

Flowing with the River

by
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A thesis
presented to the University of Waterloo
in fulfilment of the
thesis requirement for the degree of
Master of Architecture (Water)

Waterloo, Ontario, Canada, 2018
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FLOWING
WITH THE
RIVER



Author's Declaration

I hereby declare that I am the sole author of this thesis.
This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

Carried by the flow of water, this thesis is a journey into rediscovering the power of the River to animate and give reason to urban life. Its purpose is to create an alternate reality that brings people back to the primal uses of the River; a nomadic space capable of affecting both one's world, and their perceptions of it. By doing so, it is possible to escape from the chaos of urbanity, and move along the riverbanks to connect different realities. Water becomes a companion that leads us along this path.

This research examines the Seine River system in particular. It runs from the core of France to the ocean, shaping a valley that links a socio-cultural and economic corridor with the rest of the world. More locally, my focus is on where the Seine flows past the metropolis of Paris, one of the world's most influential cities and popular tourist destinations.

I develop a floating public space which serves as a metaphorical cathedral of the Seine extending from the bowels of the city through the sewers and onto the bed of the river: a flowing space to gather and worship the force of the water. Taking shape as vapor or liquid, water can be calm or rough; friend or enemy. From wastewater to fresh water, from dirty to clean water is the protagonist of this journey.

Acknowledgements

My journey at the University of Waterloo has given me the change of perspective that I have been looking for since I decided to come to Canada. This school has helped to satisfy that craving for knowledge, and the need to learn what was 'different' from where I came.

Val Rynnimeri, you are the first person in this school that believed in me. You let me in, and since then you have been my mentor. I will always be grateful for your trust. Your lectures and our discussions about architecture have brightened my days at school. You are a visionary architect; thank you for sharing your remarkable visions with all of us.

Robert Jan Van Pelt, I feel honoured to have had you as supervisor on this thesis. Your deep knowledge has been a constant source of inspiration and support. Your promptness and wisdom have made this process a pleasant and relatively fast journey, where every meeting has been extremely valuable. Thank you for following and adjusting the creation of this project; your presence helped make this 'adventure' into a proper thesis.

Dereck Revington, you taught me that necessary ability of looking into the subconscious and transmitting its deepest feelings into a physical dimension through drawings and models. Your architectural work is proof that our discipline can change human behaviour, and this has been a major source of inspiration for this thesis. I would like to thank you for helping to give a body and a core to this work.

Andrew Levitt, you showed me that a long silence has the potential to provide more answers than a conversation. Whatever this thesis is today, it is only possible thanks to your initial input and thoughtful direction.

A thank you goes to Robert Wiljer, who kindly agreed to become part of the committee; and to all those professors and friends that looked at my thesis and discussed it with me; every single comment and suggestion has been a treasure, not only for my thesis but for my personal knowledge as well.

Maria and Claudio, you are my two angels and my Canadian family. I hope that one day I will be able to reciprocate all the good you have done for me.

The ultimate thank you goes to the two most inspiring architects of my life, my mum Lorenza and dad Roberto. Your borderless passion and dedication to architecture has been the greatest model of all. Thank you for always supporting me in realizing my dreams.

This thesis is dedicated to my family: my parents, my sister and brother, and all the others who have become part of it along the journey.

It is also dedicated to all those who believe that architecture can change the world.

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Introduction

Millions of people around the world are experiencing the consequences of climate change. This natural phenomenon will steadily intensify, but it is already underway and we must be ready to deal with it. The counterintuitive crises of melting glaciers, dwindling freshwater sources, floods, and droughts are all predicted to become more destructive.

Looking at a map of the world, we can see how most of humanity lives in cities located near coasts, rivers, or lakes due to the proximity of a variety of important resources. Our way of living in this territory has resulted in the appropriation and alteration of natural waterways to better fit our lifestyle. Moreover, our insatiable need for waterfront spaces has incentivized the replacement of wetlands and beaches with concrete. The price of this has been a reduction in the flexibility that soil, vegetation and other natural features would normally provide to help moderate the effects natural calamities.

We need to reestablish a direct and deep connection with water. Our relationship with this element is certain to intensify in the coming years regardless of our desire, as we deal by necessity with the opposing forces of flooding on one side and drought on the other. Both crises provide us an opportunity to revitalize and transform our connection. My ambition is to encourage everyone to face the challenge of dealing with a new vision of community and city, in which water and people together are the ‘main actors’.

This work does not aim to directly solve humanity’s looming water issues; instead, it is intended as a tool of understanding, to work directly on and educate people rather than trying to find an immediate solution. In this complex setting, education should in fact be our first priority; people need to be informed about what is happening, and about what the repercussions on their lives will be. Changing public consciousness is the most effective way to induce citizens to behave as an active part of the mitigation of water-related issues.

Architecture has the power to influence people’s minds, and this thesis uses it as a tool to give people a strong experience —of life, of danger, of contemplation. These feelings are deeply connected with the cycle of nature, as nature expresses itself through a continuous metamorphosis of birth, existence, and death.

Looking specifically at the Seine River system for its historical importance and its contemporary value to France, this thesis proposes a journey

beginning with the formation of the site, exploring through the City and River's evolution until today. Paris' well-preserved history allows us to understand the dynamics of a city that today counts 2 millions inhabitants.

This metropolis, as is the case with so many other European cities, continues to grow whithin a territory that is already oversaturated. The relevance of water thus increases in concert with the value of free space. Encouraged by the willingness of cities to experiment with new platforms for public development, this thesis explores the water as one of the only 'grounds' in the city that are still free from its urbanization rules—the same rules that, coupled with unlimited urbanization, have disrupted and corrupted the connection between humanity and the Earth.

Today the river presents an opportunity for Paris to host a unique space that does not belong to a specific neighborhood of the city. Instead it can travel through realities and embody many characters. The goal is to create an architecture able to transform alongside the river; a space that embodies water's mutability and portrays it from a different point of view; a structure where both tourist and residents can escape from the urban chaos to experiment with something unique. An itinerant amenity not tethered to one place, this floating platform will belong to any river.

Presented as an adventure through the unknown and the magnificent, this thesis brings the visitor into a state between dream and reality. I believe this unstable balance will leave a long lasting sign on us. The four seasons are used as a structuring device, cyclically returning always to a new beginning. This quartet acts as the spine of a journey which aims to provide the opportunity to establish a new connection with water—inspiring, educating, and increasing the relevance of this topic not only as a perennial public statement, but as a way to constantly guide new visitors to novel perspectives.

Autumn serves as the opening season of this journey, representing an introductory moment when history and contemporary conditions set the stage for our stay. After this prologue, the journey will bring people under the belly of the city and through the sewers to experience the inescapable product of our presence: wastewater. These spaces, recalling a metaphorical Winter of our society, will eventually release us onto the river itself, where visitors are baptized while they traverse a myterious crypt word feels awkward.

Afterwards we will return to the surface, where a flourishing garden awaits us. Here we will experience water's greatness in shaping and giving

life to everything. In this magical space, fountains will satisfy our thirst, trees will offer us shade from the heat of Spring's sun, and the sounds of nature and its animals will provide respite from the chaotic noises of the city. When we are ready to complete our journey, we will walk at last to Summer; there a natural swimming pool will finally give us the opportunity to be fully submerged in the Seine's water, and to relieve our body of its torpidity. After all this, there is only the last goodbye; a raft awaits us, and from there we head into the unknown—a new Autumn.

Through these different spaces the visitor will revive the river in a floating 'cathedral'. In this 'machine', people are able to temporarily escape their daily reality and relearn the celebration of life. This experience harkens back to the old rituals of Paris, allowing visitors to taste that storied destination where artists, poets, writers, photographers, stylists, and any other human so-inclined could be inspired. This thesis excavates the past and brings back forgotten rituals and old technologies. It seeks to revive them with a new and contemporary direction, while still drawing inspiration from existing mythology, paintings, drawings, and manuscripts to help the reader embark on this special adventure:

This work is not based solely on a dream; its foundation resides in reality, as every setting of this adventure is studied and presented as a realistic space. Embracing the traditional typology of the barge recurrent on French waterways, this floating amenity will be capable of hosting a discrete number of people while simultaneously traversing the narrow bridges of the Seine. Different ports located along the length of the Seine's riverbanks will allow visitors to enter and exit the structure. This architecture's design utilizes nature's processes as its main technologies, from clean water filtration to hydro-electricity production.

This thesis envisions water as a public platform for exchange, international connection, and celebration, becoming the ultimate presence in our contemporary cities. This story details how the tension between city and water may become an opportunity for the development of provocative new proposals, of public awareness, and social interactions. Developed as an adventure, this thesis offers itself as one of the first steps towards a future where a prosperous coexistence between people and water becomes the basis for our future choices.

Part I

AUTUMN

Time of meditation, awareness, metamorphosis.



1.1 Walter Crane, *The Masque of the Four Seasons*.
1903-1909.

Introduction to the Act

Autumn, ‘The Fall’ of the leaves.

A season of contemplation and transformation; the flora changes, undressing in anticipation of winter.

Autumn, ‘The Fall’ of the society.

The clear and belated admission that something is about to change; a long winter is coming, and the City as Nature has to prepare to face a new season.

The Book of Autumn explains the setting of this thesis.

Compressed within the arches of the Seine’s bridges, the ripples of its current, and the stern looks of the statues that populate its monuments, there are two floating spaces: one as an explosion of green, and the other as an extension of the river, as a mirror for the Parisian sky.

And it is here, on this warm Autumn day, that this journey starts...

The Raft of the Medusa



1.2 *The Raft of the Medusa*, 1818-1819.

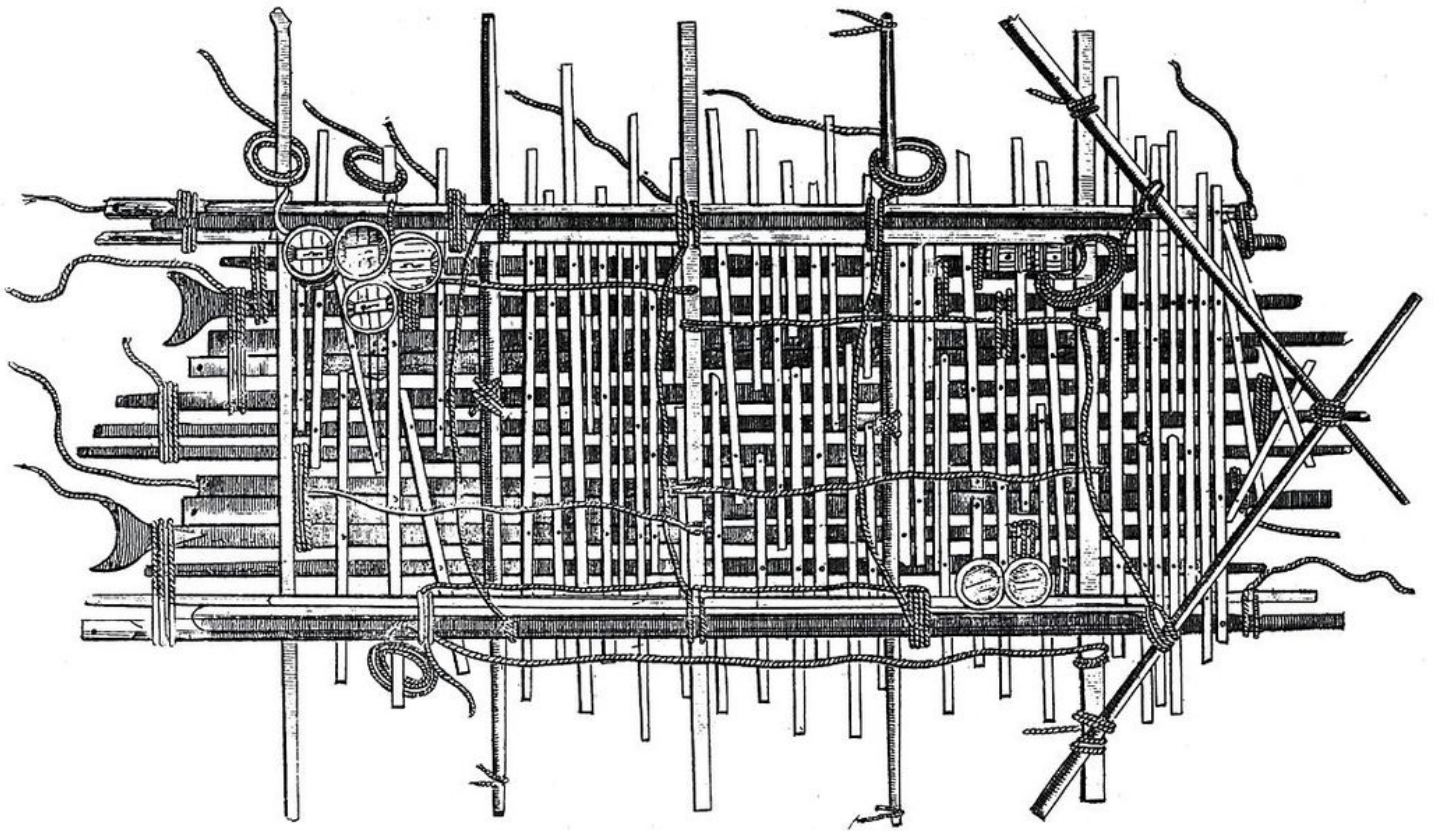
Prelude

Walking through the aisles of the Louvre Museum, which overlooks the site of this adventure, we encounter hanging on a wall the monumental work of a man able to represent one of the greatest, most tragic struggles of his time. This man was Théodore Géricault and his work is “The Raft of the Medusa”, one of the first artifacts to define the beginning of French Romanticism.

The story of this painting comes from a dramatic event which took place in the Atlantic Ocean, in close proximity to the African coast. It was the 5th of July in the year 1816; aftering running aground, the 140 crewmembers of the frigate Medusa were forced on a hurriedly constructed raft to escape ther sinking ship. Several days of starvation and dehydration led several passengers to commit suicide or homicide, followed shortly by cannibalism. Eventually a ship found and rescued the few remaining survivors. The event became an international scandal as the ship’s running aground was attributed to the incompetence of the vessel’s French captain, who received the position as a result of politics and favoritism, rather than merit.

More than 200 years later, this painting is still a symbol of the contemporary human condition. People have died because of incompetence and abandonment. Today this work still sheds light on social injustice, representing the extremes of human experience in the moments when men transform into animals. It represents all our vulnerability and pain, yet it expresses our tenacity and willpower to fight for life. The artist shows human behavior at its harshest.

This artifact gives people the faith to look for something different, control their environment, and shape the basis for a better future as human beings.¹



1.3 Plan of The Raft of the Medusa at the moment of its crew's rescue.

The accuracy of human representation and attention to details, comes from the artist's real-life studies. The drawing beside is the "Plan of The Raft of the Medusa", a reconstruction of the actual raft attributed to Alexandre Corréard, one of the survivors. This 7 m x 20 m space is a physical recollection of the presumption of human behavior over justice and nature.

The 19th century expedition of the frigate Medusa promoted the reestablishment of the French power on the African colony, today's Mauritania; today we still crave to force our presence on land. Our constant drive to readapt the land and expand limitlessly is something that has strengthened over the years to become almost uncontrollable in this period of demographic outbreak.

Romanticism is defined as a style that gives importance to human emotions, as well as one that glorifies the past and the overwhelming power of nature. It emphasizes "*the individual, the subjective, the irrational, the imaginative, the personal, the spontaneous, the emotional, the visionary, and the transcendental.*"² In many parts this adventure into rediscovering water brings us into this same state of personal challenge and emotional exploration; we become aware that we can not really understand everything, but confident that we can learn from the past and experience with our soul the greatness of nature.

The raft in this first part of the adventure symbolizes the uncertain destiny of our world, as well as our propensity to explore and our need to understand ourselves. As a society that perfectly navigates between nepotism, recklessness, and at times redemption, this concept of Romanticism will drive us to explore the deepest parts of our humanity, in a journey inside Paris, its history, and its waters.

¹ Smarthistory. art, history, conversation. *Gericault, Raft of the Medusa*. Published on May 4, 2017.

² Encyclopædia Britannica, *Romanticism: Romantic movement, Romantic Style*.

Myth and origins of the Seine



14 Sequana, Goddess of the Seine river.

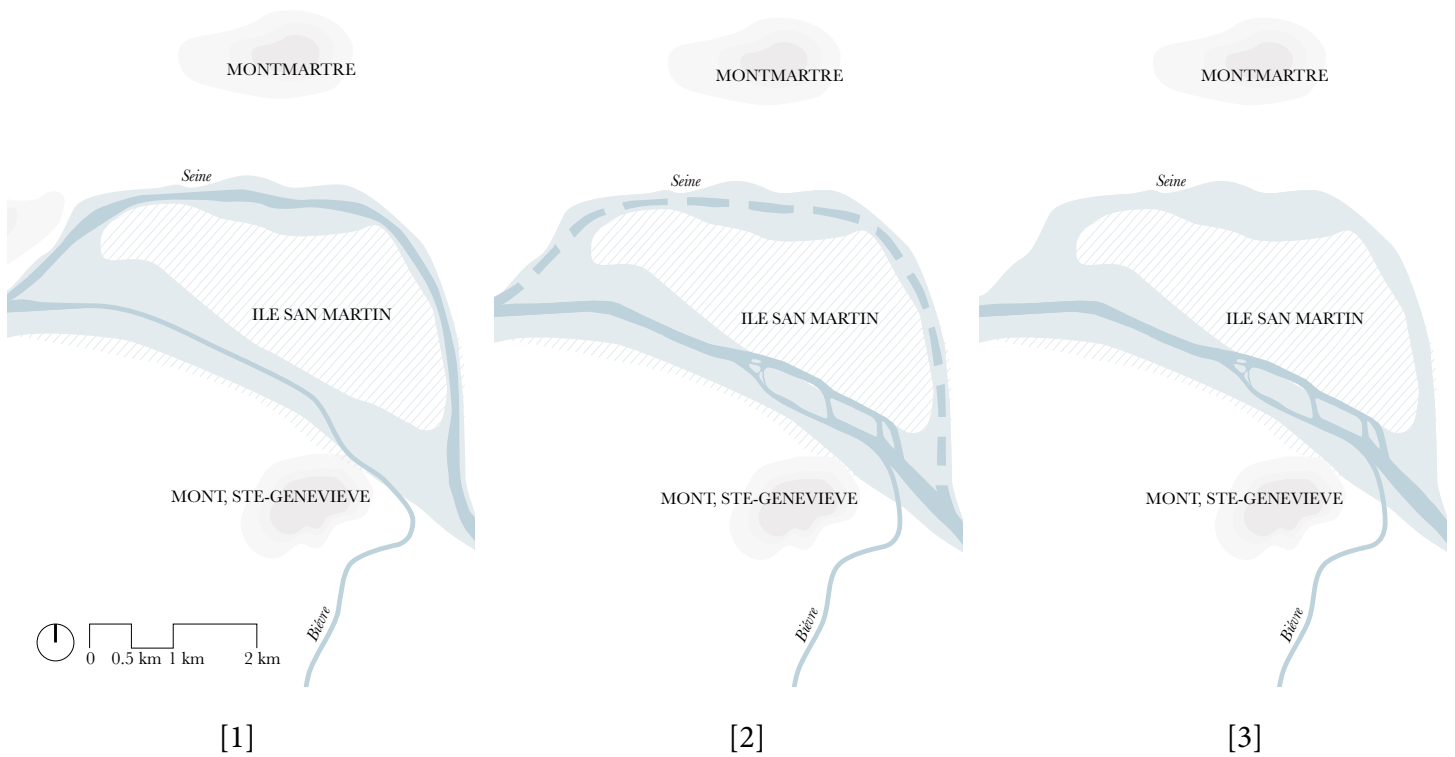
The story of the Seine starts at the end of the last Ice Age, approximately 12,000 years ago, when a stream appeared in what is now called the Seine Valley.

Around 1000 B.C.E. a tribe settled in the area; they baptized the river ‘Sequana’. In the Gaulish religion, Sequana was the goddess of the river and the Gallic tribe of Sequani. The springs, called the ‘Fontes Sequanae’– ‘The Springs of Sequana’– are located in a valley in the Châtillon Plateau: specifically, at the Saint Germain Source Seine, 470 meters above sea level. Somewhere around 4000 years ago a healing shrine was established at the source. Later, the Romans built a sanctuary with two temples and other related structures centered on the spring cave. Pilgrims frequently carried offers to Sequana with the wish of healing, and statues and other objects were manufactured with the female features of the goddess.¹

This source, that gave life to one of the most powerful regions in the world, is the protagonist of this story. Retracing the transformation of this valley, we can begin to understand the troubled growth dynamics of one of the greatest cities of all time. This is the story of our past and our present, and it will become the grounds upon which we write our tomorrow.

¹ Penhook. *Sequana, Celtic River Goddess*. Retrieved from: <http://www.penhook.org/sequana2.htm> (Accessed, September 2017).

I_ Formation of the site (40,000 - 2,000 B.C.)



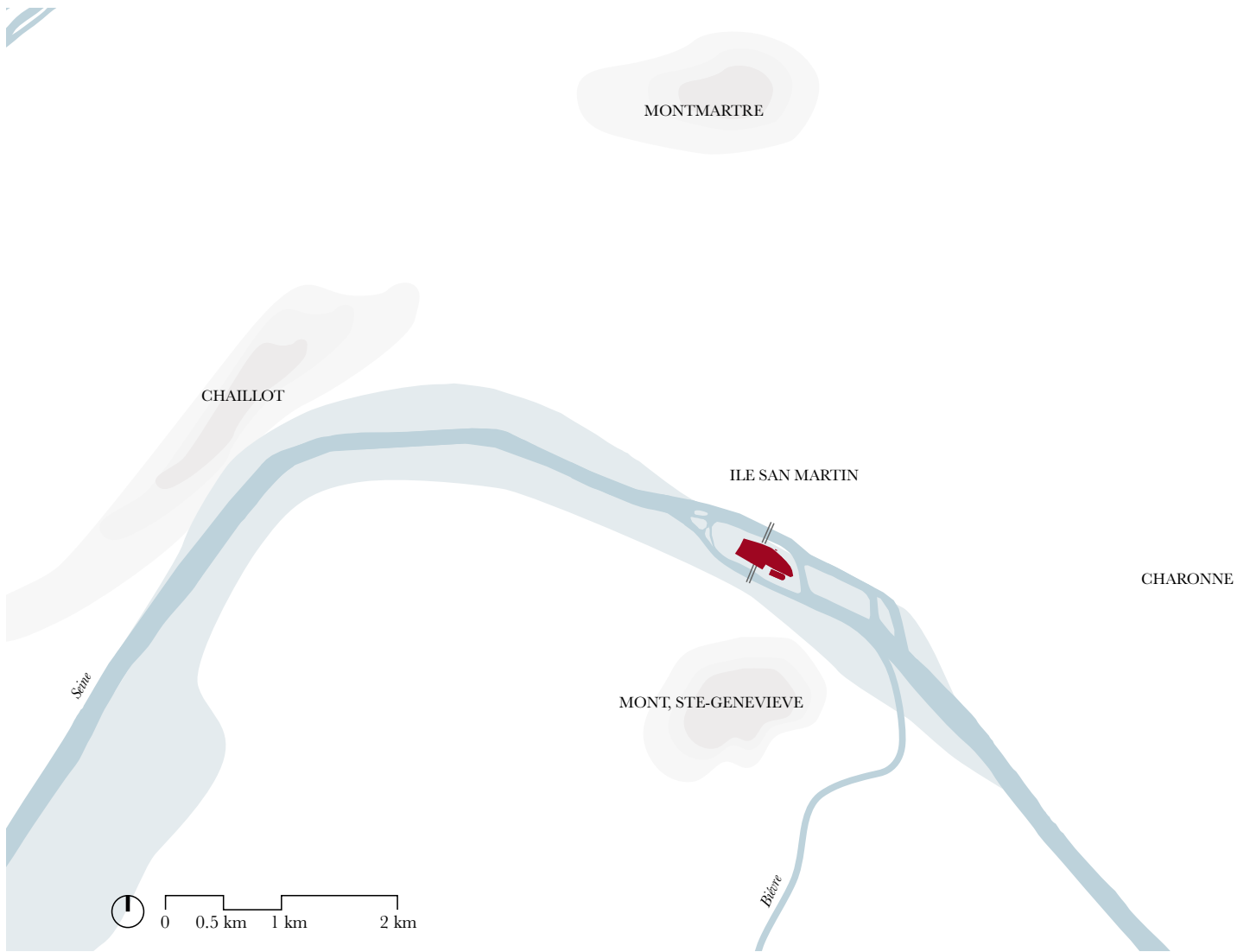
1.5 Formation of the site.

Before being formed in the Quaternary glacial period, the site of Paris was a seabed. Between 40,000 and 30,000 B.C.E. a newly-formed river, fueled by meltwater and rain, eroded a portion of land from Charonne (East) to Chaillot (West), leaving behind a riverbed of gravel. [1]

Around 10,000 B.C.E. rising temperatures began to reduce the Seine from a full basin to a river. Its course was initially defined by a single channel flowing at the feet of present-day Montmartre. [2] However, recurring floods allowed a hand of the Seine to reach the Bievre—a little river whose course runs just slightly to the south—creating a permanent physical connection between the two.

This confluence determined the creation of several islands, including the future Illè de la Cité, and over time this path became the preferred riverbed of the Seine. Near the end of the Neolithic Period the old northern arm of the river started to drain and stagnate, becoming a swamp. [3]

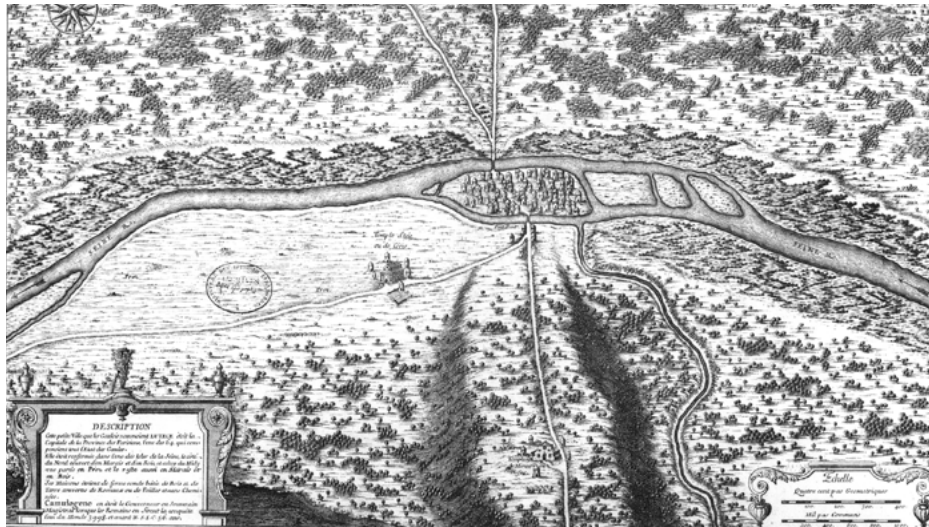
II _ The first settlement: Lucotecia (250 B.C.)



1.6 The first settlement: Lucotecia.

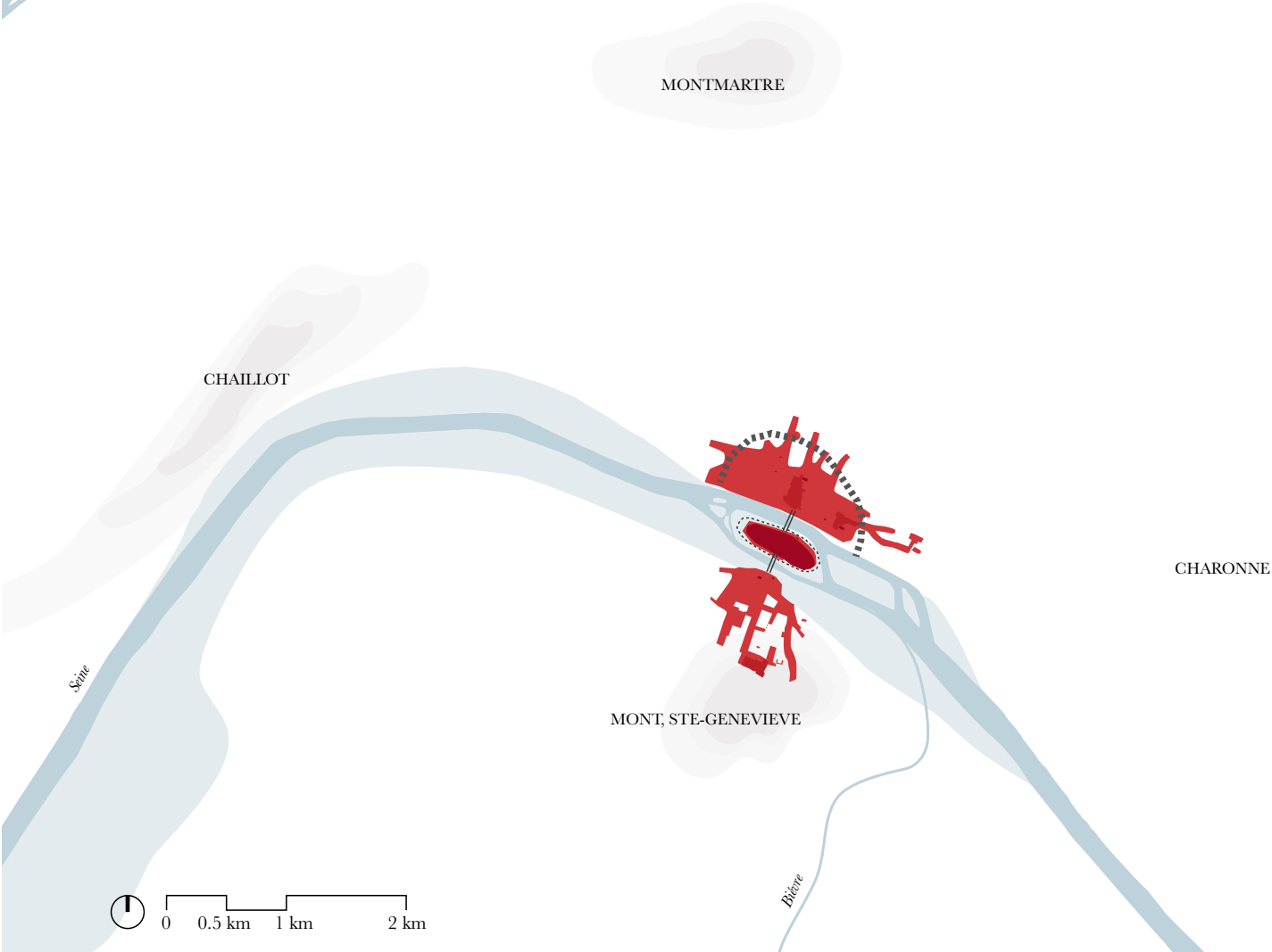
These islands, protected by two arms of the Seine, offered a strategic location. Around 250 B.C.E. the Quarisii Celts or ‘Parisii’—a group of fishermen, herdsman, boatmen and foresters—colonized the region, establishing a village on Ilè de la Cité. They gave it the pre-Celt name of Lutecia, which would later become Lutetia. It was during these years that the river was named Sequana, whose name became that of the goddess of the waters.

By 52 B.C.E., Lutetia was growing. It possessed two wooden bridges, a cult site, and a fortress. But this prosperity did not last long; the inhabitants, besieged by Julius Caesar’s army, burned the bridges in a desperate attempt to stop their enemies. Despite their efforts, Roman troops finally occupied Lutetia in 51 B.C.E.



1.7 Map of the first settlement

III _Lutetia under the Roman Empire (52 B.C. - A.D. 253)



1.8 Lutetia under the Roman Empire.

In the 1st century C.E. Lutetia was rebuilt, but only to serve as a minor site of connection between the more important trade destinations of Troyes and Rouen. The Romans developed an additional center on the lower bank of the river on the island's southern side, where a natural hill provided respite from the surrounding marshy lowland.

By the turn of the 3rd century, Lutetia counted over 10,000 inhabitants, and needed to expand all the way to the riverbank of the Seine. Between 253 and 280 C.E. barbarian tribes, originating mainly from modern-day Germany, attempted to take the settlement. But they could not gain access to the Ile de la Cité, as in addition to the natural defensive conformation of the site, the island was enclosed by walls. Henceforth Lutetia became a new strategic pole in the territory, and moreover a military town. In the following years the city and its populace changed from Gaulish language and customs to Latin and Christian ones. Circa 360 C.E. the name of the city was officially changed to 'Paris', an abbreviation of an adjective that was already being used—Parisiacus, place of the Parisii. With its central position and its possession of the precious Seine, Paris was growing and prospering.

In the 5th century the Roman Empire collapsed, and the city became a Gallo-Roman state, characterized by the adoption of Roman morals and rules in a Gaulish context. Around 500, under the Merovingian dynasty ruled by the Christian leader Clovis, the city experienced a period of increased religiosity.

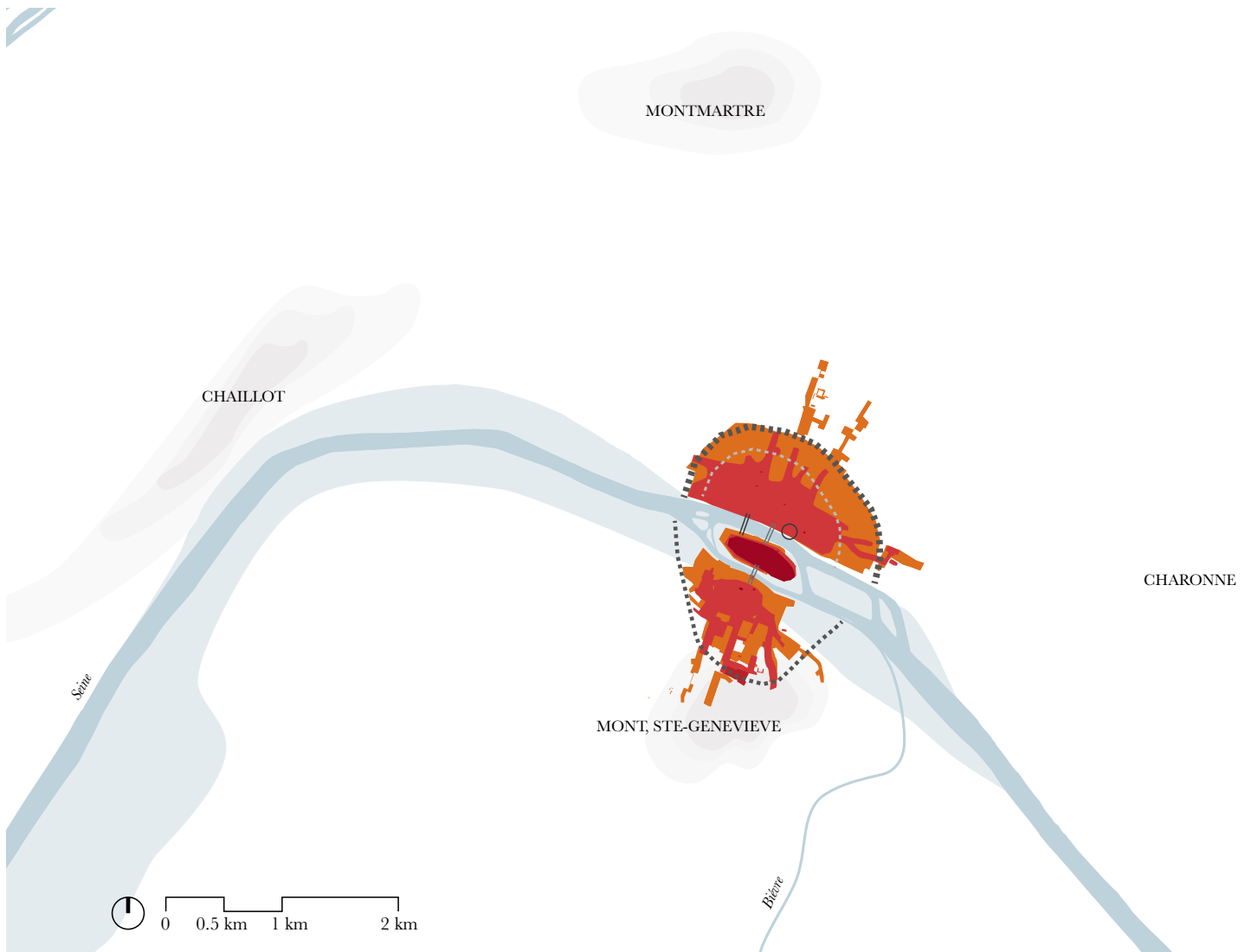
By the year 800, during the Carolingian dynasty, Paris had begun to establish itself as a relevant political force. An increasing population made it necessary to import provisions. In these days the Seine was more alive than ever; trade from Le Havre to Paris was continuous. This traffic attracted the attention of Danish Vikings, who devastated Paris in numerous attacks. Despite their advanced naval skills, they never succeeded in taking the city; instead they established at modern-day Normandy, cutting off easy access to the North Sea.

The river is now divided between two rival populations: Vikings to the north, and Franks to the south. The Seine, initially a source of life, had become a weakness for the Parisian city, allowing for constant raids and restricting rather than providing access to the ocean.



1.9 Plan of Lutetia in the year 508.

IV _ The City's reconstruction and the new fortification (897-1223)



1.10 The City's reconstruction and the new fortification.

In 1050 Paris began to reestablish its strategic military importance, and with this the city became home for kings. Under King Louis VI, who promoted an overall reconstruction and renovation of the city, Paris was slowly rebuilt. With this climate came the growth of the north bank and the establishment of the Port de Grevé; this expansion included the first major trading post, the construction of a new bridge, and the construction of a wall around the north bank settlement. With the establishment of the merchant company known as “les marchands de l’eau”, the dynamics on the river changed. This group’s appearance represents the moment in which water became institutional and structural, and the trade on water and its management becomes regulated by people.

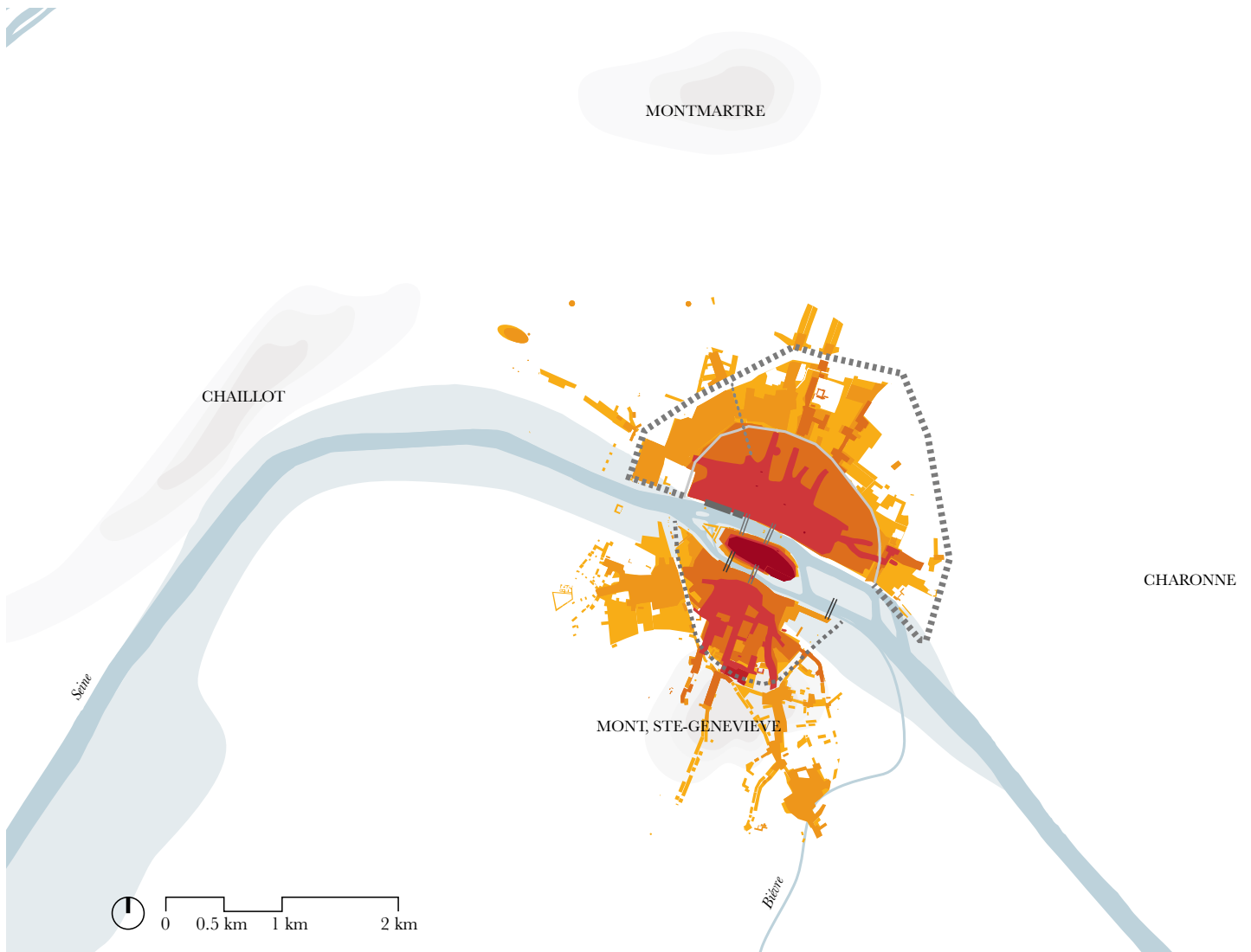
Later in the century, the city’s prosperity also made it a tempting target, so in anticipation of future attacks both banks of the Seine were further enclosed by a larger ring of walls. The streets began to be paved, communication and transit were improved with new bridges, and the swamp was reclaimed for further expansion.

At the turn of the 12th century, the Parisians conquered Normandy, and easy access to the North Sea was restored. This event initiated the economic rivalry between Paris and the other cities along the busy course of the river.



1.11 Plan of Paris in 1223

V_ The New fortifications and the growing population (1270 - 1515)



1.12 The New fortifications and the growing population.

Around 1270, the still-growing population led to further development of land outside the walls. To defend these, additional fortifications were built on the north bank, also called the right bank or 'Rive Droite'. During this period Paris assumed the role of capital of France, and became a center for international exchange and the seat of a renowned university.

In 1350 the Black Death arrived in the city, decimating its population. The climate of disease and famine induced riots against the King Charles V. From then on the main residence of the monarch has been situated outside the city to prevent the targeting of a sovereign directly by insurrections.

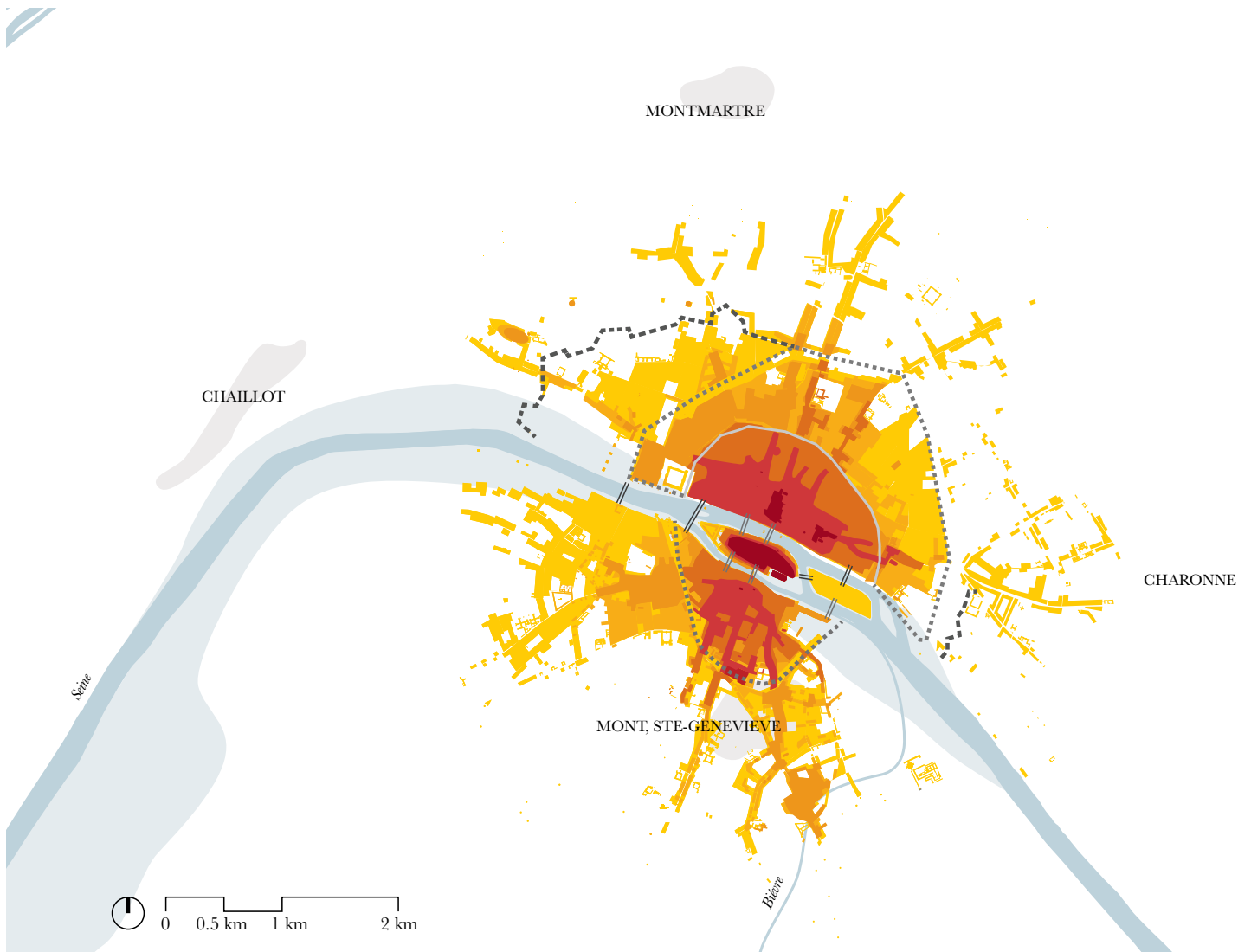
Sanitation in the French capital at this point was severely underdeveloped for its population; human waste was regularly poured into fields and onto unpaved streets, from where it would run into the Seine. The Parisians were in fact poisoning themselves, as the river was the city's sole source of drinking water.

The first Parisian underground sewer system was built under 'Rue Montmartre' and is dated 1370. It was around this time that 'Quai du Louvre', and later 'Quai Neuf', were created.



1.13 Sailors on the Seine, 1756.

VI_ The city reach its physical limit (1515 - 1715)



1.14 The city reaches its physical limit.

The difficult period of decline which persisted throughout the 14th and 15th centuries ended in 1512 when the construction of Pont Notre-Dame marked the city's return to prosperity. The bridge represented more than a physical connection between two banks; it represented a reconnection of the city's communities, and by extension their commerce. It was the ultimate place of exchange and life, for at this time bridges were rare. They represented a portion of the city that everybody had to cross daily, and so provided maximum exposure to the businesses situated along it. At that time it was often not possible to see the water from the bridge itself, as it was common practice to build houses and shops along both sides.

Unfortunately for the bridge's inhabitants, at times the Seine would experience an unusual overflow. In those moments the river – with a violent flood – carried away the bridges and everything they had accumulated over the years: houses, money and the grime of human existence. But after any such event, the prosperous commerce was soon restored.

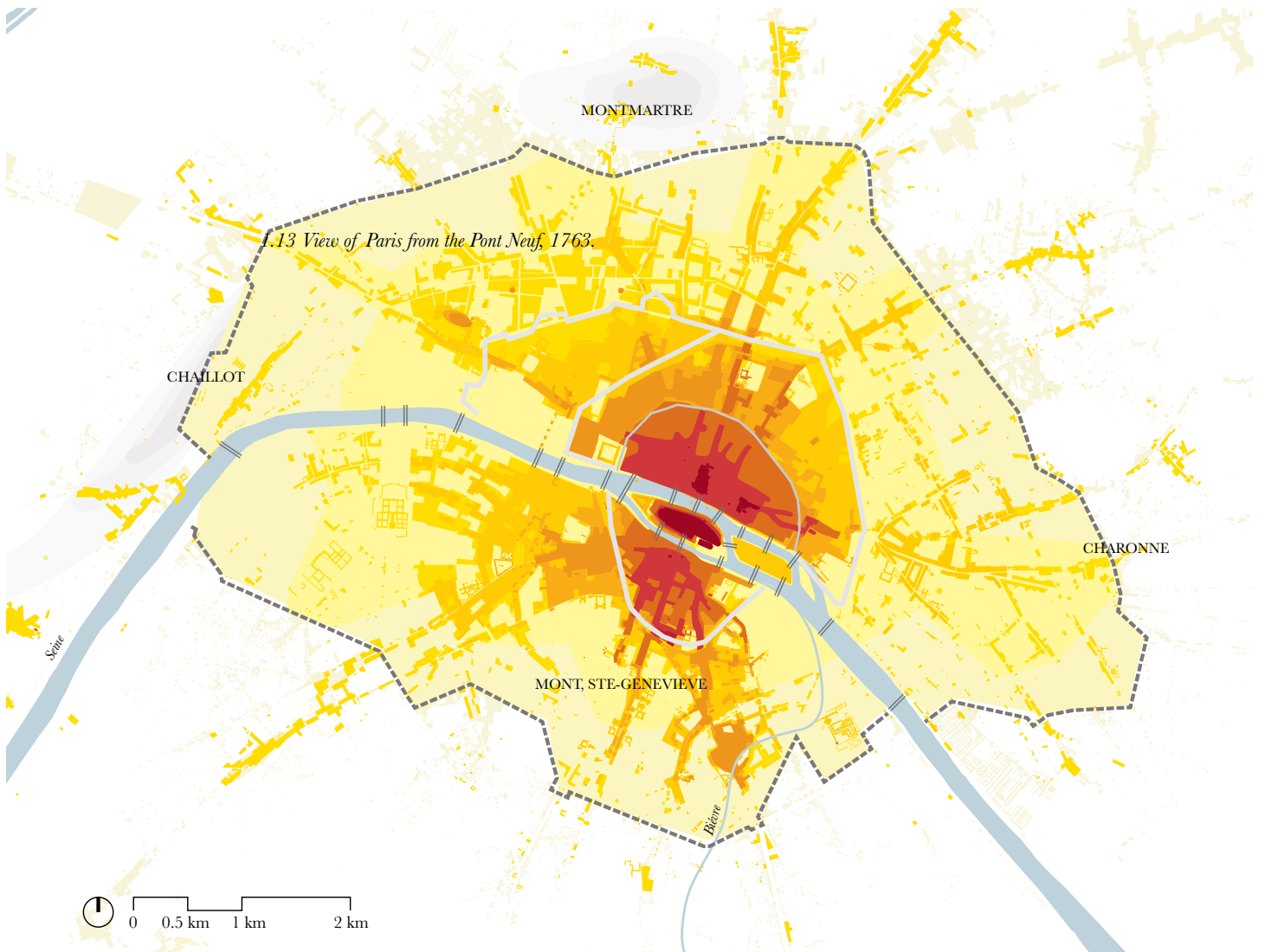
At the beginning of the 17th century, just as Paris was being officially recognized as the capital of a kingdom, the city was again faced with what was becoming a recurring problem. Its physical limits were once more becoming an issue as the population settled into a new, steady growth. It was at this point that Parisians were finally forced to face the problem of 'free space'. The streets were too tortuous for traffic, buildings were being erected even in swamps, the sanitary situation was unmanageable, the city's few fountains did not provide enough fresh water, and everything was being developed without a plan.

During the first half of the 18th century, the city started a slow renovation with the aim of solving the problem of an impenetrable urban fabric. The reigning monarch, King Henri IV, promoted several public works while introducing new rules and restrictions for future developments. It was around this time that Pont-Neuf was reconstructed without the traditional presence of houses on top in order to promote the view of the Louvre's bank.



1.15 View of Paris from the Pont Neuf, 1763.

VII _ *New urban development (1715 - 1789)*



1.16 New urban development.

In 1600, as a wave of general renovation swept the city, the Medici palace and an aqueduct supplying it were constructed. The duct also serviced the south bank, ending the lack of fresh water in the district. But this new water supply contributed to silt build-up in the Bievre, which eventually overflowed and poisoned the Seine.

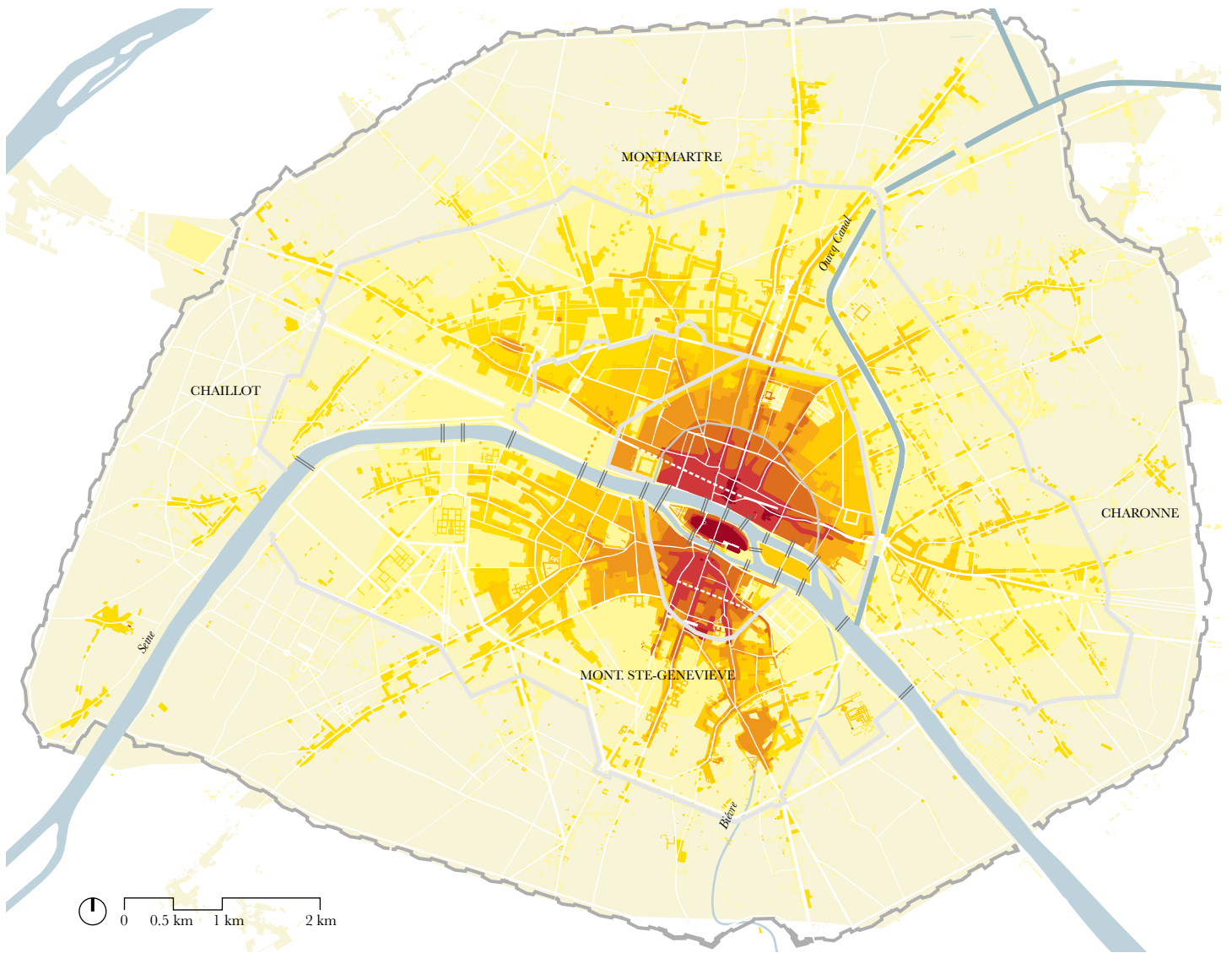
By the century's midpoint, the growth of Paris had slowed again. The city was dirty and rotted, and slime covered everything. In these moments of discontent, when resources and spaces were in short supply, the gardens—of monasteries, of the noble classes, and even of the king—were opened to the public as recreational spaces.

As the 17th century transitioned to the 18th, a rapid growth reflecting wider economic evolution began to revive Paris with new prosperity. Newer, bigger fortifications were built; embracing the new urban development, precise maps of the city were used to help control new developments. All bridges were unloaded of their buildings, new streets and plazas better linking the city were designed, and street names and lamps were introduced. These changes together began to shape parts of the city into more liveable places. It was during these years that Paris was christened 'the City of Light'.



1.17 Paris Turgot, 1734.

VIII _ *From the revolution to a new growth (1789 - 1848)*



1.18 *From the revolution to a new growth.*

Unfortunately, in the second half of the 18th century an inefficiency in food provisioning, coupled with the subsequent rise in living costs, returned Paris to an era of riots. Sewage water was again a major problem, as the main supply pumps were pumping contaminated water. Beginning in 1788 the Bievre was polluted by a factory, whose contaminants spread—probably by pumps—to the whole south-east of the city.

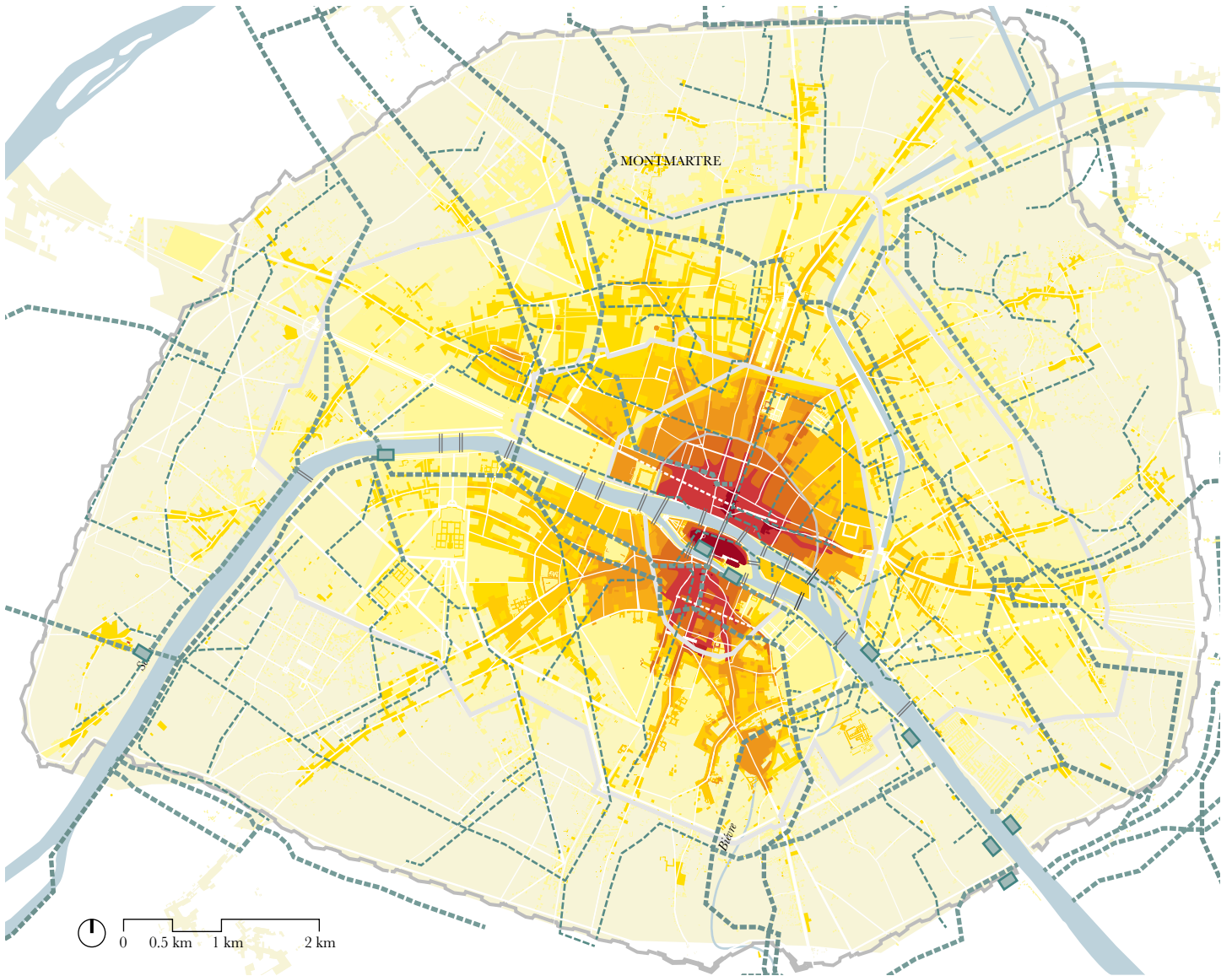
By the end of the 18th century, Paris was still underdeveloped for its dimensions; it was only at the turn of the century, in 1800, that an underground sewer network spanning 10 km was finally commissioned and built to service the city.

In these years Paris undertook several developments, with construction of riverbanks and a new recreational place, the ‘Ourcq Canal’, an aqueduct open to navigation. In 1839, yet another, bigger ring of fortifications was created to protect the city.



1.19 Canal d'Ourcq, 1800.

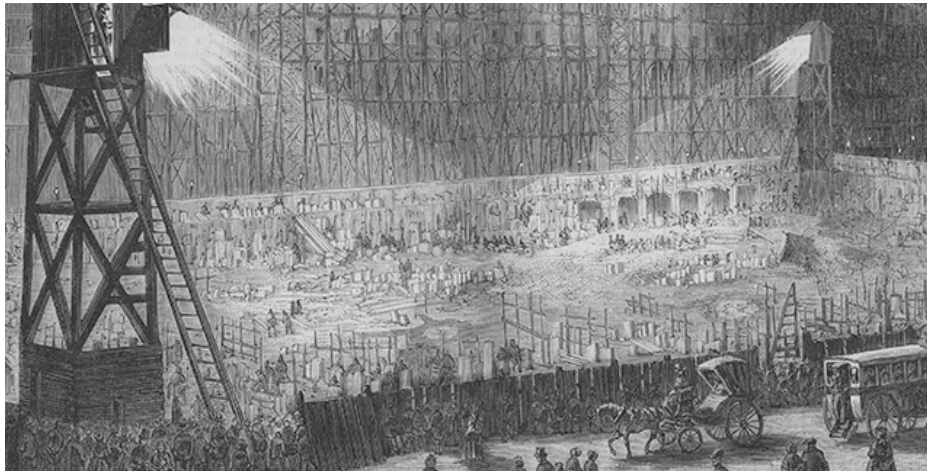
IX_ Haussmann and the big development of Paris (1848 - 1870)



1.20 Haussmann and the big development of Paris.

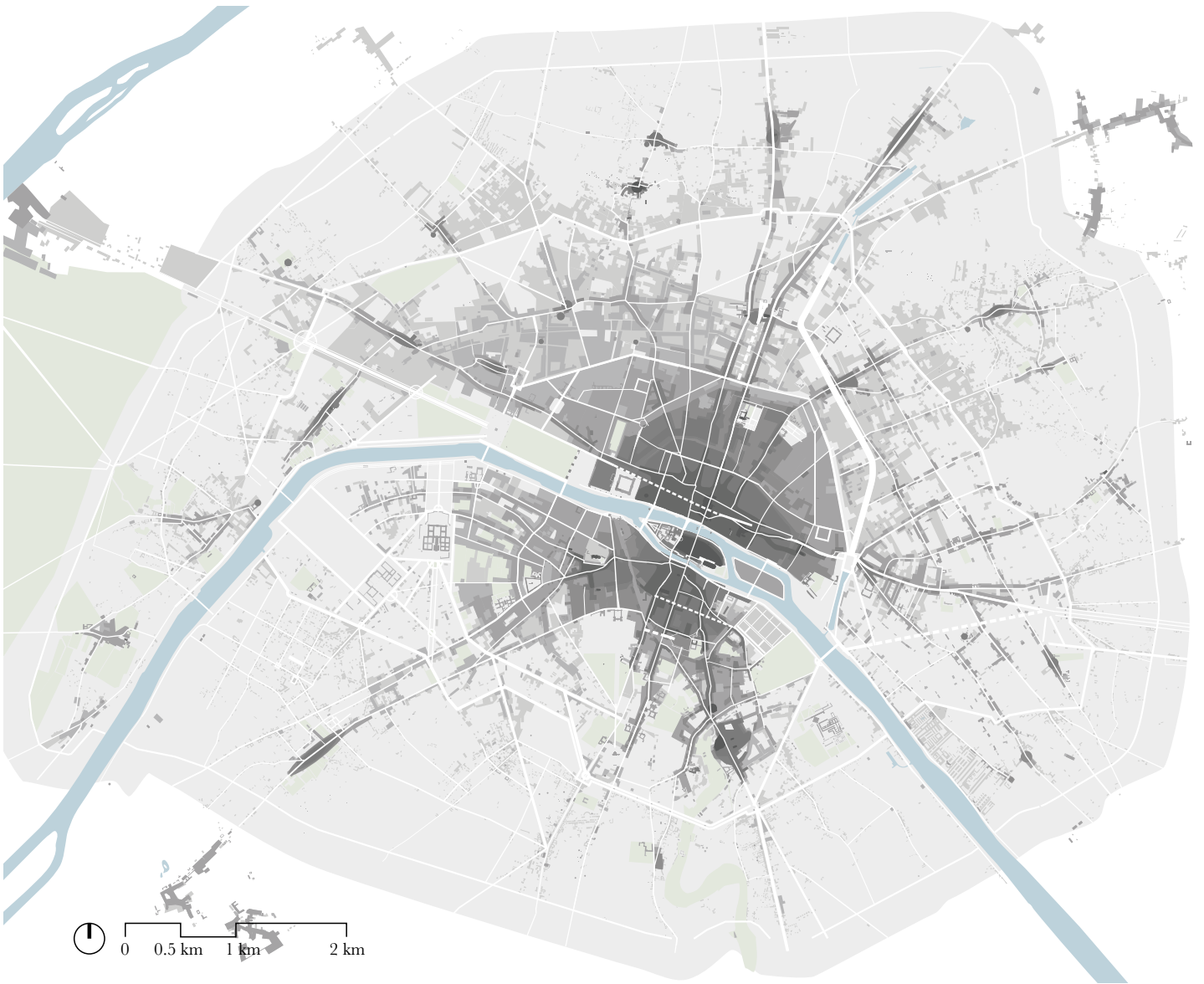
Despite the constant changes, the city was still suffering. The first half of the century was marred by poverty, starvation, and bad sanitary conditions, which together brought on a cholera epidemic. The discontent of the working class began to calcify into opposition to the opulence of the bourgeoisie and noble class. This was the Paris of “Les Miserables”, where riots and desperation were creating a broken society, and where the behavior of humans was becoming closer to that of animals. The Seine was the last home of the corpse of a rattled and hopeless Paris.

By 1856 Paris was denser than ever before, and an impenetrable core of slums occupied the center of the city, creating barriers between neighborhoods. It was in these years that the newly-empowered prefect of the Seine, Georges-Eugène Haussmann, became fundamental in the future development of the city. A campaign of state expropriation had finally made it possible to open up the overpopulated districts; consequently, huge boulevards that directly connected the city’s main parts were constructed. Haussmann, who was nominated by Napoleon III, in turn nominated newly-graduated engineer Eugene Belgrand to develop a new organization system for freshwater supply and wastewater removal. He created an extraordinary system of sewers that was the greatest of its kind and which still functions today. The once putrid Paris could now finally be cleaned up.



1.21 Nocturnal works for the construction of Rue de Rivoli with electric light, 1854.

X_ The big flood and the last century



1.22 The big flood and the last century.

In 1898 Paris started to create its metro network both aboveground and below. The city erected riverbanks along all the Seine's course; these walls signified a final break in the connection that for ages had existed between Parisians and their Goddess. Inhabitants enclosed its course in a rigid embrace with the naive hope of being able to control it. But its passivity was shortlived. In 1910 the Seine once again overflowed in what is remembered as the 'Great Flood of Paris.' Over a few days the water level rose eight metres above the ordinary level, damaging a significant portion of Paris's newly-erected banks. Since then the Seine has continued to awaken regularly, although a series of reservoirs and locks helps to control the level of the river in the region.²

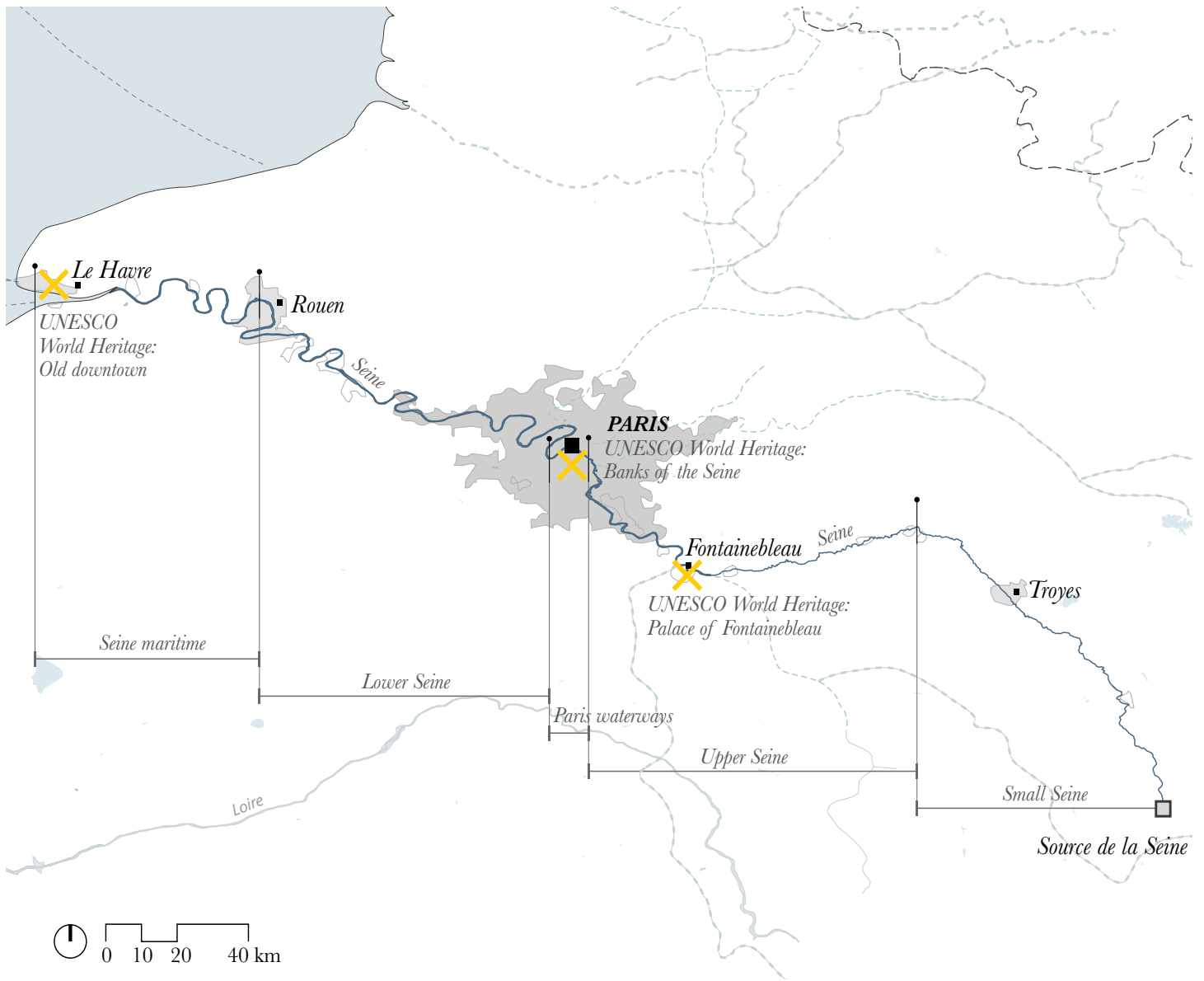
Throughout the late 20th century and into the early 21st, Paris has continued to grow, becoming one of the most populated cities in Europe with over 2,000,000 inhabitants in 2015. During the past decades, many campaigns of renovation and preservation have swept the city.

In 1991 the municipality started a long-term plan to reduce the amount of untreated water discharged directly into the Seine by protecting the river from overflow pollution and reinforcing the existing underground network. In this same year the Seine's riverbanks became a UNESCO World Heritage Site. With an average of 18 million visitors in 2016, the City of Light remains one of the biggest tourist destinations in the world.³

Even if the original connection between inhabitants and Goddess was lost during these years, the Seine still represents an important presence in the city. Everyday she offers a magnificent recreational moment to citizens and tourists, which thanks to an efficient ferry network can be used to enjoy the city from one of its most unique routes: a grand boulevard of water.



1.23 Great Flood of Paris, 1910



1.24 The Seine and its main sites

But Paris is only one of the many cities served by the river. Some other significant sites along the Seine have also been nominated by UNESCO as World Heritage sites, including the Palace of Fontainebleau and the central city of le Havre.

The length of the Seine is divided into five main parts. The ‘Petite Seine,’ or ‘Small Seine,’ begins at the sourcewaters at Source-Seine and flows through Montereau-Fault-Yonne. The ‘Haute Seine’—Upper Seine—encompasses the river’s course from Montereau-Fault-Yonne to Paris. The aptly named ‘Traversée de Paris,’ or ‘Paris waterway,’ crisscrosses through Paris itself, before becoming the ‘Basse Seine’—Lower Seine. The Lower Seine flows from Paris to Rouen, before taking its final form as the ‘Seine Maritime’ as it flows from Rouen to the English Channel and the North Sea beyond.⁴

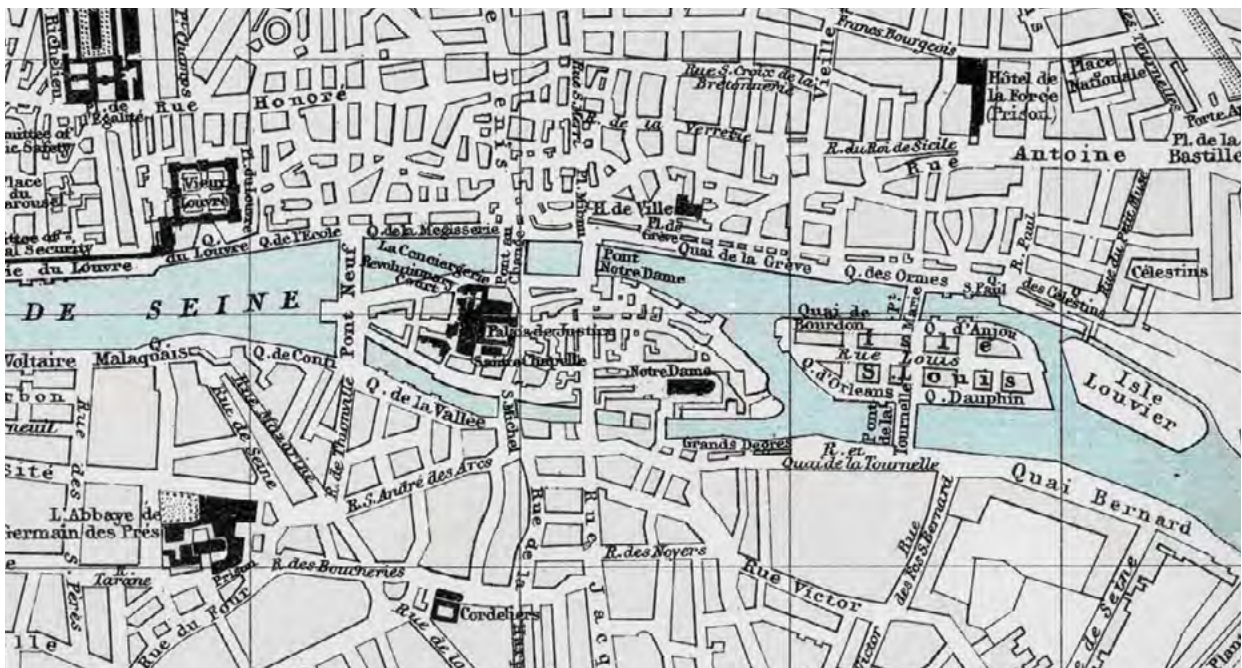
The slow flow of the Seine makes it easily navigable for a boat of standard dimensions for most of its course.⁵ The river starts to be navigable from Nogent-sur-Seine, where small craft are able to reach Marcilly-sur-Seine. After this point the river’s increased width allows for the sailing of commercial riverboats. Oceangoing vessels, instead are able to navigate only on the Seine Maritime, from Rouen until where the Seine finally reaches the ocean at the English Channel.⁶ With a catchment area of 79,000 km² and a basin area of 78,910 km², the Seine represents an interesting case study when understood alongside Paris. The City of Light has a population density of 21,000/Km² and an urban density of 3,700/Km² with an annual urban growth rate of 0.2%, making it the city with the most influence in the Seine Valley.⁷



1.25 Aerial view of Paris and its banks part of UNESCO.



1.26 Representation of the Seine river, 1572.



1.27 Representation of the Seine river, 18th century.

Today in 2017, the meaning of water and our connection with it has changed. Thinking of the river as a living system may at least temporarily change our perspective of water's ways. The river becomes the River, an active actor in his territory; as every other natural element evolves and mutates, he never repeats himself. Every second is a new beginning of infinite transformations.⁸ As a snake, he moves and changes his course with violence or grace, and expands and shrinks as he breathes. He is full of life and gives life to his surrounding, yet he can be lethal.

Looking to old maps we can see how the concept of the river has changed over the years. Old cartographies represent the river as a living element, intertwined with the urban fabric. For example, if we look at the first image on the top of the previous page the attention paid to its representation, including minute details about its flow and banks, give us a sense of the importance of role of the river in the community.

In stark contrast, more recent maps depict the river as a rigid and flat presence, silently bisecting the dense city. This shows us how the role of water in our society has changed.⁹ Can we then say that the role of the river on the urbanized territory has become increasingly less relevant? Can these documents be the proof that as long as we continue to dominate the river's waters, its value on our life will decrease. It is unlikely that we will concretely answer this dilemma, but Paris provides lessons on how the advance of new technologies to adapt the river to our needs has initiated this mechanism of detachment between people and water. The past century, which brought us so many new goods, has played a major role in this process of separation.

The Seine, that gave life and supported the village which is now a metropolis, serves as an acting force, while Paris with its history and its contemporary social conditions provides the knowledge and the inspirational setting with which to create our own version of the story. From here on we will be the protagonists of the construction of a new great monument—a cathedral of the River, able to reconnect people and water.

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- ¹ Pierre Couperie. *Paris Through the Ages: An Illustrated Historical Atlas of Urbanism and Architecture*. (George Braziller, New York, 1971).
- ² International Herald Tribune, *1910: The Great Flood in Paris*. The New York Times (June 3, 2016) <https://iht-retrospective.blogs.nytimes.com/2016/06/03/1910-the-great-flood-in-paris/> (Accessed, September 2017)
- ³ Statista, The Statistics Portal. *Number of international overnight visitors to Paris from 2010 to 2016 (in millions)*. Retrieved from: <https://www.statista.com/statistics/310377/international-overnight-visitors-to-paris/> (Accessed, June 2017).
- ⁴ French-waterways. Information about the 170km long Upper Seine. Retrieved from: <https://www.french-waterways.com/waterways/central/upper-seine/> (Accessed, September 2017)
- ⁵ French-waterways. *Waterway Depths, Heights and Widths*, 2017. Retrieved from: <https://www.french-waterways.com/practicalities/canal-depths/> (Accessed, September 2017)
- ⁶ Tourisme Flouvia. *Voies Navigable de France*. 2013. Retrieved from: http://www.vnf.fr/vnf/bibliotheque.vnf?action=display&occ_id=9677 (Accessed, September 2017)
- ⁷ Encyclopædia Britannica, 2017. *Seine River*. Retrieved from: <https://www.britannica.com/place/Seine-River> (Accessed, September 2017)
- ⁸ Revolv. *Seine River*. Retrieved from: https://www.revolv.com/main/index.php?s=Seine%20River&item_type=topic (Accessed, September 2017)
- ⁹ Note p.155 - Water and spaces. *River: a living system*.

Rituals on the Seine now and before

The following pictures are meant to retrace some of the activities connected with the Seine, from the past century until today.



1.28 Commercial boats on the Seine, 1893.

In the late 1800s, the river is still a major place for commercial activity.



1.29 World Exhibition - Globe Céleste and Eiffel Tower, 1900.

During the Parisian World Exhibition the Seine becomes a privileged boulevard from which to enjoy the view of pavilions.



1.30 Stable on a barge on the Seine, 1908.

Transport of animals and forage along the river.



1.31 Hanging laundry beside the river Seine, Henri Cartier Bresson, 1900.

The banks become backyards; a service space to clean and do laundry.



1.32 Fishermen on west of l'Île Saint-Louis, 1935.

The Seine's waters represented an important source of food until the 1970s, when the water conditions worsened with a consequent loss of fish. Today, with water quality improvement, it is again possible to fish in the Seine.



1.33 Children bathing on the Seine, 1935.

A typical summer day in the Seine, where the river becomes playground.



1.34 Bathers on Pont d'Iéna, Roger-Viollet, 1945.

*The river becomes an event space,
People gather on the Seine banks, during a summer event.*



1.35 Water games in the Seine, 1945 ca.

The Seine becomes the setting for water competitions.



1.36 Water games on Iles de la Seine, 1950

In the 50s a public swimming pool opened on the Seine's waters.



1.37 Photo shooting on the Seine, 1963

The Seine is such a characteristic emblem that it became the set for photo shoots, inspiring creativity and innovation.



1.38 House boats on the Seine, 2000

Les Péniches, the French traditional boat house. This typology is still very popular, and its presence has spread all along the Parisians banks.



1.39 Swimming pool Josephine Baker, on the Seine, 2006

A public floating swimming pool in the heart of Paris, open all year.



1.40 The Seine banks, La Grande Jatte Clichy, 2007

Throughout the last decades many portions of the banks have been reorganized to offer a more attractive and equipped public space.

From Paris to the World

The role of water in cities takes different forms and meanings. From fountains to waterfronts, this element has become a powerful tool for architecture. The conscious use of water as an urban tool has allowed the creation and revitalization of public spaces, creating a new means of celebration. In the later half of the 18th century, cities started to explore new relationships between people, urbanity, and water.¹ In these years, the city of Rome investigated the potential of water as a space-maker, with the creation of monumental fountains which used human features to embody rivers and gods. These monuments still surprise us today with their majestic beauty. Moreover, waterfronts have played a fundamental role in defining the character of cities— first as a territory for urban growth; then as an area of industry and exchange; and now as a space of expansion, revitalization, recreation, and experimentation.

Traversing the Seine's banks in the 19th century would probably have been like walking through a busy construction site. In these years large areas of marshland were dried out and several quays were raised to allow substantial portions of the waterfront to be reclaimed. These spaces still play an important role in a Parisian's everyday-life as public space, as artistic inspirational sets, and to help define human development.

It seems that our need to control water will always be connected with our way of living in a territory. This can include a series of related dynamics depending on area. Rivers may in fact experience important shortages of water, or floods, but they are all affected by regular tides. The influence of these tides can vary, generally depending on their exchange with the ocean. The consequences of local sea level rise, storm surges, and river floods become evident when considering the specific situations of certain territories, including not only those directly on waterfronts but also ones in the hinterland and in low-lying areas. There are countries where water management is not simply an 'urban appropriation'; rather, it has become a main feature of their cultural tradition. The Netherlands is a representative example of a state that has always had to deal with water. Due the necessity of controlling water, societies are forced to create certain infrastructures. But as we know, any action changing the natural condition and balance of an area creates a corresponding reaction.

Unable to find an unequivocal solution today, what we can do is control how much we are prepared to deal with these phenomena. Spreading the

information among people is the first and most important step towards social awareness and change, but we need to simultaneously embrace a new way of building cities. In order to develop updated urban realities, it becomes important to explore solutions that consider the presence of water as a city-maker.

Paris and the Seine are for this story the starting points of an exploration that does not have physical or time limits, but is open to spread throughout the world as a platform of exchange. As the map on the following pages shows, there are many relevant sites along this river which are already part of a strong national network of resources which can help this project to connect with realistic assets.

But it is not only their existence that is important for the development of this thesis. As we have seen, tourism represents a significant source of income and as such it becomes a valuable dynamic to consider.

I believe that sometimes everyone should see the city through the metaphorical eyes of a tourist. Tourists notice little things that residents miss as they are used to seeing them. In other words, we should be able to take a break from the chaos of everyday-life, and spend time to discover, be curious, and embrace our dreamier side.

This is why this story brings us into an architecture without address and without time; one where water offers a unique ‘ground’ on which to develop a project because it allows a public space to move and reach every part of the world, becoming a ‘global space of everybody’.

¹ Michel Coan. *Performance and Appropriation: Profane Rituals in Gardens and Landscapes*. Dumbarton Oaks Research Library and Collection Washington, D.C., Harvard. University Press, 2007.

Scene I

The way you will get to the entrance

You there, out walking the busy streets of Paris on this warm Autumn day. Keep walking down that street.

Wandering around the busy alleys you will be confronted by so much magnificence that you may find yourself exhausted. At that moment you will look for a place to rest and relish such beauty; perhaps there, under the shade of a tree. One of the things that makes this crowded city so livable is its propensity for offering ‘moments’. With this word I refer to all those public spaces that offer relief, either mentally or physically. They are the little niches at the side of a bridge from where to enjoy the river’s view, or the benches situated around the city and its parks, or any other space whose nature instills a sense of safety and calmness. These ‘moments’ becomes the spaces where the entrance to this adventure may be found.

Suddenly, you will cross Quai Saint Bernard. There is a park in this portion of the bank; it is called Jardin Tino Rossi. The trees are changing their leaves to the colors of a hearth; the view of the river is relieving. In a corner of this beautiful space, there is a little building. It seems a mere depot for the gardeners, but look carefully for there is a sign there: “Entrance to the Wanders”.

Let us get closer, open the doorway, and go in.



Part II

WINTER

Time of synthesis;
spoils every vital presence, revealing the truth.



2.1 Walter Crane, *The Masque of the Four Seasons*.
1903-1909.

Introduction to the Act

Welcome to the second part of this story, where the introductory framework leaves to make space for architecture.

The journey starts where water becomes the byproduct of our City, changing from water to wastewater. Soon, we will descend into the bowels, experiencing a blinding darkness.

We have said that this experience is a journey into the city and its waters. That is why, as a first step of this unconventional adventure, the visitors are compelled to descend into another Paris—a city of mud, one still with streets and intersections and squares and alleys, but where unexpected creatures are the inhabitants.

It is a labyrinth from which inclination is the thread that leads you out.

The Labyrinth



2.2 *The Myth of Ariadne and the Minotaur*

Prelude

Once upon a time there was labyrinth of such complicated construction that, even with its Minotaur defeated, no one could ever find their way out alive...

This second part of the story is inspired by the myth of Ariadne and the Minotaur. Their story is a game about exotic eroticism, the prelude of death, and the escape from unwanted inspection.

The myth of Theseus and the Minotaur presents the labyrinth as a point of no return, where young lives are sacrificed to its voracious inhabitant. At the same time, this place becomes a symbol of Theseus's courage and cunning; he challenges the labyrinth, kills the monster, and uses the wire of Ariadne to find his way out.¹

Paris undergrounds



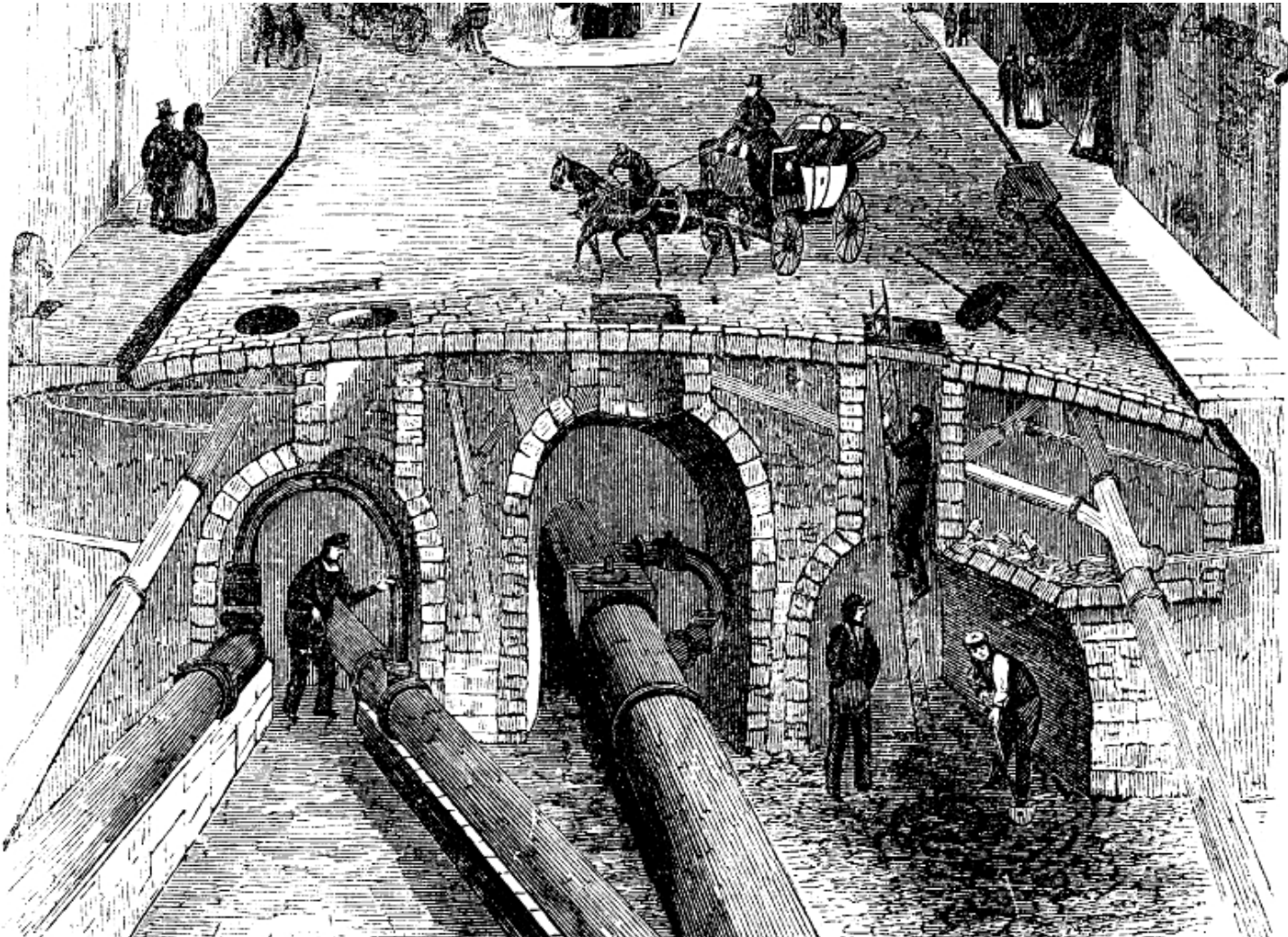
2.3 Plan of the sewers of Paris, 1878.

*Blue lines: existing sewers until 1855.
Red lines: sewers built between 1855 & 1878.*

The archetype of the 'labyrinth' recurs in every city. It represents the underground level of the city and of human life. There, from the darkness, it serves us by making possible our prosperity.

We can look at the sewers of Paris in the same way: an underground labyrinth of pipes and tunnels that collects storm-water runoff, domestic sewage, and industrial wastewater to be carried to treatment facilities. It is an intricate archetypal architecture created by man, a twisted shape which recalls the bowels or the meanders of the brain. A human spirit giving order to primordial chaos, it becomes a place in which to be lost and perhaps in which to find ourselves.

Humans and their waste



2.4 Paris: above and below ground, 1854

But let us start from the beginning.

One of the most pressing problems in any city with a growing population is wastewater. Cities had to figure out what to do with their human waste. Paris, as previously presented in the first part of the story, had to deal with a relatively late infrastructure development. As mentioned, the Parisian sewer system dates back to the year 1370 when a first small portion of underground system was constructed under Rue Montmartre.²

Patrick Süskind gives us a frank explanation of what this meant to the experience of life in the capital in those days:

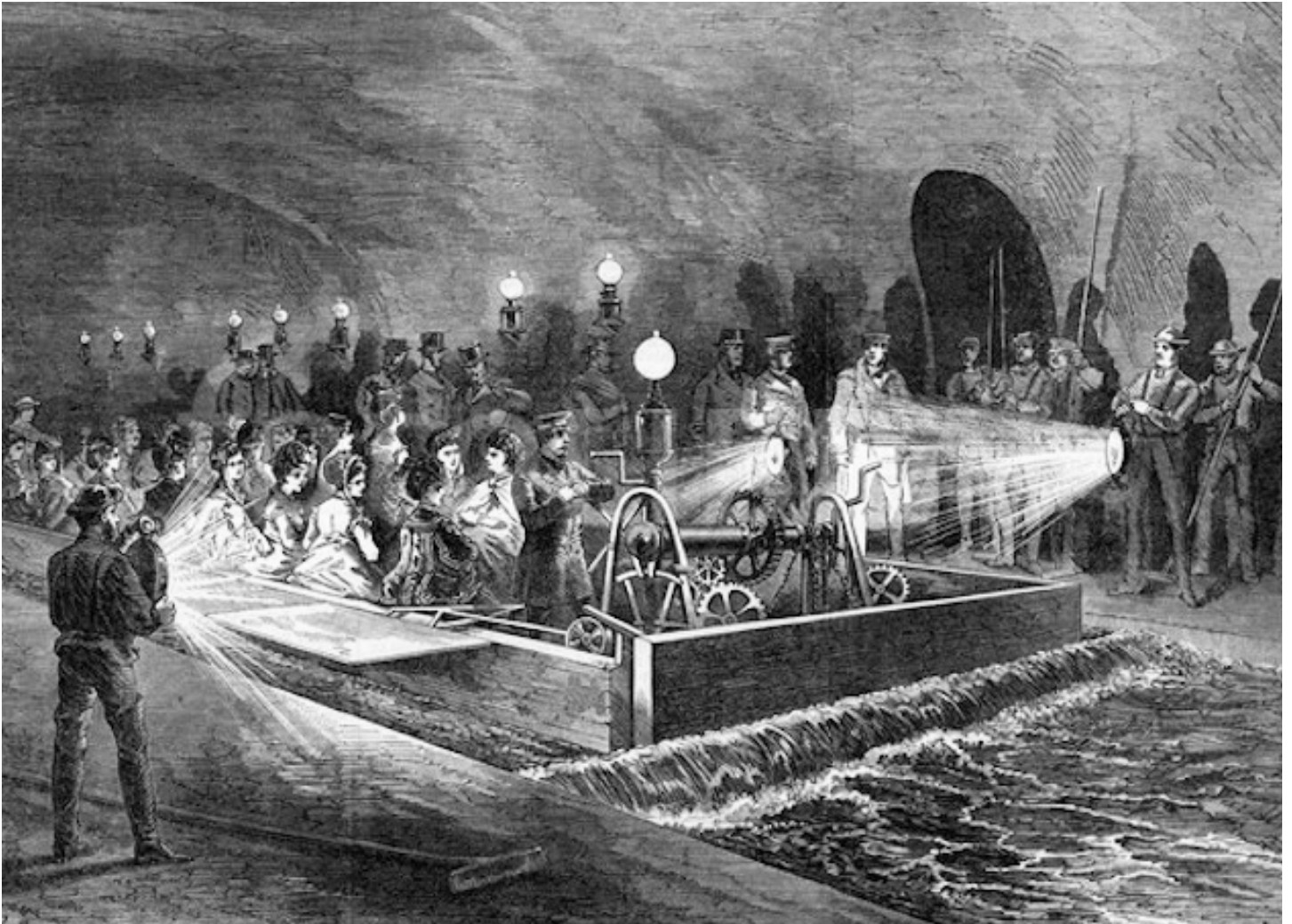
“In the period of which we speak, there reigned in the cities a stench barely conceivable to us modern men and women. The streets stank of manure, the courtyards of urine, the stairwells stank of moldering wood and rat droppings, the kitchens of spoiled cabbage and mutton fat; [...] And of course the stench was foulest in Paris, for Paris was the largest city of France.”³

Around 1600 a new ring of sewers was built on the right bank of the Seine, while the left bank continued to use the Bièvre River. In these years, the population was growing steadily and this system left the majority of the city unserved.

It was only around the 1840s, under the will of Napoleon III, that the Seine’s prefect Haussmann nominated Belgrand to coordinate the construction of ‘les égouts’, a complex sewer system spanning over 500 km underneath Paris.⁴

We can start to understand how the construction of the sewer system and water supply meant the beginning of a new era for Paris. These hidden spaces soon became the setting for many manuscripts about 19th century Paris. Victor Hugo describes this labyrinth as the “conscience of the city”⁵; where social standing is irrelevant and society is revealed in all its vulnerability.

“Few however, think of glancing at subterranean Paris; that mighty labyrinth of streets beneath ground, seen but rarely by human eyes, but without which Paris above ground would be an inhabitable morass, or a generator of pestilence. There is nothing here for show, but all for use. [...] These indispensable offices are all moving quietly on in their prescribed paths, unseen and almost unknown by the millions of noisy feet above them.”⁶



2.5 Paris Partout! A guide for the English and American Traveller in 1869.

The new sewer system became the pride of Paris to such an extent that a portion was turned into a tourist attraction, with so-called ‘Sewer-men’ giving tours on weekends.⁷ The once putrid city had come to possess one of the most comprehensive and efficient systems in Europe. By 1930, each street had its own sewer. Since then, this infrastructure has been gradually upgraded to cover the needs of an expanding population; the network now includes 2100 km of tunnels.

In 1991 the city started a long-term plan to reduce the amount of untreated water discharged directly into the Seine, protecting it from overflow pollution and reinforcing the existing underground system.

The water quality has increased significantly over the past decades, but the Seine still periodically experiences sanitary sewer overflows during periods of high rainfall, when the river becomes dangerous due to sewage bacteria. Nowadays, Paris still offers a sewer museum where travelers can get a historical overview of this underbelly system.⁸

But the purpose of this narrative is not to use the sewers as an observation platform. This story aims to create an experience where descending into the bowels of the city is the starting point of the journey, with the sewers’ entrance serving as a gate that will deliver us to other realities.

Notes

¹ Greek Myths & Greek Mythology. *The myth of Theseus and the Minotaur*. (2017) Retrieved from: <https://www.greekmyths-greekmythology.com/myth-of-theseus-and-minotaur/> (Accessed, September 2017).

² Pierre Couperie. *Paris Through the Ages: An Illustrated Historical Atlas of Urbanism and Architecture*. (New York, George Braziller, 1971).

³ Patrick Suskind. *Perfume. The story of a murderer*. (The Brillant International Bestseller. Part I. 1986),3. Retrieved from: <http://kadebg.com/wp-content/uploads/2010/07/perfume-patrick-suskind.pdf> (accessed September, 2017).

⁴ Pierre Couperie. *Paris Through the Ages*. (1971).

⁵ Victor Hugo. *Jean Valjean*. Thomas Y. Crowell - France. II capter- Ancient History of the Sewer (1887), 88. Retrieved from: https://books.google.ca/books?id=uEEVAQAIAAJ&dq=conscience+of+the+city+victor+hugo&source=gbs_navlinks_s (accessed September, 2017).

⁶ Henry Mills Alden. *Life in Paris*. Harper's New Monthly Magazine, Volume 8, (1854), 306. Retrieved from: <https://books.google.ca/books?uid=108889871284823373806&hl=en> (accessed September, 2017).

⁷ Messi Nessi. *A Boat Trip through the Paris Sewer*. November, 2015. Retrieved from: <http://www.messynessychic.com/2015/11/03/a-boat-trip-through-the-paris-sewer/> (accessed September, 2017).

⁸ Paris, Official website of the Convention and Visitors Bureau. *Musée des égouts de Paris*. Retrieved from: <https://en.parisinfo.com/paris-museum-monument/71499/Musee-des-egouts-de-Paris> (accessed September, 2017).

*...we are now almost to descend into the bowels..
..as the wonders begin at the lowest level ..¹*

¹ Victorian Paris. *Life in 19th Century Paris. The Guide to Gay Paree 1869 – Part 7: Sightseeing*. Retrieved from: <https://victorianparis.wordpress.com/2011/09/11/the-guide-to-gay-paree-part-7-sightseeing/> (Accessed, September 2017)

Scene I

descent

BOOK II—MIRE, BUT SOUL

THE CLOACA AND ITS SURPRISES

It was in the sewer of Paris that Jean Valjean found himself.

The transition was marvellous. From the very centre of the city, Jean Valjean had gone out of the city, and, in the twinkling of an eye, the time of lifting a cover and closing it again, he had passed from broad day to complete obscurity, from noon to midnight, from uproar to silence, from the whirl of the thunder to the stagnation of the tomb, and, by a mutation much more prodigious still than that of the Rue Polonceau, from the most extreme peril to the most absolute security.

whether what he was carrying away in this grave were alive or dead.

His first sensation was blindness. Suddenly he saw nothing more. It seemed to him also that in one minute he had become deaf. He heard nothing more. The frenzied storm of murder which was raging a few feet above him only reached him, as we have said, thanks

2.6 *Descent.* From *Les Misérables* by Victor Hugo, page 497.

2.7 *Next page: Tunnel 1*



Facing the night, close your eyes and let yourself fall to the unknown.

Scene II

within

support, whether for the hand of the room. He was wading in the hideous muck of the city. The occasional gleams from the air-holes appeared only at long intervals, and so ghastly were they that the noonday seemed but moonlight; all the rest was mist, miasma, opacity, blackness. Jean Valjean was hungry and thirsty; thirsty especially; and this place, like the sea, is one full of water where you cannot drink. His strength, which was prodigious, and very little diminished by his thanks to his chest and other life, began to give way with

At the end of fifty paces he was obliged to stop. A question presented itself. The passage terminated in another which it met transversely. These two roads were offered. Which should he take? should he turn to the left or to the right? How guide himself in this black labyrinth? This labyrinth, as we can understand, has a clue: its descent. To follow the descent is to go to the river.

illuminating Jean Valjean's subterranean advance for the reader, Jean Valjean did not have. Nothing told him what zone of the city he was passing through, nor what route he had followed. Only the growing pallor of the gleams of light which he saw from time to time, indicated that the sun was withdrawing from the pavement, and that the day would soon be gone; and the rumbling of the waggons above his head, from continuous having become intermittent, then having

broken up, had disappeared in the mire. For what distance? Impossible to say. The obscurity was deeper than anywhere else. It was a mudhole in the cavern of night.

Jean Valjean felt the pavement slipping away under him. He

2.8 *Within*. From *Les Misérables* by Victor Hugo, pages 498-508.

2.9 *Next page: Tunnel 2*



There, between mud and fog, appears a mouse, which seems the product of the labour of Paris.

Scene III

way out

arriving at the turn with his head down, he had encountered the wall. He raised his eyes, and at the extremity of the passage, down there before him, far, very far away, he perceived a light. This time, it was not the terrible light; it was the good and white light. It was the light of day.

ran rather than walked. As he approached, the outlet assumed more and more distinct outline. It was a circular arch, not so high as the vault which sank down by degrees, and not so wide as the gallery which narrowed as the top grew lower. The tunnel ended on the inside in the form of a funnel; a vicious contraction, copied from the wickets of houses of detention, logical in a prison, illogical in a sewer, and which has since been corrected.

It was one of those Bastille locks of which the old Paris was so lavish. Beyond the grating, the open air, the river, the daylight, the beach, very narrow, but sufficient to get away. The distant quais, Paris, that gulf in which one is so easily lost, the wide horizon, liberty. He distinguished at his right, below him, the Pont d'Iéna, and at his

2.10 *Way out.* From *Les Misérables* by Victor Hugo, pages 509-510.

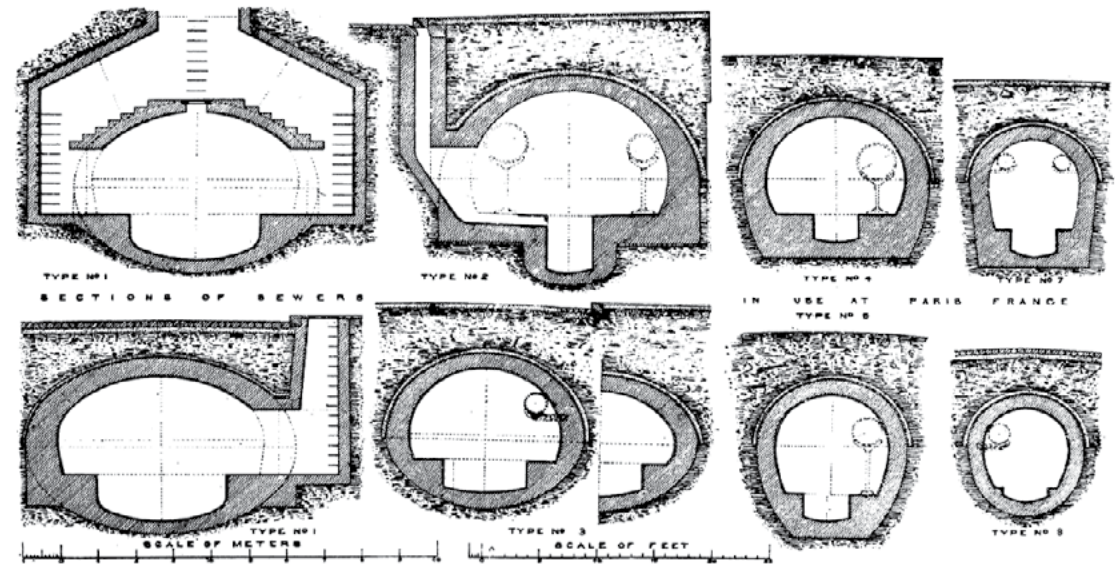
2.11 *Next page: Tunnel 3*



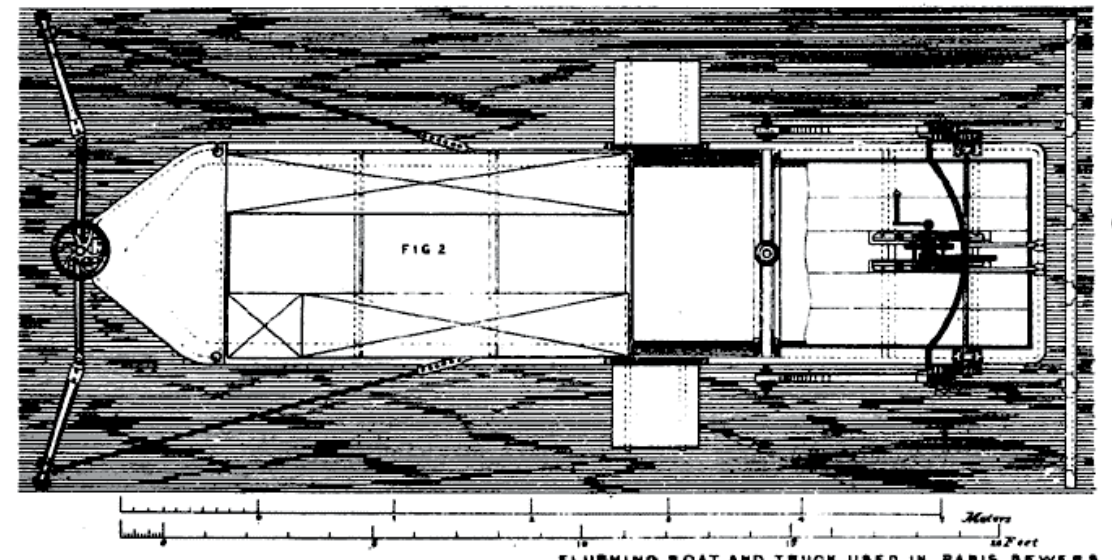
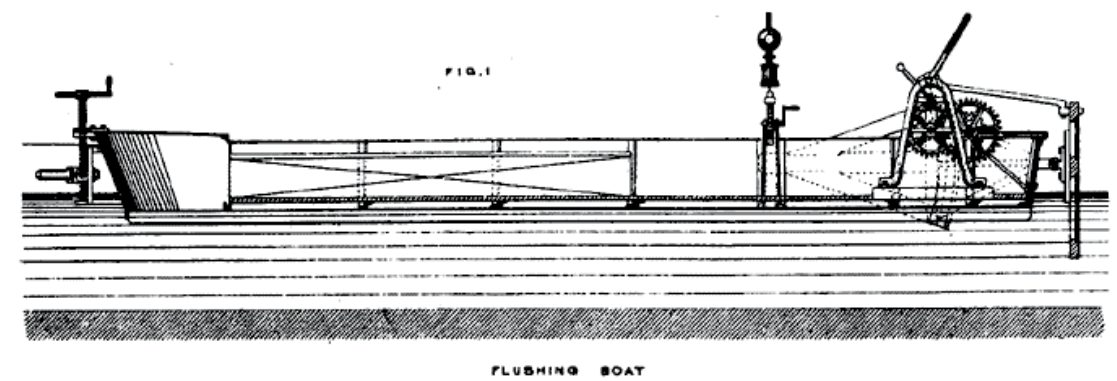
Now, you can see the light.

The visit is a nocturnal, uncomfortable battle against the unexpected, but it is at the same time a voyage of discovery —immersed in the dark, walking through the unknown to finally glimpse the light of the way out.





2.13 Sections of the sewers of Paris, 1884.

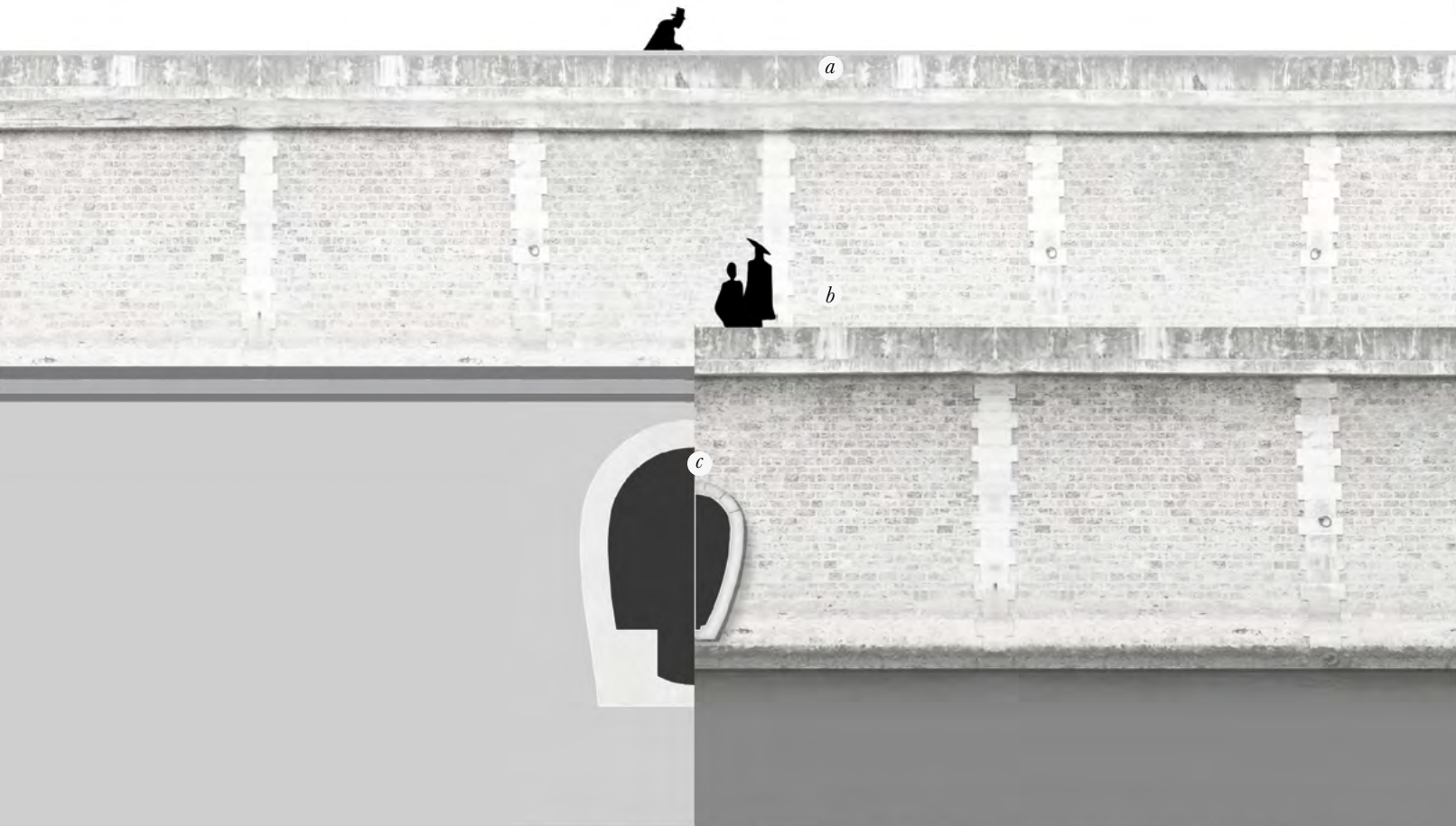


FLUSHING BOAT AND TRUCK USED IN PARIS SEWERS
2.14 Flushing boat - truck used in Paris sewers, circa 1884.

The tunnel design

The first part of this adventure is a tribute to the important system of sewers that are an integral part of Paris' historical evolution. This space in fact relies on an existing branch of this intricate system. The tunnels were proportioned at the time of their construction to accommodate an average human's dimensions, and for this reason all of its parts are still easy accessible.

This design takes shape from original drawings showing detailed sections of different sectors of the sewers. The spaces are enriched by a 'flushing boat', a raft used for the maintenance and exploration of these spaces and more pertinently as a bridge to cross the flow of wastewater. The reconstruction of this setting recreates a unique atmosphere capable of bringing the visitor into another reality, and serves as a strong introductory moment for the first exchange between visitor and water.



SECTION A-A' & facade

Spaces:

a_ Main street and sidewalk

b_ Lower bank of the Seine

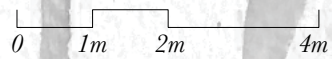
c_ Sewer outlet

d_ Sewer collector

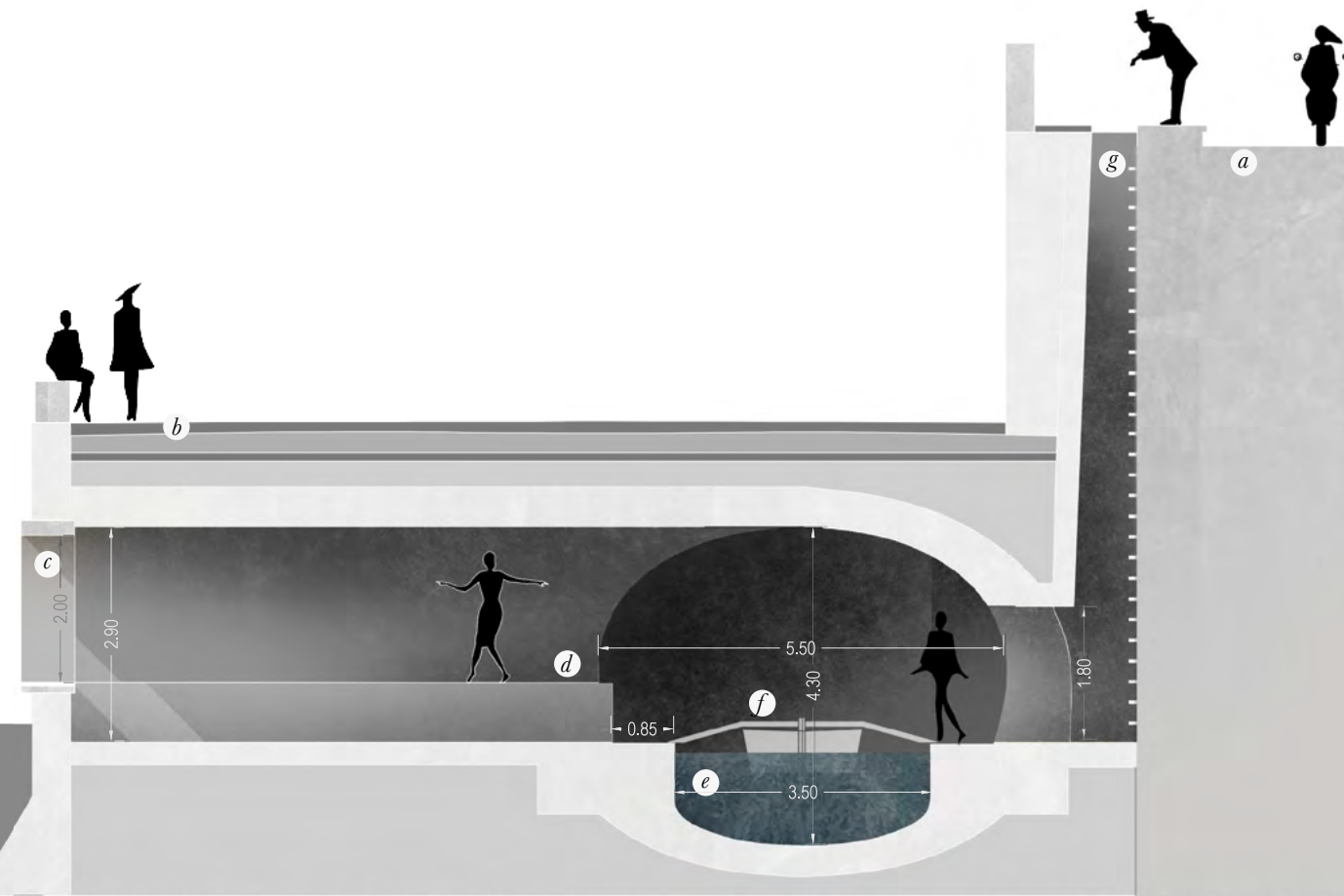
e_ Main sewer collector

f_ Flushing boat

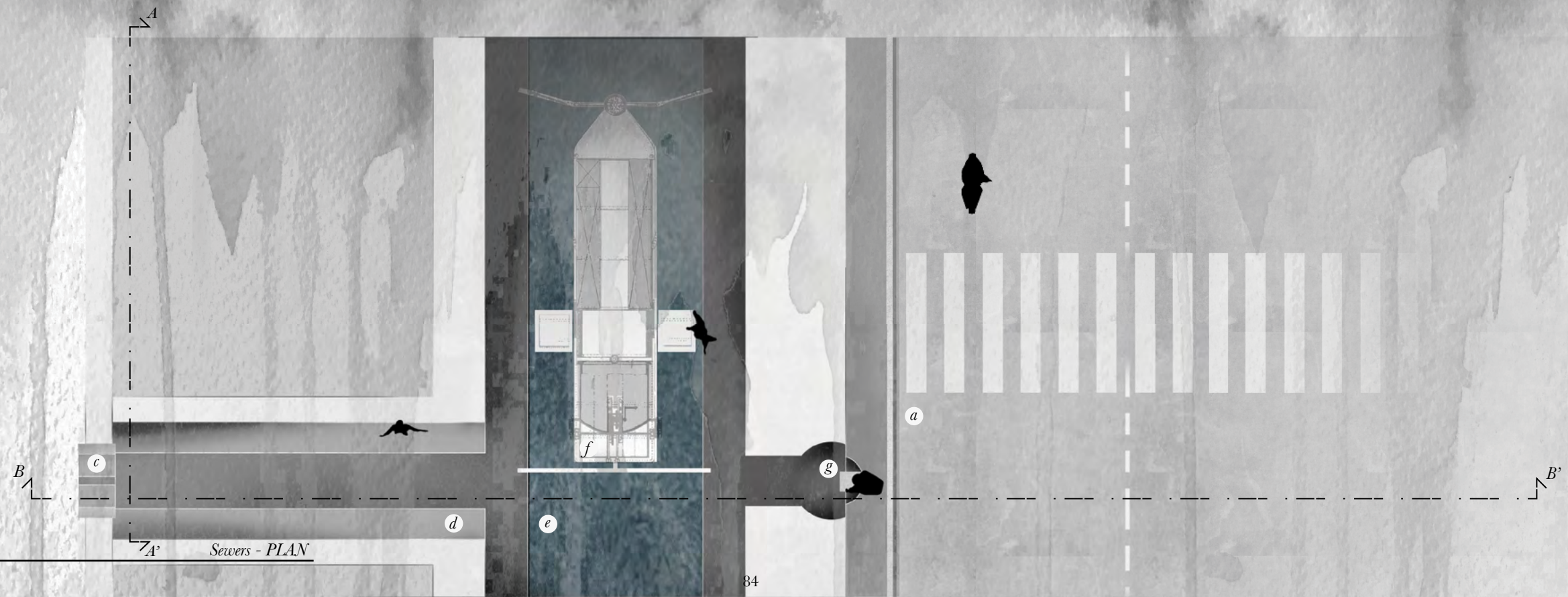
g_ Entrance for inspection



2.15 The sewers design



SECTION B-B' & side facade



Part III

SPRING

Symbol of birth and fertility, flowering season,
openness and lightness.



3.1 Walter Crane, *The Masque of the Four Seasons*.
1903-1909.

Introduction to the Act

In a few moments we will be part of something unique: the magical gift of Spring.

Water, greenery, and flowers will cradle you in an adventure that will fill both eyes and soul.

We are now ready to go further on this adventure. From Winter we now look forward Spring.

But let us go in order; let us start from the moment when, from the sewers, we encounter the river.

Relationships



3.2 Square du Vert-Galant, Paris, December 2016.

Prelude

Sometimes in our life we may find ourselves dealing with something great, strong, and beautiful, and a feeling of fear and respect may occur in us. If we are lucky enough this something is Paris.

Dealing with any city implies a sequence of relationships with the surrounding. For this reason it is important to consider the Parisian context and its existing buildings during the design process.

The City of Light has two main symbols: the Eiffel Tower and Notre-Dame Cathedral. The Eiffel Tower poses an intriguing and powerful figure; the milestone of a new era, it offers a novel point of view of and to its city. But the Cathedral of Notre-Dame contains within itself a story of people, cultures, rituals, birth, love, faith, and death. This architecture contains the memories and wills of its city's people and of its country. Moreover, its complexity in architecture translates to simplicity and purity when we understand its ability to gather people together using its "judicious balance of horizontals and verticals."¹ The architecture of Notre-Dame leaps toward the sky before bending into arches. The new structural techniques provided by Gothic design allowed the body of the building to be minimized.³

But Notre-Dame is more than what can be seen from ground level. Hugo reminds us that what we see from the surface obscures all that is hidden; these spaces can be discovered only by exploring.

"In the Middle Ages, when an edifice was complete, there was almost as much of it within the ground as above it. [...] In the cathedrals it was, as it were, another cathedral, subterranean, low dark, mysterious, blind, and dumb, under the aisles of the building above, all flooded with light and resounding night and day with the music of bells and organs."⁴

With the same purpose, this water project presents itself in different layers; one floats on the surface as a space for social interaction, while another waits underneath—more reserved, dark, and tiny. The ultimate presence stands to the omnipresent force of the Seine, who with her embrace connects everything and serves as a unique background.

¹ Alain, Notre-Dame de Paris, 7. Erlange-Brandenburg, Alain. *Notre-Dame de Paris*. Abradale Press, 1999.

² Ibid, 13.

³ Ibid, 78.

⁴ Hugo, Notre-Dame de Paris. Hugo Victor, *Notre-Dame de Paris*, London: Dent, London, 1964: 297.

Scene I

Into the Crypt

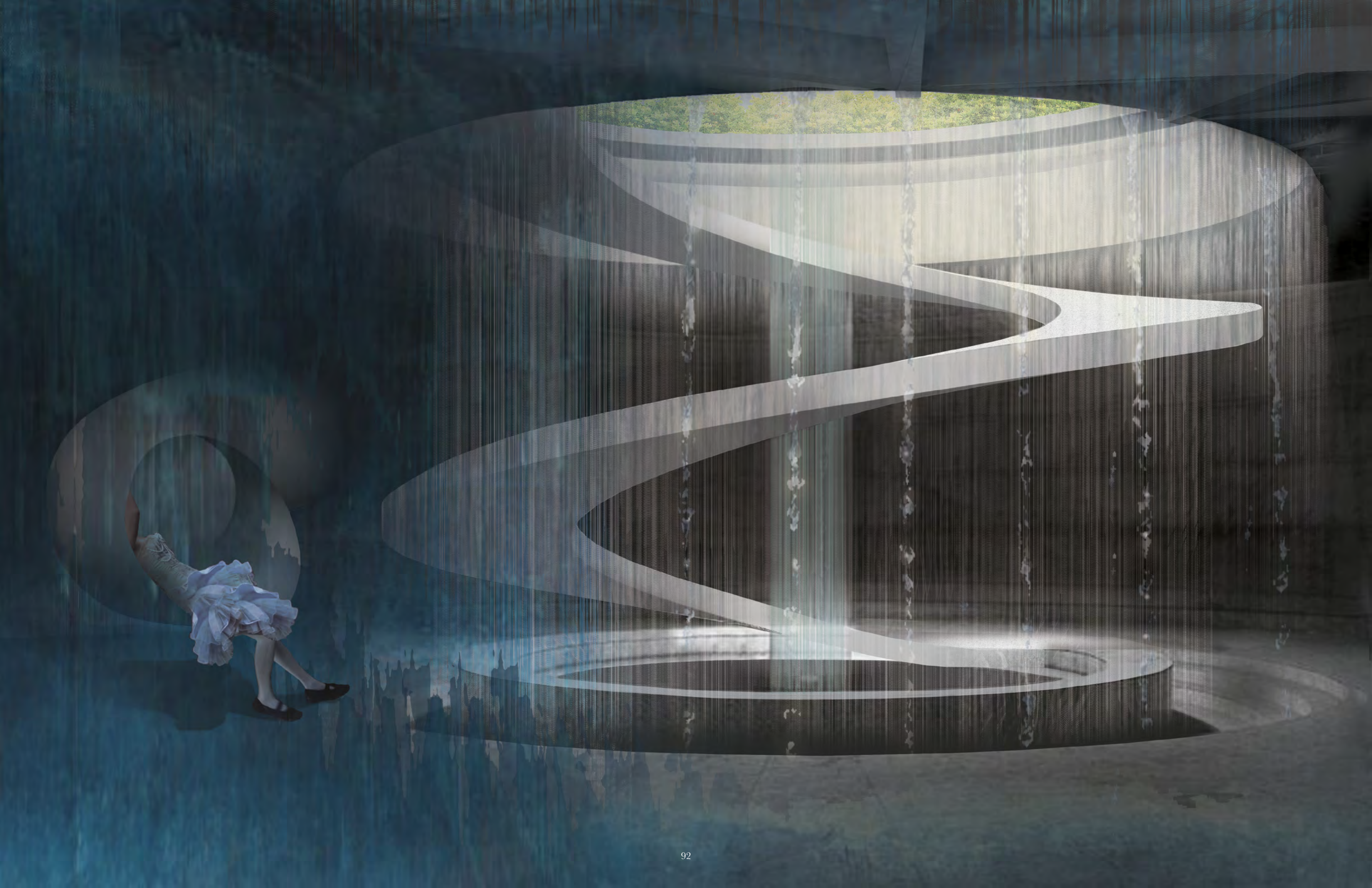
Suddenly you are falling, plummeting in a dark spiral, but it is just a few seconds before your feet are able to touch the ground again. It was a slide, and it has carried you below the water.

Now you are somehow submerged in water; you can feel its presence but you cannot touch it. You are not comfortable, not yet, but after that long Winter you know this path can only lead to something better.

The concealed slide has taken you to the crypt. There is a heavenly and spiritual quality permeating the space. You look around, trying to decide your next step. In the center a glimmer of light descends from a circular hole. Nearby a ramp is protected by a thin waterfall. Your instincts draw you towards the light, and as you approach the ramp you can feel little drops of water falling on your body.

The oculus above your head frames the blue sky, and the shimmering rays of bright light raining down transform the falling beads of water into a hundred-thousand diamonds. The atmosphere is mysterious and breathtaking at the same time.

The closer you get to the ramp, the more you feel these little drops on your skin; they are cold and delicate. As you cross through the wall of water to reach the ramp, you bow your head, in part as a natural reaction, but enough to show your respect to the ambience of this place.



Scene II

Spring and the garden

You are now moving up towards the open air; as you ascend the ramp, you catch growing glimpses of light and greenery from above.

Arriving at the summit, you find yourself drawn to the quiet majesty of nature. The shock of finding such an extraordinary garden after the darkness of the sewers and the crypt induces a sense of safety and peace. Here, time slows down, and with it your body and movements. Your eyes are soothed by the setting.

A mix of informal and formal gives structure to the space. This variation is the soul of this third act, which like the human body appears confusing but is in fact a highly organized system. The bowels of the city are here translated into green arcades, offering protective shade while at the same time recalling the features of Notre-Dame.

It is here that you can finally satisfy your thirst. Two springs are there to supply life.



From the ground, through the water, and on to the sky, this area serves as a means of transition: between seasons, between spaces, and between states of mind.

This garden is made of moments, each different and beautiful in its own way. Some of them reveal their delight slowly; waiting for the full performance of one plant, we may be captured by the beauty of another. The explosion of colors is cradled in the sounds of nature. The racket of the busy street is washed away by the babbling of the flowing water, the rustle of the plants, the buzz of the bees' wingbeats, and the gentle clatter of pebbles beneath your shoes. It becomes a beautiful experience of colours and matter. You can see the air ruffle through the garden and then brush across the water. The contrast between water and vegetation enhances the mutable and smooth texture of the water as well as the wild look of the flora.

It is a poem of grace.



The Garden & Crypt design

The connection between the banks of the Seine and its water becomes the transition between dark and light.

This small room becomes an element of transition, not only between Winter and Spring, but more importantly between spiritual states. We first arrive in the space via the slide in a reclined position; when we exit, our heads must bow under the waterfall to reach the ramp. As a meta-physical baptistery, it offers an opportunity to be touched by water and metaphorically cleanse the soul from the sins of an old life, before preparing to embrace a new one.

The design is simple and bare, with only the slide and the ramp occupying the space. Light and water are the main protagonists; they are the focal points of the scene and the drivers of emotion and movement, and we as pilgrims must traverse the darkness to reach them.

We can describe Spring as that moment when, like after a long sleep, the animal body needs to stretch. It is the instant when we open the windows to feel the warming breeze, or take our first walk of the season to enjoy the little blooms and gems that begin to colour the sidewalks.

The garden perfectly embodies this season with its colours and its atmosphere. These green spaces have always represented an important feature of Parisians' interactions with the site, where they have played an active role as a spatial, personal, and cultural tools.

As has been so historically, this space enriches the city and this part of the journey. It provides the ideal setting for people to contemplate the beauty and prosperity of nature in our lives.

In both private and public life, gardens have been the set for interpersonal and intercultural exchange and experience. They have served as meeting points for public discussion, and as spaces where new ideas and beliefs can be propagated. They have even been machines for cultural change, yet they are intrinsically connected with their territory and embody its characteristics. These places empower the relationship between nature and people.¹

This garden benefits from the ingenuity of nature that provides us with evergreen trees and other plants able to purify water. Learning from the brilliant garden designer Piet Oudolf, we can divide the vegetation into

two main categories of perennials: structurals and fillers.²

Following this model, the space has been designed utilizing a variety of long-lived clump-forming species, bushes, and small trees which offer shade and concealed spaces. In this way the garden is able to persist in its planned state for years without changing its main structure, and more importantly without the need for constant maintenance.

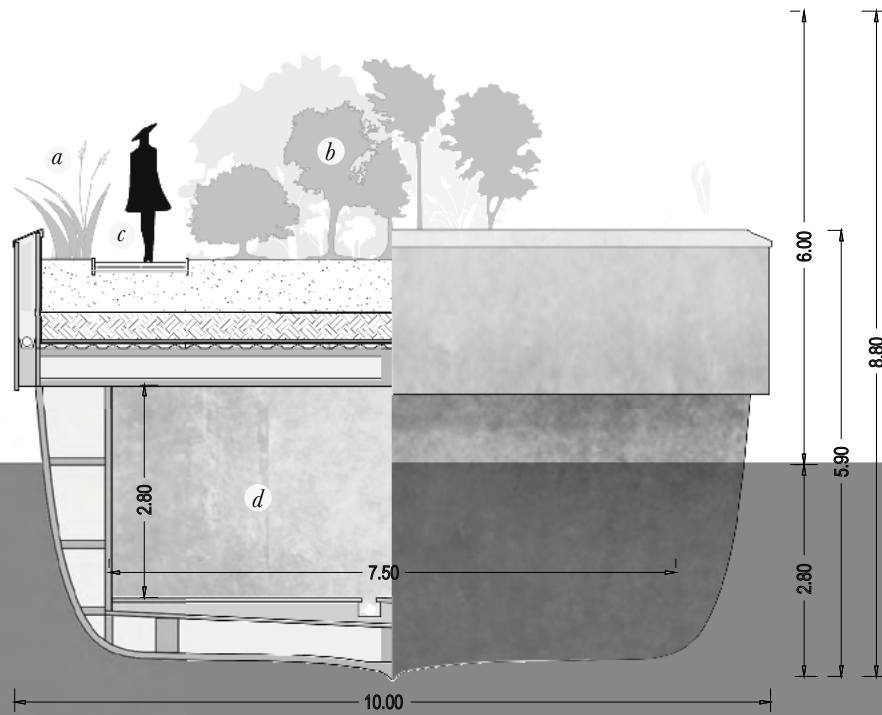
The garden's plant composition cycles through a variety of perennial and annual species over the course of year, allowing this space to transform throughout the seasons while providing an atmosphere that never lies bare. Everything here has its own rhythm in a continuous system of death and rebirth, offering a vibrant atmosphere that is different every day.

Water has its place in the garden and becomes architecture, designing spaces, shaping paths, and supplying drinking fountains. Recalling the French garden tradition, it runs on an axis from one extremity of the park to the other. From a small dig augmented by two springs, this little channel grows in size until, just before reaching the other extremity of the building, it submerges the whole path. This severity is broken on its sides by a more dynamic design of trails and greenery. Paths take different consistencies, and at times are elevated from the soil as a way to enjoy the beauty from a higher prospective.

At the edge of the garden where all the paths converge, a few steps lie atop the water, allowing us to reach the next season.

¹ Michel Coan. *Performance and Appropriation: Profane Rituals in Gardens and Landscapes*. Dumbarton Oaks Research Library and Collection Washington, D.C., Harvard University Press, 2007: 1-4.

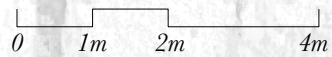
² Michelle Slatalla. *10 Garden Ideas to Steal from Superstar Dutch Designer Piet Oudolf*. Gardenista, September 2016. Retrieved from: <https://www.gardenista.com/posts/10-garden-ideas-to-steal-from-superstar-dutch-designer-piet-oudolf/> (Accessed, September 2017).



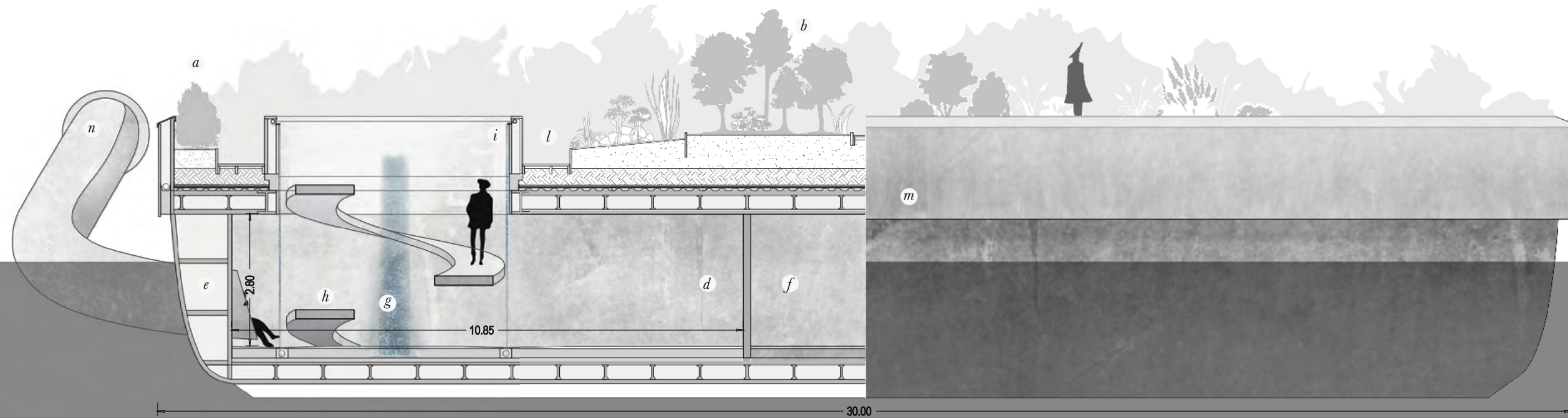
SECTION A-A' & facade

Spaces:

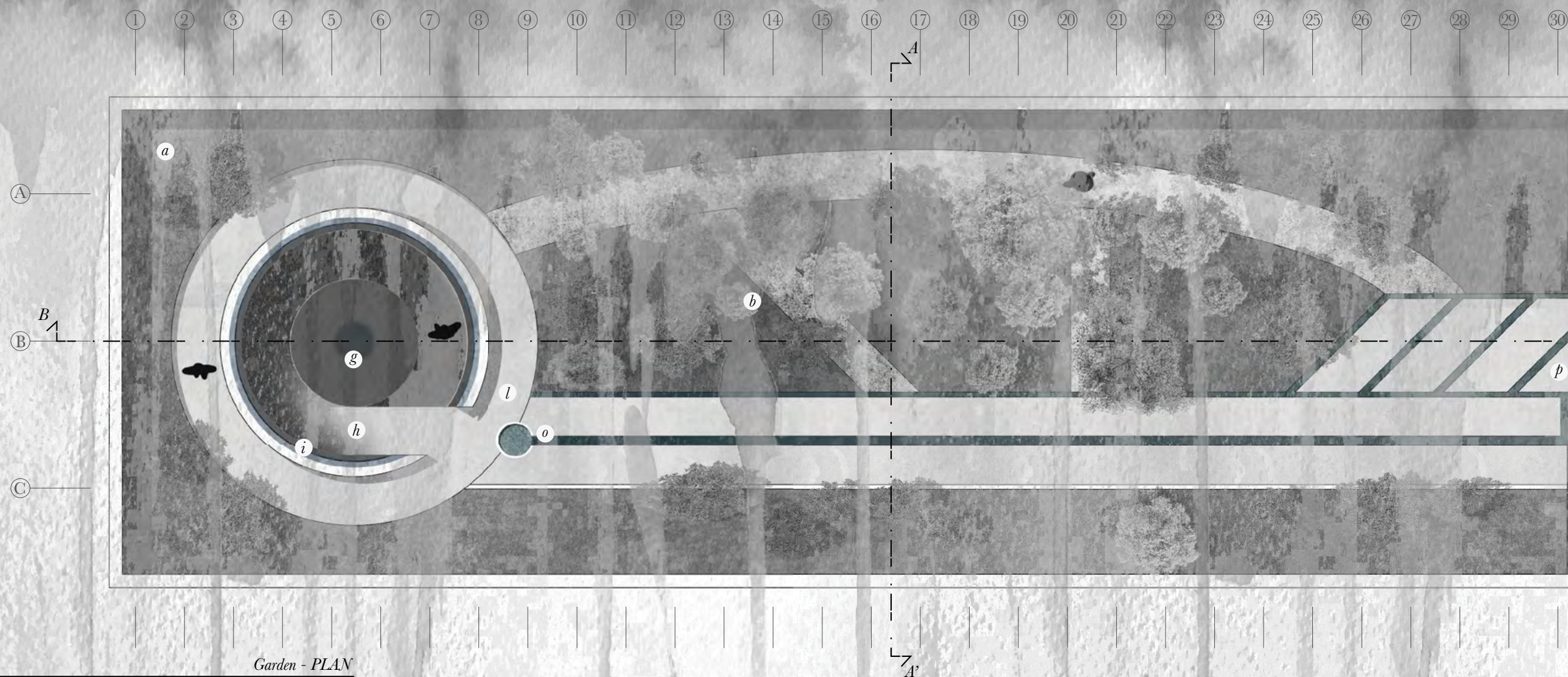
- a*_Short vegetation
- b*_Small trees
- c*_Unpaved path
- d*_Cripta with fountain and waterfall
- e*_Double structure with air chambers
- f*_Service spaces
- g*_Fountain
- h*_Ramp
- i*_Waterfall
- l*_Paved path
- m*_Steel structure
- n*_Entrance slide
- o*_Water path
- p*_Exit



3.6 The Garden design



SECTION B-B' & side facade



Garden - PLAN

Part IV

SUMMER

Season of sublime contemplation.



4.1 Walter Crane, *The Masque of the Four Seasons*.
1903-1909.

Introduction to the Act

Summer, time of rest. Nature, animals, and humans celebrate life in all its fullness.

The end of the journey; the beginning of something new.

This last section is about love—love for life.

In just few steps you will be reunited with other explorers in a celebration that will take place in water. A natural pond will wash away the heavy layers of your journey. The water will ease your burdens.

But there remain a few more steps. From Spring they will lead you to Summer.

Scene I

The Pool of Summer

Diving—suddenly you become one with water. The contrast between the sun’s heat and the water’s chill is a shock. It awakens you from your torpor, making you feel thoroughly alive.

This natural swimming pool represents the main celebration of the River, the space where we finally submerge into its waters. The act of bathing brings back rituals that were lost decades ago with the introduction of health and safety standards. You are finally part of the river; the water covers you and you feel safe.

It is here that after this long journey we are actually reconnected with the River. It has been years since you last bathed in these waters, and now more than ever you feel revived. You are surrounded by the City, and embraced by the slow flow of the Seine. You can hear her talking to you; the Goddess too is revived.

This season does not reference back to any of the main styles. There is nothing Gothic, no architecture, or even urban space. It is inspired instead by the elements we feel with our soul: the breeze’s touch on a face; the warmth of sun on skin; the caress of water between fingers; the scent of flowers. There are things that even architecture cannot embody, but only suggest or amplify.



The natural swimming pool design

One of our greatest strengths as humans is our ability to use nature to meet our standards of living. In this case, nature becomes an important actor in the technical operation of a novel style of swimming area. This area will operate as a hybrid between natural swimming pool and swimming pond, using aspects from both typologies to create an efficient new amenity able to react to many different circumstances.

Any naturally occurring body of water contains an assortment of microbes, bacteria, and algae, which are supplemented by organic nutrients. In a traditional pool, these are repelled using chemicals. In a natural swimming pool, however, the appearance of these nutrients is instead controlled by a balanced ecosystem of micro-organisms and bio-mechanical filters, like UV sterilizers or lava rock, which help guarantee clean and healthy water.¹

Swimming ponds consist of a balance of vegetation and swimming areas. These typologies do not require any mechanical filtration, as the plants which cover roughly 50% of its basin are capable of filtering the water. This mixture is in accordance with the rules for the maintenance of natural swimming ponds without additional filters.² The regeneration area consists of a variety of floating, submerged, and terrestrial-bound plants, which together maintain reliably high standards of water.

The primary difference between natural pools and swimming ponds is that pools maintain clean water using bio-filters, while ponds utilize plants. Bio-filters have been added to this proposal's pond design to provide additional control of the filtration process, and to guarantee optimal circulation of clean water throughout the pool. In other words, if normally a natural swimming pond works only with the aid of plants, and a natural swimming pool works with bio-filters, this system will be the perfect median between the two.

The filtration process begins when an external filter removes the largest debris from incoming river water. The water is then pumped into the plantation area, where a layer of volcanic rock strains out smaller particles. From here, the microorganisms located on the plants' roots can filter the finest particles from the water, removing microscopic contaminants and excess nutrients. This system ensures that the organic sediment remains separated from the pool's users and is readily removable with cleaning equipment. The result is clearer, cleaner water. The water's chemistry is passively controlled by the minerals present in the substrate,

and its pH level is kept balanced by plants continually supplied with the carbon they require. An additional chemical-free filter helps to ensure an optimal nutrient level that prevents the formation of algae.

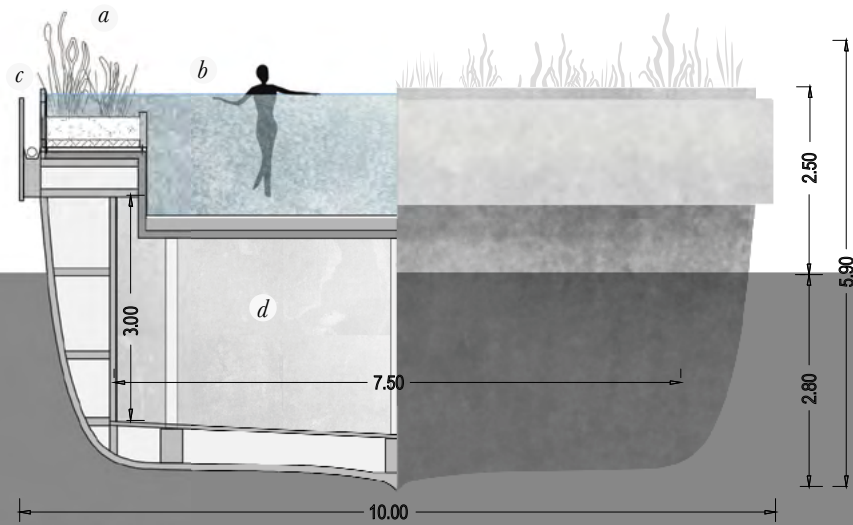
A challenge is posed by so-called ‘dead spots’: areas within the basin characterized by low water-flow. An electric pump ensures that water circulates through every section of the pool, particularly through the deepest areas. This continuous flow is important to maintain high oxygen levels and prevent from the growth of algae, and is facilitated by the basin’s rounded shape.

The overall depth of the swimming area ranges from 1.2 m at the shallowest point to 2 m at the deepest. The regeneration zone, however, goes no deeper than 30 cm. These shallow zones will keep the average temperatures between 19 °C and 25 °C during the summer. A low rate of water turnover, coupled with the fact that this typology does not require constant refilling, minimizes the energy usage and by extension the costs.

This hybrid solution allows the pool to move along the river to the sea. Here, the filtration system that connects to the river’s water will be turned off, and the regeneration area will be left alone to maintain clean water standards. This mechanism prevents the seepage of salty water that would destroy the pool’s balanced ecosystem. In this way the floating building will be able to move freely by river, lake, or sea. The opportunity to freely access different destinations also creates a risk for introduction of non-native species from the point of origin to a new ecosystem, as the regeneration area may contain plants that pose a threat to local flora. For this reason, the floating natural pool can be completely emptied; this process can take place prior to embarking from the origin river, or while out at sea before entering a new river system. The pool’s water will be refilled and its supply of plant filters restocked once it has arrived at its new destination.

¹ Clear water revival. Design and Build. Retrieved from: <http://www.clear-water-revival.com/natural-swimming-pools/swimming-ponds/how-swimming-ponds-work/> (Accessed, September 2017)

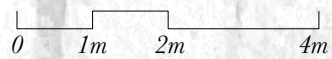
² Ibid.



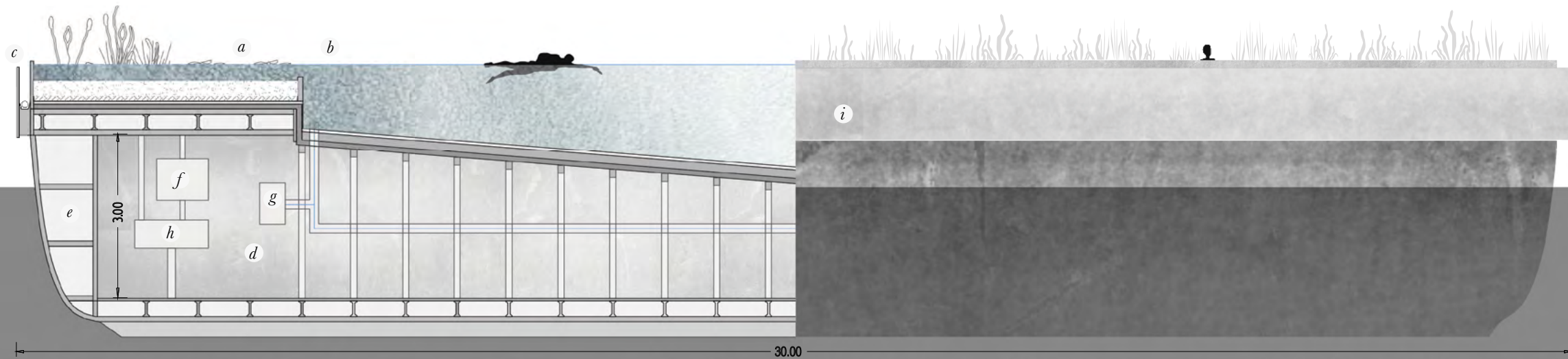
SECTION A-A' & facade

Spaces:

- a* Regeneration area with aquatic plants
- b* Pool
- c* Water drainage
- d* Service space
- e* Double structure with air chambers
- f* Bio-filter
- g* Pump
- h* External filter
- i* Steel structure
- l* Entrance deck
- m* Access to lower level
- n* Exit deck



4.3 The natural swimming pool design



SECTION B-B' & side facade



Natural swimming pool - PLAN

Towards a new Autumn

The water of the river had the power to relieve you, but your body shows by the shriveled whorls of its skin that the moment has come. It is time to move on.

Scene I

The Raft of the Medusa

It has been a while since this journey started, though you cannot really say exactly how long; maybe a few minutes, maybe a few days. The atmosphere was so magical that it almost reminds you of dream...

Was this all just that? A dream?

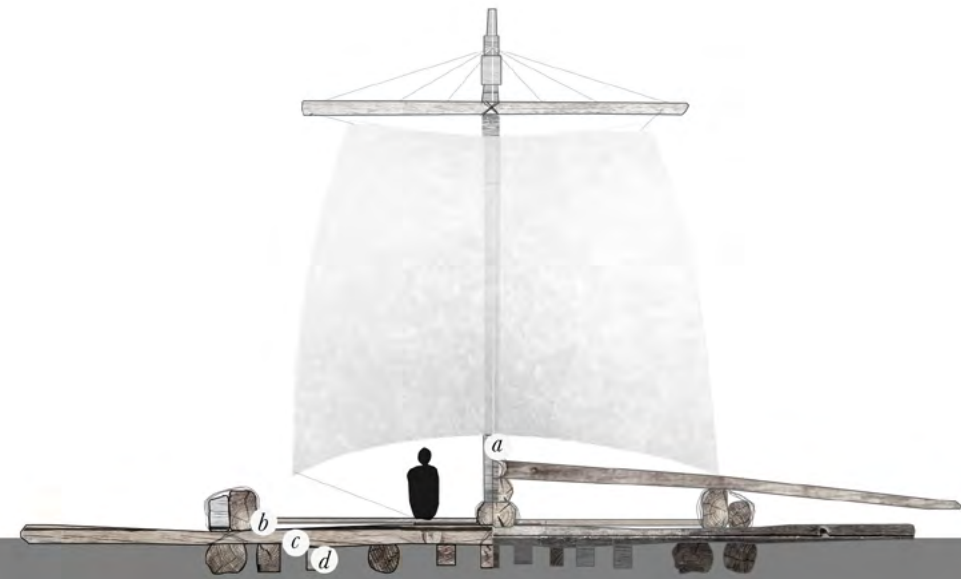
It does not matter. With eyes following the river's flow, you catch the shape of an unrefined raft. You are not sure where it will head, but somehow you know it will be the right direction. The gentle flow of the Seine will carry you wherever you need to go.

This floating space provides the adventurer with a closing impression of the journey, where they can experience a last glimpse of thought.

As is always the case, this moment can be experienced in different ways. The raft can be seen as a haven in which to survive and seek out safer places, or it may simply act as the prelude of death. You may find yourself in the ocean, or just end up going back to the city; from this point, you will decide your direction. Water, which until this point drove you along a path, becomes now your companion, both enemy and friend.

The river is calm, but still you can hear the power of its flow and feel its majestic simplicity. The air is getting cooler, and the colours of the sky begin to recall those of the Fall. It is a reminder; we will arrive soon at another Autumn.





SECTION A-A' & facade

Main elements:

a_ Mast

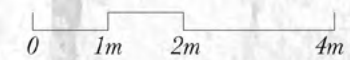
b_ Main structure

c_ Secondary structure

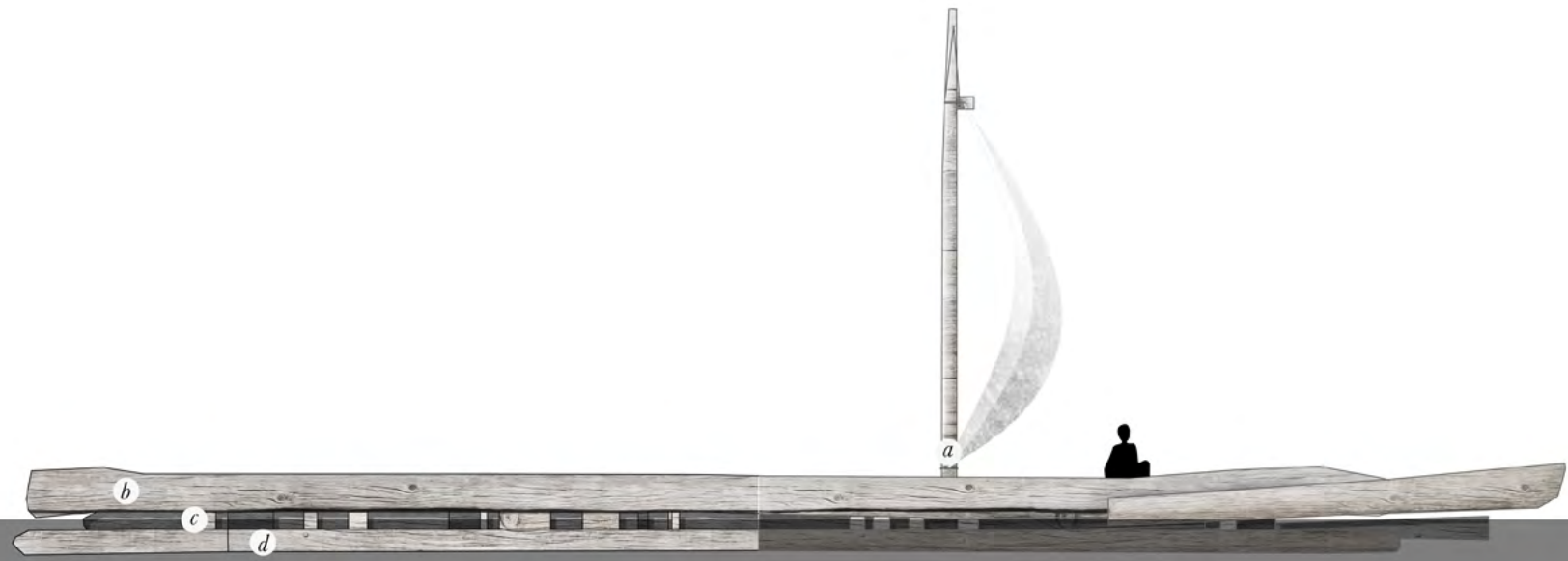
d_ Base

_ Dimensions: 7m x 20m

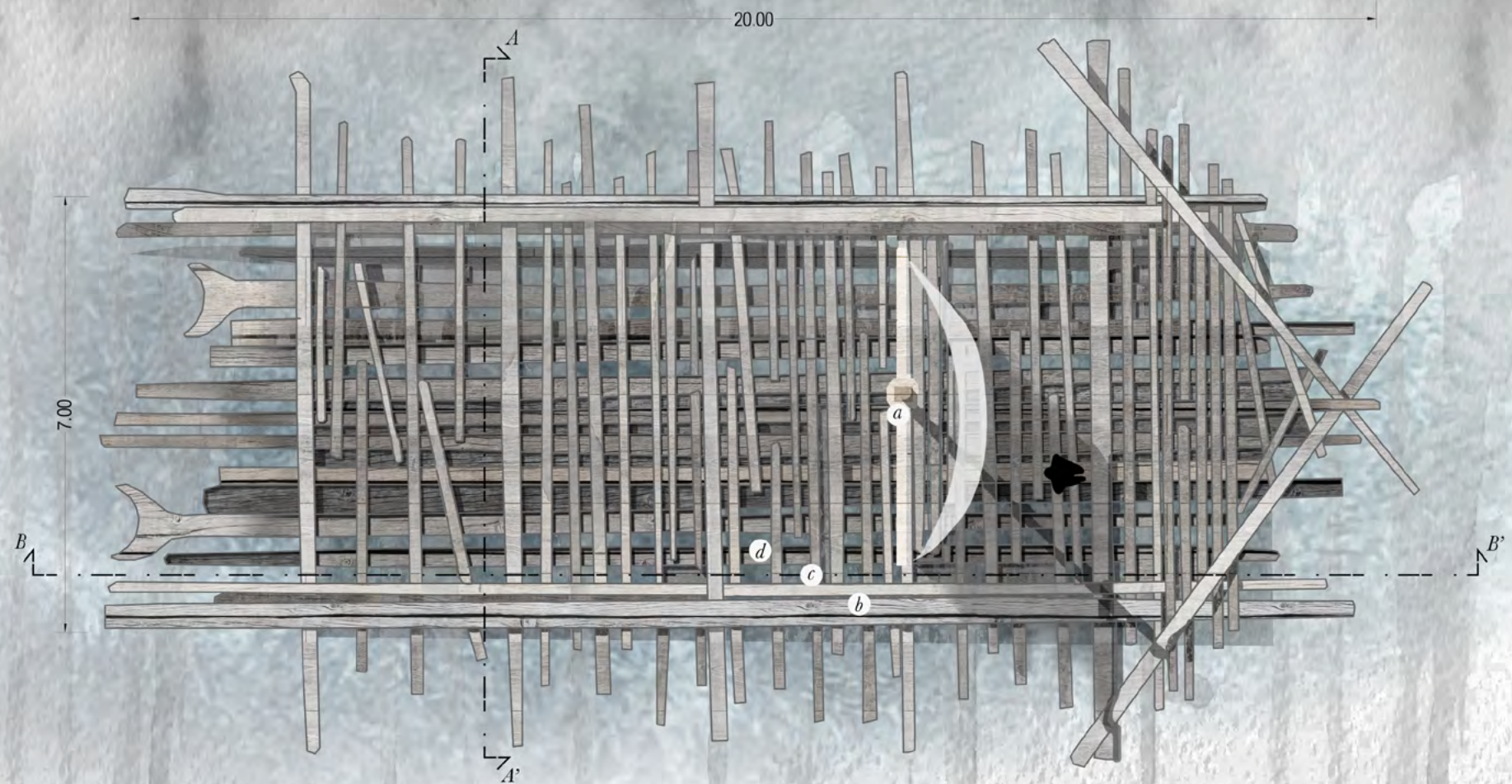
« The raft carried the survivors to the frontiers of human experience. Crazy, parched and starved, they slaughtered mutineers, ate their dead companions and killed the weakest. » – Jonathan Miles –



4.5 The Raft design



SECTION B-B' & side facade



The Raft - PLAN - drawing base retrieved from a Alexandre Corréard's composition study for "The Raft of the Medusa" by Théodore Géricault.

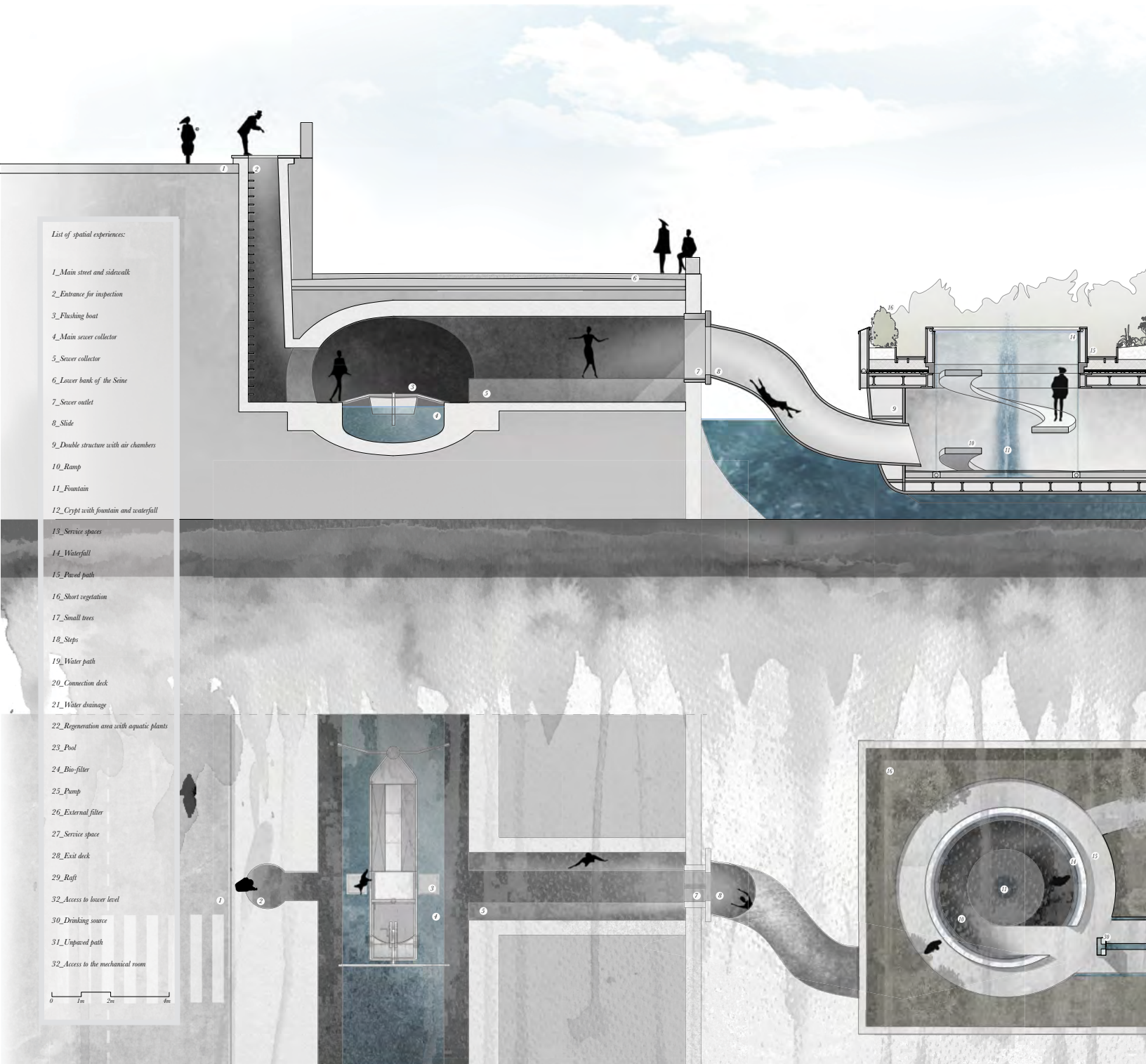
The end.

Autumn

The Entrance

Winter

The Sewers

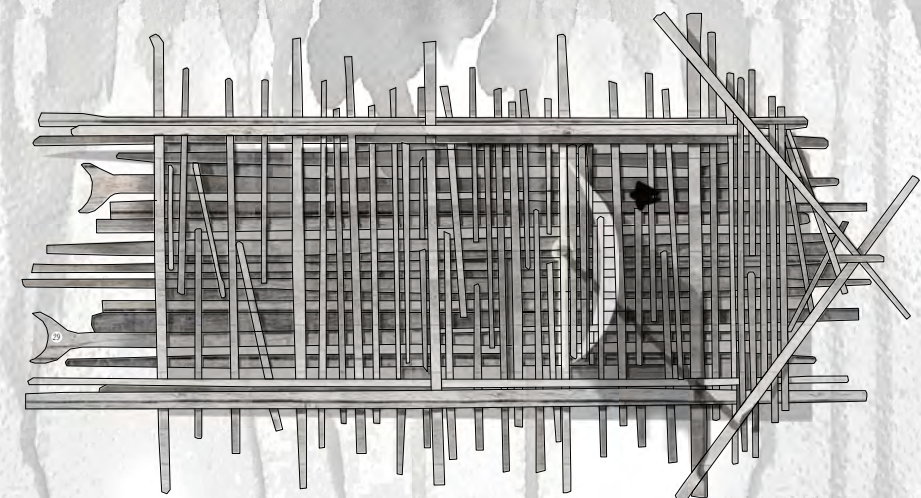
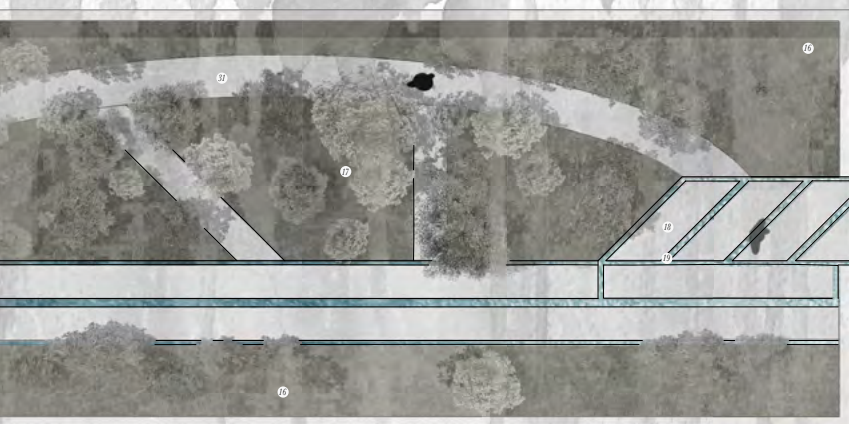
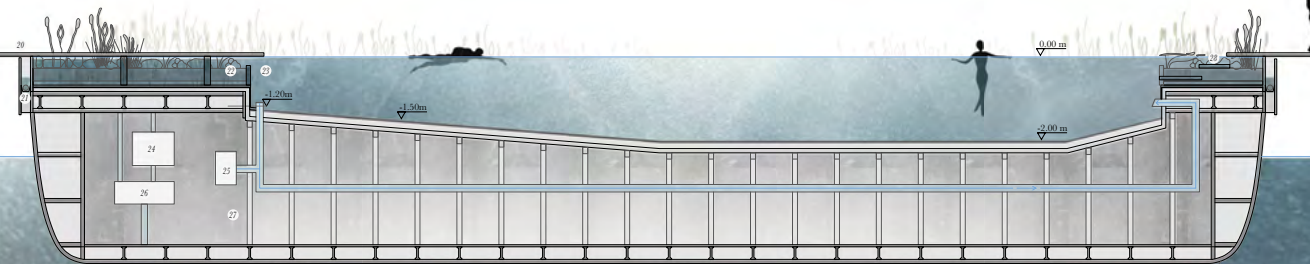
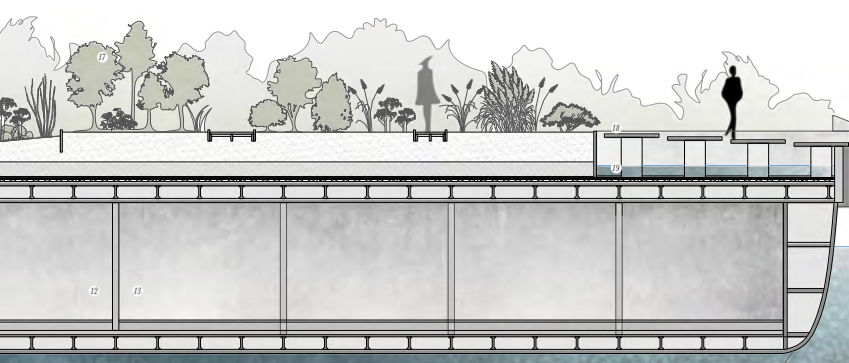


4.6 The overall design

Spring
The Crypt & Garden

Summer
The Natural Swimming Pool

Autumn
"The raft of the Medusa"



Conclusions

While our world suffers the repercussions of climate change, people are starting to feel the need to educate their communities, develop new sustainable assets, and use public space as a means to communicate these concerns. In this context, floating buildings are becoming increasingly prevalent, and relevant to contemporary urban issues.

We are vulnerable not only physically but mentally to changes in the natural world, as threats to the space of a city also pose greater questions about the society we collectively hold. This is why we are seeing greater demand for design proposals that facilitate interaction within new settings, and for higher investment in public space. The need to adapt to climate change must be absorbed by our generation and translated into new ways of creating communities and utilizing resources. Until now it has seemed difficult to imagine that humanity would be capable of changing its behaviour, but the threat of disaster coupled with an increasingly connected global population have revealed a new willingness to find novel pathways forward. We must come together to find solutions which will allow us to live alongside nature in a way that is constructive, respectful, and secure.

The story of this proposal is located between people, architecture, and consciousness. The constant interplay between real and surreal aims to bring the visitor to a state between reality and dream. When we lose ourselves in this half-sleep state, we are able to isolate an experience from everything superfluous. People can look into their subconscious and see through events without wasting attention on secondary things, fully living in their immediate sensory experience. The ambition is to amaze, using architecture to create a sense of wonder. This is the first step towards changing the public consciousness, for design solutions alone cannot solve our climate crises.

In four distinct spaces —the sewer, the floating park, the natural swimming pool, and the raft —the proposal moves onwards from the solidity of the city, through its banks, and onto its river. Without spatial borders and without defined time, water becomes the highest form of public place by both shaping space and hosting it. The cyclical journey of the seasons emphasizes the similarities in the fundamental processes of both natural and urban development. Every activity can lead back to an alternation between formation and destruction, death and rebirth.¹ From Autumn to

Winter, Spring to Summer, this narrative recalls issues we often tend to ignore.

We began with Autumn: the ‘fall’ of the visitors’ masks, the introductory moment where readers got in touch with the fundamentals of the narrative. Here the genesis and history of the Seine Valley was presented through maps, pictures, and paintings, which helped to visualize each step of this early story within the context of Paris and the Seine’s surrounding territories. In the concluding scene of Autumn, we found ourselves wandering the streets of Paris with a need to escape from the metropolis’ chaos. It was at this point that, as if in a dream, in front of us a door opened onto a tunnel to the unknown, and we who were willing to explore learned where it led.

In so doing we entered the second act of Winter, where, constrained by humidity and darkness, we experienced the start of a journey which would ultimately lead to rebirth. This underbelly of the city, which lay between the reality of the inhabited city above, and the dream of the deserted labyrinth below, held the power to expose our subconscious.

At the end of Winter’s tunnel, a slide transported us to Spring: a season of inclusion, joy, and conviviality. A moment of reconciliation between humans and water occurred; from the dark of the riverbed, we came to the light of the water’s surface. Here we had our first contact with naturally cleaned water, and were ourselves cleansed by it as we crossed through the waterfall that served as a primary element of the space. Following the path we arrived at a flourishing garden, whose beauty glorified the power of water to give life.

Finally we came to Summer: “the victory of the fertility over the waste land”², the celebration of love and by extension of life. Here we finally got to bath in the Seine, a ritual that was once so normal and now could finally be reexperienced. From there, the only task left was to climb aboard the raft awaiting us; for in this story, when one journey ends, a new one begins.

This adventure is an experience that evolves through steps, and does not arrive at an end; instead it drives us on towards a new perspective, from

which we can consciously choose our own destination.

Actions and reactions in this space are assisted and supported by the presence of water. Water as the main actor shapes every part of this journey: permeating the air with its humidity, nourishing plants and flowers with its vitamins, and regenerating our souls by cleansing our bodies. The reconnection takes place when the visitor is allowed to connect with water in its different aspects. The direct participation of users elevates the experience to a deeply personal moment of private emotion and feeling. Our senses of sight, smells, sounds, and touch are the conditions that leave marks on us. We may carry these feelings with us for a while before we fully integrate them, but they give us the necessary input to spark a change in our behaviour. The effects that an environment can have on the mind are what make architecture and design such powerful tools. The influence that a space can have on people goes further than its borders, which is why this proposal aims to be more than a building; it is an expression of community, as well as a moment of learning.

Water as a mutable element—one whose nature is constantly changing—inspired this design. The flow of the river suggests a place that nobody can own, but in which everybody can experiment. As an extension of public space, the proposed architecture aims to be freely open to everyone. Additionally, this urban public amenity will be able to offer citizens and tourists a new outlook on the cityscape, serving as a platform to observe the dynamism of Paris' skyline and connecting unexpected locations along the river. Floating buildings offer myriad opportunities to enrich a city with a collective space able to animate and serve locations throughout the harbor system. A landmark with enduring creativity and vibrancy, it can become a new attraction, serving as a floating base for events and educational features; as a vibrant movable feast able to bring people together and celebrate life; and as a space in which to experiment and relive the traditional purposes of the river that remain an indelible feature in contemporary Paris.

Now, with mass and social media, architecture is accessible from everywhere, if not physically then digitally. However, this process is not automatic. The architecture must include something unique, regardless of its subjective quality; it is only when people experience something marvelous or terrifying that they are moved to truly change or understand. If a proposal is strong conceptually, no matter the architectural form, it opens up discussion, thought, and the possibility of social change.

“No subject is terrible if the story is true, if the prose is clean and honest, and if it affirms courage and grace under pressure.”³

In order to create a strong relationship with the river, it is necessary to retrace the years when people’s lives were genuinely connected and dependent on this source. The notion of cyclical time through the four seasons was an important consideration in the development of this thesis, allowing for a discussion of something complex by dividing it into smaller, simpler sections. No less important has been the ‘time of exploration’. This experience does not in fact have a time limit; it can last a few hours, a day, or even years. It may never end as it may be repeated in cycles. The urban challenges we face due to the volatile presence of water can be transformed into valuable opportunities. Rather than simply imitating traditional amenities, architects have the power to reinvent the way space is used. This work sheds light on the development of floating spaces, a method often used in cultures where floods recur periodically. This practice has ancient roots, including the Chinampas of Mexico or the floating gardens of Gopalganj, Bangladesh.^{4,5}

Floating architecture is already starting to delineate a type of future development, yet we as a species remain largely hesitant about the application of these new technologies. How well we will adapt to the oncoming changes to our living conditions remains unclear, as do the methods by which water might be managed, controlled and planned as we do with land.

This proposal does not give an archetypal floating building, but instead provides a novel concept for how a city can develop and adapt alongside increasingly mutable conditions. As a spatial concept, the ideas presented here are applicable across many of the world’s cities. Fueled by a craving for new public places in already over-saturated urban landscapes, these will be the spaces where people can become active towards change.

¹ Northrop, Frye. *Anatomy of Criticism: Four Essays*. 1st ed. Princeton, N.J.: Princeton University Press, 1957, 131-239.

² Frye, *Anatomy of Criticism*, 158.

³ *Ibid.*, 193.

⁴ Encyclopædia Britannica. *Chinampa, Mexican Agriculture*. 2017. Retrieved from: <https://www.britannica.com/topic/chinampa> (Accessed, September 2017)

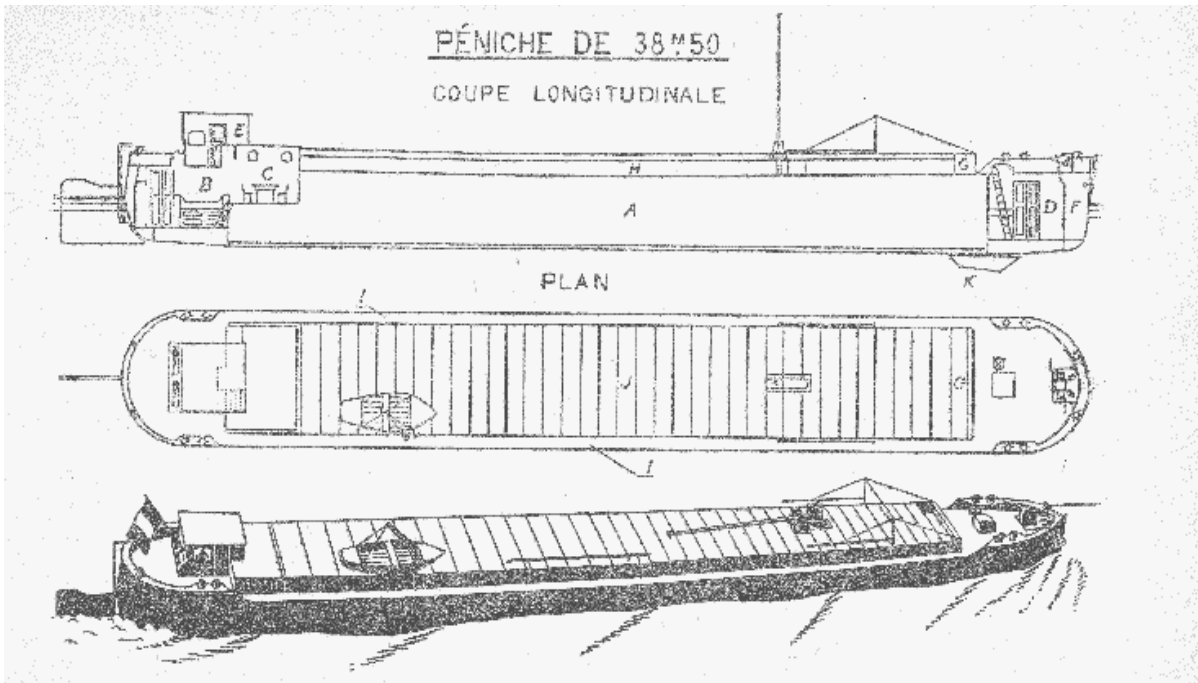
⁵ Food and Agriculture Organization of the United Nations. *Globally Important Agricultural Heritage Systems (GLAHS)*. Retrieved from: <http://www.fao.org/giahs/giahsaroundtheworld/designated-sites/asia-and-the-pacific/floating-garden-agricultural-practices/en/> (Accessed, September 2017)

The design

Barges on the Seine



5.1 Reconstruction of Pont de Choisy le Roi.



5.2 'Les Peniches', a barge typology.

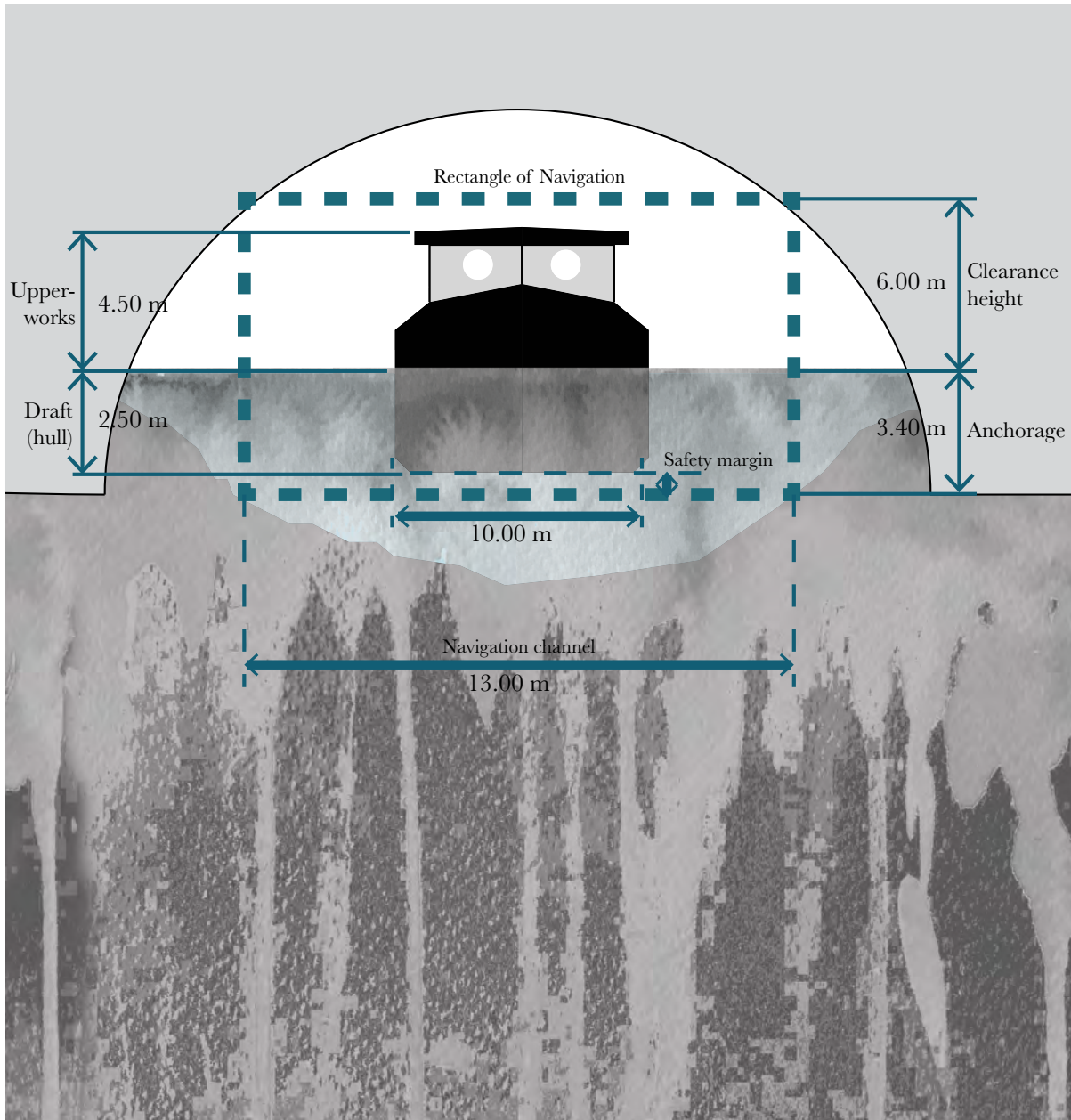
Technical design

When looking at the traditional forms of transportation in France, barges are quickly identifiable as one of the most common typologies found on French rivers and canals. A barge is a flat-bottomed boat made of wood or metal. They have been employed since the late 19th century for the transportation of heavy goods. They are generally used for short journeys across rivers, canals, and narrow waterways because of their particularly slender dimensions.¹ Some are self-propelled, while others require assistance from tugboats. In the past they would often be towed from an adjacent path by draft animals.

This thesis seeks to reinterpret and readapt this typology for new functions. Recalling the typical scaffolding of the barge, a steel structure allows us to minimize maintenance while guaranteeing a long structural lifespan. The two floating frame structures—the garden and the pool—are both operated via networks of beams and joists, albeit with slightly different elements to cover their different functions.

In the lower level, a system of air chambers allows the building to float and react to the daily tide. These technical spaces are able to control the highness of the platform from the water level, increasing or decreasing by filling specific chambers with water or air. With this mechanism the structure gains the ability to adapt to different basins, as the boat will float 2.5% lower in fresh water than in salt water.

The structure's design accounts for the constraints of navigating the numerous bridges along the Seine between Paris and Le Havre. These restrictions are challenging when the ambition is the creation of a public space. The main requirements for developing structures capable of traversing this river are dictated by the 'Marine Naval de la Seine'², a document that provides navigation rules and standards. In addition, in order to accurately anticipate the maximum physical dimensions of the floating building, it was necessary to account for differences in the river's depth. The course varies between a minimum of 3 m^[2] and a maximum of 9 m, with an average tide at Le Havre of 2.5 m every 4.5 hours.³



5.3 Rectangle of Navigation.

After taking these considerations and the dimensions of boats currently travelling on the Seine⁵ into account, the floating building's dimensions were established as 10 m wide by 30 m long with a height not exceeding 7 m, 2.5 m of which will be submerged beneath the water. Within the barge, these spaces offer a small but intense experience of vegetation and water.

Sustainability is an important aspect of the project. Consequently, the garden's irrigation system uses a combination of river water and rain water, and the whole building is powered by hydroelectricity. Both systems have been integrated into the structure so as not to damage the exterior aesthetic of the building.

By taking advantage of the competitive attitude of major cities to always be ahead in terms of avant-garde design and public renovations, this project aims to be promoted by local corporations as well as the city itself. In the meantime, maintenance will be sponsored by volunteers from the community.

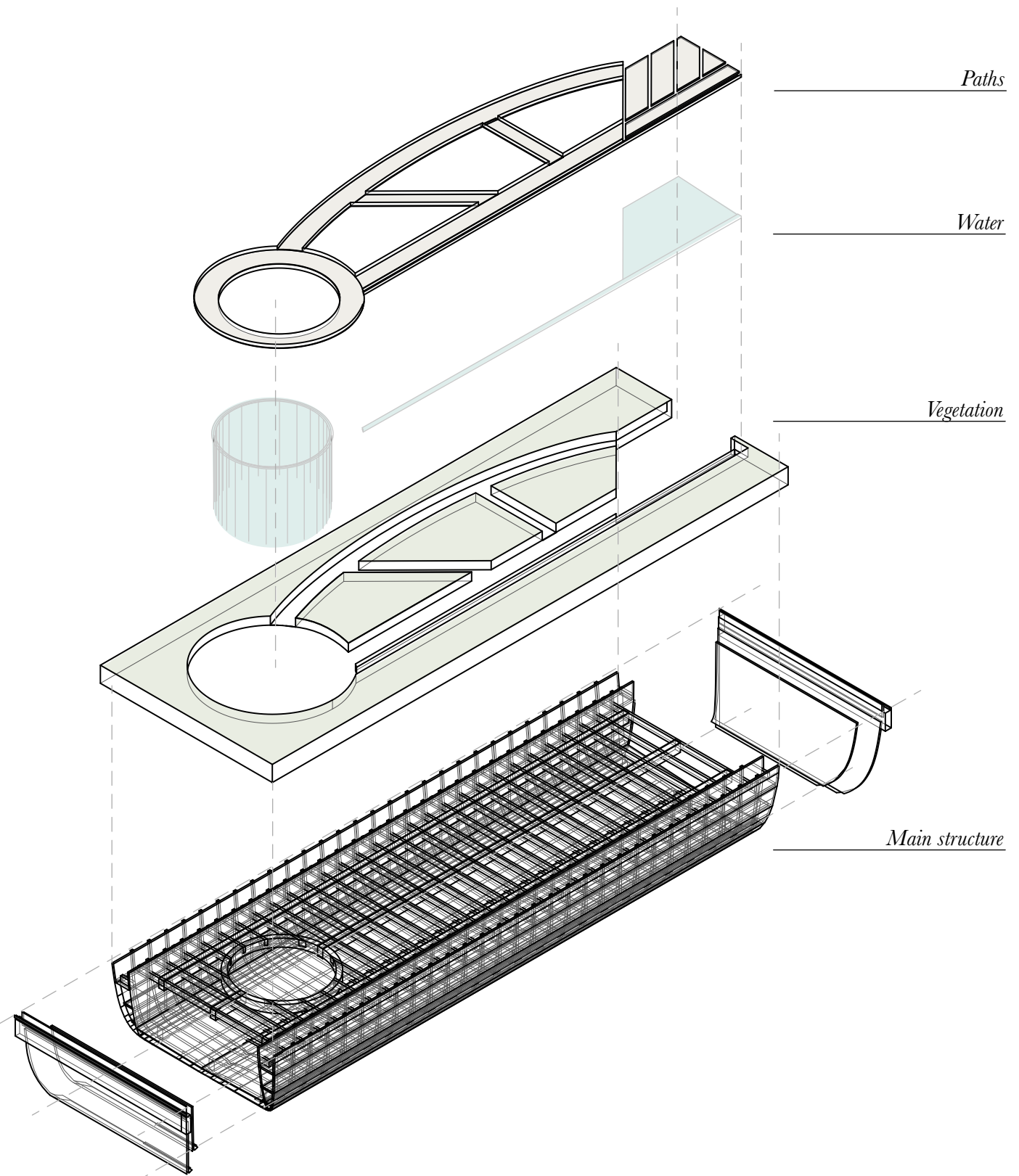
¹ Marine in sight. *Different Types of Barges Used in the Shipping World*. MI News Network (2016).

² French-waterways. *Waterway Depths, Heights and Widths* (2017).

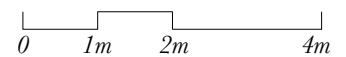
³ Tide Table Chart. *Seine River: Rouen*. From: <http://www.tidetablechart.com>.

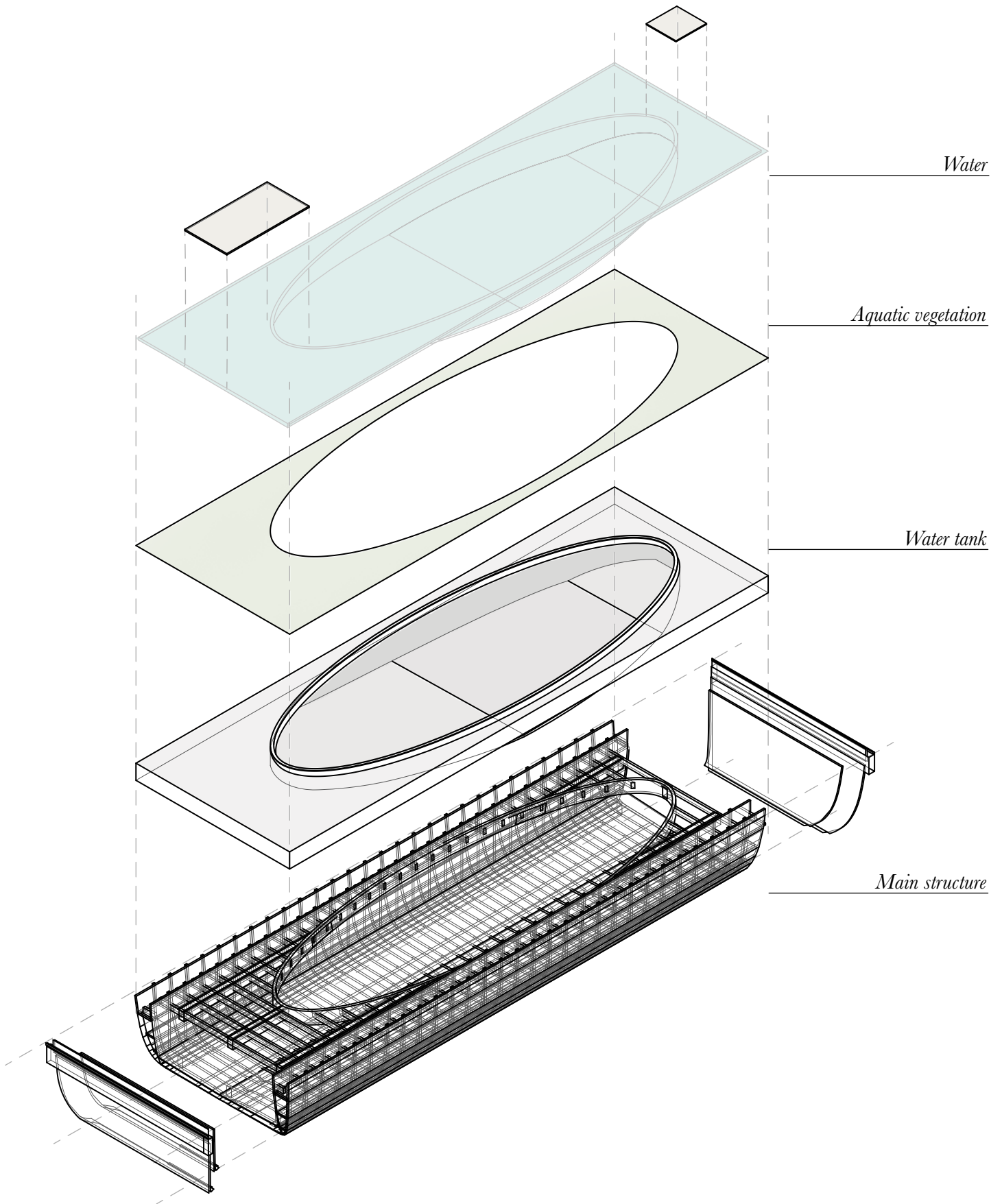
⁴ European-waterways *River Seine - from Paris to the Sea | France*. From: <http://www.european-waterways.eu/>

⁵ BateauxDeParis.com. *La Gabarre*. Compagnie des Bateaux Mouches.



5.4 The floating buildings structures.
Exploded axonometric - FLOATING GARDEN





Exploded axonometric - FLOATING NATURAL SWIMMING POOL

Bibliography

- _ Pardailhé-Galabrun, Anik. *The Birth of Intimacy: privacy and Domestic Life in Early Modern Paris*. Philadelphia: University of Pennsylvania Press.
- _ Barman, Christian. *The Bridge.:* a chapter in the history of building. Illustrated by Frank Brangwyn. london: Jhon Lane the Bodley Head Limited. New York: Dood, Mead and Company, 1926.
- _ Barker, Robert, and Richard Couotts. *AQUATECTURE: Buildings and cities designed to live and work with water*. Vicenza: RIBA, 2016.
- _ Braghieri, Gianni. *Aldo Rossi, 1931-1997*. Translated by Graham Thomson. Bologna: Zanichelli, 1981.
- _ Brandon, Raphael. *An Analysis of Gothick Architecture*. Volume II. Herbert Spencer Clark and W. Bone & Son. London: W. Kent and Co, 1858.
- _ Brettell, Caroline and James Frank Hollifield. *Migration Theory: Talking Across Disciplines*. Third edition. New York: Routledge, 2015.
- _ Brown, Sarah Annes. *The Metamorphosis of Ovid : From Chaucer to Ted Hughes*. New York: St. Martin's Press, 1999.
- _ Brown, Sarah Annes. *Ovid: Myth and Metamorphosis*. London: Bristol Classical Press, 2005.
- _ Ciriacocono, Salvatore. *Building on water: Venice, Holland, and the construction of the European lanscape in early modern times*. New York: Berghahn Books, 2006.
- _ Coan, Michel. *Performance and Appropriation: Profane Rituals in Gardens and Landscapes*. Dumbarton Oaks Research Library and Collection Washington, D.C.. University Press, 2007.
- _ Couperie, Pierre. *Paris Through the Ages: An Illustrated Historical Atlas of Urbanism and Architecture*. New York: George Braziller, 1971.
- _ Daniel, Malcom. *The Photographs of Edouard Baldus*. Canadian Centre of Architecture; Montreal.
- _ Dreiseitl, Herbert, and Dieter Grau. *Recent waterscapes & new waterscapes, planning building and designing with water*. Basel: Birkhäuser, 2013.
- _ Erlande-Brandenburg, Alain. *Notre-Dame de Paris*. Abradale Press. New York : Harry N. Abrams 1998.
- _ Flesche, Felix & Burchard Christian. *Water House*. Germany: PRESTEL, 2005.
- _ Graf, Bernhard. *Bridges that Changed the World*. Munich: Prestel, 2002.
- _ Hegewald, A.B. Julia. *Water Architecture in South Asia, a study of types, development and meanings*. Boston: BRILL, 2002.
- _ Hemingway, Ernest. *A Moveable Feast*. New York: Cribner, 2009.
- _ Koolhaas, Rem. *Delirious New York: A Retroactive Manifesto for Manhattan*. New York: Monacelli Press, 1994.
- _ Mathur, Anuradha, and Dilip da Cunha. *Design in the Terrain of Water*. Paperback, 2014.

- _ Mathur, Anuradha, and Dilip da Cunha. *Mississippi Floods: Designing a Shifting Landscape*. New Haven and London: Yale University Press, 2001.
- _ Northrop, Frye. *Anatomy of Criticism: Four Essays*. 1st Ed. Princeton, N.J.: Princeton University Press, 1957.
- _ Nillesen, Anne Loes, and Jeroen Singelenberg. *Amphibious Housing in the Netherlands*. Rotterdam: NAI Uitgevers, 2010.
- _ Mi, Young Pyo, and Jung Min Bang. *ADVANCED PUBLIC DESIGN 2, Landscape Architecture: Waterfront, Street, Park & Square*. Korea: DAMDI, 2009.
- _ Olthuis, Koen, and David Keuning. *FLOAT!: Building on Water to Combat Urban Congestion and Climate Change*. Minneapolis: Hardcover, Amsterdam, 2010.
- _ Prominski, Martin, Antje Stokman, Suzanne Zeller, Daniel Steinberg, and Hinnerk Voermanek. *RIVER. SPACE. DESIGN Planning Strategies, Methods and Projects for Urban Rivers*. Switzerland: Birkhäuser, 2012.
- _ Richardson, Tim. *Futurescapes: Designers for Tomorrow's Outdoor Spaces*. New York: Thames & Hudson, 2011.
- _ Rossi, Aldo. *Aldo Rossi, The life and works of an Architect*. Cologne: Cambridge Publishing management, 2001.
- _ Ryan, Zoe. *Building with water: concepts, typology, design*. Editor Stein Ria; Basel: Birkhäuser, 2010.
- _ Scully, Vincent, and Rafael Moneo. *Aldo Rossi: Buildings and Projects*. New York: Rizzoli.
- _ Sutcliffe, Anthony. *The Autumn of Central Paris: The Defeat of Town Planning 1850-1970*. Montreal: McGill-Queen's University Press, 1971.
- _ Tafuri, Manfredo. *La sfera e il labirinto : avanguardie e architettura da Piranesi agli anni '70*. Torino: G. Einaudi, 1980.
- _ Tafuri, Manfredo. *The sphere and the labyrinth: avant-gardes and architecture from Piranesi to the 1970s*. Cambridge, Mass: MIT Press., 1987.
- _ Taylor. *Paris Past and Present*. New York: John Lane Company, Offices of the International Studio.
- _ Temko, Allan. *Notre-Dame of Paris*. Viking Compass. New York: Viking Press, 1967.
- _ Tsang, Cindy. *Building on water a case study of the battle between environmental and social forces in Hong Kong and its effect on the harbour*. University of Waterloo. School of Urban and Regional Planning. Waterloo, Ont. 1994.
- _ Van Zanten, David. *Building Paris: Architectural Institutions and the Transformation of the French Capital*. Northwestern University, Cambridge University.
- _ Van Zanten, David. *Building Paris: Architectural Institutions and the Transformation of the French Capital, 1830-1870*. New York: Cambridge University Press, 1994.
- _ Vidler, Anthony. *The Senses of the Street and Other Essays*. The Monacelli Press.

_ Young Pyo Mi, Jung Min Bang. *Avanced Public Design 2, Landscape Architecture: Waterfront, Street, Park & Square*. Korea: DAMDI, 2009.

_ Zutcliffe, Anthony. *The Autumn of Central Paris: the Defat of Town. Planning 1850-1970*. McGill-Queen's University Press, Montreal, 1971.

_ Hugo, Victor, *Notre-Dame de Paris*. London: Dent London, 1964.

_ Carr, Frank G. G.. *Sailing Barges*. 3rd Edition. London: Conway Maritime Press, 1971.

Journal Article

Coutris, R. *The River Pollution Classification System Applied to the Seine Basin*. Houille Blanche no. 6 (1963): 647-653.

Fontaine, P. *A Method of Investigating River Basins in which the River Reacts to Renewed Rainfall, Applied to the Seine Floods, and in Particular to those which Occured in January and February 1955*. Houille Blanche (1955): 613-618.

Sitography

_ Basset, Chez. *Vue d'optique - Vue du bassin du canal de l'Ourcq à la Villette près Paris*. Edition Originale.com. Retrieved from: <https://www.edition-originale.com/fr/regionalisme-france/paris-ile-de-france/-vue-doptique-vue-du-bassin-du-canal-1800-46153> (Accessed, November 2017)

_ Bernini, Gian Lorenzo. *Piazza Navona, Fontana dei quattro fiumi*. Gli Scritti centro culturale. Retrieved from: http://www.glisritti.it/gallery3/index.php/album_066/bernini-fontana-044 (Accessed, October 2017)

_ City View. *Paris 19eme Seicle Travaux Haussman, 1590*. Retrieved from: <http://cityguide.paris-is-beautiful.com/wp-content/uploads/2013/09/1590-PARIS-19EME-SIECLE-TRAVAUX-HAUSSMANN.jpg> (Accessed, November 2017)

_ Crane, Walter. paint on cavas, years 1903-1909. *The Masque of the Four Seasons*. Image by sakrogoat. Retrieved from: knightofleo, <http://knightofleo.tumblr.com/post/152607522298/sakrogoat-walter-crane-the-masque-of-the-four> (accessed September 26, 2017)

_ Davray-Piékokolek, Renée. *L'Ile de la Cité et ses alentours vers la in du seizieme siecle*. Carnavalet, Histoire de Paris. Retrieved from: <http://www.carnavalet.paris.fr/fr/collections/l-ile-de-la-cite-et-ses-alentours-vers-la-fin-du-seizieme-siecle> (Accessed, November 2017)

_ D'Anville, Jean-Baptiste Bourguignon. *Map of Lutetia*. Ancient History Encyclopedia, April 2012. Retrieved from: <https://www.ancient.eu/image/342/> (Accessed, November 2017)

_ De la Mare, Nicolas and Julien d'Ami. *Second Map (c. 508)*. Wikipedia, last modified October 2015. Retrieved from: https://en.wikipedia.org/wiki/Eight_maps_of_Paris_from_Traité_de_la_police#/media/File:Plan_de_Paris_Lutece2_BNF07710745.png (Accessed, November 2017)

- _ De la Mare, Nicolas. *Plan of Paris in 1223*. Wikipedia, last modified October 2015. Retrieved from: https://commons.wikimedia.org/wiki/Chronologic_old_maps_of_Paris#/media/File:Plan_de_Paris_1223_BNF07710747_-_Gallica.jpg (Accessed, November 2017)
- _ Dominique Perrault Architecture / DPA-ADAGP. *The Ile de la Cité prepares its reunion with the Seine thanks to floating platforms*. Reinventer la Seine. Call for innovative projects. Retrieved from: <http://www.reinventerlaseine.fr/en/> (Accessed, September 2017)
- _ Encyclopædia Britannica. *Seine River*. 2017. Retrieved from: <https://www.britannica.com/place/Seine-River> (Accessed, September 2017)
- _ Encyclopædia Britannica. *Chinampa, Mexican Agriculture*. 2017. Retrieved from: <https://www.britannica.com/topic/chinampa> (Accessed, September 2017)
- _ Eoutouring. *Picture showing house boats on the River Seine close to the Pont Neuf bridge*. Retrieved from: http://www.eoutouring.com/images_river_seine.html (accessed February, 2017).
- _ Food and Agriculture Organization of the United Nations. *Globally Important Agricultural Heritage Systems (GIAHS)*. Retrieved from: <http://www.fao.org/giahs/giahsaroundtheworld/designated-sites/asia-and-the-pacific/floating-garden-agricultural-practices/en/> (Accessed, September 2017)
- _ France.fr. *The historic heart of Paris jumps into the future*. Retrieved from: <http://us.france.fr/en/events/historic-heart-paris-jumps-future> (Accessed, September 2017)
- _ French-waterways. *Waterway Depths, Heights and Widths*. 2017. Retrieved from: <https://www.french-waterways.com/practicalities/canal-depths/> (Accessed, September 2017)
- _ Géoportail. Retrieved from: <https://www.geoportail.gouv.fr/plan/92024/clichy> (accessed December, 2016)
- _ Gli Scritti centro culturale. *Gian Lorenzo Bernini, piazza Navona, Fontana dei quattro fiumi*. Retrieved from: http://www.gliscritti.it/gallery3/index.php/album_066/bernini-fontana-044 (Accessed, October 2017)
- _ Google Map. *Paris, France*. Retrieved from: <https://www.google.ca/maps/place/Paris,+France/@48.85592,2.312862,13.39z/data=!4m5!3m4!1s0x47e66e1f06e2b70f:0x40b82c3688c9460!8m2!3d48.856614!4d2.3522219?dcr=0> (accessed December, 2016).
- _ Grand River Conservation Authority. *Grand River Watershed Water Management Plan*. (2014) Retrieved from www.grandriver.ca (Accessed, September 2017)
- _ Greek Myths & Greek Mythology. *The myth of Theseus and the Minotaur*. 2017. Retrieved from: <https://www.greekmyths-greekmythology.com/myth-of-theseus-and-minotaur/> (Accessed, September 2017)
- _ Gray, M. Samuel. *Proposed Plan for a Sewerage System, and for the Disposal of the Sewage of the City of Providence*. Providence Press Company, Printers to the City, 1884. Retrieved from: http://www.sewerhistory.org/grfx/wh_region/parisl.htm (accessed September, 2017)
- _ Harlingue and Roger-Viollet. *Pêcheurs à la ligne à la pointe ouest de l'île Saint-Louis*. 1935. Retrieved from: <https://soundlandscapes.wordpress.com/category/paris-streets/quai-de-lile-saint-louis/> (accessed September 26, 2017)
- _ Harper. Illustration, 1854. *Life in Paris - Sketches Above and Below Ground*. Harper's New Monthly

- Magazine, Volume 8, Issue 45 (Feb. 1854), p.306. Retrieved from: http://www.sewerhistory.org/images/w/wef/wefh/1854_wefh01.jpg (accessed September, 2016)
- _ Henri Garat Mairie de Paris. *Port de Montebello*. Reinventer la Seine. Retrieved from: <http://www.reinventerlaseine.fr/en/sites/1326-port-de-montebello.html> (Accessed, September 2017)
- _ Historic Cities. *Lutetia, Vulgari nomine Paris, urbs Gallia maxima*. Retrieved from: http://historic-cities.huji.ac.il/france/paris/maps/braun_hogenberg_I_7.html (Accessed, November 2017)
- _ History for the Relaxed Historian. *Historical Map of Revolutionary Paris, 1789*. Retrieved from: http://www.emersonkent.com/map_archive/revolutionary_paris_1789.htm (Accessed, November 2017)
- _ Hugo, Victor. *Jean Valjean*. Thomas Y. Crowell - France. II capter. Ancient History of the Sewer, 1887: 88. Retrieved from: https://books.google.ca/books?id=uEEVAQAIAAJ&dq=conscience+of+the+city+victor+hugo&source=gbs_navlinks_s (accessed September, 2017)
- _ Hugo, Victor. *Les Misérables*. 1900: 498-510. Retrieved from: <https://archive.org/stream/lesmisérables1900hugo#page/518/mode/2up> (accessed September, 2017)
- _ Hugo, Victor. *Les Misérables*. 1900: 498-508. Retrieved from: <https://archive.org/details/lesmisérables1900hugo> (accessed September, 2017)
- _ Hugo, Victor. *Les Misérables*. 1900: 497. Retrieved from: <https://archive.org/stream/lesmisérables1900hugo#page/518/mode/2up> (accessed September, 2017)
- _ Imprimerie Nationale, *Les Travaux de Paris, 1889*. Retrieved from: <http://places.designob-server.com/slideshow/cartographic-grounds-exhibition/37632/2574/6> (accessed September, 2016)
- _ International Herald Tribune. *1910: The Great Flood in Paris*. The New York Times. June 3, 2016. Retrieved from: <https://iht-retrospective.blogs.nytimes.com/2016/06/03/1910-the-great-flood-in-paris/> (Accessed, September 2017)
- _ Jacques Boyer / Roger-Viollet. *Stable on a barge on the Seine. Paris*, in 1908. Retrieved from: <http://www.parisenimages.fr/en/collections-gallery/5482-12-stable-a-barge-seine-paris-1908> (accessed September 26, 2017)
- _ Loyola University Chicago. *Medieval Studies*. Retrieved from: <http://www.luc.edu/medieval/labyrinths/> (accessed September, 2016)
- _ Mairie de Paris. *Plan Local d'Urbanisme*. Version 37. August, 2016. Retrieved from: http://plu-enligne.paris.fr/plu/page/PLU?page_id=1 (Accessed, September 2017)
- _ Majesty Maps and Prints. *Paris Turgot map wallpaper*. Retrieved from: <https://www.majestymaps.com/product/paris-turgot-map-wallpaper/> (Accessed, November 2017).
- _ Mission d'Etude Ilé de la Cité. *Ile de la Cité- the Challenge*. Retrieved from: <http://www.mission-iledelacite.paris/the-challenge> (Accessed, September 2017)
- _ Nessi, Messi. *A Boat Trip through the Paris Sewer*. November. 2015. Retrieved from: <http://www.messynessychic.com/2015/11/03/a-boat-trip-through-the-paris-sewer/> (accessed September, 2017)
- _ Pavillon de l'Arsenal. *Ile Saint Etienne, the artificial beach of Meloun, 1950*. Retrieved from: <http://>

- www.pavillon-arsenal.com/fr/expositions/10392-iles-de-la-seine.html (accessed September 26, 2017)
- _ Paris, Official website of the Convention and Visitors Bureau. *Musée des égouts de Paris*. Retrieved from: <https://en.parisinfo.com/paris-museum-monument/71499/Musee-des-egouts-de-Paris> (accessed September, 2017)
- _ Penhook. *Sequana, Celtic River Goddess*. Retrieved from: <http://www.penhook.org/sequana2.htm> (Accessed, September 2017)
- _ Pérelle, Adam. *La Porte Saint-Bernard (1638-1695)*. Retrieved from: https://commons.wikimedia.org/wiki/File:Porte_Saint-Bernard_Adam_Perelle.jpg (accessed September 26, 2017)
- _ Plans de péniches Freycinet et de bateaux fluviaux. *Plan de Péniches type Freycinet (Plan of a Péniches Freycinet)*. Retrieved from: <https://www.pnich.com/planbat.htm> (Accessed, October 2017)
- _ Planetevoyages. *Players of the Champion of France with bicycle*. Retrieved from: <https://soundlandscapes.wordpress.com/category/paris-streets/quai-de-lile-saint-louis/> (accessed September 26, 2017)
- _ Planetevoyages. *Plongeon du pont d’Lena. Paris 16ème arrondissement, 1944*. Retrieved from: <http://planetevoyages.newfreeforum.com/t226-quand-les-parisiens-se-baignaient-dans-la-seine> (accessed November, 2016)
- _ Planetevoyages. *L’amphibocycle, bicyclette amphibie sur la Seine, 1909*. Retrieved from: <http://planetevoyages.newfreeforum.com/t226-quand-les-parisiens-se-baignaient-dans-la-seine> (accessed November, 2016)
- _ Sportspace. *Poolboat, Piscine Joséphine Baker*. Retrieved from: <http://www.sportspace.eu/en/project/piscine-josephine-baker/> (accessed February, 2017)
- _ Suskind, P. *Perfume. The story of a murderer*. The Brilliant International Bestseller. Part I. 1986: 3. Retrieved from: <http://kadebg.com/wp-content/uploads/2010/07/perfume-patrick-suskind.pdf> (accessed September, 2017)
- _ Raguenet, Nicolas-Jean-Baptiste. *La joute des mariners. Paris, 1756*. Retrieved from: https://upload.wikimedia.org/wikipedia/commons/1/15/Raguenet%2C_La_joute_des_mariners-2_denoised.jpg (accessed September 26, 2017)
- _ Raguenet, Nicolas-Jean-Baptiste. *View of Paris from the Pont Neuf (1763)*. The Getty Center, Object 642. Wikipedia, last modified October 2015. Retrieved from: https://en.wikipedia.org/wiki/Paris_in_the_18th_century#/media/File:Nicolas-Jean-Baptiste_Raguenet,_A_View_of_Paris_from_the_Pont_Neuf_-_Getty_Museum.jpg (Accessed, November 2017).
- _ Reinventer la Seine. *Call for innovative projects*. March 2016. Retrieved from: <http://www.reinventerlaseine.fr/en/> (Accessed, September 2017)
- _ Reinventer la Seine. *The Seine Valley*. Retrieved from: <http://www.reinventerlaseine.fr/en/axe-seine/> (Accessed, September 2017)
- _ Reinventer la Seine. *Port de Montebello*. Retrieved from: <http://www.reinventerlaseine.fr/en/sites/1326-port-de-montebello.html> (Accessed, September 2017)
- _ Revolvly. *Seine River*. Retrieved from: https://www.revolvly.com/main/index.php?s=Seine%20River&item_type=topic (Accessed, September 2017)

- _ Roger, Viollet. 1935. Retrieved from: izismile, http://izismile.com/2011/07/25/amazing_pictures_of_old_paris_30_pics.html?fb_comment_id=10150238397891157_10153254324506157#f2627e96cad25a (accessed September 26, 2017).
- _ Seurat, Georges-Pierre. Oil on canvas, 207.6 cm × 308 cm, 1884. Totally history. Retrieved from: <http://totallyhistory.com/wp-content/uploads/2011/12/A-Sunday-Afternoon-on-the-Island-of-La-Grande-Jatte.jpg> (Accessed, October 2017)
- _ Shutterstock. *Aerial view of Paris with Notre Dame cathedral*. Retrieved from: <https://www.shutterstock.com/video/clip-21298456-stock-footage-aerial-view-of-paris-with-notre-dame-cathedral.html?src=rel/29493448:4/gg> (Accessed, November 2017)
- _ Sokolsky, Melvin. *The Bubble series, 1963*. Retrieved from: <https://s-media-cache-ak0.pinimg.com/originals/0c/5c/1c/0c5c1c9d7290c36fe27544b218357771.jpg> (accessed February, 2017)
- _ Statista, The Statistics Portal. *Number of international overnight visitors to Paris from 2010 to 2016*. Retrieved from: <https://www.statista.com/statistics/310377/international-overnight-visitors-to-paris/> (Accessed, June 2017)
- _ SNCF, openarchives. *Recostruction of Pont de Choisy le Roi*. Retrieved from: <http://openarchives.sncf.com/archive/trsardo1059> (Accessed, October 2017)
- _ Take me to Paris Apartments. *The Friday Five: The Top 5 Places to Spend Summer by the Seine*. Retrieved from: <https://takemetoparisapartments.wordpress.com/2014/07/25/the-friday-five-the-top-places-to-spend-summer-by-the-seine/> (Accessed, October 2017)
- _ Tourisme Flouviail. *Voies Navigable de France*. 2013. Retrieved from: http://www.vnf.fr/vnf/bibliotheque.vnf?action=display&occ_id=9677 (Accessed, September 2017)
- _ Victorian Paris. *Life in 19th Century Paris. The Guide to Gay Paree 1869 – Part 7: Sightseeing*. Retrieved from: <https://victorianparis.wordpress.com/2011/09/11/the-guide-to-gay-paree-part-7-sightseeing/> (Accessed, September 2017)
- _ Vintage Everyday. *Paris Under Water, Incredible Vintage Pictures of Paris Great Flood in 1910*. December, 2015. Retrieved from: <http://www.vintag.es/2015/12/paris-under-water-incredible-vintage.html> (Accessed, November 2017)
- _ VNF, Voies Navigables de France. *Rectangle of Navigation*. Retrieved from: http://www.vnf.fr/vnf/img/cms/VNFhidden/carte_des_mouillages_VNF_2015_version_imprimable_20150922101109.pdf (Accessed, October 2017)
- _ Wikiwand. *La Grande Jatte, toward Clichy, 2006*. Retrieved from: http://www.wikiwand.com/en/A_Sunday_Afternoon_on_the_Island_of_La_Grande_Jatte (accessed February, 2017)

