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"The Hoist of the Yellow Flag": Vulnerable Port Cities and Public Health

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Abstract

Port cities have long played a key role in the development, discovery, and fight against diseases. They have been laboratories for policies to address public health issues. Diseases reached port cities through maritime exchanges, and the bubonic plague is a key example. Port city residents' close contact with water further increased the chance for diseases such as cholera. Analyzing three European port cities, this article first explores the relevance of water quality for public health through the lens of the Dutch city of Rotterdam. It then examines plans and projects for London that were shaped by social Darwinism and stressed the moral failings of slum dwellers as a major cause for their misery. It finally explores the case of Hamburg as the perfect example of a city that cultivated ideals of purity and cleanliness by addressing all issues at stake in public health. This article on urban hygiene in three port cities shows how remarkably rich this field of study is; it also demonstrates that the multifaceted aspects of public health in port cities require further attention.

Keywords

public health, port cities, Rotterdam, London, Hamburg

In the evolution of public health, port cities play a remarkable role.[1] This article explores how port cities became laboratories for policies that proved to be very effective. In public health, everything is about the collective body of citizens. Public health is about statistics—life span, types of diseases, causes of death, and whether all these aspects can be related to age, gender, social status, and a myriad of other parameters. Improving public health, obviously, requires political action, and in the nineteenth and early twentieth century, the need for it was felt most urgently in port cities because they were proving to be particularly vulnerable to contagious diseases and epidemics. Although today these account for only about 85 percent of all health problems, they were much more dangerous in the period that is the focus of this article.

The spectacular death toll they could cause in a matter of only a few months gave them the power to disrupt social life, and the economy called for action—nowhere more so than in port cities.

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Medical professionals took the lead. Already in the eighteenth century, it was clear that it was out of the question to improve public health by concentrating on individuals. What was also clear beyond doubt is that people's living environment had a big impact on their health. This finding perfectly coincided with one of the principal arguments of enlightenment thinking in the late eighteenth century: people's physical, spatial, and social environment determines their quality of life. Improving public health, therefore, should target the environment. What scholars, as well as laymen, had suspected for centuries proved to be true: living in large cities has a negative effect on people's health status, especially for poor people.

Statistics, however rudimentary, were quite convincing. Inspired by medical scholars, politicians, architects, and urbanists initiated campaigns to clean and purify cities, install decent sewage systems, provide clean drinking water, and remove slums. Like other sciences, medicine looked to the latest innovations in order to expand the envelope of its expertise. In later periods, scientists often proved these innovations and the concepts on which they were based to be wrong. That is the way it is supposed to work—but in the case of public health, some claims may not only be beside the point from a scientific point of view but also extremely problematic from a moral and political perspective. In this article, two aspects of public health policies in the nineteenth and early twentieth centuries appear to be particularly problematic: the links between public health and social Darwinism and the way political elites in cities used public health to discipline the citizens under their control. At the same time, the public health measures that many cities introduced were very effective and prolonged the life span and the quality of life of hundreds of thousands of people—especially those among the working classes.

This article focuses on three cities. It shows how scientific developments impacted the scope of urban projects meant to improve public health. In Rotterdam, the earliest large-scale public health interventions focused entirely on the quality of the water in the city's canals, resulting in the so-called water projects of 1841 and 1854. The plan was based on the physical qualities of the environment, notably so-called miasma: foul-smelling vapors that were believed to be the main cause of diseases. Towards the end of the century, influential scholars such as Herbert Spencer expanded the enveloped of science with moral, social and even racial issues. This allegedly justified the use of slum clearance campaigns to erase the 'race' of slum dwellers as well. The plans and projects for London date from this period and stressed the moral failures of slum dwellers as a major cause for their misery—which should be eradicated because it was believed to impact the entire urban community. For a while Hamburg was the perfect example of a city that cultivated the ideals of purity and cleanliness, culminating the ideal of an urban Gesamtkunstwerk that, however, also contained programs for social exclusion. Afterwards all public health issues at once and it developed into the cleanest city on earth – but at what cost?

Port Cities – Hubs of trade and migration

Port cities are nodes in the global networks of freight transportation. Before the 1960s, when commercial, jet-propelled airlines took over, ports were also hubs in the intercontinental journeys of passengers—mostly of business people and immigrants. In the nineteenth century, the intensity of these movements began to accelerate, reaching levels never seen before. Ports became access gates not only for all kinds of goods and growing numbers of people but also for contagious diseases.[2] Many port cities opened quarantine facilities for people who wanted to disembark from the ships but were ill. Immigrants who arrived in New York's Ellis Island were subject to medical tests before they were allowed to enter the promised land, and this was standard procedure in many countries until not so very long ago. Freight could also be the source of epidemics.

The large number of incoming ships from all parts of the world was also associated with a "rat plague," as there was fear of the spread of unknown diseases with the transfer of rats from ship to

land.[3] In the 1910s and 1920, for instance, a bubonic plague caused large numbers of casualties in Java, in the Dutch Indies, and it was believed to have entered the country by way of rats that traveled on board ships carrying rice.[4] For most of the nineteenth and early twentieth centuries, port cities were especially vulnerable. Authors have described port cities as the "portal of death," as "the gateway for epidemics that were introduced via the shipping system and quickly spread to the port cities and the economically dependent hinterland."[5] A series of cholera epidemics in the nineteenth century drove the point home. Conditions were made worse by the rapid growth of port cities; loading and unloading goods and storing them in warehouses required hard menial labor, and as port cities grew, they became hotbeds of a new, urban proletariat that often lived in slums. The question arises whether the vulnerability and the connection between social stratification and sickness in seaport cities were promoted by working conditions (e.g., among casual laborers) and living and housing conditions and whether the well-being of the port workers played a role in the evolution of port cities.[6]

The need for flexibly available labor, depending on the workload for loading and unloading incoming and outgoing ships, required residential accommodation near the port. The work in the port was difficult and dangerous, but the irregular work also gave unskilled newcomers a chance on the job market. The port cities were permanent abodes of residents and temporary abodes of immigrants, travelers and seafarers and thus a kind of a melting pot. The seamen ("Jack ashore"), many of them not (yet) married, had their wages and were looking for pleasure after a long journey ashore.[7] In addition, there were special quarters in port cities, "contact zones", a kind of diaspora for all kinds of entertainment, nightclubs, drinking, drugs, bars, prostitution and other exotic pleasures, which were also visited by the locals (if possible unnoticed).[8]

In port cities, creative milieus of business people, entrepreneurs, financing, and insurance institutes—often based on "command centers" in seaport cities—drove interwoven relationships internationally and ultimately globally.[9] Globalization processes facilitated by port cities had an increased impact on local developments ("glocalization"). The maritime networks were locally integrated and at the same time operated internationally. An integral part of the port structure was also "special" districts close to the harbor ("sailor towns").[10] With a highly international orientation, they formed a conglomerate of functions and services, shops for clothing, luxury goods and souvenirs, seaman's churches, accommodations, inns, tattoo parlors, dance palaces, and brothels. People from diverse parts of the world came together in the seaports. Port districts were considered "dangerous" and often had a reputation for being unsafe and "immoral."[11] In Spanish-speaking countries, the name "Barrio Chino" is used for these harbor districts and corners of otherness, which already conceptually relates to internationality—in this case to China ("Chinatown").[12] The newcomers sought contact with relatives and acquaintances and promoted the emergence of special ethnic enclaves and small-scale segregation.[13] Their presence also fostered prejudices about otherness. They were often stigmatized and blamed for crime and the spread of diseases and epidemics.

Locals and visitors to port cities were confronted with diverse races, languages and cultures that were not known in the hinterland. They promoted distinctive features of port cities as "different" from other types of cities. Also working, living and housing conditions and whether the well-being of the port workers played a role in the evolution of port cities, when the urban elites triggered reforms and improvements.[14] Once contagious diseases had entered the port city, overcrowded working class neighborhoods made it easy for them to spread. Because of their vulnerability, port cities provide interesting cases from the perspective of public health.

In the 19th century port cities had become hubs of world trade. With urbanization, problems with street cleaning, waste handling, rubbish, and feces increased exponentially. Cleanliness and morality were established as elements of the lifestyle in the phase of rapid industrialization. "Health" was politicized, and public health was seen as a factor in stabilizing the existing social order. In the context of rationalization spurts, health demands were also reflected in urban planning. In the

process, state and municipal measures changed from repressive and disciplinary approaches to those that emphasize incentives. This resulted in the creation of institutions with a special focus on matters of hygiene, such as in Germany, the Verein für öffentliche Gesundheitspflege (Association for Public Health Care; founded in 1869) and the German Quarterly Journal for Public Health Care, and the Royal Sanitary Institute (founded 1834) and the Journal of the Royal Sanitary Institute in Britain. Technical excursions and reports promoted international exchange. In particular, the English experience served as a blueprint for other countries. Well-known medical professionals, health experts, and town planners such as Joseph Stübben, Reinhard Baumeister, and James Hobrecht were represented in these institutions and tried to bring in experiences of public health and technical concepts of action. For example, a detailed report in German of Whitechapel in the East End of London in 1873 said: "These cramped, filthy, poorly ventilated apartments are breasts and the hearth of poverty, disease and crime. With less money one could help build things up here than later becomes necessary for poor houses, hospitals, penitentiaries."[15]

As urban reformers and select institutions started to pay more attention to urban hygiene, infrastructure problems and accelerated growth of cities as well as unregulated building and expansion, they also sought means of directing, controlling and regulating development. One could smell the places of poverty and the locations of misery. The stench evoked impressions of miasma, dangers, and centres of infection. With the slums, the bourgeois public associated and registered dirt, moral damnation, and drunkenness as well as an aimless, uncontrolled life and other perceived dangers. They saw their own lives in contrast to this image as clean, pure and orderly. Above all the increasing concentration of poverty in so called "slums" was seen as a side effect of urbanization processes and considered a new challenge.[16] The first to seek out and describe the living conditions in these areas of poverty in the cities were engineers, architects, judges, journalists and medical professionals, but also philanthropically oriented entrepreneurs. The housing conditions received less attention than the behavior of the residents. The first reformers therefore concentrated on lowering mortality rates instead of improving housing conditions of the poor. According to them, public health conditions were the inducement for improvement measures. "Clear away the filth, clear away disease, clear away the paupers"[17] was the logical sequence of argumentation.

Investments by the state in improving public health—so it was argued—would save money in the long term. Epidemics would affect local prosperity and increase the hardship and misery of the poorer population groups. Often voluntary poor relief and moral behavior controls that forced the lower population groups to accept improved hygienic standards went hand in hand with educational measures of voluntary or forced social discipline.

Rotterdam: The Battle for Clean Water

In the Netherlands, medical scientists began to urge for hygienic measures only in the mid-nineteenth century, starting a movement that became known as "the hygienists."[18] Child mortality among the poorest layers of the population caused growing concern. There were no signs that things were going to improve—to the contrary, industrialization and the urbanization only made things worse. The average life span of poor people was eighteen years shorter than that of the wealthy. The hygienists were convinced that intervention by the state was indispensable. What was desperately needed was a public health law. It was meant to replace the rather vague clauses in the Municipal Law of 1851, which forced municipalities to invest in public health measures. Since these had to be paid out of the municipal budget, they were reluctant to do anything, sometimes pointing to the lack of scientific evidence.

Why spend money on measures that might not even work? Only in 1865 did the hygienists manage to get a law passed. This "Law regulating medical inspection" resulted in a network of regional inspectors who were appointed and paid by the state. Trying to prevent clashes with the

Figure 1. The first water project. *Source*: W. N. Rose (City Archive Rotterdam, 1841).

municipalities, and respecting local autonomy, the inspectors could not do much. According to one author, the law that did most to improve public health was not even inspired by the ambition to do so: the Fortification Law of 1874 finally allowed cities to demolish the straightjacket of bulwarks that made expansion outside of them impossible. Once they were allowed to do so, it helped to diminish overcrowding in older parts.[19] Municipalities began, however reluctantly, to introduce sewage systems and networks providing clean water (initially often run by private companies). Municipal

Figure 2. The second water project. *Source*: W. N. Rose with park design by J. D. Zocher Jr. (City Archive Rotterdam, 1858).

building codes did a lot to improve the quality of the newly built housing stock, though private investors usually opposed them. The pinnacle of public health policies based on architectural and urban interventions was a set of twin laws that were approved in 1901: the Public Housing Law and the Public Health Law (which replaced its 1865 predecessor).[20] The first revolutionized working-class housing and slum clearance policies; the latter introduced municipal health committees in which architects and medical professionals worked together, checking, among other things, all urban expansion and reconstruction plans.

Rotterdam is representative of all these trends, but its nineteenth-century sanitation efforts began with a series of exceptional plans. When Josef Stübben was looking for Dutch examples to include in his famous handbook, the only suitable example was Rotterdam. First published in 1890, *Der Städtebau*, part of the monumental series *Handbuch der Architektur*, shows a typical building block of the type that marked Rotterdam's rapid growth since the Nieuwe Waterweg (New Waterway). This canalized lower stretch of the River Rhine triggered a process of unprecedented growth (which ultimately transformed its port into the largest in the world in the second half of the twentieth century).[21] In the last two decades of the nineteenth century, the number of inhabitants increased

Figure 3. W. N. Rose, Coolpolder project (City Archive Rotterdam, 1858).

from 170,000 to 315,000. No other city in the Netherlands grew as fast as Rotterdam, and therefore, no other city qualified for Stübben's book. Stübben was looking for planning principles to tackle the manifold problems caused by urban growth, a phenomenon never before witnessed at this scale. Strategies were badly needed to address overcrowding, slums, violence, vandalism, criminal behavior—and rapidly deteriorating health conditions that affected the entire urban community.

Proudly presenting itself as the Maasstad ("City on the Meuse" since the Nieuwe Waterweg coincides with the historical mouth of this river), Rotterdam's emergence as a major player in international trading networks resulted in major problems.[22] Here, too, catastrophic health conditions were a reason for concern. They were highlighted by a series of epidemics, notably of Asiatic cholera, which, as the name suggests, originated in the Far East and entered Europe by ship—which may be one reason why port cities were among the first to suffer the consequences. In 1832, 1848, 1853, 1859, and 1866, the epidemic hit the city; in 1832, 1,700 people died, and in 1848 no less than 2,000. Various theories evolved as to the origins of the epidemic; conclusive evidence could be found for none of them. What was clear, however, was that the disease it caused was extremely contagious. What was also clear was that some parts of the city were hit harder than others. One of the peculiarities of the urban composition of Rotterdam was the distinction between the old medieval part, which was protected against flooding by a dike that cut its triangular plan neatly into two, and the seventeenth-century expansion plan, the so-called water city, which was largely made up of harbor basins with open access to the river.

The "water city" was much more spacious than the medieval "land city"; moreover, the continuous rhythms of high and low tides guaranteed fresh water twice a day. Although the influx of people

looking for work in the growing city caused overcrowding in all parts, conditions in the medieval part were much worse than in the water city, allegedly proving one of the medical theories that were popular at the time: dirty vapors (the "miasma") were seen as the origin of the all contagious diseases and of health problems in general. Although medical doctors already guessed that other causes could also impact health—diets and living conditions—they urged the authorities to do something about the miasma.

This led to one of the Netherlands' most interesting infrastructural projects, the so-called water project in 1841. It was designed by W. N. Rose (who happened to be the grandson of the personal physician of Frederick the Great of Prussia).[23] His parents lived in Utrecht and, honoring a long-standing tradition among the Dutch elite, also had a country estate where they stayed during most of the summer. Rose pursued a military career, studied military and civilian architecture as part of it, and designed a citadel for the city of Ghent in what is now Belgium but between 1815 and 1830 was part of the Netherlands. He got to know the city of Rotterdam when he was asked to design a new hospital; his project for the Coolsingelziekenhuis stands out for its technical innovations, notably a system of heating and climate control that, at the time, was seen as revolutionary (and illustrates the importance attributed to fresh air). In 1839, he was appointed city architect. At that time, seven years had passed since the first cholera epidemic had caused havoc in the city, but the memory of this disaster was still very much alive. Rose was also well aware of the worsening hygiene conditions, a consequence of the need to accommodate more people than the city could cope with. And he knew what needed to be done: the city should safeguard its inhabitants from the dangers inherent in stinking, polluted air. Miasma had to be banned.

Trying to solve this problem, he encountered yet another of Rotterdam's peculiar qualities. Rotterdam joined the rank of Holland's leading cities only very late. Before the economic boom of the seventeenth century, which culminated in the construction of the water city, the city ranked quite low in the hierarchy of urban centers. Nearby Dordrecht was much more powerful and so was Delft (which also had a direct connection to the sea: Delfshaven, only a few kilometers west of Rotterdam). One of the consequences of its relatively late rise to dominance was that it had no jurisdiction over the hydraulic conditions of soil on which it sat. Rotterdam emerged in a polder landscape that was, like most of the Netherlands, entirely artificial and for the most part below sea level. Managing the water level required a huge infrastructure of canals, dikes, and the famous windmills but most importantly a decision-making structure that manages this entire apparatus. In the Middle Ages, so-called water boards emerged to take care of everything related to water: including protection against the sea, but above all, the regulation of the water level in the polders. There were several of these boards, all presiding over their own region. Rotterdam was part of the area that was administered by the water board of Schieland. Water boards are reputedly among the first democratic institutions in Europe. Decisions were made by way of voting. Everybody who owned land was allowed to vote, but the relative weight of votes depended on the size of the land they possessed. Thus, a relatively small number of landowners in the polders could outvote the much large numbers of inhabitants of the city.

As long as the interests of the citizens coincided with those of the rural landowners, this inequity did not matter. Conflicts became inevitable, however, since the owners of rural properties preferred low water levels, which made working the land a lot easier. The city, on the other hand, opted for a much higher level, the advantages being that it made the mixture of water and waste less toxic, and allowed it to flush polluted water into the river at low tide. The only way to solve this conflict was to separate the urban part of the polder from the rural areas. Rose managed to do this by proposing a dike and a number of planted canals, called "singels" in Dutch, which were used to control water levels in the built-up area.

This is the gist of the so-called water project that he proposed in 1841 (Figure 1). The dikes marked the new border of the city, which was to be enlarged in order to accommodate further

growth. Rose decided to stick to the historical triangular shape of Rotterdam's urban plan. At high tide, clean water from the river was let into the canals of the medieval part of the city, and from there to the as yet empty farmland, where the new expansion plans were to be realized. Polluted water could flow back to the river at low tide. Superfluous narrow canals in the medieval city were to be filled in; they no longer served any purpose: if the water did not flow fast enough, it might add to the problems instead of to their solution. Not surprisingly, nothing came of this plan. Although it made clever use of the unique features of the Dutch landscape, the authorities deemed it way too expensive. Seven years after this ominous decision, another cholera epidemic struck the city, costing even more lives than the one of 1832. The municipality asked Rose to redesign his plan, which resulted in his second water project (Figure 2). In order to embellish this new piece of technical infrastructure, he asked J. D. Zocher, the Netherlands' best-known landscape and park architect at the time, to make plans for what looks like an English landscape garden. It is very similar to the ones introduced in many Dutch cities when they were allowed to demolish the lines of fortification surrounding them—the only difference being that the land between the singels and the existing cities was, for the time being, completely open. The second project was approved in 1854 and endowed the city of Rotterdam with a number of luxurious singels.

The water project resulted in a peculiar form of social segregation: the poorer classes lived in closed urban blocks between them. These were of the type Stübben showed in his famous handbook. The first of these blocks lined streets at the center of the relatively narrow, long plots; for a time, the ditches between them served as open sewages. The water project contributed to a solution at the scale level of the entire city; among the next steps to be taken was the introduction of a sewage system and building regulations that made sure that the new housing stock was actually connected to it.

While Rose was working on his revised water project, he began work on one of the most ambitions projects of the mid-nineteenth century. His Coolpolderplan added a new port with canals, quays, warehouses and housing (Figure 3). Its most striking feature was its rigid grid – it appeared to emulate the checkerboard pattern of the typically Dutch polder, while ignoring the structure of the existing polders. Another remarkable feature was that, again, it referred to the historical city: it was divided in a land city (corresponding with the medieval city), and a water city (referring to the seventeenth century 'water city'. Again, Rose looked to the past as much as he looked to the future. That may very well be the reason why this project failed. Economic realities in the nineteenth century had no need for merchants who bought their merchandise, stored it, and sold and shipped it when they could get a good price. Nor was there a need for ports that accommodated this now old-fashioned way of doing business. Moreover, space for expansion of the port was very limited at the northern shore of the Meuse. Recognizing this, Rose also prepared plans for expanding the port on the southern shore. That is where the future of the port of Rotterdam took shape. Since the late nineteenth century, huge harbor basins were dug, transforming the areas in between into huge piers. One of them was Katendrecht, named after the small village that used to be here. Cheap housing for the people working in the port was built instead, and in the 1910s and 1920s the Netherlands' first China town emerged in what not long before had been an Arcadian, pastoral landscape.

London: Cleaning the Pigsty

Urban hygiene would become the Janus-headed companion of urbanization. As early as the 1840s, studies on housing, living conditions, and the state of health in cities had been carried out under Edwin Chadwick in Britain. His utilitarian Benthamian approach was based on cleanliness and morality as a norm of behavior.[24] He "was concerned to strengthen social discipline, to cut the redistribution of wealth to the non-working population and to enlarge the national economy by forcing the poor to work in it."[25] With a mixture of fear, hope, and pride, medical professionals tried to analyze the dangers and develop solutions. The biggest problem turned out to be the uncontrolled

Figure 4. Monster soup, commonly called Thames, Caricature 1828 (Paul Pry). *Source*: *Metropole London. Macht und Glanz einer Weltstadt 1800-1840, Kulturstiftung Ruhr Essen* (Recklinghausen, 1992).

discharge of feces into rivers from which drinking water was also obtained (Figure 4). The construction of the sewer system in London under Joseph Bazalgette since the 1840s was an unprecedented engineering achievement.[26] It was a response to the "big stink" and the devastating cholera epidemic of 1832, which also caused havoc in Rotterdam, Petersburg, Berlin, and Hamburg. In London, the overcrowded slums in the East End near the river suffered most.[27] Bazalgette's project fostered the belief that all urban problems could be solved by engineering innovations.

High residential density, dirt, polluted water, poor nutrition, and alcoholism were spatially clustered but considered as the result of individual behavior: dirt is immoral while cleanliness is moral. The quantitative process of increased population density in urban areas was in the following decades coupled with a qualitative change in urban lifestyle, connected to modernization processes such as the formation of the class system, increasing bureaucratization and participation, the growing significance of law, and the expansion of mass communication.[28] A study by the US American Adna Ferrin Weber (1899) provided an impressive piece of evidence of the advanced international state of city studies at the turn of the century.[29] The empirical study of cities, urban hygiene, housing conditions, and slums especially in Great Britain was marked by a systematic description of social realities with its manifestations of poverty, slum misery, and lack of affordable housing. The studies of Charles Booth (1902) and B. Seebohm Rowntree (1901) are exemplary; they are based on a thorough quantitative analysis of the problem.[30] Their angle was not an attempt to universally and theoretically penetrate the problem, as was the case in continental city studies, but instead to offer analyses of reality to master reality, which is the pragmatic theme of English city studies.[31]

Figure 5. Map by John Snow with cholera-dead entered in the form of bars in London 1854 (reprint 1874). *Source*: *Die Zeit* (November 12, 2020).

Philanthropists such as Rowntree and the Lever Dynasty, who sponsored the first Chair in Town Planning in Liverpool later in 1909, were members of the Eugenic Society and other institutions that were ultimately concerned with interdependencies of health, economic effectiveness, and productivity.[32] Other reformers proposed to solve the problem by spatially relocating part of the population, following a strategy of decentralization. This was also the gist of the garden city movement. In 1899, the Garden City Association was founded in England (following on earlier proposals by Theodor Fritsch in 1896). The garden city idea must be recognized as one of the most important reform concepts of the late nineteenth century.[33] It emerged against the background of housing problems in

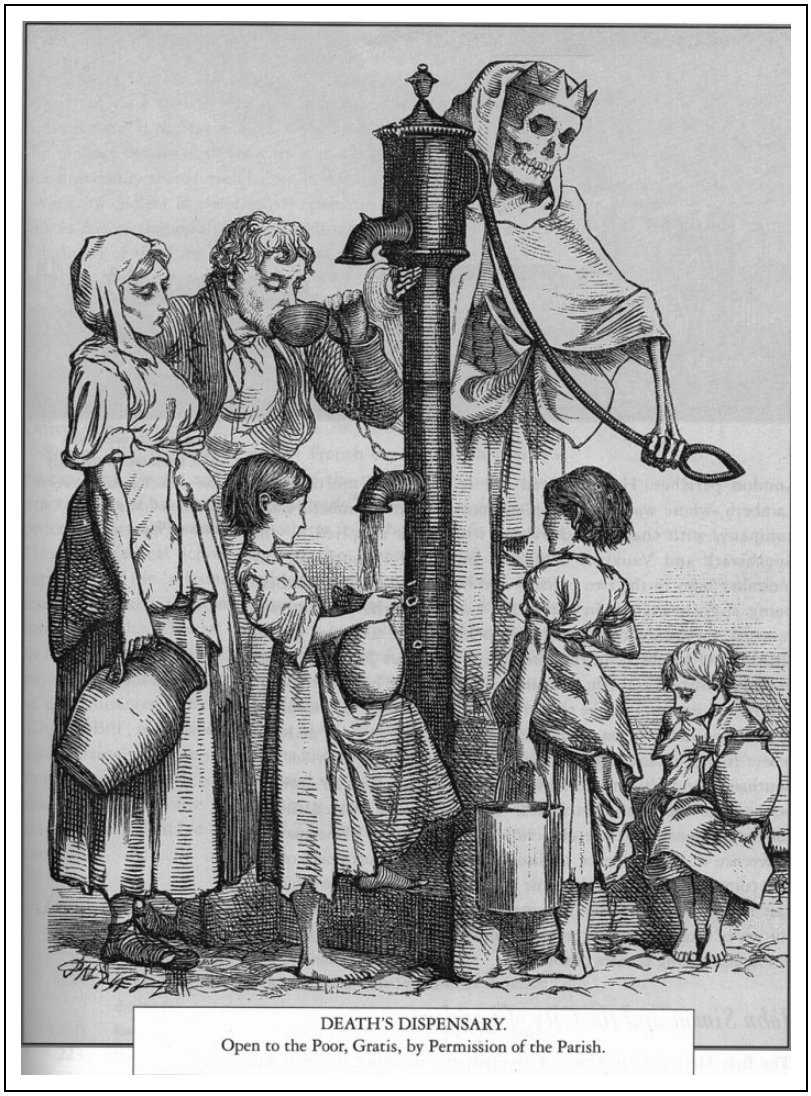

Figure 6. Drinking water for the poor from wells in London, 1860. *Source*: Stephen Halliday, *The Great Stink of London and the Cleansing of the Victorian Metropolis* (Phoenix Mill, 1999).

London and promoted an international model for decentralization and healthy living and housing conditions. This established an interpretative sovereignty and definatory power that is reproduced until now with positive and life reformatory connotations.

Representatives of the cultural elite, among them John Ruskin and William Morris, also cultivated aversion to big cities and the "masses" who lived there. Anti-urban solutions such as the relocation of people were suggested as a solution to housing problems and slum misery of big cities. Fears of "degeneration" and "physical inefficiency" of some of their inhabitants formed the background of anti-urban movements. In England, the debate developed against the backdrop of social Darwinism and racist ideologies. The conviction that the processes of natural selection and the struggle for life might not lead to a healthy population was widely accepted. This prompted arguments that increased state intervention must be organized to renew slum areas and improve living

conditions. All in all, though, in England, a realistic and pragmatic approach to the urban problems prevailed.[34] The negative aspects of urban life city were seen as "unpleasant side effects," temporary phenomena that would "go away of their own accord" or be cured with appropriate treatment.

The behavior and bad character of the residents were seen as the major causes of the poor living conditions in slums. The opponents of reform in England propagated the "pigsty theory" which stated, "Give a pig a clean sty and he will soon turn it into a muddy, smelly den."[35] It was generally believed that "the pig makes the sty and not the sty the pig." Even so, the concentrated poverty in the prospering metropolitan cities remained a problem that was difficult to understand.[36] Until well into the mid-nineteenth century, the belief that poverty was a result of failing morality of the poor, and thus their own fault, was widely held. The residents of slums, the poor, and the ill were no longer considered an expression of the will of God but rather the morally reprehensible result of a society that gave everyone an equal opportunity (Figure 5).

In England, there was a great amount of legislation dealing with common lodging houses (Acts in 1851 and 1853), then with public health (1858, 1860, 1866, 1872, and 1875) and finally with housing and, in parts slums (1868, 1875, and 1879). In the mid-eighties, the Royal Commission for Housing of the Working Classes and the Housing of the Working Classes Act introduced more effective national instruments; it opened ways to work on larger neighborhoods with unhealthy living conditions. Local idleness, however, prevented the law from being as effective as it promised to be (Figure 6). Nettlefold stated that there had been twenty-eight housing laws in England in the past half-century, with the result: "We have to-day comparatively few good houses and a mass of slums."[37]

The first goal of these legislative efforts was aimed at "improving living conditions" through clearance of large areas and rebuilding, at the same time guaranteeing that the number of housing units would not decrease. The Boundary Street project, executed by the London County Council since 1896, provided 1,044 new dwellings for about 5,700 people after demolishing all old structures.

When Queen Victoria died in 1901, London was the largest metropolis in the world with 4.5 million inhabitants—without a forward-looking urban development plan—with Balkanized responsibilities and fragmented individual plans. Growth and prosperity contrasted with unsanitary living and housing conditions and the concentration of people. While London was a metropolis and capital with a port, Hamburg was a port city in which port and trade dominated the local economy. If "seaport city" is used as a distinguishing mark for a comparative consideration of the city types here, specific formative structures and path developments must be taken into account in relation to characteristic features in each case.

Hamburg—"The Cleanest City in the World"

In Germany, conservatives and reformers, medical professionals, engineers, and architects also agreed that the big city was unnatural, inherently unhealthy, and unmoral. In parts of Hamburg, after the Great Fire in 1842, the British engineer William Lindley, a friend of E. Chadwick, introduced a filtered water supply and alluvial sewerage system (Figure 7). Hamburg's approach to improving urban hygiene was seen as modern and progressive—it made the city "the cleanest city of the world," according to an author in 1885.[38] The new sanitary facilities were only installed in the burned down part of the city and at first benefited only the upper and middle classes who lived there; later, they were introduced to working-class households as well. To "heed nature's call" in the privacy of one's own home meant increased sensitivity, civilization, or refinement of urban life. The required technology was available from the mid-nineteenth century onward, but mass distribution failed for one main reason: the lower class could not afford the rent for flats with water closets. The filtration plant that could ameliorate things had already been decided upon in 1890, but completion was not planned until 1894.

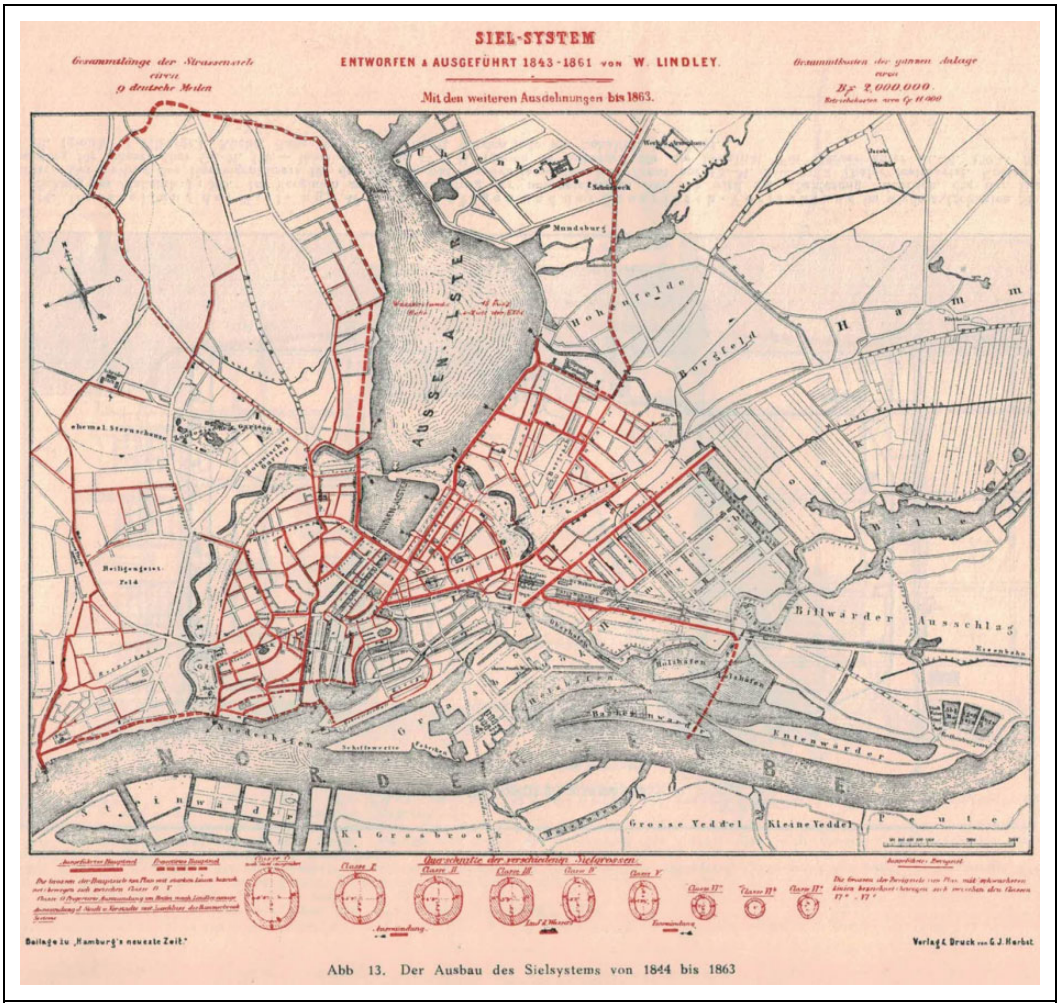

Figure 7. Expansion of the sewer system in Hamburg from 1844 to 1863 according to plans by the Englishman William Lindley. *Source*: Rolf Spörhase, *Bauverein zu Hamburg Aktiengesellschaft. Entstehung und Geschichte im Werden des gemeinnützigen Wohnungswesens* (Hamburg, 1940).

In Hamburg, there had been a smallpox epidemic in 1871 and outbreaks of cholera infections in 1831/1832, 1848, and 1873. However, tuberculosis and typhus were the dominant infectious diseases. The Senate mostly hushed up the danger and distinguished itself by inaction.[39] Two contradictory theories circulated in public health care until the end of the nineteenth century: the miasma and the contagion theories. According to the first, diseases were caused by dirt and miasma; according to the second, pathogenic organisms and infection were to blame.[40] The miasma theory became the main basis of the reform of public sanitary conditions and for good reason: in contrast to the contagion theory, the concept of miasma suggested effective interventions that promised to make cities much healthier. Preventing close contacts between people in overcrowded slums, which would have been necessary if the authorities embraced the contagion theory, was much more difficult to realize than interventions in the urban layout. The initiatives to improve public sanitary conditions were accompanied by a thrust of modernization and rationalization,[41] the reason being the

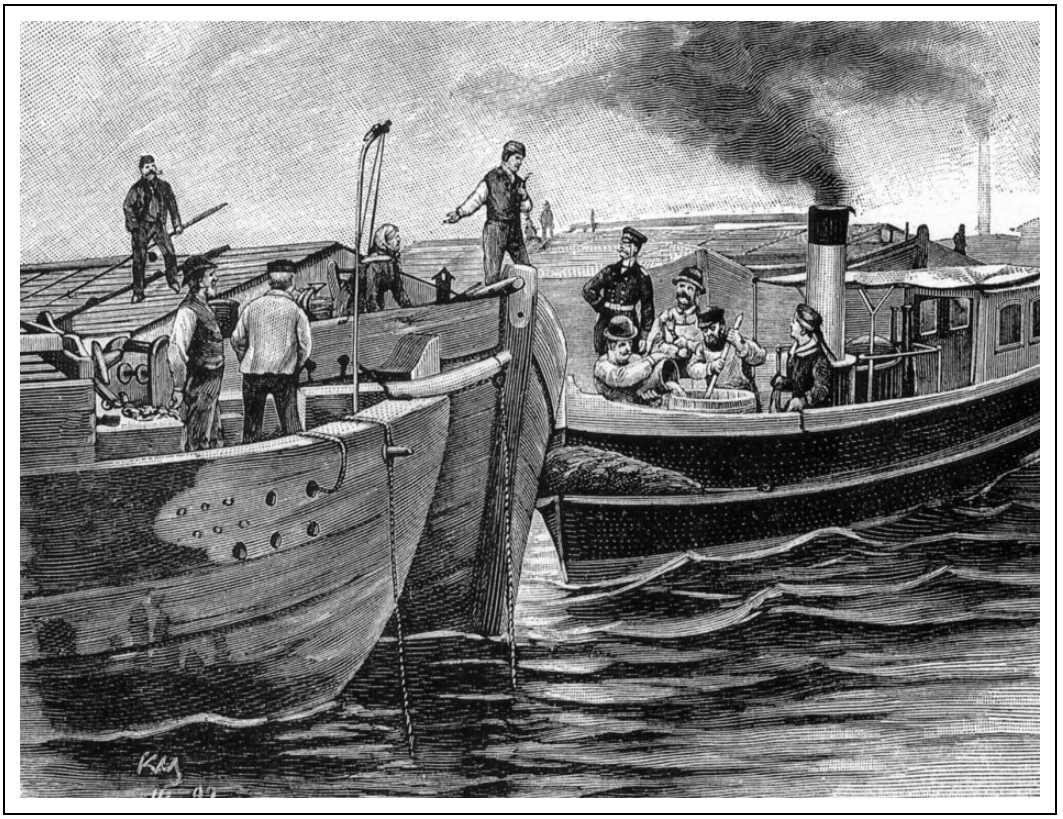

Figure 8. Disinfection of ships on the River Elbe. *Source*: *Hamburg in den Zeiten der Cholera, Behörde für Arbeit, Gesundheit und Soziales* (Hamburg, 1992).

conviction that health and environment could be manipulated, planned, and controlled. From repressive policies to stimulating measures, discipline was enforced in the name of health behavior.[42] Public health combined two contradictory elements: on the one hand, the positive, innovative approach that was based on scientific methodology and knowledge and, on the other hand, the views inspired by social Darwinism and its obsession with inequality and degeneration.[43]

The effects of urban hygiene could be statistically underpinned; they inspired urban measures that promised to be quantifiable as well. If the miasma and "air that makes ill" could be avoided by urban interventions, this would justify less density in the urban fabric. The physician Max von Pettenkofer, the German "hygiene pope,"[44] observed that a healthy person consumes five to six cubic meters of air in his sleep. If the person was prevented from doing so, his organism would be weakened and his susceptibility to diseases would increase. This led to the idea to fix minimal sizes for bedrooms. These remained in effect even after scholars found out that polluted water, not miasma, was the main cause of diseases such as cholera.[45] In 1892 there was another outbreak of cholera in Hamburg. While in the 19th century, over 10,000 people died of cholera in London, and over 8,000 in Hamburg in the hot summer 1892. Cholera caused panic and mass exodus from the city. Some people blamed social minorities, especially Jews from Eastern Europe leaving Europe by boarding ocean liners docked in Hamburg—thus, fear of plagues could fuel anti-Semitism.

Insufficient information about the spread of cholera was given "mouth-to-mouth" and via daily newspapers and notices. This spread rumors about contagion and protection options. Panic spread,

obscure disinfectants and medicines were sold, and people fled from the city (Figure 8). One year after the catastrophe, the hygiene professor Ferdinand Hueppe summed up: It is an art "to expect and supply such unqualifiable water to a city." [] He also referred to the "relatively strong infestation of boatmen and workers who use little water but drink the port and tap water".[46] In 1893 the Senate was supposed to assume "that in the last cholera epidemic the water was primarily the carrier of the contagious substance". But in relation to reforms, this was put into perspective: "Not only sanitary aspects may not be decisive, but the economic interests of the population must also be taken into account".[47]

Some people blamed social minorities, like the "yellow peril" and especially Jews from the Eastern Europe on their way to leave Europe by embarking ocean liners in Hamburg—thus, fear for plagues could fuel anti-Semitism. Between 1850 and 1939, Hamburg formed the "gateway to the world" for over five million emigrants.[48] While fleeing political or religious persecution, poverty and hunger, they tried to leave the "Old World" via Hamburg. On the Elbe island of Veddel, next to the port, 30 buildings with space for 5000 people were built for them, a "city within the city" with a synagogue, church, washrooms and dining halls and rail connection. Before leaving, the emigrants had to spend 14 days in quarantine. Against the background of the experience with the cholera epidemic, an area had been chosen for the emigrant accommodation that was on the city limits and was easy to isolate.

Faced with all these problems, the authorities of Hamburg were forced by the public opinion all over Germany to improve the sanitary and housing standards for the majority of its inhabitants. Beginning in the 1850s, they invested in the infrastructure for clean drinking water and the construction of sewage systems. The mortality rate decreased, and at the turn of the century, urban areas had a lower mortality rate than rural areas—for many centuries, it had been the other way around. The metropolis, a new phenomenon, managed to support its inhabitants—those who believed it was doomed were proven wrong.

What still needed to be solved was the housing problem of low-income groups. In Germany, the slums—the most notable manifestation of the housing problem—were a relatively new phenomenon that only appeared at the end of the nineteenth century. What was new was the extent and concentration of poverty that had resulted from industrialization processes. People flocking to the cities were accommodated in older buildings from the preindustrial area and later in small, overcrowded apartments in rented flats (tenements—"Mietskasernen"). These had a significantly higher urban density than was common before, and many more people lived in the apartments than ever before. The tenants of these new buildings, coming from the country, found it difficult to adjust to the standardized urban mode of behavior: "In their roughness they often smashed [. . .] everything that was not nailed down to get firewood; their dirty habits, their misuse of water-pipes, toilets etc. were only part of their mischief that made the life of the landlord hell." Landlords complained that the rent was paid late. "The need for a decent, roomy, clean flat was overshadowed by the needs of the stomach."[49]

Households with low incomes, often depending on casual labor, were not able to raise the money to pay rent for even a small flat. If they aspired to join the ranks of the middle classes and their "self-contained family housing," they faced the fact that they could not afford it. Especially highly mobile workers, such as seasonal workers and workers with shifting schedules, had to be satisfied with renting beds or parts of rooms. In general, the moral appeals of the bourgeois reformers were not directed at the "lowest classes" but rather on preventing the lower middle class from sinking into poverty.

Poverty was considered an individual failure in the nineteenth century. In slum clearance projects, hygienic measures represented a basic strategy of urban health; they often resulted in slum clearance policies. Apart from embellishment strategies for inner cities and the introduction of sewage systems, cutting new streets through the urban tissue determined planning and construction in many cities. Often, these streets were introduced in the oldest, overpopulated quarters where mainly low-income groups lived. They were realized at the expense of cheap, centrally located housing and were counterproductive in terms of housing policy. Since there was hardly ever enough

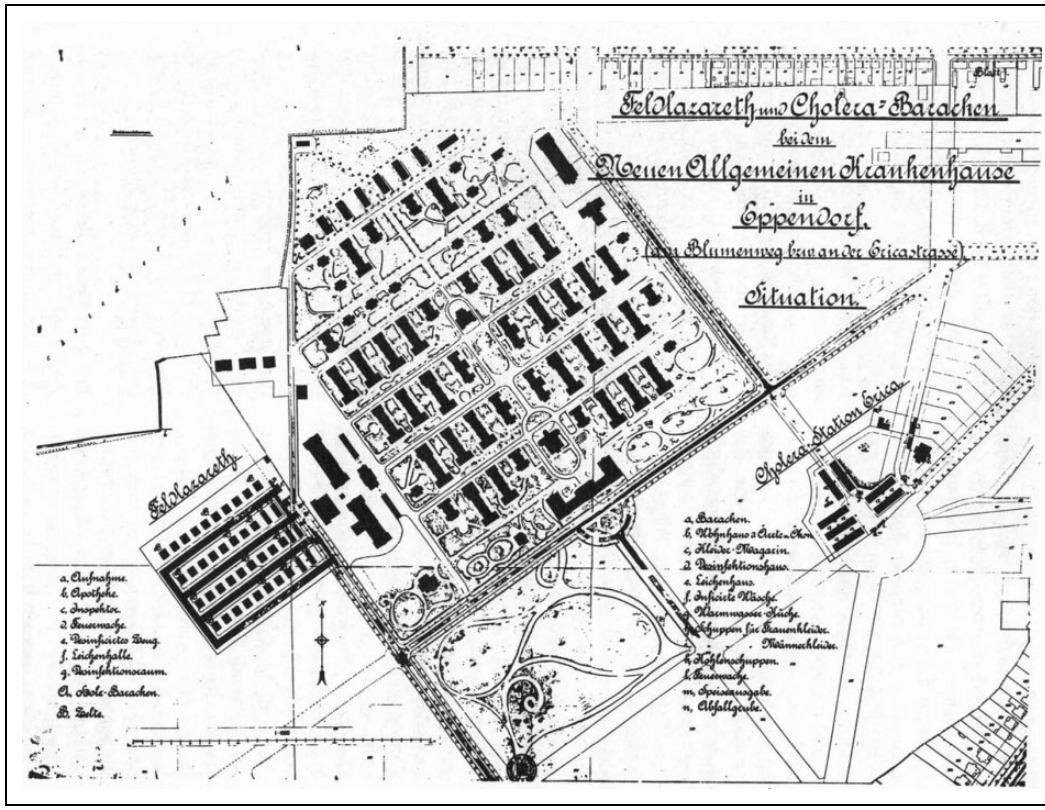

Figure 9. Field hospital with Cholera barracks 1892 in Hamburg (to the left of the Eppendorf hospital)
Source: *Ausstellung des Museumspädagogischen Dienstes Hamburg* (Hamburg, 1992).

budget to clean up entire slums, the sanitation policies usually stopped short at the construction of these new streets.

In Germany, the combined interests of house and landowners, land speculators and banks, and the electoral law prevented a housing law from being passed until 1918. The Reichstag referred to the diversity of circumstances and denied responsibility.[50] Nor was there was any legislation on slum clearing at the national level, though some cities (like Hamburg) carried out slum clearance policies on their own initiative. Among the lessons learned was the growing awareness that changes in the status of the inhabitants were imperative for the improvement of living conditions; this called for the involvement of private market initiatives alongside public interventions.

In Hamburg, the area of Südliche Neustadt, often flooded and with insanitary housing conditions, was filled with old buildings that were demolished and replaced by 4,500 new (more expensive) flats for about 21,000 people.[51] In inner-city areas, old buildings (mainly housing) were replaced by new buildings that were mainly used for tertiary uses. The Nördliche Altstadt was reconstructed and endowed with a subway line that created a better connection with Town Hall; it included a modern central business district.[52] With the clearing of all old buildings in the "Gängeviertel"—where prostitution, crime, and dissent were common, about 17,000 persons were forced to look for new accommodation.

The German Otto Schilling was one of the first to identify the emergence of a new type of city center in his work on "inner urban expansion." "The old town remains the site of trade and becomes

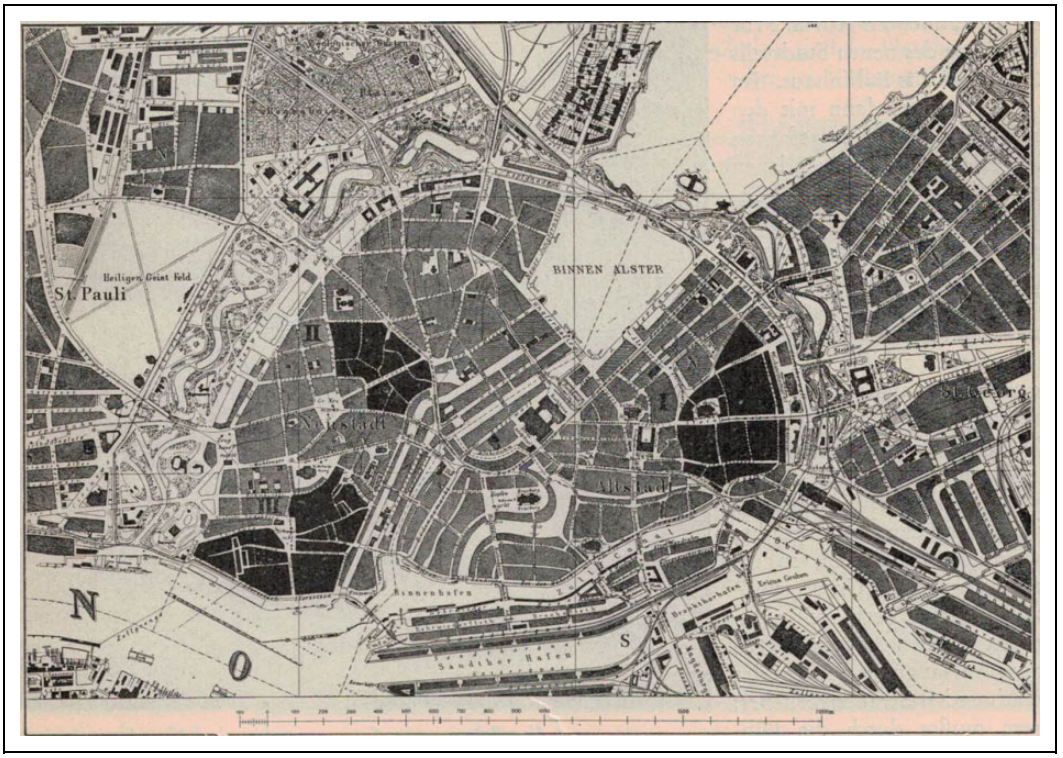

Figure 10. Defined slum areas (black) after the cholera epidemic 1892 in Hamburg with around 21,000 people affected, the implementation took more than thirty years *Source*: *Hygiene und Soziale Hygiene in Hamburg* (Hamburg, 1928).

more of a commercial center as the growing outer neighborhoods expand. [. . .] This restructuring process is generally called the emergence of a city centre, after the typical example of the city center of London. In London's city center all roads cross, and not just those of the city of London or of all of England, but of much of the world."[53] Immense costs and implementation problems caused the failure of many ambitious clearance projects in large areas. In England and Germany, only a few projects were carried out. "The activity of German cities will generally be limited to clearance of small areas for new streets for transportation and canalisation purposes as well as to level areas," wrote Josef Stübben.[54] The phenomenon of emerging city centers was thus already identified and studied before the First World War: "City center emergence means the conversion of the inner city from a housing area to a business area. [. . .]. 'Agglomeration,' and 'accumulation,' is not only apparent, but rather a distinct differentiation of the evolution of the metropolis within the city can be observed."[55] In inner urban expansion projects, the displacement of the original inhabitants was, as a rule, not considered a problem.[56] On the contrary, it was often even a declared goal. "The emergence of a city centre seems to be a necessary, or at least useful effect of urban agglomeration."[57] Offering housing as compensation, when it was even considered, usually meant that the original inhabitants had to move to another part of town to housing that was developed by the market.

Medical narratives of order and disorder, planned and unplanned, and healthy and sick found their way into urban development. It is no coincidence that the concept of renovation ("Sanierung") comes from medicine, and the German concept of urban health ("Stadtgesundung") is also borrowed from medicine. At the beginning of the twentieth century, new paradigms were added to the debate

on urban hygiene. Military suitability and racial discussions began to play a role. The urban way of life with its outgrowths, the slums, was classified as the cause of degeneration.

The First World War was not over, when the Spanish flu raged around the world - including Hamburg.[58] Dragged in from overcrowded barracks in the USA, the soldiers were sent to the front, mainly via the port in Brest in France.[59] In Germany over 250,000 flu deaths were counted, in 1918/19 and worldwide the flu should claim more deaths than the world war.[60] There were German defeats at the front, last offensives ended with high losses and after the capitulation thousands of soldiers returned to their homeland, where the revolution had broken out and events rolled over. In Hamburg, the Senate had learned no lessons from the cholera epidemic in 1892 and cases of illness were not isolated early on (Figures 9 and 10). Press censorship prevented education about the deadly flu. The first wave was soon to be followed by a second wave and the Spanish flu ultimately claimed more deaths than the First World War. It is estimated that almost 2,000 people in Hamburg succumbed to the flu-related pneumonia.

Conclusion and Outlook

This article focuses on urban hygiene in port cities. Successful though these operations undoubtedly have been, there are also some aspects that need critical assessment. From a methodological point of view, the discipline of urban planning—still in its formative years—leaned heavily on the scientific approaches of medicine on the one hand and social and cultural ideas inspired by Darwinism on the other. These allegedly gave planning a solid base in science. However, from today's perspective, many of these ideas were false and unfounded. Their use in urban planning projects resulted in the destruction of slums, with, in some cases, the clear goal to erase the "race" of slum dwellers as well. As long as it was assumed that the slum dwellers were a "low race" who passed on their "inferior genome," eugenic measures had to be a perspective of "population improvement."[61]

Though no political constellation put them in practice as radically as Nazi Germany, a large part of the international scientific community held these views. Social contexts were interpreted by a biological school of sociology, which also partly adopted the conceptual apparatus of biology, as organisms (society) with different cells (people) and cell structures. The theories of English thinkers, Malthus' population law, and Darwin's struggle for existence were transferred to social phenomena by Herbert Spencer and were very well received in Germany.[62] They underwent a reinterpretation from the aspect of inheritance and natural selection, which examined urbanization processes primarily from the perspective of racial selection. Social hygiene measures would counteract the degeneration of people.[63] And so, hygienically based narratives provided scientific evidence for the need to demolish or renovate backward slums.

Port cities are not "unhealthy" per se. Such discussions need to acknowledge the multitude of peculiarities of the working world at the water's edge.[64] Port cities were and are "laboratories of modernity," in which not only economic, social, political, and cultural but also health and epidemiological dimensions of the globalization process are reflected.

Now, scholars are mainly interested in another question: Did it work? And if so, what made it work? In order to find out, a clear analysis of the urban strategies and the built artifacts is needed. What type of water control? Which system of sewages? How did the plans for slum clearance plans impact the areas that they targeted? What can we learn from all these today? Most of the strategies we described responded to epidemics—now, 85 percent of the burden of diseases associated with so-called noncommunicable diseases like cancer and heart failure, and these are to a large extent determined by lifestyles. The effects of the built environment can partly explain these: sedentary lifestyles, lack of accessible and programmed greenery, social isolation, and food deserts. COVID-19, however, disastrous its consequences, is only a temporary phenomenon that will not have a lasting impact on public health—in the Netherlands, for instance, the number of people

expected to die of the consequences of smoking will be much higher, and the same is true for unhealthy lifestyles. Even so, the COVID-19 pandemic does illustrate something important: very often, the medical world can do very little, and we need to resort to tactics known in preindustrial times such as isolation and quarantine. It is as if COVID-19 has transformed the entire world into one big, global, vulnerable port city.

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Notes

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