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ANTWERP'S PETROLEUMSCAPE

Imagining the Carbon Age

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Since the nineteenth century, oil has been a major source of economic growth in the port city of Antwerp. It has been stored, transported, refined, and used to produce petrochemicals. Most of these activities once took place in close proximity to the city center, including along the quays of the River Scheldt. Today, immense surfaces are devoted to activities related to oil, but in new port zones far outside the city's residential areas. In fact, the sum of the surfaces of petroleum-related sites is bigger than the size of the city of Antwerp inside the Ring Road. Although you can still sense its presence at night when the horizon lights up with flares from the petrochemical port, the oil industry is much less visible than it was a century ago.

The port has dominated the urban space of Antwerp for many centuries, just as it has dominated the way citizens imagine the city. The port has long been considered a more important part of the city than the parts of the city where people live. This is partly because of the power of the oil industry served by the port. The relationship between the city and the physical presence and expansion of the oil industry is clearly a matter of the imaginary. Inhabitants have been ready to offer parts of their urban comfort and tranquility and accept being shoved and hustled by the ruthless machinery of a port's expansion and transformation in exchange for their port city gaining in aura and influence. This is true in general in the era of the oil industry's first activities inside the city as well as in the city's immediate surroundings, when it gave form to the harbor city of Antwerp. The construction of quays and canals pushed out neighborhoods, docks replaced fortifications. This is also true, on a regional scale, when in the twentieth century, the port was extended to the Dutch border, sweeping away villages and agricultural fields. Oil was not a consequence of the development of modern Antwerp, but the driving force of it: it shaped the city's deepest structures.

Throughout this period, oil has also shown its dark sides in Antwerp, as a driving force for wars, as a cause of explosions and fire, and as a source of environmental pollution. Indeed, oil seems to have made a strong impression on inhabitants when it comes to its tremendous powers of destruction at different time scales, whether in the short term by fires and explosion or in the long term by the exhaustion of natural resources, the pollution of

the human biotope, or the breakdown of Earth's renewability. The impact of petroleum's dark sides on various levels of a city is, in a port like Antwerp, clearly observable. Since the first years of its industrial presence in Antwerp, petroleum has been the cause of accidents, terrifying the city's inhabitants and decision makers. One result of these accidents was that industrial activities linked to oil were progressively moved away from the city. Worldwide, oil became a geopolitical weapon and this made a petroleum port like Antwerp particularly vulnerable. Environmental pollution due to industrial oil activities has only recently begun to be considered unacceptable, at the same time as the petroleum industry's architectural and urban heritage is being recognized as authentic and worthy of preservation. As Antwerp takes stock of and reimagines its relationship with oil, I propose that oil be regarded as one essential part of what has been an age dominated by carbon.

Wealth, Growth, and Development

In the development of Antwerp, the size of the port and the city's wealth both grew as a result of oil. Historically, Antwerp developed first on the right bank of the river, with canals entering deep inside the city, and later as a large port for cargo with docks, cranes, warehouses, and industrial plants. Since the Austrian and Napoleonic harbor extensions of the eighteenth and early nineteenth centuries—and actually since the first urban extensions by Gilbert Van Schoonbeke in the sixteenth century—the Antwerp port has grown mainly to the north. Although oil arrived relatively late in the city's history, it had a radical impact. In the second half of the nineteenth century, long-haul trade to Africa and Asia was starting, and trade through Antwerp with the German hinterland—including the trade in oil—was booming.¹ During a long period of public works between 1875 and 1911, when Antwerp was emerging as a European hub and bursting at the seams as a trading city, the city government took on the task of straightening the quays of the Scheldt, at the city's waterfront. The old canals, or fleets (*vlieten*), running perpendicular to the river into the city were filled in. New docks were built in the northern part of the city to satisfy the needs of the growing trade.

From the last quarter of the nineteenth century on, newspapers, magazines, and books advertised how fast the production of oil was continuously increasing and how oil was one of the main factors behind the booming of Antwerp's port activities. In his 1920 book *Petroleum*, A. J. Hendrix, for instance, pointed out that during the year before World War I, the world produced more than 700 million hL of petroleum.² In 1910, more than 2 million hL were imported to Antwerp, with more than half originating from the US and the rest coming from countries such as Romania, Russia, and Galicia. Of this imported petroleum, more than three quarters was consumed in Belgium, one quarter was again exported, mainly to the Netherlands and Germany, with only a small part going to other countries. Throughout the first half of the twentieth century, the progression continued. In 1928, the big Kruisschans Lock, better known as the Van Cauwelaert Lock, was inaugurated. It was 270 m long and 35 m wide. The lock was situated closer to the North Sea than the already existing locks and allowed huge vessels and oil tankers to enter much earlier into the docks and make an economically important gain in time, although the sluicing itself was very time consuming.

After World War II, Antwerp became Europe's biggest chemical cluster, thanks to the Marshall Plan, the American reconstruction plan for Europe. Antwerp's harbor had suffered less destruction than other large Western European harbors during the war, despite

important damage. Notably, Petroleum Zuid, the petroleum port in the south of Antwerp, was almost completely destroyed by numerous bombings. Nevertheless, Antwerp was one of the only ports that was able to resume normal operations very soon after the war. In 1949, the government authorized the construction of a large Total refinery on the right bank of the Scheldt. It was located south of the Kruisschans Lock, near the Marshall Dock built for inland shipping, and west of the new Petroleum Dock for the international maritime transport of oil. The site opened in 1951 housed a large refinery, built in association with BP. In the mid-1950s, the first chemical installations, specializing in the manufacture of plastics, were erected near the refinery, shortening the transportation and production chain, and increasing Antwerp's industrial diversity.³ Initially, the site of the refinery was a marshy polder, but using 5 million m³ of hydraulic backfill, it was raised by 5 m to put it above the high tide sea level of the Scheldt.⁴ A port city like Antwerp has to protect extensive international investments. Pushed by global industrial profit games, port cities function on power mechanisms that go beyond national political players and policies. Survival logics of big ports overrule national powers and force companies and port authorities to look for solutions unimaginable for local national actors. For instance, in order to continue to exist as a global player, Antwerp was forced to look for technical solutions solving the problem of its geographical confinement.

Despite the huge dock expansion projects it inaugurated in the 1950s, the port of Antwerp continued to suffer from a lack of accessibility. This became more and more problematic due to the increasing draft and tonnage of ships, especially petroleum tankers. Although a maritime port, Antwerp, located near the northern border of Belgium, is situated on the Scheldt, which, from the Belgian border to the North Sea, flows over Dutch territory for about 80 km. For decades, the responsibility for the maintenance and the dredging of the Scheldt has been a point of discussion between both countries. Tankers up to 80,000 tons can reach the Antwerp refineries. When the Antwerp oil installations risked becoming inaccessible, both the Dutch and the Belgian governments authorized the construction of a 102-km-long pipeline transporting crude oil from Rotterdam to Antwerp. The pipeline was built in the second half of the 1960s and began functioning in 1971.

To keep up with the continuous increase in shipping capacities, ever-bigger docks, quays, and surfaces were built for transshipping, storing, and distributing goods. Additions included the Delwaide Dock, opened in 1979, the Europa Terminal in 1990, and later the North Sea Terminal in 1997. In the 1970s, the port of Antwerp was progressively expanding to the north, until eventually it would reach the Dutch border. Consequently, the decision was made to cross the Scheldt and start developing port areas in the polders of the left bank. In 1989, the Berendrecht Lock was opened to allow giant ships to access the docks efficiently and safely.

Mental Landscapes of Numbers and Symbols

Showing the port's effective growth implicitly prefigures its future expansion as it affirms and prepares the mindset for it. Since the last quarter of the nineteenth century, Antwerp's mental landscape included images undergirding the paradigm of unstoppable modernization. In this, oil plays a central role. This mental landscape—in a way, the representational petroleumscape—is in constant dialog with the physical reality of buildings, urban forms, and infrastructures, with symbolic gestures, allegorical sculptures, and paintings, and with names of places and institutions.

But, besides ornament and architecture, oil's evocation of magnitude, wealth, and power is also expressed through data and statistics. In an international context, harbors are often compared and ranked according to size, growth, and quantity—and oil plays an important role in those rankings. Administrators, industrialists, economists, and politicians like to promote the international importance of big ports like Antwerp by using numbers in a manner apt to overwhelm a lay audience. Numbers are used to emphasize the dynamic aspects of flows and stocks visually evoked by the presence of reservoirs, pipelines, and other technical infrastructure. The use of grandiloquent discourse and quantitative data is part of the port's communication routine. It concerns not only economic and technological aspects, but also figures concerning the size, surface area, and scale of docksides, shipping, and port infrastructure.

In 1952, for instance, the *Société Industrielle Belge de Pétroles* published a brochure on the construction and functioning of its brand-new Kruisschans Refinery, where “5,000,000 man-hours have been devoted to the erection of this industrial complex with an annual processing capacity of approximately 1,800,000 tons.”⁵ The refinery's impressive size and productivity were communicated using imageries of quantification:

In the first eight months of the refinery's operation, about 80 ocean-going vessels unloaded more than 1,200,000 tons of crude oil, and 27 ocean-going tankers loaded more than 400,000 tonnes of product. More than 600,000 tons have already been shipped by around 1,300 barges and the same number of tank cars have taken over 35,000 tons of finished products.⁶

The text was accompanied with wide aerial photos of the installations, details of complex construction works, maps of various scales, and day and night views of the splendid high-tech installations after completion.

The Berendrecht Lock was also praised for its gigantic size. Newspapers and promotional publications repeatedly stated that the lock was the biggest in the world because it could handle more than 100 million tons of goods in a year. Its size of 500 m in length was illustrated in architectural terms by explaining that it could contain “four times the length of Antwerp's Onze-Lieve-Vrouw cathedral.”⁷ Citing its place in the world's port rankings and confirming that the port is home to the biggest petrochemical cluster in Europe and to the second-largest complex in the world, after only Houston, Texas,⁸ have been frequent rhetorical devices intended to evoke pride in the city.

The representational petroleumscape also takes shape in other ways, including spectacular architecture. In 2007, the decision of the Antwerp Port Authority to build an enormous new administrative building in the middle of the port was not just a strange whim. It was meant to serve as a city landmark that could be used for marketing the city and improving its visibility. This branding policy for city and port was a sign of its time more than a need, and part of a contemporary trend of “star architecture” serving economic and commercial goals. The new project for the Port Authority administration was to be added to the existing fire station building, a big building from the early twentieth century that was designed to resemble the seventeenth-century Antwerp City Hall. The location of the so-called Port House was chosen because it was deep in the harbor and close to an elegantly designed viaduct, planned to be part of Antwerp's northern ring road. At that spot, it would have been visible from passing cars and trucks. Unfortunately, the plans for the viaduct were canceled.

FIGURE 13.1 The Havenhuis, housing the Port Authority Administration at the Kattendijk Dock in Antwerp in 2016. The extension designed by Zaha Hadid Architects refers both to the hull of a boat and to a cut diamond reflecting sunlight. Photograph by Tor-sade de Pointes.

Zaha Hadid's winning design for the building (Figure 13.1) illustrates, probably in the clearest way possible, the city government's desire for imagery reflecting the past, present, and future of the city's grandeur. Hadid's design sits on top of the fire station. Like the city hall itself a long time ago, the fire station once burned down and was then restored to host the Port Authority administration. It is located near the Hout Dock in the northern part of the old harbor of Antwerp, dating from the early days of the Industrial Revolution, where formerly, until the end of the nineteenth century, the oil ships, barrels, and tanks were concentrated. Hadid's spectacular building was built between 2009 and 2016, the year of her death. It resembles a huge vessel navigating the clouds, while its glass and metal skin is faceted like a cut diamond, a symbol of Antwerp's diamond industry, which like the port, is ranked among the world's leaders.

Oil, a Geopolitical Weapon

Besides the fact that it has exerted an important material and spatial impact on Antwerp's port and city development and has generated a mental petroleumscape of data and symbols referring to wealth, modernity, and grandeur, oil is also a means of power. Its global economic dynamics and its infiltration deep into our society's daily life and technology have generated an efficient geopolitical power in the hands of governments and industrial groups. Petroleum's power is based on its essential presence, its wide diffusion, and its diversification at all levels and in all activities of society.

This power was explained by the Belgian Louis Gérard Nauwelaerts, author of two books on oil: his 1936 reference work *Petroleum*, written in Dutch and translated into German, Hungarian, and Polish, and his 1939 *Het groene goud* ("petroleum") ("The green gold petroleum," with "green" referring to the natural color of extracted oil), a collection of four of his lectures on oil.⁹ For Nauwelaerts, oil has replaced gold as a global power value, the main reason being that the concentrated ownership of gold has lost its symbolic power.

In recent times, real power is based on the use and ownership of the means of production.¹⁰ In that context, petroleum is probably the purest form of power. Nauwelaerts declares that oil was only at the beginning of its global ascent.¹¹ He explains that petroleum, as a result of its various forms and levels of integration in society, is resistant to crises because its economic demand is generated by basic human needs like mobility, transportation, and heating. The improvement of social welfare in various nations, he argues, relies on the stability and continuous development of the international petroleum industry—a compelling illustration of the feedback loop as described by Carola Hein.¹² According to Nauwelaerts, oil is the “biggest conquest of the 20th century” and “one of the most important milestones of History,” and has only begun to improve modern life.

From the start, petroleum had two primary qualities: it was technologically a multifaceted substance and it was immensely attractive in economic terms. Based on these qualities, it is not difficult to understand how it has been used, in many ways, as a geopolitical weapon and why it has played a primary role in international political strategies. Antwerp had a long tradition of using its geographical and political situation to its advantage.¹³ Under various occupiers—Spanish, French, Dutch—the citadel of Antwerp served as a place of protection and defense, but even more, it was a place built for controlling the citizens of Antwerp. On a crossroad between the Netherlands, France, and Germany, it was a highly strategic stronghold and an important port, although completely dependent on free passage over the Scheldt to the North Sea. Napoleon's decision to build new docks and shipyards for the military development of Antwerp was inspired by his vision, expressed through his well-known sally, that the harbor on the Scheldt was “a pistol pointed at the heart of England.”

Petroleum's importance in geopolitical affairs can be observed before World War II when its power was made effective by means of embargoes. At the end of the 1930s, when the threat of war was high, nations like the US, Japan, and Germany were turning their normal commercial and industrial activities into war economies. When Mussolini invaded Ethiopia in 1935 for his own domestic political reasons, oil proved a valuable international weapon: the Society of Nations decided to take sanctions against Italy by closing down the supply of oil products as was suggested by many media. The world understood this would have an immediate effect on Italy: “L'embargo sur le Pétrole, c'est la paix!”¹⁴

An example of oil's geopolitical power in connection with the port of Antwerp occurred when the Arab Petroleum Exporting Countries proclaimed an oil embargo in 1973, in reaction to Israel's Yom Kippur War. It set off a raw materials boom which would have long-term policy consequences.¹⁵ The big oil-producing Soviet Union formed a storage terminal company called Nafta, together with some European investors. Nafta built a large oil storage terminal in Antwerp, with a capacity of about 1 million tons, and there was even talk, for a while, of building a refinery. From the Antwerp terminal, petroleum was shipped to buyers all over Western Europe and the US.¹⁶ Nafta set up its own network of wholly owned and financed filling stations. The US hoped that this and other developments would keep the Soviet Union from reverting to autarchy, but the consequences were minimal.

Fears of Devastation

Alongside the imaginary of the urban wealth and magnitude of the Antwerp port city development in relation to oil, a darker side of oil also existed. From a historical perspective,

Antwerp's urban planning and physical organization was partly shaped in response to fires and explosions related to oil's risky presence close to the city.

Historically, even before petroleum, Antwerp had already suffered quite a lot of urban violence by fires and explosions. The fire consuming in flames the rich and beautiful City Hall, mentioned earlier, was like a harbinger of the city's fate. Finished only ten years before, City Hall burned down in 1576 during the Spanish Fury, by a fire ignited by revolting Spanish soldiers (Figure 13.2). It was also by means of fire that the Dutch army at the end of the sixteenth century tried to attack the Spanish stronghold of Antwerp, more precisely the pontoon bridge blocking off the Scheldt from all harbor traffic. It steered ships with explosives, so-called “infernal machines” or “hellburners,” onto the bridge, which caused heavy loss of life after exploding. These events symbolize the violent context of the port city, its huge commercial and military challenges as well as the fragile reality of wealth and political power. A complete and terrible destruction by bombardment and fire was also the fate of the Antwerp citadel when the huge, originally Spanish, fortification was occupied by the Dutch in the early nineteenth century and attacked by the French, who did not leave two stones on top of one another.

A more recent example of Antwerp's difficult relationship with fire can be found in the opening event of Antwerp 93: Cultural Capital of Europe, which featured artistic pyrotechnics by Pierre-Alain Hubert.¹⁷ The French fire artist was asked to open the European cultural year with fireworks on the Scheldt. His show was conceived as an ode to

FIGURE 13.2 In 1585, during the Siege of Antwerp carried out by the Dutch and the English, Giambelli conceived the “hellburners,” burning ships loaded with explosives that were used to destroy the pontoon bridge. The Spanish Alessandro Farnese, the Duke of Parma, had the pontoon built to block off the Scheldt. Frans Hogenberg, eighteenth century. Rijksmuseum.

Antwerp's connection with the Scheldt, to its harbor and industry, taking inspiration from the dramatic glow of bright flares of the port's petrochemical industry in the background. In addition to burning oil drums, small torches, and flaming fagots along the Scheldt, the choreography consisted of firing projectiles horizontally over the water, instead of vertically in the air. Except for nice reflections on the water, many found the idea of the event distasteful. People used to impressively crackling, crepitating, and thunderous skyrockets were unable to watch the spectacle.

The story of petroleum and how it is imagined in Antwerp brings to the fore the reality of accidental fire, devastation, disaster, and the risks of handling and keeping oil in the vicinity of the city. As is the case for many other port cities, Antwerp's harbor history in the nineteenth and twentieth centuries is marked by destructive fires and explosions, to the point that one could state that its urban layout was partially ruled by security questions. Also, as a result of an often-tragic learning process, dramatically destructive events led to radical decisions affecting the relationship between the city and the port. In the mind of civil society, oil and the petrochemical industry constituted undoubtedly the biggest area of concern regarding dangers of fire, explosion, and pollution.

The import of the first oil barrels from the US in 1861 was the start of Antwerp becoming the leading European harbor for the discharge of American oil. It served as a distribution hub for Europe and remained the main European petroleum harbor for decades until World War I. The earliest major disaster in Antwerp caused by oil occurred on August 10, 1866, in a building for petroleum storage on Zak Street, situated in the historic heart of Antwerp.¹⁸ Several houses went up in flames. On August 28, 1882, a fire ignited in the storehouses in the Ferdinandus polder—north of the actual Houtdok—where a number of warehouses had recently been built containing wood, a sawmill, and guano, but also oil barrels. The fire started in a bar and a strong wind blew it over to the storehouses of wood, menacing the masonry warehouse holding 6,500 barrels of oil. Thanks to the instantaneous demolition of parts of the buildings, the fire was contained.¹⁹

Until the end of the nineteenth century, oil was generally kept in warehouses in different parts of the city, but oil-related activities were soon regulated and gathered outside the city limits, around the Amerika Dock. Inaugurated in 1887, the dock was officially named Petroleum Dock and it housed Antwerp's oil activities until 1903. On September 6, 1889, an incredible explosion, followed by a huge column of white smoke and another of black smoke, marked the beginning of a fire covering 2 ha of the Amerika Dock²⁰ (Figure 13.3). A workplace dedicated to the disassembly of cartridges exploded and set fire to the neighboring petroleum store of thousands of oil barrels belonging to a private company and to the petroleum reservoirs of the city of Antwerp. The blast heavily damaged several ships in the harbor. Due to the shock of the explosion, the hydraulic power station producing power for all the engines in the harbor collapsed, ruining all its machines (Figure 13.4). The air was filled with the detonations of barrels exploding, one after the other, while the glow of the fire could be seen as far away as Malines, halfway to Brussels, and up to 50 km north of Antwerp. The burning oil flew into the Scheldt, setting fire to a number of ships and their freight. The first explosion was so powerful that its destructive effects reached the city center. Fragments of cartridges were found in a radius of several hundred meters. In the area around the Amerika Dock, not one of the fifty houses was left intact. At the site of the cartridge workplace, a funnel of several meters deep with a perimeter of 500–600 m was what remained.²¹ Three hundred people died, many of them in atrocious circumstances.

FIGURE 13.3 Informative illustration showing an overview of the site of the disaster that occurred on September 29, 1889. A legend explains the different locations of the tragedy. From *Le Petit Moniteur illustré*, September 29, 1889.

FIGURE 13.4 The site after the explosion of a workplace for the disassembly of cartridges, where petroleum tanks caught fire and exploded in 1889. The disaster spread to encompass all of the Amerika Dock in the north of Antwerp. Photograph by H. Colon, in Anonym., ca.1889. From *La catastrophe d'Anvers*: September 6, 1889 (Antwerp: Jos. Maes).

Numerous survivors were severely injured (Figure 13.5). To add to the horror of this extreme event, newspapers offered unusually realistic, if not crude, depictions of wounded and mutilated but still living victims, charred corpses, parts of bodies and limbs, many of them thrown into the air by the explosions and scattered over a wide perimeter in the north of Antwerp.²²

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LA CATASTROPHE D'ANVERS. — (Dessin de M. Paul Destez.) — Voir page 586.

1. Fabrique de MM. Rieth et Co. — 2. Cartouches, boîte et boîte de cartouches trouvées dans la ville. — 3. Construction située à cinq cents mètres de l'explosion. — 4. L'embarquement des victimes.

FIGURE 13.5 Views of the exploded workplace, cartridges, and a destroyed house situated 500 m from the explosion and the site of the oil company Rieth and Co., in 1889. The image underneath shows the rescue of numerous victims. Page with drawings by Paul Destez, in *L'Univers illustré*, September 14, 1889.

Petroleum Zuid

The catastrophe of 1889 forced the city of Antwerp to take action and protect the inhabitants from the risk of fire and explosion. It was decided that all industrial oil activities would be concentrated on 54 ha in the polders south of the city, in Kiel. The new industrial site was developed under the name Petroleum Zuid on the grounds between the new southern quarters of the city of Antwerp and the Hoboken polder.²³ In 1898, the city expropriated the ground, while the state had to develop the railway infrastructure. The city was also responsible for the plant, the buildings, and installations. Petroleum Zuid, the first petroleum port in Belgium, was one of the most important petroleum port areas in Europe. The new location was completely isolated from the residential city.

To serve Petroleum Zuid, the long quay in front of the city, built at the end of the nineteenth century, was prolonged southwards. The new port of Petroleum Zuid conformed not only to higher security norms but also provided modern infrastructure. By means of a jetty in the Scheldt—the so-called “petroleum bridge”—the ships did not have to moor along the quay and could stay at a distance from the river bank (Figure 13.6). By 1901, all petroleum activities in the port of Antwerp were moved to Petroleum Zuid. In mid-August 1904, the first oil tanker moored.

Oil companies could obtain a concession in the vast allotted area of Petroleum Zuid. The companies had to equip the long narrow parcels with railways and all the necessary installations and buildings. Some 233 petroleum tanks were situated in Petroleum Zuid. The crude oil was easily emptied by means of pipelines from tankers moored at the jetty on the Scheldt to the refineries and directly to the tanks. Refined petroleum returned by the same path. From the jetty, it was shipped to other regions. For use inside the country, it was transported from the tanks by trucks, trains, or in barrels. A new station and a huge railway yard were built northeast of Petroleum Zuid, and in 1904 a tram connection with the city was established.

The location of Petroleum Zuid was chosen to afford more security to the city and other harbor installations. Newly patented security valves were used to avoid tanks exploding and letting the gas come out and burn like gigantic torches. Despite these measures, on August 6, 1904, the plant of Petroleum Zuid was struck by an immense fire. It started with one of the tanks exploding with an enormous blast and bursting open under the pressure of gas.

FIGURE 13.6 New terminal at Petroleum Zuid laid out by Antwerp Oil Wharves on the site of a former brickyard. The chimney of the brickworks is still standing. The jetty, clearly visible in the picture, enables ships to moor at a distance from the quay. *Source:* Tank Storage Verbeke nv.

FIGURE 13.7 Petroleum tanks on fire in Petroleum Zuid in 1904. Some of the burning petrol spread toward the Scheldt, but was stopped by the digging of canals. City Archives, Antwerp.

Liquid oil flew from the tank and was ignited by a mobile forge operating quite a distance away. Almost 100,000 m³ of petroleum burned and spread the fire to forty other oil tanks, several of them exploding (Figure 13.7). The horizon was completely darkened by smoke and put the city of Antwerp in obscurity. A strong eastern wind drove the flames to the petroleum railway station where wagons caught fire and exploded. Thanks to trenches hastily dug by the firemen, the burning oil was kept from spreading. A pyrotechnic factory and a series of gasoline reservoirs were preserved (Figure 13.8). Six workers were killed on the spot.²⁴ However, in the minds of the inhabitants of Antwerp, the accident demonstrated that the new location was disaster-proof. Locating Petroleum Zuid at a distance, in the south of the city, had prevented the devastation of business and residential areas and other port installations.

During World War I, access to oil was a major strategic factor. The British-Belgian army ordered the petroleum tanks of Petroleum Zuid to be set on fire, although, when the German army conquered Antwerp in October 1914, they were still able to recover a significant amount of petroleum. Later, during the war, two fires and several bombardments caused enormous damage to Petroleum Zuid. On an international level, oil became rare. Following a request from Britain to prevent oil wells from falling into German hands, Romania destroyed more than 1,500 of its national wells. Romanian production dropped from 1,783,947 tons in 1914 to 518,460 tons in 1917 during the German occupation.²⁵ The outbreak of the Russian Revolution interrupted trade relations with Russia and eastern Europe.

After the depression of World War I, the port revived. The installations of Petroleum Zuid were rebuilt in one year.²⁶ A new extension was added to the area. The oil industry in Antwerp continued to develop successfully in the years prior to World War II. Petroleum

Le cadavre carbonisé d'un ouvrier.

L'incendie des docks de pétrole d'Hoboken, près d'Anvers.

L'incendie des docks de pétrole d'Anvers.
— Le 26 août, vers 10 heures du matin, un terrible incendie a éclaté à Hoboken, à quelques kilomètres d'Anvers, dans les réservoirs à pétrole de MM. Speth et Eiffé et de l'American Petroleum Company. En un instant ce fut un spectacle terrifiant; un nuage épais de fumée noire, chassé par un vent de sud-ouest, s'étendit sur la ville, obscurcissant l'atmosphère; les détonations se succédaient sans interruption, au fur et à mesure qu'éclataient les réservoirs, dont le contenu venait alimenter le feu.

Les pompiers d'Anvers, immédiatement accourus, se rendirent compte que toute tentative serait vaine pour arrêter la violence de cette fournaise; tous leurs efforts durent se borner à protéger des flammes les établissements voisins et notamment un atelier de pyrotechnie. Les soldats du génie s'employèrent à creuser des tranchées pour détourner le cours de ce fleuve incandescent, qu'il fallait empêcher, à tout prix, d'atteindre l'Escaut, où il eût incendié tous les navires à quai. On y parvint non sans peine, car l'incendie s'était étendu sur plus de 3 hectares. Sur quarante « tanks » (réservoirs) élevés en cet endroit, trente-huit ont été détruits.

La catastrophe serait due à une cause

très minime : un filet de liquide, s'écoulant par une fissure de l'un des tanks de l'American Petroleum Company, s'enflamma au contact du feu d'une forge portable, installée près des réservoirs. Les dégâts ont été évalués à 7 ou 8 millions au moins.

On retrouva dans les décombres sept corps carbonisés, dont l'identité ne put être établie; mais le nombre des victimes doit être plus élevé.

L'incendie de l'arsenal de Toulon. — Le 7 août, un incendie d'une violence inouïe s'est déclaré à Toulon, dans l'arsenal principal de la marine, gagnant bientôt les ateliers des mouvements généraux, la section du charpentage, la section de garniture. À droite et à gauche de ce vaste bâtiment se trouvent deux cales où précisément des torpilleurs vedettes étaient en réparation; deux ont pu être mis à l'eau, un troisième a été légèrement endommagé.

Les bâtiments ravagés par le feu ne for-

La cale de réparation des torpilleurs.

L'incendie de l'arsenal de Toulon. — Phot. Marius Bar, Toulon.

FIGURE 13.8 The tanks of the oil companies of MM Speth and Eiffé and of the American Petroleum Company caught fire on August 26, 1904, and quickly spread over the whole area of Petroleum Zuid. The photograph in the center shows the carbonized body of one of the victims, an oil worker. *Source:* Revue universelle, August 26, 1904.

Zuid was further extended into the Hoboken polder to accommodate the construction of a refinery, a new type of activity for the Port of Antwerp. A new jetty was built. Unfortunately, Petroleum Zuid was damaged during World War II and it never fully recovered. Also, the oil industry moved to the Marshall Dock—inaugurated in 1951 and initially called Petroleum Dock—in the new port areas in the north of Antwerp. Petroleum Zuid was abandoned little by little. In 1953, 4.3 million tons of oil were processed in Antwerp of which only 405,000 tons were handled at Petroleum Zuid.²⁷ The last concession in Petroleum Zuid will end in 2035.

Environment, Pollution, and Heritage

Images of oil slicks on the surface of oceans and rivers, burning oil wells in the desert as a result of war action, petroleum disasters caused by train accidents, and accidental explosions of petroleum storage tanks not only evoke ancestral fears of collective cataclysms, but also amplify worries about contemporary worldwide ecological disasters. Images do not need to be explicit to evoke the hazards inherent in oil. Consider the famous and fashionable photographer Ed Burtynsky on his recent photographic series, “Oil”:

The car that I drove cross-country began to represent not only freedom, but also something much more conflicted. I began to think about oil itself: as both the source of energy that makes everything possible, and as a source of dread, for its ongoing endangerment of our habitat.²⁸

Despite all the benefits oil can produce for the immediate comfort and pleasure of individuals and society, it is increasingly considered a menace to a habitable environment.

With oil's dark side becoming more visible, two specific concerns came up when Petroleum Zuid was abandoned: the burden of its environmental pollution and the possible loss of its industrial heritage. These concerns represent separate ecological and historical values, but seen in a wider context, they require a form of intellectual integrity and integrative thinking, as the care for our environment and for the historical remains of what has preceded our society expresses our effort to preserve the future. Our history, let it be environmental, industrial, urban or architectural, is part of our future. It is challenging, but not surprising, to see these concerns in a highly industrial area as Petroleum Zuid combined as aspects of the same question.

Petroleum Zuid should be considered a place with an industrial memory. The former petroleum site with its machinery, storehouses, jetties, tanks, and pipelines is now abandoned but represents a certain idea of a petroleumscape. All this equipment and infrastructure form an ensemble of early twentieth-century petroleum infrastructure and architecture. Today, the site includes several historical elements which have recently been protected by law.²⁹ Indeed, the public action of the industrial archaeology group VVIA³⁰ has resulted in stopping the planned demolition of some of Petroleum Zuid's oldest buildings.³¹ These buildings were the only ones that survived the fire of 1904. One of them was a unique, early concrete structure. In December 2014, the activist group succeeded in having some buildings listed

as valuable and protected, including the Avia company refectory with the concierge's house and several petroleum tanks with masonry stairs and talus as well as a pump house of the same oil company, along with a concrete warehouse, the concrete jetty on the Scheldt, and a portion of the pipelines above ground.

On the other hand, how Petroleum Zuid is remembered also concerns the environment and its deterioration over a century of intensive industrial use. When the site started to function in the early twentieth century, oil was pumped through underground pipes from ships at the jetty to the tanks. Multiple leaks occurred and large quantities of oil infiltrated the soil, resulting in severe pollution of the area.³² At the end of the 1930s, after long negotiations, the leaking underground pipes were replaced by conduits above ground. Nevertheless, the soil of Petroleum Zuid remains heavily polluted and requires remediation. In terms of intellectual integrity, industrial archaeology should also consider the ecological consequences of the industrialization of oil as part of an entire systemic complex. If the residual pollution left over from the industrial activities is perceived as a violation of nature and as an obstacle to the cultural valorization of the site, it recovers also a completely different meaning. Oil pollution on a site like Petroleum Zuid should be considered an integral part of the industrial system: the machines, installations, and buildings are witnesses of highly technological innovations and functional designs of an industrial system that involved also smoke, spilled oil, filthy soil as well as enormous societal costs in terms of human health and well-being. All these systemic consequences need a thorough didactic explanation besides the historical and archaeological documentation of oil industry technology.

To mark the difference with the previous period, by March 2016, Petroleum Zuid had been transformed into a project area of about 60 ha with the name Blue Gate Antwerp, a name that evokes renewal, cleanliness, openness, immateriality, and airiness. For the public partners of the project (the city of Antwerp and the Flemish region), “blue” is a symbol for the green economy and an ecological and economic future, and “gate” refers to the role of a doorway imagined as played by both city and river. In the mindset of both partners, the project is intended as an investment in sustainability and eco-efficiency based on “cradle-to-cradle” organization: it is a form of closed cyclic thinking where every kind of waste is nonexistent because it is avoided or recycled. It is designed to improve the negative imagery of oil in terms of pollution, risk, and the waste of precious soil and space. The ancient petroleum plant will be recycled and transformed into an activity zone with green areas, new clean industries, start-ups, leisure areas, and parks. Today, with the foresight of the Blue Gate Antwerp project in the south of Antwerp, the epic cycle of the oil industry in an urban context—transport in barrels and storage in reservoirs, shipping in tankers, pumping through pipelines, treatment in petrochemical complexes—is now ending.

Epilogue: A Carbon Age

The Antwerp port, city, and river have been privileged witnesses of the dramatic ascent of oil in modern society. In the wake of the historic trajectory that petroleum has traced in the port city of Antwerp, and in view of future projects like Blue Gate, something more than a postindustrial turn could open a window on the twenty-first century. The story of the petroleumscape is after all a mixture of utopia and hubris; its arrival as a basic industrial substance, its rise as an economic value, its abstraction through petrochemical processes, went along with the fabulous imagery of wealth and power and the risks and fears of fire,

disaster, and pollution. At first, the oil industry was one of the fundamental pillars of an “affluent society.”³³ But today, this cycle of production is to a large extent compromised. All the fears that have been adding up since oil's first appearance in the nineteenth century have culminated in its recent rejection. Carbon is the fourth most abundant element in the universe. Because of the unlimited use of nonrenewable energy resources, carbon accumulated by geological processes over millions of years has been released back into the atmosphere. Oil's immense carbon footprint is one of the main causes of climate change. If humanity's presence on Earth has created the Anthropocene, this has occurred as a result of what Eric Roston has called the Carbon Age.³⁴

In this context, the case of Antwerp is even more intriguing. Oil and diamond, substances that historically engendered the city's wealth, are both carbon-based. Diamond is a solid form of carbon. Crude oil is a mixture of comparatively volatile liquid hydrocarbons that releases carbon when burned.³⁵ The carbon cycle, made of the different paths of carbon in the environment—between ocean, soils, vegetation, air, and so on—is one of the main dynamic elements of Earth's climate. Diamonds and oil symbolize inorganic and organic processes on different time scales. The materials are associated with opposing qualities: eternity and immanence with the one, and unbridled consumption, immediate effect, and exhaustibility with the other.

A reflection on the Carbon Age could offer Antwerp a new context for its carbon past and future, leading to a new narrative and the creation of museums, exhibits, courses, and educational activities, heritage tours and visits, marketing topics for business companies and industries, but also to the exploration and experimental observation of natural environments. Besides the urban and architectural dimensions of the petroleumscape, the mental landscapes shaped by the desires and fears initiated by oil could lead to new research about specific imagery, discourse, legends, dreams, and nightmares generated in the Carbon Age of Antwerp and other port cities.

Notes

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- 11 Nauwelaerts, *Het groene goud*, 32–33.
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