of the hearth and ending in contemporary architecture where fire is either dislocated and hidden or extinguished. I explored this evolution through two theoretical perspectives. On one hand, Bachelard's understanding of evolution demands a break down of this process into instants of creation. This is a conventional approach in Western thinking, for evolution is analysed according to these instants, which operate as immobile, autonomous objects. This fragmentation is informative in the sense that architecture emerges as an entity that absorbs the demands of the inhabitants and the society in general. Existing architectural establishments, typologies,

⁴⁵⁴ "Time and archaeology 4: Bergson's continuous duration", accessed May 12, 2009, <http://posthumanocentric.webs.com/apps/blog/show/604204-time-and-archaeology-4-bergson-s-continuous-duration>.

⁴⁵⁵ Ibid.

technologies, and materials, in the process of their becoming, filter out and store the most successful and efficient knowledge from the past. In this sense, one can claim that architecture functions like an archive, for it stores a reduced memory of its entire past. Through Bergson's theory of evolution, on the other hand, I explained that architecture, as it emerges in real time, in duration, is a virtual multiplicity according to which the totality of its past is preserved in the present. In other words, architecture can be perceived as an archive that records and stores every single aspect of its constant, ever-changing evolution.

Chapter 6 - Architecture on Fire

In the previous chapter, I looked at architectural evolution in regard to fire starting from the sacred flame of the hearth up to the detached, partly extinguished fire that burns in contemporary architecture. Through this analysis, I explained that architecture operates as an archive either by storing a reduced memory of its entire past or by carrying the totality of its virtual past constantly in the present. Considering these archival qualities of architecture, in this chapter I investigate a particularly significant moment of architectural evolution, which is marked by accidents of fire, and explore how architecture archives this temporal death. Destruction caused by fire is one of architecture's biggest threats. Since the advent of modernism and because of today's environmental awareness, combustion on architectural grounds is either securely confined in space or has died out. Yet, fire catastrophes still occur. A spark of fire may be the reason that causes the complete collapse of a building, of a neighbourhood, and in some cases, as seen throughout history, of whole cities.⁴⁵⁶ It is the scope of this section to explore these accidents and later comment on how architecture responds to these events in archival terms. I explain that fire accidents that take place in buildings can be perceived as processes, which instigate other processes that are parallel but also dependent to the initial accidents. The memory of these accidents has pushed societies to the concentrated investment in organised fire fighting whereas the imminent and unpredictable threat of fire imposes the constant need for advanced fire research. Fire fighting is not only external to the building but also integral to it, and this is expressed with the employment of active and passive protection systems. On one hand, the fear of destruction by fire has equipped architecture with cyborg qualities; fire detection and protection systems, such as smoke alarms, sprinklers, and air vents, comprise active reactionary mechanisms, which respond to any signs of fire present in the building. They function as sensory centres, according to which architecture becomes animated in an attempt to protect itself against fire. On the other hand, the passive protection system refers to the

⁴⁵⁶ Rome was totally destroyed by fire in 64 BC. In the 19th and 20th centuries, big parts of cities were also destroyed by fire. Some of the most famous fires are The Great Chicago Fire in 1871, the Great Fire of London in 1666, San Francisco Earthquake Fire in 1906, and the fire in Tokyo in 1923.

design and materials of a building. Later in the chapter, I focus on a documentary called *Incendio*, which depicts a major fire accident that took place in 1974 in Sao Paulo. My intention is to highlight common problems and mistakes that can take place in contemporary urban environments, and which can be avoided or resolved if there is relevant legislation. In regard to the latter, historically the establishment of building legislation is attributed to fire catastrophes. Building codes and regulations can be perceived as a codified memory of accidents and mistakes, and their enforcement informs passively every new architectural creation. Following my methodology, I explore the moment of architectural destruction initially through a Bachelardian perspective. This moment is very critical as it punctuates architecture's overall evolution thus making it discontinuous. Then, I look into it through Bergson's philosophy according to which architecture emerges in duration, thus the moment of its destruction is perceived "only [as] a snapshot view of a transition."⁴⁵⁷ Therefore, the moment of architecture's temporal death by fire is nothing more than a mere aspect of its ever-changing evolution.

Fire in the building

The moment when a fire breaks out in a building signifies the beginning of a process. The process of combustion demands the simultaneous working of three ingredients in order to occur.

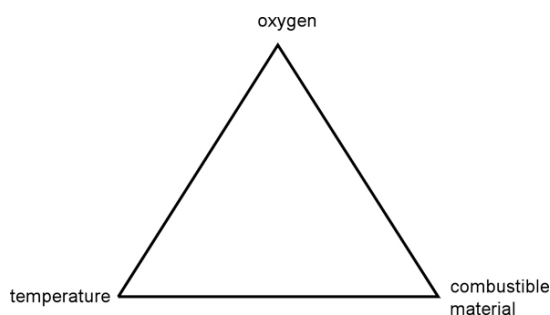


Illustration 35: Fire's eternal triangle ⁴⁵⁸

⁴⁵⁷ Henri Bergson, *Creative Evolution.*, trans. A. Mitchell (New York: Henry Holt and Company, Camelot Press, 1911), 175.

⁴⁵⁸ Drawing made by the author.

This is fire's *eternal triangle*: the three corners are occupied by oxygen, a combustible material, and a certain level of temperature. In a balanced system of any two of the elements, the introduction of the third one leads to the beginning of a combustion process. Fire's eternal triangle is 'shaped' as soon as a specific heat level is achieved. Respectively, in order to stop such a process, one of the triangle's components needs to be 'removed'.⁴⁵⁹ Recently, however, for the method of chemical fire extinguishing is introduced, the fire triangle is no longer representable, as it excludes the chain reaction of the chemical. In this respect, a new diagram is created to accommodate all four aspects of fire's combustion and extinguishing.

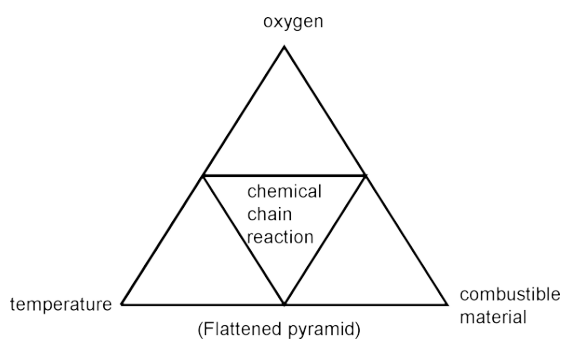


Illustration 36: The tetrahedron of fire⁴⁶⁰

This is the *tetrahedron of fire*, which establishes combustion as a chemical process. Each triangular surface of the pyramid represents a necessary element for combustion to take place. Equally, as soon as one of these elements is removed, the combustion process finishes.⁴⁶¹ One of the most common practices of extinguishing fire involves throwing water on the flames. This helps to reduce the local temperature below which combustion can be possible. Equally, deposits of water thrown around the periphery of a flaming centre will prevent expansion. However, the introduction of water in an attempt to extinguish fire may have an adverse effect. For instance, water on a deep oil fire will suffocate the fire temporarily but the oil, as it reaches a high temperature, will scatter and re-ignite further. A different process to extinguish fire is by cooling either the gaseous combustion area, or by removing the combustible itself from its

⁴⁵⁹ Paul Stollard and John Abrahams, *Fire from first principles : a design guide to building fire safety* (London; New York: E & FN Spon, 1991), 5–6.

⁴⁶⁰ Drawing made by the author.

⁴⁶¹ Arthur E Cote, *Fundamentals of fire protection* (Quincy, Mass.: National Fire Protection Association, 2004), 107.

environment. Alternatively, one may also introduce a barrier between the burning surface and the flame, as in the case of a fireproof blanket, or by cutting off the air supply so oxygen does not feed the fire further.⁴⁶²

A normal process of combustion develops in certain stages with the moment of ignition indicating its beginning. The first evidence of combustion is the smouldering stage. This is a non-flaming process accompanied occasionally by incandescence, and in most cases by the emission of smoke. The next stage is the appearance of, predominantly, smoke, or else the emission of very hot fine particles indicating an incomplete combustion, which although they only reach the temperature of 80°-100°, can still be lethal. Next is the stage of incandescence, which can be described as a glowing heat. The final stage of a developing combustion is flaming, and refers to the oxidation of liberated gases generating heat and light. It indicates the maximum growth of a combustion process before its decay begins.⁴⁶³ Flames produce a temperature of the order of 1500K (ca. 1200°) and maximum of 2500K (ca. 2200°) in air.⁴⁶⁴ Looking closely at the combustion process of a building, the rise of temperature instigated by a human intervention or an electrical overloading may lead to a tragic event. If the level of heat reaches the smouldering stage, the fuel material starts decomposing. As previously described, this is the stage of an early combustion, which, although it does not involve flaming of the material, in most cases releases potentially lethal smoke. The smouldering combustion can spread to adjacent materials reaching temperatures of up to 400° (which is usually the temperature of a flaming combustion), and develop further to a full combustion.⁴⁶⁵ In principle, the development of a combustion process depends upon the amount of oxygen present in space. Therefore, a fire in a big open plan and well-ventilated space develops rapidly and exhausts itself quickly, whereas in a building composed of a series of small and confined spaces where oxygen is limited, such as ducts, cupboards, ceiling voids etc., combustion is partial and the biggest impact is caused by the lethal toxic release of smoke.⁴⁶⁶ In the latter scenario, the build up of smoke in a confined space, as soon as it is noticed and a

⁴⁶² The Aqua Group, *Fire and Building, a Guide for the Design Team* (London: Granada Technical Books, Granada Publishing Ltd, 1984), 2.

⁴⁶³ *Ibid.*, 2–4.

⁴⁶⁴ James G Quintiere, *Fundamentals of fire phenomena* (Chichester: John Wiley, 2006), 3.

⁴⁶⁵ The Aqua Group, *Fire and Building, a Guide for the Design Team*, 3.

⁴⁶⁶ John W Lyons, *Fire* (New York: Scientific American Library, 1985), 104.

door is opened, the sudden wave of air causes an explosive flashover, which is the “[s]tage of development of a contained fire at which fire spreads rapidly to give large merged flames throughout the space.”⁴⁶⁷ When flashover happens, every object and surface erupts into flames and the pressure produced may reach an intensity capable of blowing out windows. The expansion of fire in a building may initially develop steadily and in a predictable way. Flashover, however, is one of the most troubled aspects of fire’s expansion in space; whereas people are adjusted to linear phenomena and would expect a steady and predictable development, the sudden and explosive nature of flashover leaves fire ‘witnesses’ entirely staggered.⁴⁶⁸

Illustration 37: “View of the fire damage taken from the lounge of the ground floor flat giving every indication that the fire had been slow burning for a considerable time and did not develop until a wedge shaped section of the timber floor collapsed.”⁴⁶⁹

Firstly and statistically the most common cause for a fire to break out in a building is the building’s contents, such as the furniture, fittings and fabrics, which all carry rapid and intense burning characteristics. Carpets and curtains in particular promote an unusually rapid spread throughout the whole building due to their proximity with its structure and external skin.⁴⁷⁰ Secondly, the materials used for the construction of a building can be a potential fire threat, thus their choice must abide by relevant building legislation. In general, the resistance of materials to ignition is dependent upon their chemical composition and their surface area exposed to air. Therefore, modern man-made materials, in comparison with natural ones, usually tend to have a higher tolerance to flammability. Out of all man-made materials, however, plastic, which is extensively used in contemporary buildings, has a somehow peculiar reaction to combustion, and therefore requires particular attention, as to how and where it is

⁴⁶⁷ The Aqua Group, *Fire and Building, a Guide for the Design Team*, 182–3.

⁴⁶⁸ Lyons, *Fire*, 85.

⁴⁶⁹ *The London Fire Brigade Archive: Selected Photographs from the 1930s-1970s* (London: The Photographers Gallery, 2006), 22.

⁴⁷⁰ William K Bare, *Fundamentals of fire prevention* (New York: Wiley, 1977), 123.

used. For instance, polyvinyl chloride (PVC), which is used to wrap electric cables, can cause fire if electrical overloading causes the plastic's thermal decomposition.⁴⁷¹

Illustration 38: "Electric overload."⁴⁷²

Or, PVC drainage pipe-work can help fire spread between the spaces that it serves, as it provides passage for smoke and a thoroughfare for heat and flames to travel through.⁴⁷³ Regarding the external fabric of a building, the heat and fire tolerance of cladding materials used in the façade play a significant role in the event of a fire, as they comprise the main way through which flames can spread to adjoining spaces. Ironically, the external skin of low-rise buildings is traditionally made of bricks or stone, thus having a high heat tolerance, whereas contemporary high-rise constructions make use of low-heat tolerance cladding materials, which can help fire spread rapidly, creating irreversible damage. Fire can also cause a complete collapse of a building as soon as the produced heat affects its frame. This can occur even when combustion has not reached its highest point, but has distorted the structure due to thermal expansion. The steel reinforcement of walls and slabs may expand to such degree, that it can demolish bricks and concrete and bring about ultimate collapse.⁴⁷⁴

⁴⁷¹ Stollard and Abrahams, *Fire from first principles*, 29.

⁴⁷² *The London Fire Brigade Archive: Selected Photographs from the 1930s-1970s*, 12.

⁴⁷³ The Aqua Group, *Fire and Building, a Guide for the Design Team*, 9.

⁴⁷⁴ Stollard and Abrahams, *Fire from first principles*, 11.

Illustration 39: "The remains of a concrete wall. The fire has turned it into rubble which crumbled when handled. The long pillar in the middle is of cast iron and it can be seen it has bent but not cracked."⁴⁷⁵

When fire breaks out, it needs space to develop. The process of combustion produces hot smoke and gases, which lead to a build up of higher atmospheric pressure than the ambient. As a result, smoke travels towards zones of lower pressure and contaminates them. Generally, heat and incomplete products of combustion in the smoke are the most frequent cause of fire spread. In a large space, a micro-climatic condition is created when smoke and gases create intense air circulation to any space with low pressure.⁴⁷⁶ In principle, any building is a potential space where fire can spread horizontally and vertically. A vertical circulation, such as a staircase or a lift shaft, creates a flue effect, which allows an easy expansion of fire. Equally, a corridor or a ceiling void can act as a horizontal flue, thus the broad use of fire-resisting doors and compartmentation. Amongst all horizontal spaces subject to create a fire passage, voids over suspended ceilings are the most problematic ones. They usually conceal electrical and other services, which are of high fire risk levels; combustion can take place within, but out of sight, and can lead to the collapse of the ceiling before it is even noticed, or can create a flash-over. They are spaces usually composed of and insulated with combustible materials, and they connect different parts of a building through service outlets, thus raising the risk of spreading flames throughout its entirety.⁴⁷⁷

Fire fighting

I have so far explained that the moment when a fire breaks out marks the beginning of a process, which, focusing specifically on buildings, develops in various ways depending on how they are designed and what they contain. However, such a process of combustion does not normally take place in isolation. As a result, other interrelated processes begin. In the following paragraphs, I examine briefly key aspects of the fire service and its technology and equipment, the employment of active and

⁴⁷⁵ *The London Fire Brigade Archive: Selected Photographs from the 1930s-1970s*, 4.

⁴⁷⁶ Stollard and Abrahams, *Fire from first principles*, 13–4.

⁴⁷⁷ The Aqua Group, *Fire and Building, a Guide for the Design Team*, 13–4.

passive fire protection systems, fire legislation, and fire prevention research, which altogether make up processes determined primarily by fire. Through a closer look at the moment when a fire accident takes place, my intention is to understand and comment on how architecture responds to this event in archival terms.

Fire in the industrialised world is a motive power. The heat gained from the combustion of fuels in engines is transformed into mechanical and electrical energy. The work produced in these engines replaced human labour and changed the map of the world. Since the Industrial Revolution, there is an increasing concentration of combustible materials in cities. Different types of fuel are housed not only in tank farms and harbours, but also appear in every corner of a city, every factory, shop, office and residential building. Fuel is present outside buildings, in cars that are parked or are moving in front of them. In other words, there is an increasing potential of fire accidents in cities than ever before.⁴⁷⁸ The threat of destructive fires is not a recent phenomenon. Since the early years of civilisation, when methods of kindling fire were invented and widely applied, fire accidents have been impending. Prior to the invention of fire-fighting techniques, fire burnt until it died out, for the only means for extinguishing it involved water stored within each household and that was never sufficient.⁴⁷⁹ In response to this unpredictable ongoing danger, societies organised groups of people to fight it. The earliest evidence of fire fighting bodies stretches back to the Roman times.⁴⁸⁰ The Roman fire fighting force, which was composed of slaves, was called *Familia Publica*⁴⁸¹ and had stations by the walls and gates of the city.⁴⁸² Nevertheless, the efficiency of the force to combat fire did not meet the Emperor Augustus' expectations so in 6 A.D. he imposed a fire fighting reformation. The new force was called *Corps of Vigiles*, and was in action for 500 years. Its organisation and equipment are worth mentioning, as they were highly sophisticated. The total area of Rome was divided into 14 regions. There were 7 groups of *Vigiles*, each of them responsible for 2 regions. Each group had an army of 1000 men, and that was further

⁴⁷⁸ Lyons, *Fire*, 109.

⁴⁷⁹ Stephen J Pyne, *Fire : a brief history* (London: British Museum Press, 2001), 109.

⁴⁸⁰ David Burgess Wise, *Fire engines and fire-fighting* ([London]: Octopus Books, 1977), 7.

⁴⁸¹ This name was most probably given to this force because, acting like parents of the public, they took over the responsibility of the latter's safety.

⁴⁸² G. V Blackstone and Fire Protection Association, *A history of the British fire service*. (Fire Protection Association, 1996), 1.

split into 10 smaller teams of 100. In other words, a city of less than a million people was guarded by 7000 fire fighters, or put simply, there was one fireman per 140 citizens. Their stations were built strategically on the borderlines of two adjoining regions where faster approach to fire centres could be achieved.⁴⁸³ An excavation that took place in 1820 revealed a sub-station, which contained two statue bases with the inscriptions of firemen's different posts. Their duties were equal to the ones of contemporary fire fighting; the *Aquarius* carried water, the *Siphonarius* supervised the pump, and the *Uncienarius* lifted burning roofs with fire hooks.⁴⁸⁴ Roman fire-fighters used large and heavy hammers to break doors, give access to burning buildings, and even create fire breaks. They also used ladders to access the roof level after the roof was taken down with a hook, and axes to open locked doors.⁴⁸⁵ Regardless of the fact these tools were primitive, in our days they have remained unchanged.

Vitruvius, the early Roman architect, recorded the existence of a brass fire engine invented by a Greek inventor of the 2nd BC called Ctesibious. In the history of fire fighting, Ctesibious' machine appears to be the first one that made use of an enclosed air chamber as a means to provide a continuous flow of water.⁴⁸⁶

Illustration 40: Sketch of Ctesibious' machine⁴⁸⁷

Later on, Hero of Alexandria, Ctesibious' pupil, invented a similar machine, which included 2 vertical cylinders. The downward movement of these cylinders with the assistance of a pump also provided a continuous flow of water that was discharged

⁴⁸³ Ibid., 2.

⁴⁸⁴ E Green-Hughes, *A history of firefighting* (Ashbourne [Eng.]: Moorland Pub., 1979), 11–2.

⁴⁸⁵ Arthur Ingram, *A history of fire-fighting and equipment* (London: New English Library, 1978), 7.

⁴⁸⁶ Burgess Wise, *Fire engines and fire-fighting*, 6.

⁴⁸⁷ Image accessed March 14, 2012, <http://www.mlahanas.de/Greeks/HeronAlexandria2.htm>.

through a pipe fitted with a swivel joint so that the water could be directed towards the fire. This pipe was called a gooseneck.⁴⁸⁸

The fall of the Roman Empire was followed by negligence and inability to fight fire. In England, specifically, with the arrival of the Anglo-Saxons the situation changed dramatically. The wealth rising from inland resources made fire fighting less important as any destruction was followed by immediate re-construction. Supply of materials was abundant, therefore, the need for fire fighters was redundant. As a result, Roman knowledge of fire fighting was forgotten.⁴⁸⁹ Fire fighting methods and laws in England started to reappear again years later. In 872 A.D., in Oxford a law was written, which demanded all house fires to be put out with the ringing of the evening bell.⁴⁹⁰ Special rings of bells coming from the churches also announced certain events, such as the need for volunteers to fight fires. This method for calling for help was used in rural areas until the 20th century. The fire bell that can still be found in Sherborne Abbey has an inscription that says,

Lord, quench this furious flame,
Arise, run, help, put out the same⁴⁹¹

With the Norman invasion in 1066, William the Conqueror imposed a stricter regulation in regard to putting out house fires at night. This was better achieved by placing a metal cover over the open hearth, which is called *Couvre Feu* in French or *Curfew* in English, and the ring of the bell is the curfew bell.⁴⁹² In this sense, the modern understanding of the word curfew has a similar resonance, for as soon as it is imposed, people have to stay indoors.

Since the advent of industrialisation, organised fire fighting re-emerged. During these years, the majority of the cities in the world were partially destroyed by fire. The threat of urban fires, enhanced by bombing during periods of war, led towards the gradual creation and establishment of fire fighting forces, initially on a private and local scale and, much later, on a national level. In Britain, after the Great Fire of London in 1666, the fire fighting service was provided by insurance companies and

⁴⁸⁸ Ingram, *A history of fire-fighting and equipment*, 9.

⁴⁸⁹ Burgess Wise, *Fire engines and fire-fighting*, 11.

⁴⁹⁰ Green-Hughes, *A history of firefighting*, 15.

⁴⁹¹ Blackstone and Fire Protection Association, *A history of the British fire service.*, 7.

⁴⁹² Pyne, *Fire*, 109.

protected only the buildings they were financially liable for.⁴⁹³ Up until the end of the nineteenth century, it was the responsibility of each parish or town to provide fire fighting forces and equipment.⁴⁹⁴

Illustration 41: London Fire Engines, c. 1830⁴⁹⁵

Focusing on London, in 1707 every parish was required to provide a fire engine and a leather pipe, whereas only in 1774, one hundred years after the big disaster, it was stipulated that

...every parish should provide three or more proper ladders of one, two or three storeys high, for assisting persons in houses on fire to escape there from.⁴⁹⁶

In 1832, the first union, the *London Fire Engine Establishment*, brought all the fire fighters from the insurance companies together and their primary concern was to maintain the protection of insured properties. Accordingly, a parallel body, the *Voluntary Society for the Protection of Life from Fire*, was established in 1836.⁴⁹⁷ The peculiar duality of fire fighters and lifesavers was abolished at the command of Captain Sir Eyre Massey Shaw in 1865 with the enforcement of a relevant act, which established the Metropolitan Fire Brigade in London.⁴⁹⁸ The London Fire Brigade was established a few decades later, in 1889, after a Local Government Act.⁴⁹⁹ In general, fire fighting in the United Kingdom remained on a local scale until the beginning of World War II. Then, judging by the catastrophic impact of the air raid bombings that took place during the Spanish Civil War and expecting a larger war to spread across Europe, the British Home Office urged for its reorganisation. In 1938, an Act of Parliament promoted the formation of the *Auxiliary Fire Service*, a voluntary fire

⁴⁹³ W. E. Jackson, *London's Fire Brigades* (London: Longmans, Green and Co. Ltd, 1966), 11.

⁴⁹⁴ Image accessed March 15, 2012, <http://archiveshub.ac.uk/features/firefighters.shtml>.

⁴⁹⁵ Eric L. Bird and Stanley J. Docking, *Fire in Buildings* (London: A. & C. Black, 1949), 30.

⁴⁹⁶ *Ibid.*, 28.

⁴⁹⁷ Green-Hughes, *A history of firefighting*, 34.

⁴⁹⁸ *Ibid.*, 57.

⁴⁹⁹ J. B. Nadal, *London's Fire Stations* (Huddersfield: Jeremy Mills Publishing Ltd, 2006), 99.

service, the mission of which was to assist the existing fire fighting forces.⁵⁰⁰ Through the same initiative, women also joined the fire service creating the *Women's Voluntary Service for Air Raid Precautions*.⁵⁰¹ In 1941, the National Fire Service was formed, which was a unified fire fighting body. Later, in 1948 the fire brigade's administration returned back to counties and local boroughs because this arrangement was officially established as more efficient and successful.⁵⁰²

I have discussed that the methods to combat fire were forgotten after the fall of the Roman Empire. However, since the first years of industrialisation during which humanity witnessed numerous disastrous fires, fire fighting re-emerged and gradually took the form that is familiar to us today. In response to the threat of fire, an additional process developed in parallel with fire fighting. The fall of the Roman Empire was followed by the abandonment of fire fighting equipment, which re-appeared in 1548 after the German translation of Hero's work.⁵⁰³ This translation instigated interest in forgotten mechanical fire fighting methods, which in turn inspired the creation of the first fire engines. Accordingly, the first fire engine on wheels was created by Anton Plater in Augsburg in 1548. Since then, a whole series of different designs was made, which demanded the constant supply of water from sources found in the vicinity. That was achieved with canvas or sailcloth buckets that were used to transport water to the engines. Yet, constant function of the fire engine demanded constant supply of water. With the joint effort of people standing in a line, the water was passed from the source to the engine and this was a task most frequently assigned to women, as men fought the fire on the frontline.⁵⁰⁴ These early fire engines, apart from the fact that they needed a constant supply of water, also needed to remain a certain distance from the fire; close enough to be effective, but far away enough as not to burn. This problem was solved in 1672 with the introduction of a leather hosepipe between the engine and a nozzle by Nicholas and Jan von der Heijden, which helped to keep the engine distant from the fire.⁵⁰⁵ The Heijdens also helped solve the

⁵⁰⁰ "London fire brigade, The second World War", accessed March 15, 2012, <http://www.london-fire.gov.uk/OutbreakOfWorldWarII.asp>.

⁵⁰¹ "Firefighters", accessed March 15, 2012, <http://archiveshub.ac.uk/features/firefighters.shtml>.

⁵⁰² "London fire brigade, Post War", accessed March 15, 2012, <http://www.london-fire.gov.uk/PostWar.asp>.

⁵⁰³ Ingram, *A history of fire-fighting and equipment*, 8.

⁵⁰⁴ *Ibid.*, 9–10.

⁵⁰⁵ Burgess Wise, *Fire engines and fire-fighting*, 13.

problem of supplying water with buckets. Initially they invented a canvas funnel on a wooden stand that could feed the engine with water through a pipe. Later, they invented a suction pump that was connected directly to the engine.⁵⁰⁶ These early fire engines were also difficult to manoeuvre, as they were usually mounted on sleds and not wheels, thus their transport through narrow streets and alleys was particularly difficult. Gradually, fire engines increased in size, became more efficient and manoeuvrable, and started being produced out of metal and not wood. The first steam powered pump was invented in 1829 by John Braithwaite and John Ericsson,⁵⁰⁷ which weighed 2 ¼ tons and pumped 30-40 tons of water per hour. It soon became highly unpopular as it made redundant many people who worked the manual pumps. There was also a general dissatisfaction in regard to their weight, their slow transportation at fire incidents, and also because the fire of the boilers needed to be kept burning constantly so that the engine could pump water at any time.⁵⁰⁸ Steam fire engines were later replaced by self-propelled ones, which were invented in 1862 in London by William Roberts.⁵⁰⁹ They were three-wheeled, which allowed easy manoeuvres in narrow places, and their efficiency in throwing water was radically improved.⁵¹⁰ Later designs of fire engines were battery generated, which were easy to start, moved fast and provided adequate space on the top of the vehicle for a person to drive them. The last phase of fire engine design are the motor vehicles. Since 1910, motor vehicles have remained as the basic layout of fire engines and today they are only different in detail.⁵¹¹

An equally interesting development that took place in parallel with the fire engine is the ladder. For hundreds of years, ladders were used as a means of access and rescue in all buildings.⁵¹² This remained unchanged until the 19th century when rescue from higher levels was needed.⁵¹³ The initial response to this need was the

⁵⁰⁶ Ingram, *A history of fire-fighting and equipment*, 11.

⁵⁰⁷ Roger Pennington, *British fire engine heritage*. (London: Osprey, 1994), 21.

⁵⁰⁸ Ingram, *A history of fire-fighting and equipment*, 14.

⁵⁰⁹ Bart H. Vanderveen, ed., *Olyslager Auto Library, Fire-fighting Vehicles 1840-1950* (London/New York: Frederick Warne & Co Ltd, 1976), 9.

⁵¹⁰ Burgess Wise, *Fire engines and fire-fighting*, 75.

⁵¹¹ Ingram, *A history of fire-fighting and equipment*, 31.

⁵¹² *Manual of Firemanship, A Survey of the Science of Fire-fighting. Book 5, Ladders and Appliances*, Issued Under the Authority of the Home Office (Fire Department) (London: Her Majesty's Stationery Office, n.d.), iii.

⁵¹³ K. R. M. A. Gilbert, *Descriptive Catalogue of the Collection Illustrating Fire Fighting Appliances* (Science Museum: Her Majesty's Stationery Office, 1969), 22–3.

creation of the extension ladder, which was first designed by a London based artist called Abraham Wivell.⁵¹⁴ The further need for mobility led to the addition of carriage wheels mounted on it. As the extension ladders became longer, there was a demand for a rigid base. The German fire fighting industry introduced ladders mounted on metal-frame beds and that were supported on chassis. The ability to become longer demanded structural strengthening and this was achieved by trussing their length. Fire fighting ladders were later produced with a hydraulically controlled, jointed and folding length with an operator's cage found at the top end. This improvement is welcomed and has been used for aerial rescues since.⁵¹⁵

Breathing apparatus has also appeared and evolved in response to the threat of urban fires. The gradual increase in use of plastic in households and in certain types of industry was accompanied by fires releasing highly toxic smoke, which made fire rescues particularly difficult and harmful. The need for an efficient breathing apparatus was thus unavoidable.⁵¹⁶ The first breathing aid of the late nineteenth century was a helmet made of rubberised material and sat on firemen's shoulders. The air was drawn in through a filtered mouth-tube and discharged through a valve. The first self-contained breathing apparatus was invented in the early twentieth century. It functioned with a closed-circuit oxygen supply that lasted for thirty minutes and later on for one hour. One of the problems of combating fire with a breathing apparatus was the danger of disorientation in smoky environments, which resulted in firemen running out of oxygen supply. In this respect, modern sets have a built-in safety margin, which can in principle give firemen enough time to escape a blazing building. Yet, if there is not enough time or firemen find themselves in danger, the breathing apparatus sets are equipped with audible alarms. The communication amongst them and with their base controls is also improved, as current breathing apparatuses carry reliable in-built radio sets. Fire fighting has also been assisted by technological developments from other fields. Thermal imaging cameras (TIC), which have developed from night-time infrared army technology, are also used in fire rescues. These cameras can either be hand held or on helmet-mounted units and assist firemen

⁵¹⁴ Green-Hughes, *A history of firefighting*, 34–5.

⁵¹⁵ Ingram, *A history of fire-fighting and equipment*, 71–3.

⁵¹⁶ *Manual of Firemanship, A Survey of the Science of Fire-fighting. Book 6, Breathing Apparatus and Resuscitation*, Issued Under the Authority of the Home Office (Fire Department) (London: Her Majesty's Stationery Office, n.d.), iii.

to find the exact location of a fire in very smoky buildings. They are also used in tracing human casualties, as these cameras detect the outlines of bodies. In regard to clothing, firemen's uniforms are made of fire-resistant and flash-resistant materials, which are used in the space industry.⁵¹⁷

Following this brief account on concurrent and interrelated developments in response to the threat of fire, I find it equally important to point out how cities accommodate these developments and thus reflect this threat too. In regard to the fire service, for instance, the urban landscape is constantly adapting itself to provide a fully functional and efficient operation. The following images depict part of this development of the urban infrastructure to accommodate the demands of the fire brigade in London.

Illustration 42: The map on the left shows the location and number of fire engines in London in 1833⁵¹⁸

Illustration 43: The map on the right shows the number of fire engine stations around London after the Metropolitan Fire Brigade was established (1865)⁵¹⁹

Illustration 44: The image at the top is a map that dates back to 1880 and shows the location of fire hydrants in the City of London. The image at the bottom is a close up of this map focusing around the area of St Paul's. The red dots show the exact location of the fire hydrants. [London Fire Brigade Museum Archives]

⁵¹⁷ N. Wallington, *Fire-fighting: a Pictorial History* (Bristol: Paragon, 1997), 40–1.

⁵¹⁸ Nadal, *London's Fire Stations*, 7.

⁵¹⁹ *Ibid.*, 64.

Illustration 45: Map of London, 1910. The image at the top is a map that dates back to 1910 and shows the location of fire stations, fire hydrants and fire alarms in the County of London. It also shows the range of action that each fire station covers. The image at the bottom is a close up of this map. The centres of the stars show the location of fire stations whereas the positions of the offshoots show the location of fire hydrants and fire alarms that relate to these fire stations. [London Fire Brigade Museum Archives]

Today, the way a fire incident is dealt with initiates a set of processes that reflect the preparedness of the fire brigade and the efficiency of the urban infrastructure. As soon as a fire is discovered, the fire brigade is normally contacted over the phone. This phone call is received by the fire brigade's control and despatch centres, which house the unseen protagonists of every emergency operation. Contemporary control centres are equipped with modern computer and communication technology, which allow the direction of every fire rescue operation to be conducted away from the noise, emotional charge and danger of onsite fire-fighting conditions.⁵²⁰ As soon as the call is received, the address of the caller is displayed on a computer screen. Automatically, the call centre operator can locate the nearest available fire station to the location of the incident. When its location is established, the fire station is informed about the fire. This information arrives with printed details of the address, the severity of the accident and the type of building that is involved.⁵²¹ On certain occasions, some control rooms are able to provide information, such as the layout of the burning building, location of the nearest fire hydrants and potential risks of the area, such as chemicals or explosives. Permanently manned stations are able to provide assistance within one minute after a call is made. In the countryside or remote areas, where fire stations are covered by volunteers or part-time firemen, the call centre operator informs firemen through beepers. In this case, they aim to be on their way within four minutes after a call is received.⁵²²

Having made a short account of the development of the fire fighting service, technology and equipment, my intention is to demonstrate how the memory of fire catastrophes, enhanced by the potential of future ones, informs and initiates processes that direct society towards a gradual and constant reorganisation. Since the

⁵²⁰ *Manual of Firemanship, A Survey of the Science of Fire-fighting. Book 10, Fire Brigade Communications and Mobilising*, Issued Under the Authority of the Home Office (Fire Department) (London: Her Majesty's Stationery Office, n.d.), 25.

⁵²¹ *Ibid.*, 50–2.

⁵²² Wallington, *Fire-fighting: a Pictorial History*, 50–1.

Roman times, the fear of catastrophic fires pushed towards the formation of groups of people who were given the responsibility of looking after civilians by acting against fire's fierce action. Following the fall of the Roman Empire, the knowledge of fire fighting was forgotten but later, due to severe urban fires that took place during the first years of industrialisation, fire fighting re-emerged and methods of combating the flames were re-invented. In the context of the current research, the emergence and development of fire fighting can be perceived as an evolution that started because of fire. This evolution is not isolated but takes place in parallel with others, such as the evolution of fire fighting technology and equipment, which is equally informed by the threat of fire. Altogether, these interrelated and interdependent evolutions are additionally determined by the way a city is organised yet they also inform the shape of the city too. So, for instance, the fire engine was initially immobile and wooden whereas now it is adjusted on wheels and is fireproof. Its shape is adapted to fit through little alleyways and its ability to throw water has also improved. At the same time, the city itself is spatially reconfigured to accommodate the demands of the fire service. Contemporary cities are thus split into fire zones within which some buildings, strategically chosen, are assigned to accommodate fire stations from which any fire incident can be dealt with within minutes. Commenting further on the evolution of fire fighting technology and equipment, one can argue that they have now obtained cyborg characteristics.⁵²³ In 'A Cyborg Manifesto', Donna Haraway compares late twentieth century machines to earlier ones explaining that the latter "could not achieve man's dream, [they could] only mock it."⁵²⁴ Contemporary machines, on the other hand,

...have made thoroughly ambiguous the difference between natural and artificial, mind and body, self-developing and externally designed, and many other distinctions that used to apply to organisms and machines. Our machines are disturbingly lively, and we ourselves are frighteningly inert.⁵²⁵

⁵²³ Etymologically, the word 'cyborg' derives from the word 'cybernetics', which was for the first time coined in the 1940s by the mathematician Norbert Wiener, and the word 'organism'. The term 'cyborg' was initially used by NASA scientists and referred to "a series of experiments that explored how the human body might be technologically enhanced in order to allow space travel." [Matthew Gandy, "Cyborg Urbanization: Complexity Monstrosity in the Contemporary City," *International Journal of Urban and Regional Research* 29.1 (March 2005): 27, footnote 1.]

⁵²⁴ Donna Jeanne Haraway, *Simians, cyborgs, and women : the reinvention of nature* (New York: Routledge, 1991), 152.

⁵²⁵ *Ibid.*

Equally, fire fighting equipment is cyborgised in a sense that it comes to mediate between man and fire by reinforcing the former's physical abilities. In this sense, rescue ladders and helicopters, breathing apparatuses, uniforms, and cameras have evolved in such a way that they have become extensions of man's hands, legs, eyes, lungs, and skin, respectively.

Fire protection and the building

I have argued that the threat of fire in the built environment has pushed societies towards the gradual formation of an organised fire service and, consequently, towards the significant development of fire fighting technology and equipment. Nevertheless, this investment does not remain external to the building. Fire fighting has expanded and is absorbed in processes that take place within buildings too. In the following paragraphs, I explain how buildings are equipped to protect themselves against fire. This refers to the integral fire protection systems, which can be classed as either active or passive.

Active fire protection is an integral part of most buildings and this refers to objects or methods that respond actively to certain changes in the conditions of closed environments. Most commonly, this protection includes fire sprinkler systems mounted on ceilings, which are automatically activated as a result of an increase in temperature. The heat radiated by the flames causes a glass component of the sprinkler system to detach itself and fall on the floor followed by the distribution of water onto that particular area.⁵²⁶ The first automatic sprinkler systems were invented in 1852 by William Macbay.⁵²⁷ In 1861, a more practical device was created by Lewis Roughton whereas the first sensitive automatic sprinkler system was invented in 1864 by Major A. Stuart Harrison. After World War I, two major developments took place. These were the introduction of the multiple control system and the glass bulb sprinkler head.⁵²⁸ Detection systems are also part of an active fire protection strategy. Heat, smoke or flames can be detected by this equipment, which in turn activate a sonar alarm that calls inhabitants for immediate evacuation. This system may also be

⁵²⁶ *Manual of Firemanship, A Survey of the Science of Fire-fighting. Book 9, Fire Protection of Buildings*, Issued Under the Authority of the Home Office (Fire Department) (London: Her Majesty's Stationery Office, n.d.), 3.

⁵²⁷ *Ibid.*, 3–4.

⁵²⁸ *Ibid.*, 4–5.

programmed to automatically inform the fire brigade of the event, as well as trigger fire doors to shut and mechanical smoke vents to operate.⁵²⁹ Fire extinguishers are also part of an active fire protection system. However, their use is manual and dependent upon the inhabitants.⁵³⁰ Active protection systems refer to certain technological devices, the mission of which is to protect the integrity of the building and provide safety to the inhabitants. Whereas in the past, the role of sprinkler or fire alarms for instance, was performed by humans (hose, hand-bell) now we “employ technology...[as it] promises to bring forces of nature and culture under control, to liberate us from misery and toil, and to enrich our lives.”⁵³¹ The contemporary American philosopher Albert Borgmann, based on Heidegger’s understanding of technology, perceives the liberation and enrichment that technology brings about in relation to the availability of goods. Available technological goods contribute to our lives without imposing any burdens. For him, the hose or the hand-bell is a thing, as one needs to put it into action to make it work. Things can only be understood in the context of their environment. They need physical engagement through an application of skill. Technological devices, on the other hand, which in this discussion are the sprinkler system or the fire alarm, procure a clear commodity that does not demand attention, engagement, and skill, and because of this, they come to be concealed or reduced in size.⁵³²

Passive fire protection deals with the overall design approach of a building in regard to fire and the appropriation of the materials used for its construction. Fire compartmentation, for instance, which is a good example of this approach, is achieved by the employment of fire rated building components such as walls, floors, doors and so on. In general, building components have to meet certain fire-resistance standards, which in the unfortunate event of a fire limit the spread of fire and smoke within certain compartments.⁵³³ This, effectively, gives enough time to the inhabitants to escape the building safely and the fire brigade to conduct their work. The acceptable

⁵²⁹ The Aqua Group, *Fire and Building, a Guide for the Design Team*, 66–7.

⁵³⁰ *Ibid.*, 68–9.

⁵³¹ Albert Borgmann, *Technology and the character of contemporary life : a philosophical inquiry*. (Chicago: University of Chicago Press, 1984), 41.

⁵³² *Ibid.*, 42.

⁵³³ *Fire Safety, Approved Document B, Volume 1-Dwellinghouses*, The Building Regulations 2010 (HM Government, Edition incorporating 2010 amendments 2006), 57–65.

fire resistance standards are set and controlled by Building and Fire Codes and Regulations, which I refer to more extensively later.

Fire escapes are also part of a passive fire protection system and they can be found either internally or externally to the building. Nowadays, most fire escapes are within the shell of a building and they discharge on a street level through fire exit doors. In the past, as soon as fire regulations were enforced, existing buildings had to comply so that they reach an acceptable degree of fire safety.⁵³⁴ On certain occasions, these adjustments were impossible thus fire escapes were mounted externally. A classic example is the famous steel fire escapes that can be found extensively in New York City.

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Illustration 46: Steel fire escape in New York. John Lyons comments in *Fire* that these external steel fire escapes are unsuccessful as the heat of fire often makes them detach and fall from the building.⁵³⁶

Commenting on fire protection systems as an overall concept, one can argue that fire fighting methods and equipment, which were initially used to combat fire externally, were later adopted and adjusted so that they enter the building zone permanently forming an integral part of the building's organisation. The fireman's hose, for instance, is converted into an automatic sprinkler system or an internal hose reel, and the ladder into an external fire escape. One may argue further that active fire protection systems lend cyborg qualities to architecture, which cannot be overtaken by the natural fear of fire. In a recent paper on 'cyborgs', or the hybrid between a machine and an organism, Matthew Gandy writes that the idea of cyborgs can be used to study "the corporeal experience of space",⁵³⁷ thus he applies it to contemporary cities to conceptualise their growth. Regarding the development of the contemporary home, he reflects on Anthony Vidler's argument⁵³⁸ saying that it

⁵³⁴ Fire Protection Association and Loss Prevention Council, *Guide to building fire protection*, ed. Lynn Jackson (Borehamwood: Fire Protection Association, 1997), 59.

⁵³⁵ Image accessed March 28, 2012,

http://christopherchanond.typepad.com/christopher_chanond_blog/current_affairs/

⁵³⁶ Lyons, *Fire*, 123.

⁵³⁷ Gandy, "Cyborg Urbanization: Complexity Monstrosity in the Contemporary City," 28.

⁵³⁸ Anthony Vidler in an essay called *Homes for Cyborgs* explains that the boundaries between nature and technology are now blurred as "...the body, itself invaded and reshaped by technology, invades and permeates the

...has become a complex exoskeleton for the human body with its provision of water, warmth, light and other essential needs. The home can be conceived as 'prosthesis and prophylactic' in which modernist distinctions between nature and culture, and between the organic and the inorganic, become blurred.⁵³⁹

Equally, fire, heat, and smoke detectors sense fire whereas fire alarms react and communicate with the inhabitants to avoid loss of life and ultimate destruction. Automatic air vents allow the building to breathe and let the smoke out. Sprinklers compliment firemen's duties, whereas automatic fire doors compartment the building and secure safe egress thus enhancing the fire brigade's efforts in advance. In other words, the fear of fire has equipped architecture with cyborg qualities, which animate the building in the event of a potential fire.

Fire and legislation - *Incendio*

The following text is an extract from the transcript of a super8 documentary film called *Incendio*,⁵⁴⁰ which depicts a major fire accident that took place at the Joelma building in Sao Paolo, Brazil, on the 1st of February 1974. My decision to include this particular tragic event in my research is mainly because of its scale, but also because of the reason that caused it and the impact it had on Brazilian building legislation. The British fire engineer Gordon Cooke has classified the Joelma disaster as one of the biggest ever since the Great Fire of London in 1666⁵⁴¹ and the author Frances Kennett as one of the greatest disasters of the twentieth century.⁵⁴² This accident started as a result of a faulty air-conditioner, yet it managed to kill nearly two hundred people creating scenes that remind one of the more recent terrorist attacks at the World Trade Centre in New York in 2001. The Joelma accident, which brought about immediate changes in Brazilian building legislation, highlights common problems and mistakes associated with contemporary urban fires, which can be avoided if relevant legislation

space outside, even as this space takes on dimensions that themselves confuse the inner and the outer, visually, mentally, and physically." [Anthony Vidler, *The architectural uncanny : essays in the modern unhomely* (Cambridge, Mass.: MIT Press, 1992), 147.]

⁵³⁹ Gandy, "Cyborg Urbanization: Complexity Monstrosity in the Contemporary City," 28.

⁵⁴⁰ *Incendio* is based on information gathered during a joint investigation of the Joelma Building fire by the National Fire Protection Association and the National Bureau of Standards U.S. Department of Commerce. Written and Edited by Eliot Tarlin, Produced and directed by Craig Johnson, NFPA Media Productions and Eliot Tarlin

⁵⁴¹ "Fire disasters", accessed August 23, 2012, <http://www.cookeonfire.com/services/fire-disasters/>.

⁵⁴² Frances Kennett, *The greatest disasters of the 20th century* ([S.l.]; Secaucus, N.J.: Castle Books ; Distributed by Book Sales, 1975).

is enforced. In general, the scope of this section is to demonstrate how legislation operates as a codified memory of fire accidents, which informs the creation of architecture.

Illustration 47: Stills from Joelma Super8 documentary film

“Sao Paulo was a modern South American metropolis of over eight million people. ... As in other cities, the skyline is dominated by high-rise buildings....The safety of those people depends upon these structures and their contents. Across from Sao Paulo’s city hall stands the two year old, 25-storey Joelma building...Friday morning, the 1st of February 1974, 756 employees were inside when the fire started.

Beginning on the 24th floor up as the fire moved quite rapidly through the building. The fire was discovered at 8.50 in the morning, the fire department was notified by the occupant an adjacent building fifteen minutes later. The first fire units arrived about 10 minutes after 9...First attempts by fire fighters to enter the building by the central stairway were halted at the 11th floor, then smoke and intense heat made it impossible for them to go further. Heat and smoke also turned away helicopters trying to reach the 171 people trapped on the roof...

..Fire fighters then worked from the street...In less than 2 hours, it had consumed all the combustibles and burned out...At the time of the fire, the Joelma building was a fire-resistive, reinforced concrete shell, which had been filled inside with combustible materials. The air-conditioner in this window on the 12th floor required a circuit breaker different from the kind needed by the other units, the time of installation none was available, so in order to use the machine it was installed, bypassing the electrical control panel for the floor...

...The people on the Joelma roof thought that the helicopter rescue might be possible for them as well. It wasn’t. There was no place on the roof, clear enough and large enough, for helicopters to land...On the north side some people had crawled under the tiles of the drainage route and were shielded from the heat. They alone were found alive... Several people lowered themselves from floor to floor and eventually made it to the aerial ladders. Most, however, remained where they were and they could not be reached only until the fire was out. 41 people were rescued over ladders...After the Joelma building had been searched authorities had found that 179 people had died....For the occupants of such a building, the only thing between safety and tragedy in a fire situation is the existence and the enforcement of adequate local standards

and codes. If occupants have no way out of the building but also no place safe inside, they are trapped. If systems and materials within the building are not holding down the fire spread until the fire department can get there, then the situation may be too far advanced when they do arrive. Such was the case in Sao Paolo on February 1st 1974, and 179 people died.”

The Joelma disaster illustrates how easily a small incident, such as an electrical failure, can bring about a real catastrophe. A little spark can develop into a big fire and spread rapidly throughout the building, which is not designed to respond to such an undesired event, whereas the fire brigade is not prepared to deal with it either. At the same time, this accident demonstrates clearly and confirms the fear associated with fire, which can be so immense that it pushes people to even jump out of buildings. Yet, this example is important because it stresses primarily the necessity of controlling Acts, Bylaws and Codes of Practice that must apply from the conception of a design to construction and maintenance. Today, buildings are bigger in size, technologically more advanced and are designed to accommodate a great number of people. Consequently, any failure or accident that occurs implies a great loss in terms of lives and money. In a sense, buildings are entities from which society expects full functionality and financial stability. Building codes and regulations can, therefore, be perceived as an organised body of knowledge, which can be used as a tool to avoid these unnecessary accidents.

Building regulations have existed for a long time. The first recorded evidence stretches back to the rules imposed by the Babylonian king of Mesopotamia, Hammurabi, in 1750 BC. Articles 229 through to 235 deal with design issues whereas article 229 specifically states that:

If a builder builds a house for someone, and does not construct it properly, and the house which he built falls in and kills its owner, then that builder shall be put to death.⁵⁴³

Initially, building regulations dealt with the protection of people occupying buildings, and only in more recent years have these rules included the protection of the property itself. A significant step towards the formation of our present legislation was the City of London’s code established in 1189 called the ‘Assize of Buildings’, which enforced

⁵⁴³ Ivar Holm, “Ideas and beliefs in architecture and industrial design : how attitudes, orientations, and underlying assumptions shape the built environment” (Oslo School of Architecture and Design, 2006), 333.

the construction of common walls, rights to light access, drainage and safe egress in case of fire.⁵⁴⁴ In Sienna, Italy, building laws were introduced in 1262 and by 1309 any new house required planning permission prior to its erection.⁵⁴⁵ Historically, however, the main reason that drove most societies towards the establishment of building rules was the catastrophes caused by fire. After the Great Fire in London in 1666, the building legislation of the city became very strict and complex; amongst these restrictions, stone and brick⁵⁴⁶ became a compulsory material, and tiled roofs replaced thatched ones.⁵⁴⁷

Illustration 48: Result of a fire in a church made of brick and timber in Luton. Only the brick chancel survived. [London Fire Brigade Museum Archive]

The most sudden and rapid demand for building regulations was observed during the second half of the nineteenth century as a result of the Industrial Revolution. The success of James Watt's invention of the steam engine brought about the demand for new architectural solutions. Up until then, unless it was at a seaport, industrial goods were transported in small quantities, and were stored and merchandised in small shops. The invention of the engine suddenly allowed mass transportation of goods to city centres. Respectively, new building solutions were needed, such as large open-plan and multi-storey warehouses. Until then, the main fuel for city fires was the building itself, whereas in the new order, the contents of industrial buildings became the prominent threat.⁵⁴⁸ In addition, the migration wave from rural areas to cities led to the creation of high-density urban centres. This developing new urban reality was accompanied by the constant threat of fire and epidemics. At the same time, the increasing number of new buildings demanded a shift of liability from property owners to their lenders and insurers. The protection of

⁵⁴⁴ K. G. Whittick, *The Party Wall, a Short History* (Surrey: Faculty of Party Wall Surveyors, 2007), 9–10.

⁵⁴⁵ *Ibid.*, 333.

⁵⁴⁶ The change to stone and brick as building materials was also a consequence of the limited timber resources of that period. As nine-tenths of it was used to fuel the iron and glass furnaces, the oak left for the use of the navy was insufficient.

⁵⁴⁷ "The fire of London building regulations", accessed March 25, 2012, <http://www.locallocalhistory.co.uk/studies/buildingregs/index.htm>.

⁵⁴⁸ Bare, *Fundamentals of fire prevention*, 123.

city dwellers and their property was thus an urgent issue, which pushed towards the creation of building legislation. In the United States, for instance, after the fire in Chicago in 1875 the first American building code was established. Following Chicago's example, many other cities in the States wrote their own building rules locally, however they lacked the knowledge and experience obtained from the aftermath of the fire, and fell short of specialised resources needed to apply to the task. The catastrophic fire of Baltimore in 1904 urged for the creation of a 'model code'. In 1905, the National Board of Fire Underwriters, an insurance industry group, compiled the first National Building Code of the country.⁵⁴⁹

Today, building regulations comprise an advanced and complex reality, which the majority within the building industry most commonly disrespects. They are perceived by designers as a body of unpleasant restrictions, condemning freedom of expression and innovation.⁵⁵⁰ In regard to fire, its impact seems to interest a limited number of specialists, and in most cases, these are usually insurance experts and surveyors acting on behalf of insurance companies. The current legislation presiding in England comprises the Building Regulations 2000, which were designed by the Secretary of State for the Environment under powers delegated by parliament under the Building Act 1984.⁵⁵¹ Fire Safety is the longest and strictest part of the 'Building Regulations (Approved Document Part B)'. This document provides guidance, in terms of fire strategy, for the construction and maintenance of all different types of buildings, from low-rise manors to high-rise office spaces. The large variety of building typologies as well as the different types of occupancy taking place within, create the necessity for a flexible set of regulations that have to be followed. Nevertheless, although compliance with 'Part B' is essential, it can be avoided if the building is designed according to fire engineering principles.⁵⁵² Fire engineering is based on approved

⁵⁴⁹ Barry D Yatt, *Cracking the codes : an architect's guide to building regulations* (New York: J. Wiley, 1998), 37.

⁵⁵⁰ *Ibid.*, 11.

⁵⁵¹ The Secretary of State, by Act of Parliament, is responsible for ensuring the health, welfare and convenience of people living or working in (or nearby) buildings is secured. The Building Act 1984's prime purpose is to assist in the conservation of fuel and power, prevent waste, undue consumption, and the misuse and contamination of water. It imposes on owners and occupiers of buildings a set of requirements concerning the design and construction of buildings and the provision of services, fitting and equipment used in (or in connection with) buildings.

⁵⁵² "Fire Engineering is the application of scientific and engineering principles, rules [Codes], and expert judgement, based on an understanding of the phenomena and effects of fire and of the reaction and behaviour of people to fire, to protect people, property and the environment from the destructive effects of fire." The institution of fire engineers, the international organisation of fire professionals, accessed March 25, 2012, <http://www.ife.org.uk/about/about/fireengineering>.

computational assessments, which I refer to more extensively later. The calculations provided by this software may also be calculated using the British Standards indications. These standards are a set of complex charts, whose results are also acceptable in terms of fire compliance. In other words, fire safety in a building may be reached using the Part B Regulations, fire-engineering methods or British Standards indications. However, although all three methods are equally acceptable, occasionally their design indications vary, therefore questions regarding safety arise and can justifiably cause.

Regulations, fire-engineering approach, and application of British Standards in a form of design indications and restrictions are principally tailored for a universal purpose; the containment of fire in a building and the protection of its occupants. However, regardless of their potential perfection and efficiency, there are certain parameters, which cannot be predicted and/or avoided. Regulations cannot control the flammability of contents that are brought into a building by the occupant. In this case, building regulations are destined to protect the neighbours.⁵⁵³ However, a recent fire accident that took place at Lakanal House in Camberwell, London, on the 3rd of July 2009 and which caused 6 people to lose their lives has exposed this legislative imperfection in regard to the flammability of the occupants' contents and has initiated a series of relevant debates towards resolution.

Illustration 49: Images of the fire at Lakanal House in Camberwell, London.⁵⁵⁴

The initial blame for this tragedy was put down to the fact that this building did not meet acceptable fire standards. However, according to research conducted by the architect Sam Webb,

...the greatest risk to people living in blocks of flats comes not from structural failure, although that is there in LPS blocks, but from fire.

Eradication of that risk comes from the management by the local authority or the owners of the blocks. Cleanliness would be a start.⁵⁵⁵

⁵⁵³ Whittick, *The Party Wall, a Short History*, 9.

⁵⁵⁴ Images accessed March 29, 2012, <http://www.architectsjournal.co.uk/news/daily-news/lakanal-house-new-evidence-reveals-how-fatal-fire-spread/5204724.article>.

⁵⁵⁵ Sam Webb, "Councils Should Learn from King's Cross Fire," *The Architects Journal*, 2009, 5, vol. 230, 16.

Lack of cleanliness is, therefore, an additional reason that may cause an unpredictable spread of fire and can take everyone by surprise. It is an issue that was initially raised after the fierce fire at King's Cross Station on the 18th of November 1987, which most probably started because of a burning match or cigarette and killed 31 people.⁵⁵⁶

Illustration 50: Image of the aftermath of the fire at King's Cross Station, London.⁵⁵⁷

According to the London Fire Brigade Fact Sheet, during the annual inspection the station was found to be in a substantially dirty state providing storage for combustible materials.⁵⁵⁸ Similarly, according to Sam Webb's statement, the fire in Camberwell would not have spread so rapidly if the public areas of that building were kept clean, thus his insistence on the enforcement of an appropriate legislation.⁵⁵⁹

Another parameter that is somehow difficult to predict and reflect in regulations is the panic reaction of people in the presence of fire. The concept of panic has a long history and refers to a contagious feeling that does not merely relate to fire. The word comes from the mythical god Pan of Ancient Greece, and was originally attributed to the mass emotion that spread throughout the Persian army during the Battle of Marathon against the Greek army. When faced with fire, the reaction of people is in most cases unpredictable, as panic overcomes the human capacity for rational thinking.⁵⁶⁰ According to records of fire incidents in the nineteenth century, the buildings that created the biggest emotions of panic were theatres. Theatres were usually the only places of public entertainment, however, their design incorporated no

⁵⁵⁶ *King's Cross Fire, 18 November 1987* in Fire Brigade Museum Archives "The Times" published 19th of November 1987.

⁵⁵⁷ Image accessed March 25, 2012, <http://www.firetactics.com/KINGSCROSS.htm>.

⁵⁵⁸ In the *Fact sheet* covering the tragic accident at King's Cross issued by the London Fire Brigade, Richard L. Best writes that "[t]he cause has yet to be determined, but the initial investigations have ruled out various possibilities such as arson, an electrical fault, burning fluff and grease below the escalator in the machine room, or a build-up of gas such as methane in the area at the top of the escalator. Only two causes cannot yet be discounted: Smoking materials and friction in the escalator external machinery parts. Of the two possibilities, the first is considered to be the most likely contender and as a result a complete ban on smoking on London's Underground system, has been introduced. The annual inspection of the station was carried out in April this year. The brigade's report said sacks of rubbish and cables were found on platforms, buckets of waste oil in tool rooms, combustible materials in a storeroom, and the ventilation plant room was in a dirty state." [*King's Cross Fire, 18 November 1987* in Fire Brigade Museum Archives ""]

⁵⁵⁹ Webb, *The Architects Journal*, 16

⁵⁶⁰ S. D. Sime "The Concept of Panic" in *Fires and human behaviour*, ed. David V Canter (London: Fulton, 1990), 63–4.

safety measures.⁵⁶¹ Between 1800 and 1875, there were 434 recorded theatre fires out of which 46 were in the United Kingdom, and this was attributed to the gas lamps that were used to light up the stage. Due to the high number of these accidents, emotions of panic started to build up amongst people when gathered in big, hugely crowded, public buildings. Respectively, the information produced through this reaction was absorbed and encoded in regulations, and manifested itself in certain design implementations, such as more than one easily accessible fire exit of a certain width, lighting and ventilation, or certain controlled strategies of evacuation.⁵⁶²

Illustration 51: The Arts Theatre Club (1951), 6/7 Great Newport Street, London WC2.⁵⁶³

Traditionally, building codes and standards have set levels of performance according to the experience and judgement of code writers. The levels of safety that these codes prescribe are expressed in imprecise terms, such as ‘low’, ‘minimum’ or ‘acceptable’. There is only one acceptable level of fire safety that must be achieved prior to the use of any building, which, under the Fire Precautions Act 1971, is confirmed with the issue of a Fire Certificate by local authorities.⁵⁶⁴ Through the use of Codes and Standards, authorities measure the acceptability of a building’s integrity in regard to fire. Nevertheless, the problematic nature of regulations at this point lies in the degree of safety achieved through their enforcement. It is true that the degree of safety, or else the level of risk, is impossible to measure accurately, and yet, if such thing were possible, an ‘acceptable’ level of risk, when it comes to human lives, would be rather arbitrary. The levels of safety should be measurable. Only through quantification can a systematic fire safety analysis be possible. However, the assignment of real numbers to levels of safety, as a result of comparing the amount of money spent with the number of human lives lost, is an unacceptable practice.⁵⁶⁵ In a

⁵⁶¹ Blackstone and Fire Protection Association, *A history of the British fire service.*, 252–3.

⁵⁶² S. D. Sime “The Concept of Panic” in *Fires and human behaviour*, Canter, 68-9.

⁵⁶³ *The London Fire Brigade Archive: Selected Photographs from the 1930s-1970s*, 13.

⁵⁶⁴ Fire Protection Association and Loss Prevention Council, *Guide to building fire protection*, 68–9.

⁵⁶⁵ B. M. Cohn, “Formulating Acceptable Levels of Fire Risk” in *Fire Risk Assessment : a Symposium Sponsored by ASTM Committee E-5 on Fire Standards, Hilton Head, S.C., 4 June 1980*, eds. G. T. Castino and T. Z. Harmathy (Philadelphia: American Society for Testing and Materials, 1980), 29.

research paper called 'Formulating Acceptable Levels of Fire Risk', B. M. Cohn suggests that

...[a] probabilistic approach can be used to set fire safety goals. Sufficient statistics are available today to set realistic goals, and the state of the art in fire safety systems analysis is sufficiently advanced to develop the methodology needed to calculate the failure probabilities for specific events. It assigns probabilities to events associated with fire development in a building and allows these probabilities for a specific set of conditions to be related to the risk being evaluated (loss of life, property damage, business interruption, and so on). Statistics of industry experience help to relate the relative safety levels to the actual loss forecasts. Similar statistical analysis can be used to establish goals for fire safety in building codes, regulations, and standards.⁵⁶⁶

Probabilistic approach to fire risk analyses is a common practice and the concept of probabilities, regardless of whether it is expressed in quantitative terms or not, is inherent in every building code.

The formation and application of building legislation can be perceived as an act of compromise to an ideal, which looks towards the creation of a fireproof world. The possibility of the total elimination of destructive fires, whilst fire is still in the service of humans, is probably an unrealistic scenario. This would demand the exclusive use of non-combustible materials, which would in turn imply an urban environment built anew. The aspiration towards a fireproof world made of non-inflammable materials can be seen in the technology of building materials, as, for example, in the extensive use of asbestos. In the late 19th century, asbestos became increasingly popular within the building industry due to its fire-resisting properties.⁵⁶⁷ Its name in Greek means 'inconsumable' or 'inextinguishable' and it has been used since ancient times. Specifically, evidence for its use can be traced by what is called the 'salamander's wool', a type of woven cloth that was thrown into fire and later emerged unburnt. The fascination for the use of asbestos, apart from its heat, electricity, acidity, and dampness resistance can also be attributed to the fact that it can be woven like cotton, turned into powder or even fibre with remarkable tensile strength. The first time that

⁵⁶⁶ B. M. Cohn, "Formulating Acceptable Levels of Fire Risk" in *Fire Risk Assessment : a Symposium Sponsored by ASTM Committee E-S on Fire Standards, Hilton Head, S.C., 4 June 1980*, 28.

⁵⁶⁷ A. M. (Professor) Low, *Romance of Fire* (Worcester/London: The Trinity Press, 1941), 205.

asbestos' safety, in regard to fire-resistance, was tested in the building industry was at a fire incident at the Queen's Theatre, Manchester, in 1890, in a period when asbestos was widely used in safety curtains. During that fire, asbestos curtains⁵⁶⁸ managed to effectively divide the theatre and prevent the expansion of flames to subsequent spaces.⁵⁶⁹ This was an early idea of fire compartmentation, whereas today it is achieved with the use of fire doors.

Building Codes and Regulations are an area of constant research. They are composed by experts whose task is to gather information on the causes and impact of failures and accidents that take place within the built environment. This legislation aims at prevention and protection, yet any potential failure comprises a new source of information for further improvement; it is a continuous process that evolves through catastrophe. At the same time, the restriction imposed by the increasing body of regulations is what creates ground for something new to emerge. As J. H. Middleton says of Ancient Rome:

Nero had a new and elaborate Building Act drawn up, requiring fireproof material...to be used for external walls for houses; and it appears very probable that he wilfully caused the great fire which destroyed a large part of Rome in order that he might with effect bring his new Act into operation.⁵⁷⁰

Respectively, the building process takes place in an unoccupied realm within boundaries, at which, according to the Greek concept of horismos [*χωρισμός*, dividing], as soon as one sets boundaries or restrictions, something does not stop but only then begins to emerge. To illustrate this argument, high-rise buildings and skyscrapers in particular, appeared only after building codes, specific to materials and construction techniques, were written and enforced.⁵⁷¹

The restrictions imposed by Building Regulations can, therefore, be treated as forces of fresh and radical potential, which can open up ground where creativity is achieved through adjustment and compromise. A vibrant example that clearly

⁵⁶⁸ The concept of the theatre fire curtain was invented by Captain Sir Eyre Massey Shaw after a series of immense fires that took place in the 1880s. Following a big fire at the Alhambra Theatre in Leicester Square in London, during which the Prince of Wales was nearly killed, Shaw published an article called Fires in Theatres that required every theatre to make use of fire curtains made of metal, which, in case of a fire, could divide the theatre from the auditorium. [source accessed March 15, 2012, <http://www.london-fire.gov.uk/VictorianTheatreFires.asp>]

⁵⁶⁹ Low, *Romance of Fire*, 208.

⁵⁷⁰ Bird and Docking, *Fire in Buildings*, 24.

⁵⁷¹ Lyons, *Fire*, 110.

demonstrates this statement is a recent conceptual project called 'The Party Wall Project' by Mae Architects in collaboration with Slider Studio.

Illustration 52: 'The Party Wall Project' by Mae Architects and Slider Studio.⁵⁷²

This project is inspired by the obligatory existence of party walls in the urban fabric of the United Kingdom. The construction of party walls was for the first time enforced after the Great Fire of London in 1666. Since then, a thick common wall (party wall) had to separate adjoining properties with the intention, in case of a fire, to prevent its spread and therefore protect the immediate neighbours.⁵⁷³ Effectively, this enforcement has formed a unique urban grid, which is defined by the location of these party walls, and any building process takes place within the boundaries created. This is the starting point of 'The Party Wall Project', which according to its concept

...[it] explores the potential for self commissioned housing constructed within serviced plots and contained between party wall structures. Slider Studio's computational simulations allowed Mae to visually describe the complexity, variety and variation produced by this concept, demonstrating how a small number of constructional parts can be combined to form a rich architectural language.⁵⁷⁴

Mae architects took as a starting point a common urban typology that can be found in the United Kingdom, which imposes specific spatial restrictions and limits design creativity. Based on these restrictions, they examined possible combinations by mixing various materials, forms, functions, sunlight conditions, colours, and so on, and demonstrated effectively how spatial restrictions do not necessarily set limits to architecture.

Returning to my key point of reflection, building legislation can be perceived as a codified body of memories that evolves continuously through accidents and mistakes. The form, materials, and construction techniques of new buildings upon which this legislation is enforced carry the memory of these accidents and mistakes, too. In other

⁵⁷² "The party wall project", accessed May 12, 2008, <http://www.sliderstudio.co.uk/projects/party-wall/>.

⁵⁷³ Whittick, *The Party Wall, a Short History*, 19.

⁵⁷⁴ "Slider Studio", accessed September 2, 2009, <http://sliderstudio.co.uk/>.

words, memory in-forms passively the building process, and externalises and materialises itself in the end product, in architecture. Memory impacts actively on creativity and becomes, therefore, one of the latter's necessary parameters. In this sense, building legislation can be considered as a positive and liberating piece of information in the hands of the architect. An exemplary demonstration of this statement is 'The Brick House' by Caruso St John Architects, a shortlisted nominee for the Sterling Prize Award 2006.

Illustration 53: Site plan and interior images of the Brick House by Caruso St John.⁵⁷⁵

'The Brick House' in West London stands out for its remarkable design, which is generated as a compromise to various restrictions. On the one hand, constraints are imposed by the awkward shape of the site and the access to it, and on the other hand, due to current legislation, this residential project can only raise one storey up and cannot have direct views to three of its sides. In response to these restrictions, the architects created a cave-like space, where sunlight, captured through shafts, is projected onto the ceilings whereas the rooms, placed on a lower ground level, have direct views to a small internal courtyard. This compromised design, although foreign to conventional typologies, is a remarkable example of great creativity achieved through the application of restrictive legislative forces.

Commenting further on building legislation, the initial reason that compelled societies towards its creation and establishment is the trauma caused by fire catastrophes. Building legislation is the realm in which the memory of accident and destruction is stored. It is an archive that remains static until a new accident occurs; in this case, the archive is activated as new information is added to it. This legislative archive informs architecture, for all constructions have to abide by it, or else, using Derrida's terminology, architecture reflects the archive's violence. The traumatic

⁵⁷⁵ "Caruso St John Architects, Brick House", images accessed May 5, 2008, <http://www.carusostjohn.com/projects/brick-house/>.

memory of accidents is *compulsorily* externalised and embodied in the architectural end product, which manifests itself in its form, spatial arrangement, construction method, choice of materials, and so on. Architecture, on the other hand, as a shelter for these memories, has the function of an archive too. It is to be found in stasis as it carries a frozen memory of previous catastrophes. Nevertheless, in the case of a new accident, the architectural archive is put in motion and informs legislation through what is left behind, its ruins or ashes. Effectively, the memory of architecture's own catastrophe informs architecture itself in a vicious circle.

Fire prevention research

As the dream of creating a totally fire-resistant environment is unattainable, society has accepted the fact that this world is combustible and will always be so. Regardless of the advancement of fire-resistant building technology, the contents of an occupied house are flammable. Taking this for granted, the imminent threat of fire has brought about the development of additional processes, which deal with research in fire prevention. In general, fire prevention calculates the behaviour of combustible materials in relation to fire. Primarily, it deals with the calculation of the total heat of combustion, which is the total thermal energy per unit mass that is emitted by a complete combustion. Secondly, it is the rate of heat release, or else the intensity of the material's output of thermal energy per unit mass per unit time. The calculation of exothermic properties allows for the estimation of the material's contribution to a fire scenario. However, research in fire prevention also looks at the endothermic properties of materials, the calculation of which refers to what is needed for sustaining its combustion (heat capacity, sensible heat, latent heat). In this examination, it is also important to consider the thermal conductivity, which is the rate at which heat enters from the surface into the interior of the material to allow the process of decomposition to take place.⁵⁷⁶ Fire researchers reconstruct fire incidents in laboratories to monitor the performance of combustible materials. However, this test represents only one combination of conditions that may take place in a real fire, as its development in space is unpredictable. Therefore, fire test design requires the

⁵⁷⁶ Lyons, *Fire*, 88–9.

consideration of many variables. The most common technique developed by researchers is the 'tunnel test'. The material to be tested is placed on the top of a long rectangular passageway on one end of which a large fire is introduced for a certain period of time. The material in question supplies fuel to the burner and effectively allows the fire to move further down the tunnel. The propagation of fire inside the tunnel and the distance that it travels until it burns out is recorded and its measurement represents its degree of flammability. If the indication of the 'tunnel test' is below a certain degree, the material is rated as non-combustible.⁵⁷⁷

Illustration 54: The 'tunnel test', Southwest Research Institute.⁵⁷⁸

Illustration 55: The burner end of tunnel furnace.⁵⁷⁹

In 1950, the 'tunnel test' was established as the standard method to predict the way fire spreads, particularly on flooring materials. Eventually, this method proved to be misleading as the performance of the same materials in real fires was often very different to the one predicted.⁵⁸⁰

Fire tests can establish reliably only the physical properties of a material. When it comes to a real fire, there are quantitative and qualitative differences that cannot be taken into consideration in a fire test, such as the heat flux, air-flow and so on. Hence the emergence of research centres, which can house full-scale fire experiments. These experiments are expensive yet their significance is increasingly recognised.⁵⁸¹ The first fire laboratory in England was established after a decision of the British Standards Institution in 1932 in Elstree. It was the third one to operate internationally after the two centres in Chicago and Stockholm. The results emerging from fire laboratories are particularly informative. Structures are carefully subjected to measured pressures, and

⁵⁷⁷ *Symposium on Fire Test Methods*, Presented at the Fourth Pacific Area National Meeting (Los Angeles: American Society for Testing and Materials, 1963), 3–5.

⁵⁷⁸ *Ibid.*, 4.

⁵⁷⁹ *Ibid.*, 5.

⁵⁸⁰ J. Randall Lawson, *NIST Technical Note 1628, a history of fire testing* (U.S. Department of Commerce: National Institute of Standards and Technology, 2009), 21–2.

⁵⁸¹ Lyons, *Fire*, 94.

then heated to very high temperatures, such as 1000°-2200° C. The experiment finishes with the structure's resistance to water, as it would occur in a real fire incident, with the water introduced by the fire brigade. For instance, a 9-inch brick is expected to resist a 6-hour combustion under forty tons pressure, and subsequent cooling down with cold water for 6 minutes. Moreover, the purpose of these laboratories is not only the observation of materials under combustion, but also the testing of fire fighting techniques and extinguishing appliances.⁵⁸²

The expense of full-scale fire experiments has respectively led researchers to the creation of an alternative method of testing, which is more cost-effective but scaled down.⁵⁸³ The National Bureau of Standards in the United States has validated one-fourth as the acceptable scale for testing. Although the results from this test are very precise, there are certain parameters that cannot be scaled down. For example, the flame height cannot be scaled down proportionally. In essence, the fire damage measured in small-scale experiments is less severe than in full-scale ones, yet the results can be adjusted accordingly. Along with real fire experiments, research has also diverted its interest towards the use of mathematical models. Early attempts at mathematical fire models were very modest. They involved very basic spaces with a single fuelled fire burning in the middle of the room. Most parameters that take place in a real fire event were not considered. The experiments looked exclusively at a single gas temperature as a function of time. Later on, these models started to become more complex by subdividing the volume of air in the room into smaller units. However, the advance of computer technology in the mid 1970s allowed the process of this data to be accomplished in more detail, including parameters such as different room sizes and geometries.⁵⁸⁴ Nowadays, computational fire modelling is a method used by fire-engineers. It has advanced to such a degree that it can predict the turbulent flow of gases inside a building, as well as keep track of the changing positions and sizes of soot particles.⁵⁸⁵ By 1985, the year when John Lyons' book *Fire* was published, computational fire modelling technology

⁵⁸² Low, *Romance of Fire*, 212–3.

⁵⁸³ Qassim, R. Y. "A Program for Computational Fire Dynamics" in *Fire Safety Engineering*, ed. D. N. Smith (Bedford: BHRA (Information Services): The Fluid Engineering Centre, 1989), 87.

⁵⁸⁴ Lyons, *Fire*, 96–7.

⁵⁸⁵ Qassim, R. Y. "A Program for Computational Fire Dynamics" in *Fire Safety Engineering*, 94.

...divided [a room volume] into some 70.000 sub-volumes (or cells) and as many as 12.000 representative particles can be tracked in their travel through these volumes. The equations involve five dependent variables that are followed through 3.000 time steps, or major iterations. Some 400.000 equations are solved in each iteration. Over one billion items of data are generated in a single run of this model, of which only a tiny fraction may be used by another computer program to generate a graphic display that summarises the results for study by the investigators.⁵⁸⁶

Computational fire modelling is able to predict the duration of a fire developing in any given space from ignition to the point of its complete exhaustion. The calculation takes into consideration all the potential sources that can fuel a fire, and according to crosschecks with results obtained through full-scale experiments, the accuracy of these models is plus or minus 10 percent. The margin of this error, however, is critical when it comes to calculating the time needed for escape in a flaming building. It is, therefore, debatable how much confidence one can have in computer simulations. There are parameters that the software can calculate easily and quickly, yet others, such as the panic-stricken behaviour of people escaping from fire, which remain mere predictions.⁵⁸⁷ Accordingly, people's safety is calculated with digital processes, as for many, and particularly for cyborg scientists, "human thinking, memory and decision making can be modelled by computer programs."⁵⁸⁸ As the risk of fire from either natural or man-made causes can never be completely eliminated, fire prevention research aims at reducing any potential breaking out to a low probability. Throughout the years, the quantification of risk has been incorporated into the design strategy in various forms.⁵⁸⁹ For instance, an early approach developed by fire prevention engineers in the United States resembles a decision tree according to which, if all possibilities are considered, the prevention and fire fighting can be effectively tackled with either through passive or active measures. The complete version of this document is 3 feet long and 11 inches high (the following image comprises only a condensed version of it). The decision tree deals primarily with two possibilities; either the ignition of fire in a building or, if fire has already occurred, the response to it. If all

⁵⁸⁶ Lyons, *Fire*, 99.

⁵⁸⁷ *Ibid.*, 97.

⁵⁸⁸ Matthew Fuller, ed., *Software studies : a lexicon* (Cambridge, Mass.: MIT Press, 2008), 188.

⁵⁸⁹ Castino and Harmathy, *Fire Risk Assessment : a Symposium Sponsored by ASTM Committee E-S on Fire Standards, Hilton Head, S.C., 4 June 1980*, 3–4.

possibilities of the tree have been considered in the design and construction of the building, then the building itself possesses a certain degree of fire safety. However, what still remains unknown is the level of fire safety achieved, which is why this approach is usually not preferable.⁵⁹⁰

Illustration 56: The decision tree. "The decision tree is a success tree, with the top event denoting the satisfactory management of the fire to prevent injury or loss of property. This type of success tree is the mirror image of a fault tree, in which the top event would be the loss of fire control leading to fire injury or property loss."⁵⁹¹

Researchers, therefore, came up with a quantitative approach, where fire safety comparisons between different designs were possible. A new model was developed which listed 13 safety parameters for three main concerns: fire containment, fire extinguishment and the movement of people. According to this model, a numerical value is assigned to each parameter. Then, the three columns are counted individually, the rows are totalled and the last column is finally calculated. Depending on the result, the degree of a building's fire safety can be assessed. If the result is not satisfactory, then certain parameters, which can be chosen according to aesthetic and financial criteria, have to be adjusted to raise the total value to an acceptable level. This approach is currently being used for buildings providing health-care facilities and other specialist occupancies. This is because this model is developed by taking into consideration the interior furnishings and the potential fire hazards of these buildings.⁵⁹²

Illustration 57: Checklist for the qualification of the evaluation of fire safety.⁵⁹³

In this section, I looked at a specific moment of architectural evolution, which is interrupted by fire accidents. A fire in a building is a process that initiates other parallel processes dependent on this event. In the last few paragraphs, I focused on fire prevention research, which comprises a chain of processes that explores and predicts

⁵⁹⁰ Lyons, *Fire*, 130.

⁵⁹¹ Castino and Harmathy, *Fire Risk Assessment : a Symposium Sponsored by ASTM Committee E-S on Fire Standards, Hilton Head, S.C., 4 June 1980*, 45.

⁵⁹² Lyons, *Fire*, 133–4.

⁵⁹³ *Ibid.*, 133.

the way fire develops and spreads in space and the way materials burn. Based on the fact that the aftermath of real fire accidents, which is the end product of a combustion process, does not contribute an adequate amount of information to the study and avoidance of similar future events, fire researchers conduct real life fire experiments in laboratories and simulate fire incidents in buildings. Reflecting on these experiments and appropriating them into my primary inquiry, the architectural archive is reproduced, either in a smaller physical scale or digitally, and then is set on fire. For Bruno Latour, experiments that take place in laboratories are understood as the following:

The guinea pig alone would not have been able to tell us anything about the similarity of endorphin to morphine; it was not mobilizable into a text and would not help convince us. Only a part of the gut, tied up in a glass chamber and hooked up to a physiograph, can be mobilized in the text and add to our conviction.⁵⁹⁴

The results of experiments are therefore delivered in the form of scientific texts. Questioning the source of these texts however, Latour questions: “What is behind a scientific text? Inscriptions. How are these inscriptions obtained? By setting up instruments.”⁵⁹⁵ Effectively, the inscription of scientific results consists of the written memory of what takes place during an experiment. My focus at this point is on what follows after the scientific text is in hand. In the case of fire experiments, specifically, this text in-forms architecture as it decides upon the building’s materiality, structure, contents, etc. Contextualising this on my present inquiry, the memory of destruction of the physical or digital replication of architecture is archived in the end product, in architecture itself.

Architecture on fire – a Bachelardian approach

I have argued that fire accidents are a constant and imminent threat to architecture. As a result, society has made a thorough and increasing investment in order to protect its members from fire as well as to preserve the integrity of buildings.

⁵⁹⁴ Bruno Latour, *Science in action : how to follow scientists and engineers through society* (Cambridge, Mass.: Harvard University Press, 1987), 67.

⁵⁹⁵ *Ibid.*, 69.

This investment manifests itself in various ways. Today, buildings are designed and equipped to combat fire at every stage of combustion. Smoke detectors respond to traces of smoke in enclosed areas, which usually indicate the smouldering stage of a combustion or incandescence. Heat and fire detectors respond to later stages of combustion, when flames have already developed. Part of their response to fire is the activation of the sprinkler system, which throws water inside the building from outlets on the ceiling. At the same time, a sonar alarm calls inhabitants for immediate evacuation whereas an automatic signal is sent to the fire brigade to alert them to the incident. The evacuation of a building takes place through fire routes and exits, which are designed in such way that they aim to provide a safe and quick egress free of smoke and flames for a certain period of time. This is achieved through fire compartmentation and the use of fire-resistant materials. One can draw parallels between the way fire accidents are perceived and dealt with in a building, the way architecture is organised, and Bachelard's views of duration and evolution. Bachelard, opposing Bergson's temporal continuity, perceives every evolution as discontinuous, thus its duration is broken down to points, intervals. Equally, the duration of combustion in a building is understood as developing in different stages. Starting from the smouldering stage, it escalates gradually until it reaches full combustion. Architecture and fire protection technology reflects this discontinuity by responding to every stage of combustion accordingly. So, for instance, smoke detectors detect early stages of combustion whereas heat detectors detect later ones. A different example is the positioning of fire exits in a building. The duration of escape from any point in a building to a safe place outside cannot exceed a certain amount of time. This duration is spatialised and thus calculated in distance. Effectively, abiding by regulations the positioning of fire exits punctuates the duration of escape to the maximum distance possible from any given point inside the building.

In general, the way fire in buildings is combated is the result of an ongoing, organised attempt to avoid recurring accidents. If one considers architectural evolution in Bachelardian terms, then a fire catastrophe comprises the temporal death of architecture. This temporal death punctuates architectural evolution, it makes it discontinuous, and at the same time it indicates an instant of creation, as a new building or part of a city is usually erected to replace the destroyed one. The end

product of combustion, the destroyed building, can be perceived as a body of useful knowledge that informs fire research and technology. For Bachelard, knowledge

...taken at the moment of its constitution is polemical knowledge; it must first destroy in order to make room for its constructions. Destruction is often total and construction never completed.⁵⁹⁶

The knowledge attained through observation on accidents agrees with his notion of knowledge production. For him, knowledge is the product of the dialectic between theory and practice:

...concepts need to become technical to be precise and to develop, and technical applications are performed according to theoretical procedures and on scientific objects, that is, objects created by science.⁵⁹⁷

In other words, a destroyed building is the basis, the theoretical stand, upon which new technologies are tried out and by which new knowledge is produced. Fire experiments and fire research very often demand the reconstruction of fire accidents. Due to the exorbitant cost of these experiments, the reconstruction is scaled down. Small-scale fire experiments comprise a miniature of the real event and as a result their values become condensed and enriched.⁵⁹⁸ For Bachelard, observing and experimenting on a miniature

...opens up an entire world. The details of a thing can be the sign of a new world, which, like all worlds, contains the attributes of greatness. Miniature is one of the refuges of greatness.⁵⁹⁹

To expound on the temporal death of architecture, the memory of the accident contains useful knowledge that has an impact on building legislation. Any revision or addition to this legislation takes place in parallel to architecture's destruction, as the latter continuously informs the former. In this sense, building legislation may be considered as an archive of the memory of the accident, which decides on future architectural constructions. Effectively, "what remains of the historical past ...[is] only that which has reasons for beginning again."⁶⁰⁰ As soon as a new building is erected, the memory of the accident is externalised and stored in its design, materials, and

⁵⁹⁶ Gaston Bachelard, *The dialectic of duration.*, trans. Mary McAllester (Manchester: Clinamen, 2000), 34–5.

⁵⁹⁷ Cristina Chimisso, *Gaston Bachelard : critic of science and the imagination* (London; New York: Routledge, 2001), 72.

⁵⁹⁸ Gaston Bachelard, *The poetics of space* (Boston: Beacon Press, 1994), 150.

⁵⁹⁹ *Ibid.*, 155.

⁶⁰⁰ Bachelard, *The dialectic of duration.*, 20.

technology. This externalisation secures memory itself, as "[m]emories...the more securely they are fixed in space, the sounder they are."⁶⁰¹ To sum up, a Bachelardian understanding of architecture's response to accident confirms that architecture absorbs and reflects the discontinuity of its evolution. A point or interval that punctuates this evolution is architecture's own destruction, its temporal death. As previously mentioned, however, architecture operates as an archive in which a reduced memory of its whole past is stored and recorded. Therefore, as soon as architecture disappears temporarily, this temporal absence signifies a point in time when existing knowledge is being reorganised. New architecture reflects only the knowledge that is previously proved to be efficient and successful. The rest detaches itself from its evolution and becomes part of history. In other words, architecture operates as an archive that updates and reorganises itself through its own destruction.

Architecture on Fire – a Bergsonian approach

This chapter explored the way architecture responds to its own destruction caused by fire. Throughout history, fire accidents have been one of the biggest threats to architecture. As a result, society has made an organised attempt to avoid them so that the integrity of buildings and the protection of inhabitants are secured. Earlier, I gave a short account of the history of fire fighting that stretches back to the Roman times. Since the advent of industrialisation, most major cities in the world have been repeatedly destroyed by fire. The result was a constant and rapid reorganisation of the fire brigade and an investment in fire fighting equipment and technology. Buildings themselves are nowadays equipped to combat fire too, either passively or actively. Regardless of this response, fire accidents are still an imminent threat and they inevitably happen. The ceaseless occurrence of these accidents informs building legislation and at the same time provides information for fire research. In general, this multi-faceted response, if considered in Bergsonian terms, makes up a bigger, more detailed picture of the same evolution, the evolution of architecture, whilst its destruction is merely a temporal aspect of it. As I mentioned previously, Bergson's evolution, which is a reaction to mechanism and finalism, is a dynamic, open-ended

⁶⁰¹ Bachelard, *The poetics of space*, 9.

process that unfolds constantly. This evolution is creative, unpredictable, and it takes place in duration, in 'real' time, which he defines as "the continuous progress of the past which gnaws into the future and which swells as it advances."⁶⁰² In order to understand the concept of Bergsonian evolution, one must first make a distinction between instinct and intelligence. Whereas the duration of evolution can be experienced instinctively, Bergson claims that we perceive it with our intellect. The intellect has a tendency to construct on inert matter and even if it operates on living matter, it will still treat it as if it were inert.⁶⁰³ Any fluidity or movement escapes it and what it perceives instead is a series of discontinuities, of immobilities, that give the impression of continuity and duration. The destruction of architecture, therefore, which is either partial or sometimes even total when completely eradicated by fire, comprises merely a snapshot of architecture's overall evolution.

Both instinct and intelligence are tendencies, which, in earlier stages of evolution, used to interpenetrate each other. Now they only hold traces of their common roots. Instinct and intelligence possess innate knowledge. As I explained earlier, the former carries innate knowledge of things, of matter, whereas the latter of relations,⁶⁰⁴ which is the knowledge of how things relate to each other, of their form. Bergson in 'Creative Evolution' makes a further distinction between instinct and intelligence in terms of how inventive they are. For him, invention is complete as soon as there is a material end product, a manufacture of an instrument.⁶⁰⁵ Thus, depending on how these instruments are manufactured and being used, they disclose a fundamental difference between instinct and intelligence:

instinct perfected is the faculty of using and even of constructing organized instruments; intelligence perfected is the faculty of making and using unorganized instruments.⁶⁰⁶

In this sense, he explains further, an insect or an animal uses an already assembled instrument that it possesses and is part of its body, like a nose, eye, wing etc., to perform its task. This is an instinctive function. On the other hand, humans, operating with intelligence, assemble unorganised instruments, which are external to their

⁶⁰² Bergson, *Creative Evolution.*, 11.

⁶⁰³ *Ibid.*, 88–9.

⁶⁰⁴ *Ibid.*, 86.

⁶⁰⁵ *Ibid.*, 81.

⁶⁰⁶ *Ibid.*, 82.

bodies and are manufactured for specific purposes. For this reason, an instrument operated instinctively is perfect for its function for, if its use was modified, the species itself would be different. When it comes to an instrument manufactured intelligently, however, it is imperfect. However as Bergson points out,

...as it is made of unorganized matter, it can take any form whatsoever, serve any purpose, free the living being from every new difficulty that arises and bestow on it an unlimited number of powers.⁶⁰⁷

An instrument created by intelligence cannot be merely restricted to its primary function; it can be used in different ways and for various things. It opens up ground for unlimited improvement and application. Yet, for Bergson, the only advantage of intelligence over instinct is to be found in later stages of evolution, when intelligence

... proceeds to construct constructive machinery. At the outset, the advantages and drawbacks of the artificial instrument and of the natural instrument balance so well that it is hard to foretell which of the two will secure to the living being the greater empire over nature.⁶⁰⁸

In any case, the fact that intelligence constructs and uses unorganised instruments reveals an additional aspect of human evolution, which is of major importance. This is that evolution does not only embrace the organic changes that take place in our physical nature, but also include all developments in our intellectual and material culture. Contextualising this in the current research, one can draw parallels between human evolution, on one hand, and the evolution of material culture in regard to fire accidents, such as fire fighting equipment, technology, research, and so on, on the other. Fire accidents, which one would normally perceive as obstacles to architectural evolution, are dealt with by our intelligence. We employ external tools, which we ourselves have invented, to overcome these obstacles. So, for instance, when a fire breaks out, the sprinkler system replaces the manual labour of fire fighters by throwing water on the flames, the smoke and fire detectors replace our sense of smell and touch accordingly whereas fire alarms 'announce' the event. One can thus claim that architectural evolution, during its unfolding, initiates other evolutions parallel to but also dependent on it. A Bergsonian understanding of evolution implies also that

⁶⁰⁷ Ibid., 82.

⁶⁰⁸ Ibid., 82.

this dynamic, constantly-changing process, at any moment of its development, archives every knowledge related to our intellectual and material culture. However, as this knowledge is a product of a process in flux, it never stays static. The evolution of knowledge takes place in duration too but, as it is our intellect's tendency to perceive fluidity as discontinuous, it breaks down its movement in immobilities and projects knowledge, as if it were static, on the form of things. Therefore, the knowledge we obtain by reflecting on any formal arrangement is just a fraction of the whole knowledge that is inherent to evolution as "[w]hat is real is the continual change of form: form is only a snapshot view of a transition."⁶⁰⁹

The key objective of this chapter and the last was to explore the way architecture archives memory. To narrow down the scope of this inquiry, I concentrated on the memory of a specific element, namely fire, and looked at how architecture evolves in response to it. The previous chapter examined architectural evolution and fire spanning from the origins of architecture to contemporary times, whereas this chapter focused on a critical moment of this evolution, which deals with the temporal death of architecture caused by fire. Both sections shared the same methodology. Following Bachelard's notion of knowledge production, according to which new knowledge must say *no* to old knowledge, I initially explored architectural evolution through a Bachelardian perspective, which comprises a traditional understanding of evolution in Western thinking. For Bachelard, evolution is discontinuous. Therefore, its duration needs to be broken down to instants of creation, which can be perceived and studied. Then, through Bergson's philosophy I developed a different, less conventional approach to architectural evolution, which perceives it in a perpetual flux. Through the emergent contradiction of these two opposing theories, my intention was to develop an alternative understanding of the relationship between architecture and memory, which is integral to this research. To summarise, a Bachelardian approach demonstrates that architecture operates as an archive in which a *reduced* memory of its whole past is stored and recorded. This memory functions as a guideline for future architectural creations and is constantly updated every time a building is destroyed. Equally, every time a new building is erected, existing knowledge

⁶⁰⁹ Ibid., 175.

is reorganised thus a new building carries only the knowledge that is previously proved to be efficient and successful. Through Bergson's philosophy, on the other hand, I explained that architecture, as it emerges in real time, in duration, can be considered as a virtual multiplicity, so that it preserves the whole of its past in the present. In other words, architecture archives every single aspect of its perpetual, ever-changing evolution. However, as our intellect has the tendency to perceive every evolution as discontinuous, devoid of duration, it breaks it down into immobilities and as a result we end up perceiving merely an aspect of it.

This research is inspired by a recent global tendency that deals with the perpetuation of memories from the past. According to Pierre Nora, this tendency is called *duty to remember*. In architecture, the *duty to remember* reflects the increasing interest in heritage protection schemes, which takes place through listing. Listing is the process that aims at the preservation of a building's memory and comprises the official archiving of architecture. As I explained through Bergson's theory of duration and memory, however, archives, and thus also listed buildings, can be considered as sites of forgetting. This contradicts the fundamental function of archives, and heritage, and at the same time explains the objective of this research, which is to seek for an alternative approach to the way architectural heritage is understood and negotiated. For this reason, in the last two chapters I explored the archival properties of architecture and concluded, depending on the theoretical stand, that architecture carries with it either a reduced or a complete memory of its entire past. Thus, given that architecture operates *always* as a repository of its entire past, the need for conservation and the role of heritage in general appear to be redundant. Based on this final remark, the following chapter, which is also the conclusion of this thesis, draws on archival theory to provide an alternative understanding to conservation.

Chapter 7 - Conclusion

The concept of memory in contemporary culture has undergone significant alterations. Today, answers to questions, such as ‘what should we remember?’, cannot be given with confidence, as there is a great deal of confusion and uncertainty in regard to what is worth preserving for the future. As a result, we are witnessing a seemingly unrestricted desire for recording and preserving memories from the past, which manifests itself on both an individual and collective level. Pierre Nora attributes this phenomenon to a contemporary anxiety for the future and its uncertain development, and he calls it *the duty to remember*. For the sociologists Ulrich Beck and Anthony Giddens, the future is equally uncertain and this is because we live in a ‘risk society’, which carries a distinguished characteristic: an ongoing anticipation of the future and fear of its irreversible destruction, which creates the need to invest in the stockpiling of memory.

My research focused on architectural conservation, which is currently receiving great attention by many governments, professionals, and the general public. This interest in conservation is confirmed through the continuous re-organisation of legislation and a growing academic engagement. One of the key points of concern in current conservation debates is the lack of a consistent policy. For instance, theoretical dilemmas arise when trying to establish a rationale for the conservation of modern architecture; often buildings from that period do not fall in any regime of conservation. Conservation policies are based on Western values and ideas, and deal only with the exceptional and the unique. Yet, one of the most critical problems of conservation is inherent in its nature. This is its destructive effect on the linear evolution of time on buildings, which brings about what the architect Rem Koolhaas has coined as *Cronocaos*. On the one hand, restoration reverses time so that a building returns back to previous orders, as it once stood, and on the other hand conservation freezes time so that a building’s current state is prolonged into the future. These problems associated with conservation built the foundations of this thesis, and also set its objective that was the establishment of an alternative conceptual approach to architectural conservation. To achieve this, I drew on various disciplines, such as memory studies, psychoanalysis, mythology, conservation history and theory, and

architectural history and theory. Reflections on the topic gave also rise to the invention of an 'unusual' methodology; the methodology of fire that is inherently ambivalent yet conventionally constructive and illuminating. Effectively, this strong interdisciplinary and cross-disciplinary character grounded this thesis in the field of cultural studies.

My approach to conservation was made through archival theory. My decision to draw on this theory was based on the grounds that listed buildings operate like archives in a sense that both aim at the preservation of memory. In the second chapter, therefore, I explored the concept of the archive and elaborated on Jacques Derrida's understanding of it. My interest in Derrida's archival theory is based on his association of the archive's function with the function of the Freudian unconscious. On both occasions, this function incorporates three sequential stages: inscription, storage, and retrieval. Derrida makes a further conceptual association, which is the fact that the theory of psychoanalysis is also a theory of the archive. Effectively, archives can be perceived having life and death drives, just like humans do. The drives of archives, and particularly the death drive, or the archive fever as Derrida calls it, is one of the concepts that I will refer to later to build my final arguments for the conclusion.

Following my study on the concept of the archive, I drew on archival theory to examine individual and collective memory. I explained that there is a long tradition in Western thought that associates the memory of the individual with the function of the archive; the three-faceted operation of the archive -inscribing, storing, and retrieving- reflects also the three stages of the memorising process that take place in the individual. Plato, for instance, likens memory with a block of wax, on which we imprint our thoughts and perceptions. Or, in ancient Rome, memorisation, which is an art, takes place by inserting and storing mental images in mental places, whereas recollection occurs by retrieving these images through mental 'strolls'. This tripartite function of the memory of the individual is also evident in more recent discourses, as in Freud's psychoanalytic theory I referred to earlier. Then, I developed the concept of collective memory, a term coined by Maurice Halbwach, which also appears to operate as an archive. For Halbwach, memory has social dimensions. It depends on the social framework in which it is created and the material objects present in them. Recollection demands a reconstruction of this social framework in the present, thus

memory can never obtain its original essence. As soon as the social group to which a memory belongs dies, then collective memory dies too and is replaced by history. For Paul Connerton, collective memory is transferred to the present through the practice of commemorative ceremonies and bodily practices. It entails archival functions in a sense that processes of inscribing, storing, and retrieving still take place. In general, whereas for individual memory these processes are internal, for collective memory they are external and associated with social frameworks or cultural formations and communications. In regard to individual memory, although a process of memorisation is purely internal, it still demands an archiving process. Memory needs to be externalised onto some sort of substrate, so that it can later be used upon recollection. Therefore, the function of individual memory can be considered equally as external as the function of collective memory, which demands objects or practices to refer to. In this last section of chapter 2, therefore, touching on concepts relevant to archival theory, I explained that both individual and collective memory operate with an archival logic. Effectively, the distinction between the two types is superfluous.

In the third chapter, I developed the methodology of the research. Considering the fact that I had to provide a fresh theoretical understanding of architectural conservation, which I could only achieve by reassessing the broad relationship between architecture and memory, I narrowed down this research by focusing on the memory of a specific element, on fire, and the way architecture accommodated it throughout the years. The choice of fire is relevant in the sense that the primitive hut was erected around it therefore it comprises architecture's first memory. At the same time, as fire is one of the major causes of architectural destruction, fire is the last memory of architecture too. Theoretically, the study of the memory of fire indicated openly the deploying of specific philosophical sources. This is the work of Gaston Bachelard, who is known for his views on memory and fragmented time, but also renowned for his psychoanalytic approach to fire. Nevertheless, as I dealt with the element of fire, which is of a conflicting nature, I decided to employ an opposing theory from a philosophical rival, and this is the one of Henri Bergson, who propagated the concept of temporal continuity. It is not accidental that I based my arguments throughout this thesis on the theoretical conflict between the two philosophers, for this follows Bachelard's views on the advancement of knowledge, which I adopted as a

methodology. Bachelard explains that the formation of objective knowledge can be achieved only through modern sciences. It is a constant dialectical process, which is often aggressive and polemic, as it can potentially shake the foundations of a whole discipline. This is what he calls as an 'epistemological rupture'. Science can refuse its own past and re-organise itself radically from scratch. Bachelard himself uses this model of knowledge production in his own philosophy too and encourages its employment. This gave me the freedom to contradict his philosophy with the one of Bergson. Moreover, I explained that for Bachelard in the core of scientific knowledge there is a reverie, and he speculates that the first thing that the human mind must have dreamt of is fire. Consequently, the starting point of science, which is the essence of scientific knowledge, is fire, therefore the theoretical conflict between the two opposing theories of Bachelard and Bergson carries with it the memory of this element too. To support the omnipresence of fire in knowledge and conflict, I developed Jean-Pierre Vernant's interpretation of the Promethean myth and the ancient philosophy of Heraclitus. According to Vernant, his analysis of the myth reveals that fire carries the memory of the divine conflict between Prometheus and Zeus, whereas the possession of the element suggests a technics, a technical ability, which is the link between fire and knowledge. In Heraclitus' philosophy, the cosmos emerged through the divine interaction of the fourfold; fire, earth, water, and air with fire as the leading force. It is to be found in a perpetual flux and this movement is the result of a universal conflict. Conflict is above all necessary as it leads to the creation of life and, equal to Bachelard and Vernant, it is associated with the eternal nature of fire. Overall, my intention to draw parallels between fire, on one hand, and conflict and knowledge, on the other was the fact that my proposed methodology of conflict becomes a methodology of fire.

Following the methodology, in the second section of the same chapter I looked closely into fire. Today, our knowledge of this element is muddled. It is a mix of personal intuitions and scientific knowledge, and is always taken for granted. For this reason, I looked into some of its manifestations throughout the years and recovered aspects of it, which lend it this confused nature. Sourcing my literature mainly from the extensive and pioneering work of the social anthropologist J.G. Fraser, I made a retrospective inquiry into fire's manifestation in mythology, old rituals, and festivals. Then, I referred to the advancements that took place during the eighteenth century in

the studies of combustion, which, according to Bachelard, can be considered as an 'epistemological rupture', for they brought about a radical advancement in our knowledge of the element. Commenting on this rupture through an archival perspective, I explained that if old and new knowledge is perceived as two distinct archives, the replacement of the old one by the new one creates a certain degree of confusion, as the older body of knowledge slowly enters the realm of oblivion. This effectively clarified why the contemporary, scientific knowledge of the element of fire is merged with ambiguous notions and fallacies from the past that stretch back to ancient times.

In chapter 4, I focused on an obvious association, which is the one of architectural heritage as an archive. I made a brief and concise account of key points in the history and theory of architectural conservation, and elaborated on the two distinct and opposing trends of modern conservation; Violet-Le-Duc's restoration movement that started in France and John Ruskin's conservation movement in England. I explained that the contemporary approach to the theory and practice of architectural conservation, which is a phenomenon rooted in Western ideology, is based on the attempt to unite both restoration and conservation principles into a single strategy, and is directed and regulated by international charters and agreements. Then, I focused on English Conservation, which I examined through archival theory. English Conservation grants the periodic renewal of buildings' elements, various repairs that do not affect the current state and look of buildings, interventions that may increase knowledge of the past, and restoration practices that can clearly give to buildings more heritage value than they would originally have. I therefore stressed the unavoidable impact of this practice on the linear evolution of time.

This impact affects the way memory operates in architecture, which I first associated with Bachelard's theory of time and memory. According to his theory of repose, time is discontinuous in a sense that it can be broken down to at least two instants so that it has a dialectic. Equally, every duration, thus also evolution, starts out of nothingness and, as it is discontinuous, it can be broken down to instants. In order to experience an evolution one has to activate the rhythm of its constitutive discontinuity, of creation and destruction, otherwise, without rhythm, evolution cannot take place. Memory, for Bachelard, is also discontinuous and defined by

consecutive breaks. Being influenced by Halbwach, Bachelard claims that memory depends on the social framework in which it is created, thus the more secure the framework is the sounder the memory. For recollection to take place, one needs to remember these social frameworks, which mark the past as decisive moments, and this can happen through the employment of the imagination. English Conservation abides by Bachelard's notion of time and memory in a sense that both conservation and restoration punctuate the evolution of a building at specific points in time, either by freezing time in the present or by reversing it to a previous state. I explained further that listed buildings can also be perceived as frameworks in which memories are fixed and secured. In this sense, if the framework is successfully preserved or restored, then memory can be cued and recollection can take place.

I next approached English Conservation through the opposing theory of Henri Bergson through which I demonstrated that archives, thus also listed buildings, can be perceived as sites of forgetting. For Bergson, there are two types of time: a homogeneous one, which is the time of physics that can be measured in space, and the real time, or else duration, which is heterogeneous and can only be experienced with the method of intuition, a method he adopted for qualitative divisions. In regard to memory, Bergson explains that there are two main types. One is the habit memory that deals with the memory that is acquired through the repetition of an action, as if it were a habit, and the other is the representational memory that records every detail of our life in the form of memory-images. In order to produce a memory-image in the present, the living body, which is the centre of action that is called the body-image, needs to trace it amongst the totality of all memory-images present in memory and bring it forth into the present. Recollection is, therefore, the actualisation of a memory-image from a virtual place or substratum. However, this imaginary movement of bringing a memory out of some sort of storage place gives the wrong impression, as if it comes out of an archive. In this sense, there is also a third type of memory in Bergson's philosophy, which is called pure memory, and refers to the totality of memory-images found in a virtual state. In the process of recollection, the filtering out that takes place when a memory-image from a virtual state is actualised can in fact be considered as a process of forgetting. Furthermore, Bergson's memory is not archival in a conventional sense; memorisation does not involve the imprinting on any

substratum like a wax tablet or the unconscious. Imprinting, the emergence of the archive, takes place only in the process of recall, when memory is actualised. In this sense, the totality of memory does not reside in archives, but elsewhere, therefore whatever is to be found in archives is merely a reduction. I contextualised this argument with conservation practice. Conservation is the body-image, the centre of action, which filters out the totality of memory-images that make up the complete past of a building by preserving only an aspect of it. Therefore, listing, which is in essence a process of archiving, preserves only a small fraction of memory, thus listed buildings can effectively be considered as sites of forgetting.

In Chapter 5 and 6, I took a step back and looked at the broader relationship between architecture and memory by focusing on the study of a specific element, namely fire. In Chapter 5, I looked into architectural evolution spanning from the ancient flames of the hearth up to contemporary architecture. This was studied through two perspectives; one dealt with the way architecture adapts itself to accommodate fire based on the thermal comfort it provides, whereas the other considered fire exclusively as energy, thus explored its proliferation in architectural space in energetic terms. In regard to architecture's adaptability according to thermal comfort, I first described how the fire of the hearth once occupied a central position in space and functioned as a gathering point. During the first years of modernity, there was a shift. The centrality of the hearth was gradually replaced by fireplaces, radiators and under-floor heating. People found themselves surrounded by multiple centres whereas fire is now dislocated. In sustainable design, fire is out, the space where fire once inhabited is simply redundant. The energetic investigation of architectural evolution, on the other hand, perceived a building as a composite of different energies. I explained that the energy that fire produced within the primitive hut was initially consumed for maintenance but later it was used for the construction of buildings too. Both perspectives looked into architectural evolution in accordance with fire for a single reason, which is to comment on how architecture records memory. Through Bachelard, I demonstrated how architecture is perceived as a porous entity that reflects the needs and demands of the society. In archival terms, architecture operates as an archive in which a reduced memory of its whole past is recorded and stored. This memory can be used as a guideline for future architectural creations, whereas it

updates itself every time a new building is built. I then juxtaposed Bachelard's approach to evolution with Bergson's. For Bergson, evolution is a dynamic process in constant flux, which is driven by *élan vital*. This vital force or impulse keeps evolution in ceaseless flow. The problem of understanding evolution, Bergson explains, is a problem based on a more general inability of the intellect to experience the flow of duration thus also the duration of evolution. Whereas duration can be experienced instinctively, we have the tendency to perceive it with our intellect, which breaks it down to instants. These instants do not represent the real essence of duration, but they are merely snapshots of its continuity. Equally, if architectural evolution is perceived as a process that emerges in real time, in duration, then the whole of its past exists at any time in the present with both past and present pointing towards the future. In other words, for Bergson architecture carries with it the totality of its past.

In Chapter 6, I looked into a key moment of architectural evolution, which is architecture's temporal death caused by fire, and investigated the way architecture absorbs this event. Fire in buildings is imminent and when it breaks out, it is often unpredictable. As a result, society has invested in various ways to tackle this threat. Today, buildings are protected with active and passive fire protection systems. Cities also have organised fire-fighting forces, appropriate building legislation, and there is a constant investment in fire prevention research. I first commented on architecture's response to fire accidents based on Bachelard. I explained that architecture's temporal death caused by fire punctuates its overall evolution. A destroyed building is useful knowledge that can be used for the advancement of fire related research, building legislation, and so on. The moment when a building is destroyed indicates the period during which architectural knowledge is reorganised. Then, only what is successful and efficient will be repeated. The rest belongs to the past. I next developed Bergson's theory of evolution in regard to accidents. For Bergson, evolution is an open-ended, dynamic process in flux that develops in duration, thus the temporal death of architecture comprises merely an aspect of this evolution. I demonstrated that the Bergsonian evolution does not only refer to organic changes that take place in our physical nature, but also include the advancements in our intellectual and material culture. For we have the tendency to perceive the duration of evolution with our intellect and not with our instinct, we break it down to frozen immobilities, thus

perceive just a small aspect of it. Yet, if evolution is perceived in Bergsonian terms, in duration, then it carries with it the totality of its past, including every advancement in the intellectual and material culture. In both chapter 5 and 6, I established archival properties in architecture and concluded that a building carries with it either a reduced or a complete memory of its entire past. Contextualising this in the overall argument of the thesis, the fact that architecture stores either a totality or a contraction of its entire past, questions the need for conservation and the role of heritage in general, as it proclaims them essentially redundant.

In the following paragraphs I develop my concluding arguments and reach the objective of this thesis, which is to provide a novel theoretical approach to architectural conservation. To achieve this, I return to the opening of this thesis and specifically to Luis Benassi's 'Black Umbrella'. The reason I referred to this film is predominantly the fact that it ties together focal points of this research. The 16mm film reels of the triptych are part of the fire brigade's archive material, which were accidentally found in a disused fire station in London, and depict burning buildings. Archives, buildings and fire are also the three main topics of my research, which, up to this point, I have either examined in isolation or studied the relationship between two at a time: buildings-archives, fire-archives, and buildings-fire. Now, having Benassi's film as the starting point, which intermingles efficiently all three main topics of this thesis, I will next develop my approach to conservation.

In 'Black Umbrella', Benassi appropriated the use of the archive according to his artistic needs. Whereas the original purpose of this material was the documentation of fire incidents, he edited and presented it in a way that the 'Black Umbrella'

...is shielding 'our' young woman from the explosive, life threatening splinters produced by the flying bomb, the flying bomb, which incidentally could be seen as a metaphor for the heartless architects of displacement.⁶¹⁰

Doing so, the director makes a bold statement in regard to the limits, and also the possibilities, attached to archives. The postmodern concept of the 'Death of the

⁶¹⁰ Extract from the event's catalogue.

Author' is clearly manifest as the author's initial intention, which is the documentation of fire incidents, is absent from this film installation. This confirms further the fact that archives do not contain a single, unified truth but a series of many 'valid' truths that are dependent on the interpretation and/or the ends of the researcher. On this light, my intention to refer to 'Black Umbrella' celebrates openly this versatile, polysemic nature of the archive for which I comment through a psychoanalytic perspective.

This agrees further with Derrida's overall ambition of 'Archive Fever', to open up "a project of a general archiviology...[of] a general and interdisciplinary science of the archive",⁶¹¹ something that both Benassi's film and this research aim to implement. In this specific project of archiviology, I made two distinct archival associations through which I investigate conservation. I argued that both fire and buildings operate as archives. On these grounds, applying Derrida's theory of the archive I make a further conceptual leap; that both fire and buildings can be examined through a psychoanalytic perspective. In regard to fire, its conflicting nature, which is able to create life and at the same time consume it in its flames, can be perceived as a manifestation of the drives. It is through the psychoanalysis of fire therefore that the element emerges carrying both life and death drives, which is what Bachelard calls the *Empedocles complex*. In this sense, fire in this research is not only a methodological tool but also a reflection of the drives.

The triptych portrays the burning down of buildings and is superimposed by the projection of a female figure carrying a black umbrella, which protects her from exploding building elements. 'Black Umbrella' depicts the imminence of architecture's destruction as well as the necessity for its safeguarding, which, if perceived on the grounds that architecture operates as an archive, one can comment on the latter in psychoanalytic terms. Accordingly, architecture can be perceived having a twofold manifestation: on one hand, it reflects the life drive, which is the drive that leads towards the creation and preservation of life, and refers to all existing buildings around us. On the other hand, in that architecture is an archive, it also carries an intrinsic quality, which is that of archive fever. The archive fever, which relates to the Freudian death drive, pushes towards extinction, towards an inorganic state. It reflects

⁶¹¹ Jacques Derrida, *Archive fever : a Freudian impression.*, trans. Eric Prenowitz (Chicago: University of Chicago Press, 1996), 34.

the desire to return to the primordial memory, to the absolute beginning of architecture, which is the element of fire. In this sense, for the very fact that buildings preserve the memory of fire and at the same time tend to destroy it, architecture emerges as an archive that sustains memory through a continuous process of its creation and destruction.

Translating this in concrete terms, one simply needs to reflect on any building. Buildings carry a great deal of memory, which stretches back to the beginning of architecture, to the primitive hut. This memory is stored in their form, in their typology and materials, in the technology that is used to construct, power and maintain them. Buildings are assembled in compliance with relevant legislation, which is generated by the success or failure of previous buildings. In this sense, legislation itself can be considered as a type of memory that is externalised onto the form of architecture. Buildings are also responsible for the existence and prolonging of collective memory. Collective memory does not only depend on the social framework but also on the material space in which it is created. Effectively, if the architecture of a city changes drastically, this will have an unavoidable destructive effect on collective memory too. However, although memory is stored in architecture, its longevity is perishable. Buildings cannot escape the impact of time. They unavoidably decay and degenerate thus the memory they withhold fades away slowly. To avoid the complete eradication of memory therefore, new buildings must be built, thus creating a vicious circle of creation and destruction that leads to the preservation of memory. This schema is analogous to the myth of Memory according to which Mnemosyne's enactment on behalf of remembering, that takes place through the process of construction, is always counteracted and gradually overshadowed by the opposing working of Lesmosyne on behalf of forgetting. Therefore, to preserve memory is to sustain the cycle that articulates in a simultaneous occurrence the complete dimension of the mythological entity, of both Mnemosyne and Lesmosyne.

A characteristic example of an architecture that demonstrates this alternating play between remembering and forgetting as a means for the preservation of memory is the work of Giovanni Battista Piranesi. The famous Italian topographical engraver,

who is rarely recognised for his work as a practicing architect,⁶¹² puts a particular emphasis on the emotive and creative power of ruins. His work was developed partly as a reaction to a new interest in the achievements of the ancient Greeks that emerged during that period, which undermined the superiority of the Romans. In his “finest and most influential of all his polemical-archaeological works”⁶¹³ ‘Il Campo Marzio dell’ Antica Roma’ (1972), which is a folio of six etchings depicting particular views, or *Vedute*, of Rome, Piranesi demonstrates visions of the city’s past based on his extensive archaeological and architectural knowledge and enhanced by his imaginative interventions.

Illustration 58: Piranesi, G. B., *The Grande Pianta*, site plan of the Campo Marzio. Plate from the Campo Marzio.⁶¹⁴

Illustration 59: Piranesi, J. B., *Scenographia Campi Martii* (aerial panorama of the Campo Marzio). Plate from the Campo Marzio.⁶¹⁵

In his *Vedute* of Rome, Piranesi depicts monuments in ruins, fragmented, whereas the surrounding landscapes are presented with a great attention to detail, as they stood in mid-eighteenth century Rome. In other words, the monuments witness the passing of time, as imagined by the artist, whereas the rest of Rome’s topography stays intact without undergoing any transformation. Commenting on Piranesi’s selected erasure of history, the art historian John Pinto points out that:

The organic process of decay, together with cannibalistic recycling of ancient materials into modern edifices, inevitably revealed the underlying structural

⁶¹² John Wilton-Ely, Giovanni Battista Piranesi, and Pierpont Morgan Library, *Piranesi as architect and designer* (New York; New Haven: Pierpont Morgan Library ; Yale University Press, 1993), i.

⁶¹³ *Ibid.*, 39.

⁶¹⁴ Image accessed April 29, 2013, <http://especiales.lainformacion.com/panoramicas/piranesi/piranesi-mapa/>.

⁶¹⁵ Image accessed April 29, 2013, <http://www.wfu.edu/art/pc/pc-piranesi-catalog.html>.

features of Roma buildings, making visible aspects of these monuments that were never intended to be seen.⁶¹⁶

Piranesi's 'Campo Marzio' reflects a deliberate interplay between architectural remembering and forgetting. The intention of the artist through this selective fragmentation of the urban landscape is to produce a memory in which the supremacy of Rome exceeds the one of ancient Greece. Yet, in context with my main argument, 'Campo Marzio' can also be perceived as a powerful illustration of both life and death drives through the interaction of which memory in architecture can be sustained in the present and prolonged into the future. One can argue further that 'Campo Marzio' has the same function as 'Black Umbrella' in a sense that they both reflect the life and death drives of architecture, which are necessary for the preservation of memory.

Returning to my proposal to interpret architecture in accordance with the theory of the drives, I make a further conceptual association. Architectural conservation, which is in essence an official process of archiving, aims to protect the material aspect of architecture. It aims to prolong the building's integrity by either freezing it in time or by returning it back to previous orders. Through a psychoanalytic perspective, conservation can be perceived as the discipline that on one hand protects the life drive and on the other hand it represses the death drive, or archive fever, thus preventing full architectural expression. It prevents the decay and degeneration of buildings therefore interferes with the way memory is innately preserved and prolonged in architecture.

If one now considers architectural conservation as a repression of the death drive, then certain conceptual problems or inconsistencies inherent in the former's nature can be approached from a different perspective. For instance, I argued that post-war architecture does not usually fall in any regime of conservation. A psychoanalytic interpretation of this argument suggests that the death drive in this case is freed from repression. The desire to destroy post-war buildings relates to the desire to obliterate the memory, or rather the trauma, associated with them, so that new buildings can replace them. At this point, one can suggest further that the

⁶¹⁶ John A Pinto, *Speaking ruins: Piranesi, architects, and Antiquity in eighteenth-century Rome* (Ann Arbor, Mich: University of Michigan Press, 2012), 111–2.

architecture of the modern movement was essentially an architecture of the death drive, in a sense that it aimed to “erase the traces”⁶¹⁷ and “endure less than us”.⁶¹⁸ Therefore, if we are to preserve the true spirit of modernist architecture, then the death drive should be released so that its complete memory is preserved through its material absence; a statement that agrees in principle with Owen Hatherley who sees the conservation of modernism as the absolute conspiracy “with the people who have always opposed it”.⁶¹⁹ Reflecting on this desire to obliterate the memory of specific buildings, one can recall the ongoing series of installation projects entitled ‘City on Fire’ by Thyra Hilden’s and Pio Diaz’s that has been taking place since 2005 in various cities around Europe.

Illustration 60: Images from the City on Fire project. The venues that were ‘set on fire’ by Hilden and Diaz - the holy church of St. Catherine in Frankfurt and the Trevi Fountain in Rome,⁶²⁰

The two artists, by projecting fire images on monuments or other buildings of cultural significance, aim to “reveal the fragile and transitory nature of these man-made constructions, and thereby destabilize prevailing order.”⁶²¹ My interpretation of these installations is that, through these temporary events of symbolic destructions, they achieve a conceptual expression of the death drive that questions the value and significance of “the roots of Western civilisation”.⁶²²

Coming back to my proposal to examine conservation through the drives theory, the fact that conservation policies apply only to buildings that are exceptional and unique suggests that the mediocre and ordinary are beyond appreciation. In this case, the death drive is also released. The prospect of establishing an international conservation agenda is also problematic, for the criteria for releasing the death drive are different amongst different cultures. Hence, as an overall theoretical approach to conservation, my proposal does not only consider the value or historical significance of

⁶¹⁷ Owen Hatherley, *Militant modernism* (Winchester, England; Washington, D.C.: O Books, 2008), 3.

⁶¹⁸ “Antonio Sant’ Elia, “Manifesto of Futurist Architecture”, in *Rethinking technology a reader in architectural theory*, eds. William W Braham, Jonathan A Hale, and John Stanislav Sadar (London; New York: Routledge, 2007), 21,

⁶¹⁹ Hatherley, *Militant modernism*, 5.

⁶²⁰ Images accessed September 10, 2012, <http://www.cityonfire.org/>.

⁶²¹ “City on Fire”, accessed September 10, 2012, <http://www.cityonfire.org/>.

⁶²² Ibid.

buildings but also an additional parameter; it takes into consideration how the drives are perceived and appropriately treated.

It is therefore crucial at this point to return back to psychoanalytic theory and explain why the drives must be in a 'peaceful' balance so that I can next comment on conservation accordingly. As I explained in chapter 2, in Freudian psychoanalysis the death drive has a twofold manifestation: one that is external and expressed as a sadistic aggression and one that is purely internal and expressed as masochism. Freud claims that both manifestations are normal, and in actual fact they are necessary and beneficial for the organism. In other words, evilness and aggression are indeed parts of our nature, which have to be externalised. In 'Civilization and its Discontents' (1930), Freud attributes the glory of civilisation to the simultaneous workings of the life and death drives, where the death drive is diverted or sublimated. He explains that civilisation serves the life drive (Eros), which brings people together and makes them into a solid, functional unit. He also acknowledges that amongst people there is also an innate aggressiveness, which reflects the working of the death drive (Death).⁶²³ Later, however, he adds that

...the development of civilization is no longer obscure to us. It must show us the struggle between Eros and Death, between the life drive and destructive drive, as it plays out in the human species. This struggle is the essential content of all life, and therefore the development of civilization can simply be characterized as the struggle for life of the human species.⁶²⁴

In other words, as the death drive is innate but essential to life, then it is imperative that the evil and aggression that it is expressed with are sublimated, channelled creatively as a 'will to power'. This is possible by abolishing the dualistic model of the life/death drive, according to which the death drive counteracts the righteousness of the life drive, and seeing the two as *one* fundamental positive force of our nature.⁶²⁵ In

⁶²³ Sigmund Freud, *Beyond the pleasure principle*, ed. Todd Dufresne, trans. Gregory C Richter (Peterborough, Ont.: Broadview Editions, 2011), 134–5.

⁶²⁴ *Ibid.*, 135.

⁶²⁵ Rob Weatherill, ed., *The death drive : new life for a dead subject?* (London: Rebus Press, 1999), 36.

regard to conservation, such a psychoanalytic approach accepts that progress in architecture can be achieved through the *equal* workings, or struggle, of the life and the death drives, thus destruction is not necessarily considered as something negative. After all, as Freud points out, our civilisation would not develop unless it was constantly threatened by destruction. The same applies to architecture too.

A powerful illustration of an artistic attempt to 'balance' the architectural life and death drives through a sublimation of the latter is the temporary creation of the 'Skoghall Konsthall' that took place in 2000 by the Chilean artist Alfredo Jarr. Jarr was invited to the Swedish town of Skoghall, which houses predominantly the local workforce of a large pulp mill that operates in the area, to propose a 'rejuvenating' work of public art, as it was considered to be a "dormitory town, with no civic space for the exhibition of art, no amenities whatsoever for the production of culture of any sort."⁶²⁶ In response, Jarr proposed to design and build a community art space, the 'Skoghall Konsthall', commissioned exclusively by the pulp mill company, in which local artists could exhibit their work. The only difference from any other exhibition space, however, was the fact that twenty-four hours after the opening of its first exhibition the 'Skoghall Konthall' was to be burnt to the ground in presence of the local community. Jarr's aspiration was to create a short lifespan art space through which

... this creativity and ephemeral existence will help define the importance of contemporary art. He also hoped that the short existence of this project would also make visible the void that we would live in if it were not for art.⁶²⁷

Illustration 61: The opening and closing of Alfredo Jarr's Skoghall Konthall, Sweden.⁶²⁸

In context with the main argument, my interpretation of this project is that the creation and almost immediate destruction of the 'Skoghall Konthall' comprise a successful articulation of both the architectural life and death drives, where

⁶²⁶ Michael Corris, "White Out," *Art Monthly*, October 2002, 7.

⁶²⁷ "Alfredo Jarr", accessed August 25, 2012, <http://students.cis.uab.edu/juliate/sweden.html>.

⁶²⁸ Images accessed August 25, 2012, <http://students.cis.uab.edu/juliate/sweden.html>.

destruction is welcomed and in fact celebrated as a 'healthy' and beneficial option for the progress of our civilisation. Based on Freudian psychoanalysis, therefore, I stress that controlled destruction must be an integral part of a 'healthy' conservation agenda.

This research is by all means conceptual. The conclusion does not define an end, but rather a beginning. A beginning that is open to interpretations, such as further theoretical work, diverse artistic interventions, or even an actual praxis of destruction. The interdisciplinary approach that I employ to develop my arguments brings to light a relationship with potential future and dynamism. This is the relationship between architectural conservation and psychoanalysis. Exploring the possibilities and crossing the boundaries of these two disciplines can in fact lead to something new and radical. Lastly, looking at architecture through the drives theory creates a disciplinary bridging. One of the effects of modernism was the division of the urban landscape into new and old, which pushed towards the creation of two opposing disciplines; the one of the architect and the one of the conservationist. Through a theory of the drives the distinction between these two disciplines becomes superfluous.

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