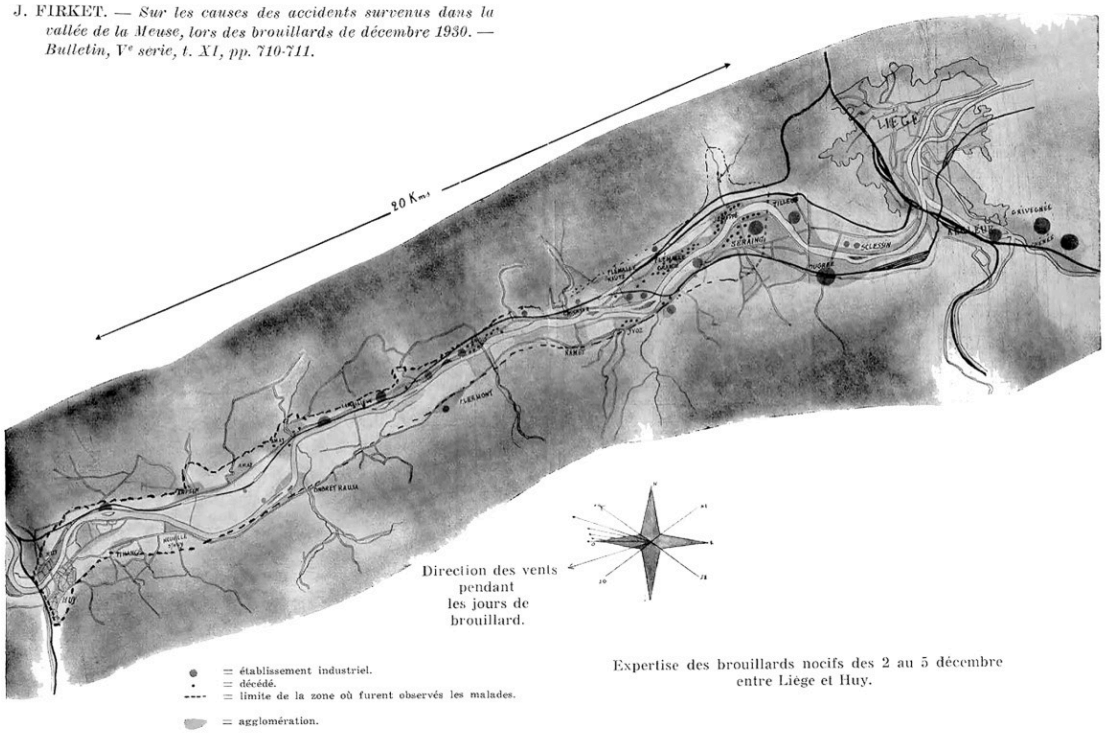


Figure 1. The “Deadly Fog of the Meuse Valley”: map of the valley drawn up by the experts. The small dots indicate the deaths attributed to fog, the larger dots are the large fa (however many factories are not represented), and the dotted border delimits the area where fog patients were observed. Reference

In a fossil fuel economy, air can become unbreathable

Alexis Zimmer

See also:
Jennifer Gabrys for another report on TOXIC FOG

Jerry Zee for another report on TOXIC FOG

Figure 2. Screenshot of the Brussels air application, April 8, 2019.

On April 8, 2019, the Brussels region experiences an episode of acute air pollution. A grey ceiling overhangs the city. The air is opaque, a fine mist covers the city. Visibility is reduced, breathing is impeded. Air quality measuring devices indicate values of more than 100 micrograms of fine particles per cubic meter. The air is charged with dust, microparticles, gases: nitrogen, carbon monoxide, sulfur dioxide. The meter of the Brussels air application, developed by the Environment and Energy Administration, reaches its highest level: blood red. The commentary that accompanies it: execrable (Figure 2). According to air pollution monitoring agencies, the reason for this opaque and unbreathable haze is to be found in the combination of two phenomena: on the one hand, fumes from motorway traffic and the spreading of industrial agriculture, and on the other hand, weather conditions—little wind, high humidity—that do not favor their dispersion.[1,2] The authorities recommend that fragile people—the elderly, those with respiratory problems or newborns—stay at home and avoid any physical exercise.

Photographs from the Albert Humblet collection.

Figure 3. Brouillards dans la vallée de la Meuse, ca. 1930. These photos were taken during the interwar period. The fog is not that of the first week of December 1930. That fog. according to the descriptions in the archives, climbed higher up the valley. Few, if any, chimneys were visible.

These phenomena are not exceptional. They are the usual repetitive feature of societies with fossil economies. They are not new. They are at the end of a long chain of repetition of toxic, morbid, and deadly mists. Long before these contemporary mists, there were other industrial and toxic fogs. The fogs that invaded London throughout the second half of the 19th century are a good illustration.[3–6] In the 20th century, the scientific literature retained three major episodes that caused the sudden death of several dozen to several thousand people. The “Deadly Fog of the Meuse Valley” of 1930 inaugurates this series, which also includes the “Deadly Smog of Donora”[7] of 1948, and the “Smog of London” of 1952.[8]

The brief history of the deadly fog of the Meuse Valley that follows can thus be conceived as one facet of a more substantial history of the often morbid, sometimes fatal, alterations of the atmospheric conditions of life. I am a historian of this disaster, and I have tried to account for it by reintegrating it into the long history of the social and environmental transformations that have shaped it.[9] It can help to identify some ways of understanding how people have learned to neglect the combined powers of fossil materials and the air into which they eject their emissions, to the point of making air unbreathable for entire populations .

First week of December 1930

In the first week of December 1930, in the industrial valley of the Meuse, between Huy and Liège, in Belgium, an increasingly thick fog is spreading (Figure 3). In the press, it is described as a compact mass with clearly defined limits, as clear trenches. Its consistency and color are surprising. In Liège, it is experienced as a patchy grey bath, dotted with vacuoles of a completely clean air. Anyone who emerges from it appears to people outside the fog sheet as a ghost rising from a wall of old grey stones. Elsewhere, a little further upstream in the river, some people describe a yellowish color. It seems heavy, animated by downward movements, an almost organic mass spread by gravity. It is described as slippery, moving along the slopes of the valley, as if loaded with an impalpable mass that weighs it down and pulls it irresistibly towards the lowest points of the valley.

But most worrying is how it interferes with breathing. Its pungent smell reminds some of sulfur matches. The fog burns the throat, the lungs. Breathing becomes difficult, chests become tight. People spit black, get dizzy. Cattle are also suffering the effects of this strange meteorological phenomenon. A painful grumbling accompanies the animals' breathing. The doctors in the valley are responding to increasingly numerous and worrying requests. Several hundred or even several thousand people suffer from the fog; some are sick with vomiting and gagging. On Thursday night, the first deaths occur. The next day, the slaughter continues. By the end of the December 5th more than 60 people have died.

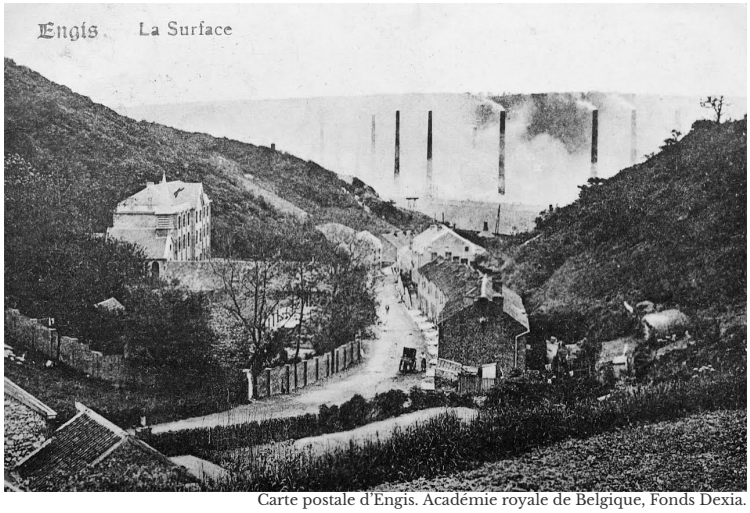
Mystery or "just fog"?

What has happened? The mayor of Engis, the most affected commune (about 15 deaths were recorded there), requests an investigation from the hygiene commission of the Province of Liège on the afternoon of Friday, December 5th. The next morning, the director of the commission, Dr. Lacombe, presents the conclusions of his investigation: there was no other explanation for this sudden mortality than "just fog," the cold, and the predisposition of the victims to suffer the harmful effects.

For six days, however, this fog is depicted in the press as a mystery. There are many scholarly explanations. The English physiologist and hygienist, John Scott Haldane, favors the "Black Death" hypothesis. Jules Amar, theorist of the "human engine," evokes a process of hydrodiffusion (a hypothesis he will defend in front of the Academy of Sciences):[10] "On the one hand, the air in the lungs is humid when it leaves. On the other hand, it is wet at the entrance, which causes breathing to stop and slow asphyxiation." Other scientists suggest different explanations: special microbes carried by the southerly winds; gases and dust from a recent volcanic eruption; a "slower drowning"—a less academic version of hydrodiffusion—the saturation of air with water vapor causing spasms from the muscles and glottis leading to asphyxia. The valley's inhabitants favor the industrial hypothesis: many factories spilled smoke and gas into the valley.

Within this profusion of hypotheses, Lacombe's conclusions have the merit of certainty. He insists: no gas or fumes are at the origin of this disaster. The director of the Hygiene Department at the Ministry of the Interior, Dr. Timbal, publicly relays these conclusions: "Doctors believe that these are purely and simply natural deaths, caused by the particularly intense, cold, and humid fog."

Well? Mystery or “just fog”? Reading the reports of this passage, it seems that there was no mystery except to those who lived far away from this fog. The notion that the cause of death associated with this “fog” is natural is contradicted by the smell, the taste, the burns to the throat, the itchy tongue; by progressive peeling of the oral cavity; by irritated and crying eyes; by the cough; by the feeling of suffocation, the heaviness of breathing; by the rapid heartbeat, by profuse sweating; by nausea, dizziness, vomiting, foamy saliva; denied by the dust and industrial gases that those who live in the valley are continually forced to breathe.



Carte postale d'Engis. Académie royale de Belgique, Fonds Dexia.
Figure 4. Photograph taken at the beginning of the century, not far from Engis. In the distance, you can glimpse the chimneys of the zinc and acid plant of the Nouvelle Montagne. Source: Cheminées des usines de la Nouvelle Montage.

The valley is industrial, one of the most industrialized in Europe (Figure 4). A local resident asserts that

> no investigation will be able to convince the inhabitants of the valley of the safety of the pestilential air they breathe. They live on the premises, their sense of smell and their lungs protest in their own way against any conclusions that would exonerate the factories.[11]

There are obvious facts that are difficult to contest. Pierre Nolf, Queen’s doctor and president of the Red Cross: “Pure fog cannot kill anyone.” Max André, pharmacist in Hollogne-aux-Pierres: “Curious thing: this fog deposited a grey-slate, greasy and sticky dust.” And in the press, without any other explanation:

> This is obviously not the first time that the industrial region of the Meuse has been affected by a fog that bothers and makes people and animals sick. Already in 1897 and 1902, there was “a fog disease” or “fog asthma” in the Meuse valley between Huy and Liège. The same condition due to fog reappeared in 1911, from January 13 to 20. At that time, as a few days ago, we had to content ourselves to noting the harmfulness of the fog and recording deaths and illnesses without being able to determine exactly what caused the disaster.[12]

The Belgian government is being questioned. Members of Parliament, the League of Nations, and the City of London want to know more. Two new commissions of inquiry are set up: one administrative, from the Corps des Mines; the other judicial, from the Liège public prosecutor’s office.

Investigations

Mining engineers visit the plants, collect testimonies, collect information about the operation of the plants. Among the suspected gases, sulfur compounds, more particularly sulfur dioxide, predominate. They are, in fact, the “normal” products of the combustion of coal, the main material consumed in the region—more than 10,000 tons per day. Prosecutor’s office investigators open bodies, perform more than a dozen autopsies of men and cattle, and carry out toxicological analyses. From this, they determine the supposed causes of death: initial irritation and asthma that lead to a subsequent cardiac arrest. They carry out industrial chemistry calculations. They determine the amount of substances discharged daily into the valley by industry: more than 20,000 tons of carbon dioxide, 290 tons of carbon monoxide, 50,000 tons of combustion nitrogen, 71 tons of sulfur dioxide, and more than 210 tons of dust (Figure 5). Nearly 30 different substances are also listed. In the fog, these substances interacted. The dust and soot in suspension acted as “tiny sulfuric acid factories.” The valley was a huge reactor (Figure 1).

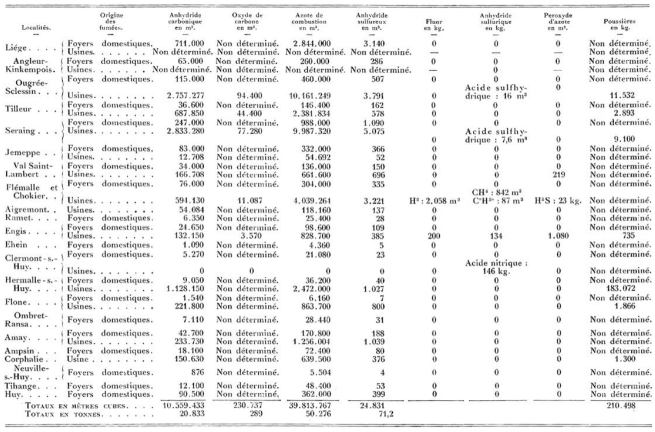


TABLEAU I. — *Nature et quantité des produits émis par vingt-quatre heures.*

Localités.	Origine des fumées.	Anhydride carbonique en m³.	Oxyde de carbone en m³.	Azote de combustion en m³.	Anhydride sulfureux en m³.	Fluor en kg.	Anhydride sulfurique en kg.	Peroxyde d'azote en m³.	Poussières en kg.
Liége	Foyers domestiques.	711.000	Non déterminé.	2.844.000	3.140	0	0	0	Non déterminé.
	Usines.	Non déterminé.	Non déterminé.	Non déterminé.	Non déterminé.	—	—	—	Non déterminé.
Angleur-Kinkempois.	Foyers domestiques.	65.000	Non déterminé.	260.000	286	0	0	0	Non déterminé.
	Usines.	Non déterminé.	Non déterminé.	Non déterminé.	Non déterminé.	—	0	—	Non déterminé.
Ougrée-Sclessin	Foyers domestiques.	115.000	Non déterminé.	460.000	507	0	0	0	Non déterminé.
	Usines.	2.757.277	94.400	10.161.249	3.791	0	Acide sulfhydrique : 16 m³	0	11.532
Tilleur	Foyers domestiques.	36.600	Non déterminé.	146.400	162	0	0	0	Non déterminé.
	Usines.	687.850	44.400	2.381.834	578	0	0	0	2.893
	Foyers domestiques.	247.000	Non déterminé.	988.000	1.090	0	0	0	Non déterminé.
Seraing	Usines.	2.833.280	77.280	9.987.320	5.075	0	Acide sulfhydrique : 7,6 m³	0	9.100
Jemeppe	Foyers domestiques.	83.000	Non déterminé.	332.000	366	0	0	0	Non déterminé.
	Usines.	12.708	Non déterminé.	54.692	52	0	0	0	Non déterminé.
Val Saint-Lambert	Foyers domestiques.	34.000	Non déterminé.	136.000	150	0	0	0	Non déterminé.
	Usines.	166.708	Non déterminé.	661.600	696	0	0	219	Non déterminé.
Flémalle et Chokier.	Foyers domestiques.	76.000	Non déterminé.	304.000	335	0	0	0	Non déterminé.
	Usines.	594.130	11.087	4.039.264	3.221	H^2 : 2.058 m³	CH^4 : 842 m³ C^2H^2 : 87 m³	H^2S : 23 kg.	Non déterminé.
Aigremont	Usines.	54.084	Non déterminé.	118.160	137	0	0	0	Non déterminé.
Rimet	Foyers domestiques.	6.350	Non déterminé.	25.400	28	0	0	0	Non déterminé.
Engis	Foyers domestiques.	24.630	Non déterminé.	98.600	109	0	0	0	Non déterminé.
	Usines.	132.150	3.570	828.700	385	200	134	1.080	735
Ehein	Foyers domestiques.	1.090	Non déterminé.	4.360	5	0	0	0	Non déterminé.
Clermont-s.-Huy.	Foyers domestiques.	5.270	Non déterminé.	21.080	23	0	0	0	Non déterminé.
	Usines.	0	0	0	0	0	Acide nitrique : 146 kg.	0	Non déterminé.
Hermalle-s.-Huy.	Foyers domestiques.	9.030	Non déterminé.	36.200	40	0	0	0	Non déterminé.
	Usines.	1.128.150	Non déterminé.	2.472.000	1.027	0	0	0	183.072
Flone	Foyers domestiques.	1.540	Non déterminé.	6.160	7	0	0	0	Non déterminé.
	Usines.	221.800	Non déterminé.	863.700	800	0	0	0	1.866
Ombret-Ransa	Foyers domestiques.	7.410	Non déterminé.	28.440	31	0	0	0	Non déterminé.
Amay	Foyers domestiques.	42.700	Non déterminé.	170.800	188	0	0	0	Non déterminé.
	Usines.	233.730	Non déterminé.	1.256.004	1.039	0	0	0	Non déterminé.
Ampsin	Foyers domestiques.	18.100	Non déterminé.	72.400	80	0	0	0	Non déterminé.
Corphalie	Usine	150.630	Non déterminé.	639.500	376	0	0	0	1.300
Neuville-s.-Huy	Foyers domestiques.	876	Non déterminé.	5.504	4	0	0	0	Non déterminé.
Tihange	Foyers domestiques.	12.100	Non déterminé.	48.400	53	0	0	0	Non déterminé.
Huy	Foyers domestiques.	99.500	Non déterminé.	362.000	399	0	0	0	Non déterminé.
TOTAUX EN MÈTRES CUBES.		10.359.433	230.537	39.813.767	24.831				210.498
TOTAUX EN TONNES.		20.833	289	50.276	71,2				

Figure 5. Table of quantities of substance released into the atmosphere during fog, 1931. Reference

But how can we explain that these emanations do not kill more often? The investigators mention the topography. This part of the Meuse Valley does not offer all the advantages of evacuating industrial emissions into the upper atmosphere. However, the topography is even less subject to variation than are industrial gas, smoke, and dust spills. Only more fluctuating, less stable elements are likely to account for the catastrophic "exceptionality." The meteorological conditions allow experts to explain why usual releases—in the absence of any incident—do not kill. The determination of meteorological conditions (high pressure, near-zero winds, rapid drop in temperatures, thermal inversion phenomena), coupled with the differential analysis of substances present in the atmosphere, allows them to report their conclusions almost a year after the disaster:

> After having examined which substances were likely to explain the harmfulness of the fog, and having successively eliminated most of them, we are led to conclude that, above all, the sulfurous compounds which result from the combustion of coal have exerted their harmful action, either in the form of anhydride or sulfurous acid, or in the form of sulfuric acid, whose production in sufficient content *was made possible* by the combination of exceptional weather conditions in early December 1930.[13]

Today, these conclusions are celebrated as the occasion of the first scientific demonstration of air pollution-related mortality.[14] Rather, it seems to us that they constitute the occasion when it was impossible to continue to deny it. But, at the same time, another way of mitigating the role of industrial infrastructure was invented.

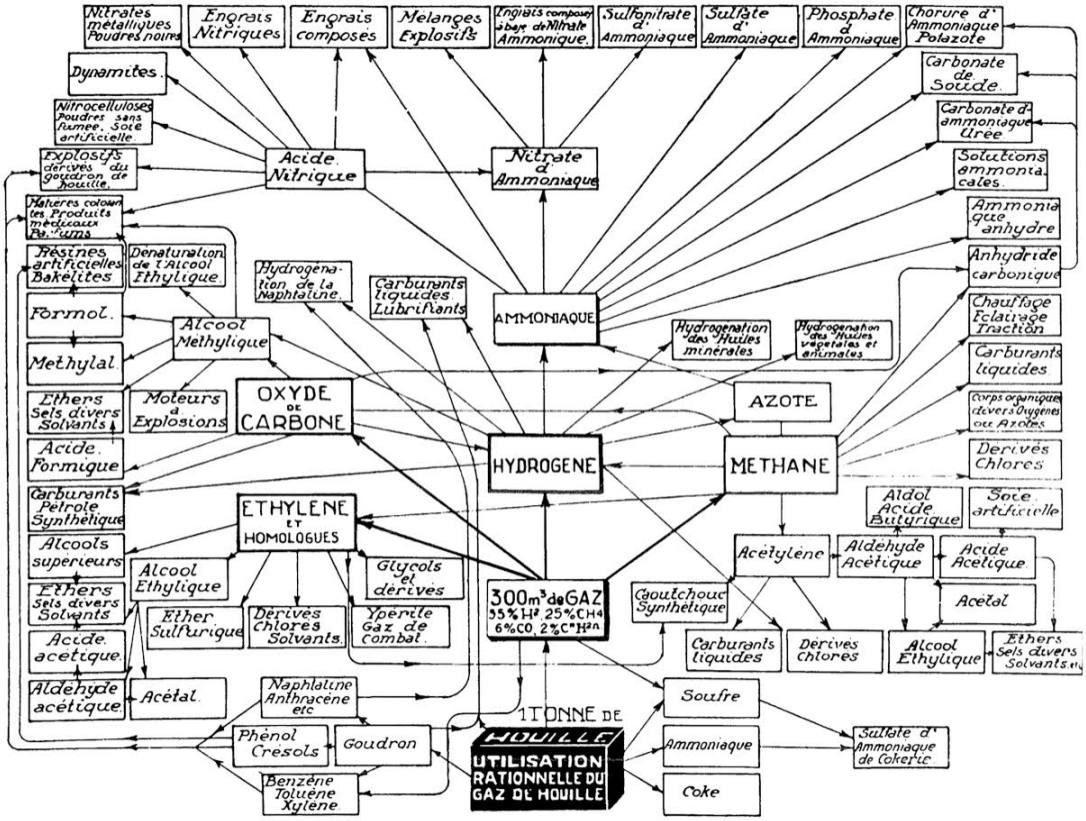


Figure 6. Utilisation rationnelle du gaz de houille. This diagram, produced on the occasion of the centenary of Belgium's independence and the international exhibition in Liège in 1930, and exhibited at the stand of the Belgian Nitrogen Society, shows "how each constituent of coke oven gas[product of coal carbonization] gives rise to a very distinct chemical department where it finds its full use: hydrogen and nitrogen form the synthetic ammonia from which fertilizers, nitric acids and synthetic nitrates are derived; carbon monoxide is used in the manufacture of synthetic methyl alcohol, which is itself transformed into formaldehyde, bakelite and pharmaceutical products; ethylene is used to produce ordinary ethyl alcohol or its derivatives: ether and higher alcohols; methane, finally, by special processes, is transformed into hydrogen, carbon monoxide, carbon dioxide, carbon dioxide, and acetylene, the gas from which acetic acid is derived." Lighting or heating gases, tar, coke, fertilizers, pharmaceutical specialties, perfumes, explosives, artificial resins, colorants, alcohols, acids…: a radiant coal. The commentary describes it as a "fantastic star surrounded by countless satellites." Reference

Naturalization

All investigations, from Inspector Lacombe's initial findings ("just fog") to those of the prosecution experts ("exceptional weather conditions," as well as the topography of the valley and the predisposition of the victims to suffer) have evoked various allegedly natural and extraordinary elements to account for both the formation of the fog and the deaths it has caused. From a simple natural phenomenon, radically detached and independent of the industrial activities that take place in the valley, fog has finally become a hybrid compound of nature and artifice: fog, dust, and sulfur compounds. In the latest conclusions, however, nature, with its meteorological powers, remains the primary agent of the disaster. It was the "combination of exceptional weather conditions" that made it possible to produce sufficient amounts of sulfur compounds. The industry as a producer of gas and dust has disappeared. The actual conditions of massive coal consumption are not mentioned.

The particular attention paid to the decisive importance of certain "natural" attributes of the valley marks a tendency of expertise to naturalize the disaster: it tends to erase or undermine the artificiality and historicity of the concrete assemblage that produced this deadly fog. The effects of this naturalization are at least threefold: they largely ignore the usual overflows of industrial production and their harmful effects on the environment and bodies; they divert attention and action from controlling and reducing industrial pollution to supposedly "natural" causes; and they reduce the dangers of air pollution to local singularities and the exceptionality of a phenomenon. That "nature" known to the experts has a deep elective affinity with industrial constraints.

The effects of this naturalization are at work in the administrative decisions that follow the expertise. These measures are mainly based on the establishment of new relations between the Royal Institute of Meteorology in Brussels, industrialists, and the mayors of the valley. The institute has a new mission: it warns the municipal authorities and industrialists by telegram of the possibility of a return to an atmospheric situation similar to that of December 1930. Upon receipt of this warning, "the mayors would only have to choose between the following means: (1) distribute gas masks; (2) transport the most exposed people (the elderly or sick) to the heights; (3) encourage inhabitants in poor health to withdraw to well-heated premises."[15] For their part, the industrialists would only have to reduce, while these conditions dissipate, the release of their emissions into the atmosphere.

A historical denial

This operation linked a meteorological institute to municipal authorities, who were to implement special measures for allegedly predisposed persons and for the reduction of fumes, based on expert recommendations about the time for the weather conditions to dissipate. This way of handling the situation has found a contemporary form in the “smog plan” operation at work in many cities. The way in which these air pollution episodes are reported and governed remains, in many respects, similar to that of 1930. In a way, we still live in the mists of 1930.

In our interpretations of these phenomena, we have not learned to link the elements involved in pollution to our lifestyles, to the choices of societies, to the way in which these choices are collectively or not discussed and made, to the very unique types of relationships that our bodies weave with the air, water, land, the multitude of lives that are involved, and to the multiple historical trajectories that shape and inherit them. As this diagram shows (Figure 6), in 1930, coal was not just “coal.” The products of its exploitation are divided into a multitude of compounds weaving together one or more branches of industry. Many practices (from its exploitation to its uses and its modes of consumption and transformations), as well as much knowledge (tacit, cartographic, geological, engineering, chemical, etc.), are attached to it. Coal's use is divided among many practices and objects. There are few domains that are not directly or indirectly related to it. Coal is not just an energy issue, however important that may be. Without the constant injection of this ore into the fabric of these relationships, not only would the economy of the societies thus shaped be seriously compromised, but it is the whole of these relationships that would collapse.

At the same time that coal—and more generally fossil fuels—were extracted from the subsoil and became essential resources for the functioning of our societies, certain materials that compose them joined the air until they became, sometimes, unbreathable. I learned from the study of this disaster that if we want to work to get out of this situation, we have to learn, collectively, to unravel all the relationships that shape it and to invent other ways of living that are, at the same time, other ways of breathing.

View References

This is merely one field report in the Feral Atlas

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