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KEEPING THE CITY TOTALLY CLEAN: YELLOW FEVER AND THE POLITICS OF PREVENTION IN COLONIAL SAINT-LOUIS-DU-SÉNÉGAL, 1850–1914*

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ABSTRACT: This article explores the ways in which French colonial authorities met the life and death challenge represented by the re-emergence of yellow fever epidemics in Saint-Louis-du-Sénégal at a time when physicians knew very little about the etiology, diagnosis, transmission and treatment of most infectious and parasitic diseases. The discussion focuses on changing strategies and policies designed to address yellow fever threats, the attitudes and priorities of the authorities, the limits of 'colonial medicine' and the responses of people affected by sanitary measures. The article argues that because of the ignorance of the etiology and epidemiology of yellow fever, policies were misdirected and did not achieve their primary goals. Even after the introduction of germ theory, the gap between medical thinking and practice persisted for another decade. The African urban working class and underclass were the first victims of this state of affairs. The article also examines the conflict between the interests of public health, commerce and privacy rights.

KEY WORDS: Senegal, health, colonial.

SINCE K. David Patterson's observation in 1974 about African medical history as an untouched field, an increasing number of scholars have been focusing their attention on the relationship between disease, Western medicine and colonial rule in Africa.[1] Thematically, the main concerns have related to the role of colonial medicine in the conquest of Africa,[2] the social

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[1] K. D. Patterson, 'Disease and medicine in African history: a bibliographical essay', *History in Africa*, 1 (1974), 147.

[2] W. Cohen, 'Malaria and French imperialism', *Journal of African History*, 24 (1983), 23–36; N. E. Gallagher, *Medicine and Power in Tunisia, 1780–1900* (Cambridge, 1983); Philip D. Curtin, *Death by Migration: Europe's Encounter with the Tropical World in the Nineteenth Century* (Cambridge, 1989); Philip D. Curtin, *Disease and Empire: The Health of European Troops in the Conquest of Africa* (Cambridge, 1989); R. Headrick,

history of several 'colonial diseases',[3] disease and urban segregation,[4] disease ecology and political economy,[5] medical ideologies[6] and the medical profession.[7] Interpretations have also varied. Although most historians have looked at biomedicine as a tool of empire and a means of social control, they have disagreed on its effectiveness. Conservative interpretations have presented the history of Western medicine in Africa as an account of its successes in reducing mortality and in achieving population growth. Liberal interpretations have tried to show that the record of colonialism on health issues was a balanced one. Radical interpretations have emphasized racialized health policies, health inequalities and the introduction of new diseases.

These works have greatly contributed to our understanding of the processes and structures that led to the imposition by the colonial state of biomedicine as the official medical practice as well as the responses to it, ranging from resistance and selective adhesion to accommodation and even appropriation. Studies examining cities, in particular, have helped us understand the factors that provided a rationale for change in urban policy

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Colonialism, Health and Illness in French Equatorial Africa, 1885–1935 (Atlanta, 1994). The list is suggestive, not exhaustive.

[3] R. Packard, *White Plague, Black Labor: Tuberculosis and the Political Economy of Health and Disease in South Africa* (Berkeley, 1989); M. Lyons, *The Colonial Disease: A Social History of Sleeping Sickness in Northern Zaire, 1900–1940* (New York, 1992); N. E. Gallagher, *Egypt's Other Wars: Epidemics and the Politics of Public Health* (Syracuse NY, 1990); J. P. Bado, *Médécine coloniale et grandes endémies en Afrique, 1900–1960: lèpre, trypanosomiase humaine et onchocerchose* (Paris, 1996); E. Silla, '*People Are not the Same*': *Leprosy and Identity in Twentieth Century Mali* (Portsmouth NH, 1998); Myron Echenberg, *Black Death, White Medicine: Bubonic Plague and the Politics of Public Health in Colonial Senegal, 1914–1945* (Portsmouth NH, 2002).

[4] Maynard W. Swanson, 'The sanitation syndrome: bubonic plague and urban native policy in the Cape Colony, 1900–1909', *Journal of African History*, 18 (1977), 387–410; E. M'Bokolo, 'Peste et société urbaine à Dakar: l'épidémie de 1914', *Cahiers d'Etudes Africaines*, 22 (1982), 13–46; Maynard W. Swanson, '"The Asiatic menace": creating segregation in Durban, 1870–1900', *International Journal of African Historical Studies*, 16 (1983), 401–21; Philip D. Curtin, 'Medical knowledge and urban planning in tropical Africa', *American Historical Review*, 90 (1985), 594–613; C. Coquery-Vidrovitch, *Processus d'urbanisation en Afrique* (2 vols.) (Paris, 1988); Odile Goerg, *Pouvoir colonial, municipalités et espaces urbains, Conakry – Freetown des années 1880 à 1914*, vol. 1: *Génèse des municipalités* (Paris, 1997); Odile Goerg, 'From Hill Station (Freetown) to downtown Conakry (First Ward): comparing French and British approaches to segregation in colonial cities at the beginning of the twentieth century,' *Canadian Journal of African Studies*, 32 (1998), 1–31.

[5] M. Turshen, *The Political Ecology of Disease in Tanzania* (New Brunswick NJ, 1984); E. A. Eldredge, 'Drought, famine and disease in nineteenth-century Lesotho', *African Economic History*, 16 (1987), 61–93; S. Feierman and J. M. Janzen (eds.), *The Social Basis of Health and Healing in Africa* (Berkeley, 1992).

[6] A. Patton, *Physicians, Colonial Racism, and Diaspora in West Africa* (Gainsville, 1996); H. Deacon, 'Racism and medical science in South Africa's Cape Colony in the mid- to late nineteenth century', in R. MacLeod (ed.), 'Nature and empire: science and the colonial enterprise', *Osiris*, 15 (2000), 190–206.

[7] John Iliffe, *East African Doctors: A History of the Modern Profession* (Cambridge, 1998).

from early forms of cohabitation to urban residential segregation by race and class. However, these studies – focusing on malaria, bubonic plague and cholera – have emphasized the impact of the mosquito theory and the germ theory of disease on urban colonial planning, but have neglected the role played by the miasmatic theory of disease, which preceded it, in the genesis of segregationist ideas and practices. Recent scholarship has underlined the fact that steps taken by the colonial authorities before the introduction of germ theory helped lay the foundation for segregation. In his carefully researched book on plague in Dakar, Myron Echenberg pointed to the importance of yellow fever in establishing 'important precedents' for disease control well into the twentieth century.[8] Another historian, Bruce Fetter, has in a recent article stressed the contribution of the 'commonsense innovations' of British medical officers in saving lives, 'even though they had no formal scientific rationale'.[9] This article will focus on yellow fever outbreaks in Saint-Louis-du-Sénégal and political and social responses to them. It will contribute to the discussion on colonialism and urban residential segregation. In this regard, the study will complement the works of Philip Curtin and Odile Goerg in the light of new advances in health science, and the works of John Iliffe on the urban poor.[10] The article argues specifically that the miasmatic theory of disease and the measures that it inspired contributed to the reduction of mortality, to the pathologization of those classified as *indigènes* (working poor and underclass) and to the emergence of urban segregationist practices. The emergence of the germ theory of disease brought the last two processes to fruition. The application of Western medical knowledge in Senegal resulted in a division among physicians and between colonial officials and municipal authorities, and in a conflict of interests between public health, commerce, popular culture and privacy rights.

Evidence for this study is drawn from the archival materials, published sources and oral sources related to Saint-Louis's experience with yellow fever, one of the three 'exotic pestilential diseases', along with cholera and plague, that necessitated the application of permanent sanitary measures. Yellow fever occupied a special place in the minds of French authorities because of the recurrent and disruptive nature of the epidemics, the high mortality rates, the panic and flight that they provoked and the challenge that they posed to the rhetoric of the *mission civilisatrice* related to freeing the natives from the tyranny of disease over health, of instinct over reason and of ignorance and superstition over knowledge, without engaging what W. E. Connolly called the 'enigma of otherness'.[11] Above all, yellow fever provided the material for the construction of the Africans as natural carriers of disease and a justification for segregation.

[8] Echenberg, *Black Death*, 23.

[9] Bruce Fetter, 'History and health science: medical advances across the disciplines', *Journal of Interdisciplinary History*, 32 (2002), 440.

[10] John Iliffe, *The African Poor: A History* (New York, 1987); Curtin, *Death by Migration*; Curtin, *Disease and Empire*; Curtin, 'Medical knowledge'; Goerg, *Pouvoir colonial, municipalités et espaces urbains*.

[11] William E. Connolly, *Identity/Difference: Democratic Negotiations of Political Paradox* (Minnesota, 2002).

YELLOW FEVER THREATS, THE MIASMATIC THEORY AND THE 'GEOGRAPHY OF BLAME'

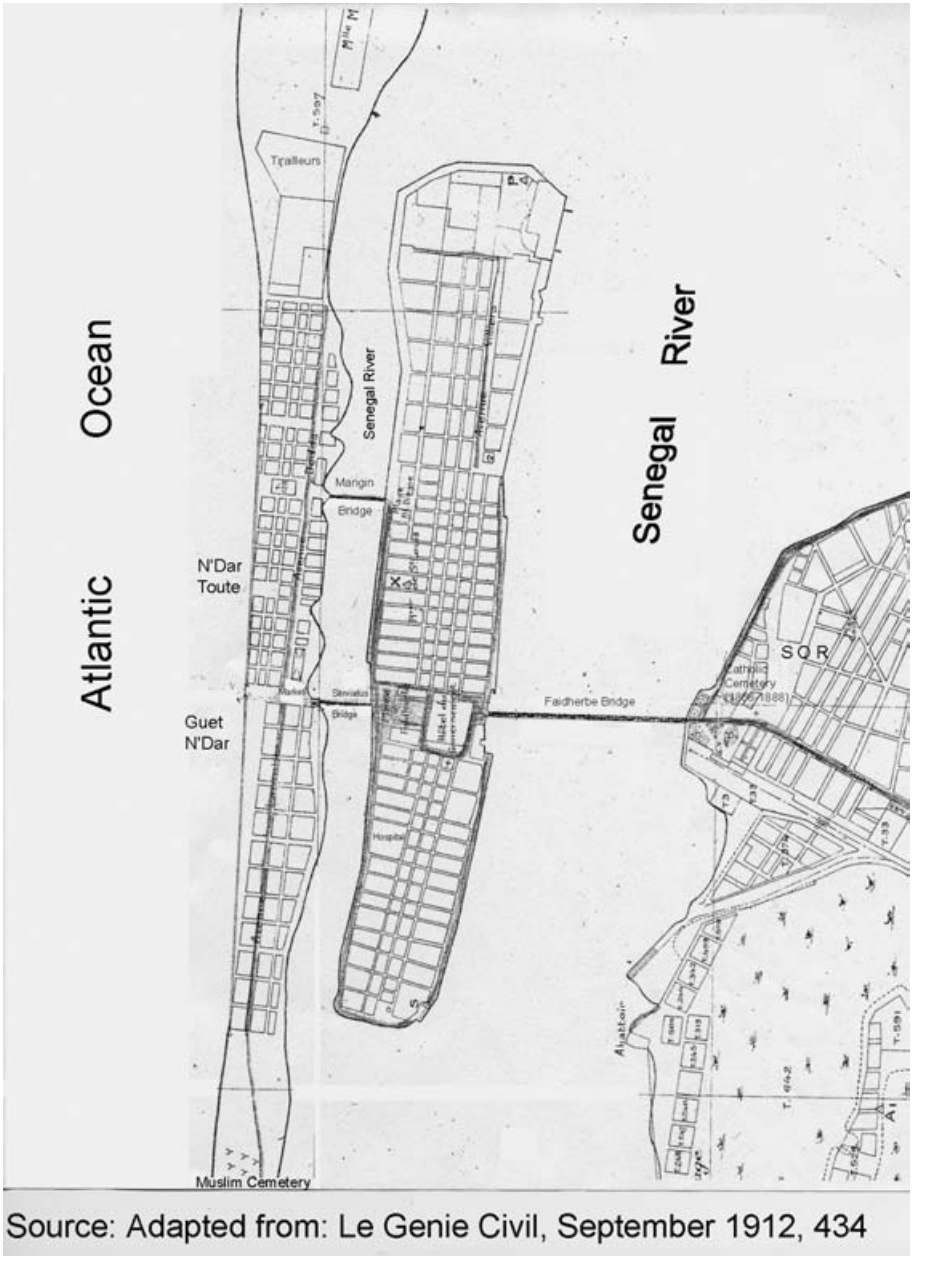
In the second half of the nineteenth century Saint-Louis grew from a trading post to a commercial port city, the capital of Senegal and, for a while, the capital of French West Africa in the context of the emerging French empire. It included the city-island and three peri-urban villages of Guet Ndar, Ndar Toute and Sor. The early urban society included the Africans, a majority of whom were Wolof Muslims, and the French merchants; from their interaction emerged a métis community, which would play a key role in commerce and politics. Saint-Louis attracted an increasing floating population in search of work or assistance. It remained the largest city in francophone West Africa until 1914, with a dynamic civil society, electoral institutions and an expression of citizenship which produced 'the biggest headaches' for the colonial administration, as David Robinson has pointed out.[12]

However, Saint-Louis early on developed the reputation of being an unhealthy place. Indeed, urban growth and the unequal distribution of wealth and resources that accompanied it resulted in population growth and environmental contamination. International trade and travel and the inadequacies of public health policies were associated with the emergence and spread of viral, parasitic and bacterial diseases, which killed or disabled thousands of city residents.

Yellow fever is a disease of forest monkeys in Africa and the Americas. The virus is transmitted by mosquito vectors as part of a monkey-to-mosquito cycle. The disease is endemic in the jungle where it circulates between monkeys, with occasional monkey-to-human transmission through infected female *Aedes aegypti* mosquitoes. These mosquitoes have also adapted to living around human agglomerations and multiplied in containers of clean water, leading to urban epidemics of yellow fever. Infected mosquitoes can also travel in ships and trains and spread the disease. Yellow fever thrives where there is adequate rainfall and warm weather. A person who becomes ill presents terrifying symptoms that cause panic: jaundice, high fever, internal hemorrhage and vomiting of black blood. It has been argued that the fact that symptoms were mild in children conferred immunity to permanent residents of endemic areas or areas frequently visited by yellow fever, thus restricting the outbreaks of epidemics to the sudden arrival of large groups of newcomers such as immigrants, soldiers, sailors, etc. This view can be found in Philip Curtin's assertion that 'yellow fever in West Africa was a strangers' disease, attacking those who grew up elsewhere'.[13] Curtin's interpretation was a reflection of official mortality statistics that provided more details about the Europeans and the 'assimilated' group than about the majority of the natives, who had limited access to medical services. But recent scholarship in molecular biology has revealed that a person who has been exposed to a viral

[12] David Robinson, *Paths of Accommodation: Muslim Societies and French Colonial Authorities in Senegal and Mauritania, 1880–1920* (Athens OH, 2000), 98.

[13] Curtin, *Death by Migration*, xiv, 130; Curtin, *Disease and Empire*, 10; Donald B. Cooper and Kenneth F. Kiple, 'Yellow fever', in Kenneth F. Kiple (ed.), *The Cambridge World History of Human Diseases* (New York, 1993), 1101; for a critique of Curtin, see Fetter, 'History and health science', 427.



Map 1. Map of Saint-Louis.

or bacterial infection acquired protective 'immunity' not against reinfection but against severe or life-threatening symptoms.[14]

[14] Michael B. Oldstone, *Viruses, Plagues, and History* (New York, 1998), 16; Stephen S. Hall, 'Billions of powerful weapons to choose from', in Maya Pines (ed.), *Arousing the*

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Medical historians are still divided concerning the origin of yellow fever in Africa or the Americas. A Cuban physician, Dr. Carlos Finlay, identified in 1881 a mosquito vector as its agent of transmission, but his theory remained in scientific limbo until it was verified in 1900 by J. Lazear, while the virus itself was discovered in 1901 by Dr. Walter Reed. Both were members of the American Yellow Fever Commission in Cuba.[15] The first vaccine was developed in 1937.[16] Before these discoveries yellow fever remained the most feared disease. Today, outbreaks of urban yellow fever still occur in some regions of West Africa between May and October, and in South America between January and April.

Yellow fever struck Saint-Louis several times in the second half of the nineteenth century and produced thousands of casualties. Understanding the career of yellow fever in the city requires an analytical framework that focuses on agency and structure, and takes a critical look at the dominant interpretational model of the colonial health officers that tends to obscure some features of the re-emergence of yellow fever. As clinician and anthropologist Paul Farmer reminds us, the emergence of a disease can neither be fully understood nor explained if one does not take into account the interaction between large-scale social forces, complex biosocial realities and local factors and actors.[17] This approach can also shed light on other crucial issues that the outbreaks bring to the forefront of the debate such as scapegoating and stigmatization or medical profiling, associated with fear and suspicion.[18] Charles L. Briggs's concept of medical profiling has a great explanatory power in that it introduces a dichotomy within the body politic between sanitary citizens, who are expected to obey the laws and cooperate with health authorities to control the epidemics, and unsanitary subjects, who are not open to modernity and are likely uncooperative patients. By choosing the path of resistance, the unsanitary subjects relieve the government from any obligation to invest in their health.[19]

Yellow fever ravaged Gorée in 1830 and returned in 1859 and 1866 without reaching Saint-Louis. But in 1867 it struck the city at the end of August and spread rapidly, provoking a general panic, and overwhelming the response capacity of the colonial authorities and the available health resources. When the disease subsided at the end of October, it had killed around 300 Europeans and hundreds of Africans.[20] Before the advent of the mosquito theory, there were two overlapping theories of the disease: localism (or environmentalism) and contagionism.

Fury of the Immune System: New Ways to Boost the Body's Defense (Chevy Chase, 1998), 6–29.

[15] Francois Delaporte, *The History of Yellow Fever: An Essay on the Birth of Tropical Medicine* (Cambridge MA, 1991).

[16] W. Biddle, *A Field Guide to Germs* (New York, 1995); Oldstone, *Viruses, Plagues, and History*.

[17] Paul Farmer, *Infections and Inequalities: The Modern Plagues* (Berkeley, 1999), 5.

[18] For more details about stigmatization, see Philip Strong, 'Epidemic psychology: a model', *Sociology of Health and Illness*, 12 (1990), 249–59.

[19] Charles L. Briggs with Clara Mantini-Briggs, *Stories in the Time of Cholera: Racial Profiling during a Medical Nightmare* (Berkeley, 2003), xvi.

[20] Archives of the *Congrégation du Saint-Esprit*, Chevilly-la-Rue (ACSE), *Bulletin Général*, 6.42 (1866–67), 183–4.

The localists argued that yellow fever had to do with local environmental conditions, both natural and human-made. Epidemics were understood to be caused by noxious miasmas emitted by decaying organic matters arising from the cemeteries, stagnant pools from floods and torrential rains that had transformed the streets of Saint-Louis into infected ponds, and the natural environment surrounding the city – a flat swampy land, the mouth of the Senegal River and the mixture of salty and non-salty water in the river around the city. The frequent and terrible 'winds from the south' during the summer months contributed to the spread of diseases. Other sources of miasmas included waste from animal slaughtering, and urine and manure from camels, mules, sheep, cows and horses left rotting in the streets and public spaces, and along the docks. Localists did not see yellow fever as a disease that could be transmitted from person to person; one could simply inhale miasmas or be exposed to the sunlight and get sick.

The contagionists contended that yellow fever was caused by a kind of poison which could be transmitted through contacts between people or through infected buildings and objects such as clothes, merchandise, mail, skins, leather, wool and feathers, irrespective of the local sanitary conditions. Contagionists believed that yellow fever was not locally produced; instead, it was imported to the city from Sierra Leone, Gambia, Portuguese Guinea or Grand-Bassam via Gorée and Dakar.[21]

Besides these general causes of fevers, both localists and contagionists had identified other predisposing factors that they believed played a key role in determining the pattern of infection, especially who would get infected and die, who would recover and who would not get sick. These factors included unsanitary housing, tropical heat, poor diet, fatigue, bad habits and excesses and 'moral emotions' caused by frequent disputes resulting from cross-cultural miscommunication in situations of 'forced interaction' with the *indigènes* – such as aboard ships – in which 'Europeans are obliged to refrain themselves' from taking any action that would worsen the increasingly strained race relations.[22]

Techniques used to deal with the yellow fever threat combined both sanitationist and quarantinist approaches. The localists favored strategies aimed at attacking the predisposing factors and improving sanitation and hygiene enforced by municipal police, while the contagionists relied mainly on quarantines, sanitary cordons, disinfection and isolation. The two schools of thought were not incompatible, however, and did not form two permanent groups. There were probably few committed localists and contagionists; rather, the majority of public health officials found both explanations complementary.[23]

The yellow fever policy of the mid-nineteenth century was formulated from an environmental and narrow contagionist perspective. To improve

[21] Archives Nationales du Sénégal, Dakar (ANS), H 20, Public Hygiene and Sanitation Council (PHSC) meeting, 10 Jan. 1868; for more on contagion and infection, see Peter Baldwin, *Contagion and the State in Europe, 1830–1930* (New York, 1999), 3–5.

[22] ANS, Section Afrique Occidentale Française (AOF) 1-4, Captain Doublet aboard 'L'Etoile', 1860, 42.

[23] ANS, AOF H 32-14, '*Epidémie de fièvre jaune à Saint-Louis* (*23 juillet–19 novembre*)', by Dr. Martialis, 3–4, 6.

the preparedness for epidemics, the public health officials recommended measures that emphasized sanitation and hygiene, disinfection, the isolation of European troops and an effective use of hospital services, as well as a surveillance program that would enforce the quarantine regulations applying to ships arriving from contaminated or suspected regions.[24] Such measures had serious disruptive effects and an intrusiveness that the authorities underestimated, as I will discuss below. They were certainly convinced that the outbreak response was effective, however. But yellow fever subsided simply because of the extended cold weather from January through May, which sent mosquitoes into hibernation, and the short life-span (less than two months) of the female *A. aegypti*.

Efforts to control a disease about which little was known and to avoid its recurrence heightened the anxieties that the French felt about Senegal. While the yellow fever policy was implemented, a cholera epidemic ravaged Saint-Louis in November 1868 and within a month it had killed 1,112 *indigènes* – 5,000 according to missionary sources[25] – and 92 Europeans,[26] including Governor Pinet-Laprade, out of a population of 20,000. The succession of outbreaks challenged the basic assumptions about the interaction between the French and the *indigènes* and provided the authorities with a rationale for accelerating the change in urban policy from cohabitation to racial and class segregation that had started a decade earlier. Health authorities first targeted Saint-Louis's marketplace, which they perceived as a source of miasmas generated by foodstuffs that were exposed to the burning sun. In addition, the marketplace was described as the site of 'forced agglomeration of individuals, almost naked, the majority of whom have no notion of decency, who presented to the European population from the metropole a revolting as well as immoral spectacle'.[27] The marketplace was transferred to Ndar Toute. The authorities next targeted unsanitary housing, especially the shacks located in the city center that were seen as breeding grounds for the disease, and decided to eliminate the *indigènes* from the city center. Known as the *bataille de la paillotte* (war on shacks or thatch-roofed houses) during Faidherbe's tenure in the 1850s and 1860s, the policy of forced removals continued between 1871 and 1873 to include the streets of Saint-Paul in the north and Saint-Joseph in the south.[28] The authorities presented the policy as based not on race but on class, social status and culture, especially the living standards and the degree of westernization or modernity, which explains why it did not affect the métis and Muslim merchant families. The policy was justified by the inability of the *indigènes* to meet the requirements of the building codes in order to prevent frequent fires during the cold season.

The evidence suggests that the policy of forced removals was actually inspired by racial prejudice, however. Studies on race and ethnic relations

[24] ANS, *Moniteur du Sénégal et Dépendances*, 1867, 643; ANS/H20/Senegal, PHSC meeting, 10–11 Jan. 1868.

[25] ACSE, *Bulletin Général*, t. 6 (1868–9), 864.

[26] Archives Nationales de France, Aix-en-Provence (ANFSOM), Séries géographique Sénégal, XI 30, chief medical officer, Rulland, to governor, 3 Jan. 1869.

[27] ANFSOM, Séries géogr. Sénégal, XII 9, Administration Council meeting, 25 Sept. 1869.

[28] ANS, *Moniteur*, 25 Feb. 1873, 1.

have shown that it is possible to 'fence in' a set of beliefs by periodically admitting to exceptions, and to look down upon the majority of others in the same category, who, presumably, are really 'typical'.[29] The specific historical situation of Saint-Louis, with the structural features of its commerce and its complex political and civil society, can help explain why the métis and Muslim merchant families were defined as exceptions and categorized as sanitary citizens. Yellow fever and cholera outbreaks and the imagined or real class character that they took led the health authorities to construct the *indigènes* as natural targets for particular diseases and as threats to the health of the Europeans and people associated with them. In French thinking, the *indigènes* had disqualified themselves from sanitary citizenship by refusing to adopt French cultural values and ideas of progress, and were therefore situated outside modernity and 'civilization'. They were 'different', 'other', and the social difference was located in their customs, habits, lifestyles and sexuality. Their women were seen littering and bathing naked in public, and these practices were viewed as the result of 'self-negligence' and 'the absence of sentiments that distinguish people who respect themselves', despite the claim made a decade earlier by Hamet Ndiaye Anne, *cadi* (judge) of the Muslim Tribunal, that the 'old habits have ended'.[30] Being classified as *indigènes* had serious implications concerning the ways in which they would be treated by the colonial authorities, as the next epidemics revealed.

The 1878 yellow fever epidemic was part of the pandemic that affected most Atlantic societies from Philadelphia and Memphis to Rio de Janeiro and Freetown, as a result of globalization of trade and travel. It arrived from Brazil in May, brought to Dakar by *Le Niger* and *L'Orénique*. The boats were not quarantined.[31] The epidemic was declared in Gorée in mid-July and in Saint-Louis in September, only after the infection had spread from the *indigènes* to the Europeans. Despite the control measures adopted by the authorities, ranging from quarantine and *cordons sanitaires* to health education,[32] yellow fever spread in the city and, by December, it had killed 652 Europeans out of a European population of 1,300, including 14 Sisters of Saint-Joseph de Cluny who cared for the sick, and an undetermined number of middle-class residents and *indigènes*.

Many factors contributed to high mortality. Immigration from France, wars and famine in the countryside swelled the population of Saint-Louis, now a city of 16,000 residents. Urban growth had created vast problems of sewage, waste removal, housing and water supply, and had increased the quantity of breeding places for mosquitoes. To make sense of the crisis, the authorities looked for scapegoats. Some in Paris resigned themselves to the fact that, because of its climatic conditions, Senegal was especially

[29] Hubert M. Blalock, Jr, *Race and Ethnic Relations* (Englewoods Cliffs NJ, 1982), 20–1.

[30] ANS H 21, Special Commission meeting, 2 July 1864; ANS H 20, PHSC meeting, 10 Jan. 1868.

[31] ANFSOM, Ministry of Agriculture and Commerce to the Ministry of Navy, 16 May 1878, in Séries géogr. Sénégal, XI 34, Navy Health Superior Council meeting of 30 Jan. 1879.

[32] ANS AOF H 28-2, governor's decision no. 15 of 2 July 1878; ANS AOF H 28-4, decision of governor, no. 17 of 27 July 1878; ANS AOF H 28-5, decree no. 16 of 28 July 1878; ANS AOF H 28-37, *Ordonnateur* to governor, 6 Aug. 1878.

vulnerable to yellow fever. Others pointed to bureaucratic deficiencies. Others argued that only prevention could spare Senegal from another epidemic, especially the application to Senegal of the provisions of the law of 3 March 1822 and the decree of 22 February 1876 empowering the sanitary police to enforce quarantine.[33] The final solution, some suggested, was the separation between the Europeans and the *indigènes* as 'an element of first importance from the point of view of hygiene'. But such a measure, they realized, could not apply to the existing agglomerations, such as Saint-Louis, Dakar or Conakry, where it would not find supporters among the merchants who were primarily concerned with profit, not hygiene. Separation would be possible only in future agglomerations,[34] given that a significant number of Muslim residents had been French nationals since 1830.[35] In the meantime, the authorities focused on enforcing the quarantine regulations and other sanitary measures. Soon, they would face another health threat that would reveal that, despite their presence in the 'right' social category – that of sanitary citizens – the métis and Muslim merchants did not necessarily share the administration officials' perception of health risks and did not appreciate the pathologization of the *indigènes* who were their supporters and voters.

In May 1879 fear and suspicion spread among the colonial authorities as cases of fever and diarrhea accompanied by vomiting were observed among city residents. The anxiety was justified not only by the coming of the rainy season and the possibility of another epidemic, but also because of an influx of hundreds of European troops into Saint-Louis. The unknown illness provoked an intense debate during a key meeting of the Sanitary Commission of 14 May 1879, presided over by Pierre Carpot, *Ordonnateur*, who represented the administration. In a report to the governor the day before, doctors had linked the symptoms to the offensive smells from rotting fish coming from Guet Ndar, and had called on the public health officials to remove the 'focus of infection'. Pierre Carpot blamed Mayor Gaspard Devès, from one of the leading métis families, for tolerating the 'general unregulated fishing' in Guet Ndar and for his unwillingness to implement the recent sanitary measures, which had provisions for a new location for fish smoking at the extreme south of Guet Ndar in order to minimize the threat to the city's welfare. Standing as 'the defender of the material interests of the *indigènes* and those of the city', Devès took great pains to argue that the fishing industry was not a threat to the city's health and that the *indigènes* had the right to dry fish and earn a living. He reminded the participants that even during the tenure of Governor Pinet Laprade (1865–9) no workable solution could be found to the issue, and that the only viable alternative chosen by the Municipal Council in 1878 was to prohibit fish smoking during the rainy season. He presented contrary evidence indicating that those symptoms were sporadic and were sometimes observed among the *indigènes* who ate fish without enough spices and hot pepper during the cold season. He concluded

[33] ANFSOM, Séries géogr. Sénégal, XI 34, Navy Health Superior Council meeting, 30 Jan. 1979.

[34] ANS/H32, a draft of an unfinished letter, no author or date listed.

[35] Dominique Sarr and Richard Roberts, 'The jurisdiction of Muslim tribunals in colonial Senegal, 1857–1932', in Kristin Mann and Richard Roberts (eds.), *Law in Colonial Africa* (London, 1991), 131–45.

that the causes of the ailments – known as *n'diank* – could be found elsewhere. But where Devès focused on similarities – the same symptoms affecting the *indigènes* – Dr. Pierre-Adolphe Doué, acting chief medical officer, saw the essential 'differences' between the Europeans and the *indigènes*. His thesis was that different diets and different living conditions could not possibly result in similar symptoms. He reported that three officers who had recently visited Guet Ndar contracted the illness while crossing the Servatius Bridge on their way back to the city-island. In response, Devès ruled out the suggestion that the fishing industry would be the 'unique cause' of the illness. But a vote at the end of the debate on the issue of 'fish smoking as a danger for the sanitary situation of Saint-Louis', and 'what to do about it', resulted in a majority in favor of an immediate ban recurring every year on 1 May.[36] One of the consequences of the ban was the exodus of adult fishermen in search of work as *laptots* (pilots) or *traitants* (commercial agents) along the Senegal River.

The health crisis revealed not only the strength of the alliance between the Devès clan and their African supporters and commercial allies in Guet Ndar and Saint-Louis's hinterland, but also the jealousies of their competitors as well as the underlying hostility between the administration and the Devès clan – which would lead to Devès's revocation as mayor in 1880 on the basis of fraud charges.[37] The evidence suggests that the sanitation syndrome, described by M. Swanson in South Africa, was at work in Senegal as well. It referred to dealing with urban race relations in the imagery of infection and epidemic disease.[38] In Saint-Louis the yellow fever epidemic gave way to an epidemic of fear and suspicion and to an epidemic of stigmatization of the *indigènes*.[39] Guet Ndar, the most populous and most disadvantaged peri-urban village, was now seen as the focus of infection and the 'space of death',[40] where people, fish, beaches and even the air were infected and contagious. 'Civilized' persons, or sanitary citizens, who went there returned sick. It was the 'heart of darkness', to use a familiar expression.

In light of the preventive measures adopted by the public health authorities, many, like Governor Brière de l'Isle, hoped that the recent epidemic would be 'the last human hecatomb'.[41] But their hope was premature. Indeed, yellow fever re-emerged in 1880 and 1881, producing respectively 80 and 503 victims among the Europeans, including the newly arrived Governor De Lanneau, and creating panic, racial hysteria and a siege mentality. In the words of an eyewitness, the epidemic deprived the colony of its 'arms and head'.[42] Yellow fever was now seen as endemic to Senegal; the epidemic was understood as a simple transformation from endemic to epidemic disease under the pressure of climatic conditions and the natural and social environment. Many officials became convinced that the repatriation to

[36] ANS H 22, Sanitary Commission meeting, 14 May 1879.
[37] On the revocation, see Robinson, *Paths of Accommodation*, 109, 283 nn. 66, 67.
[38] Swanson, 'Sanitation syndrome', 387.
[39] For more on the subject, see Strong, 'Epidemic psychology: a model', 249–59.
[40] Michael Taussig, *Shamanism, Colonialism and the Wild Man: A Study in Terror and Healing* (Chicago, 1987), 3.
[41] ANS AOF H 32-39, Inauguration du monument élévé à la mémoire des officiers du Corps de la Santé de la Marine pendant l'épidemie de 1878.
[42] ACSE, *Journal de la Communauté*, entry for 4 Aug. 1881.

France of non-essential personnel before the rainy season would be the only way to save European lives without generating unnecessary high costs,[43] while others hoped that building ten public toilets and providing the police chief with a horse for round-the-clock surveillance would suffice to keep the city totally clean.[44] Dr. Chassaniol, who saw himself as an 'impotent pioneer of science', nurtured the hope that 'a variation of medication based on the chemical science and the microscopic observations made by Pasteur could lead to a rational treatment' in the near future.[45] But some officials were dissatisfied with the routine ways of responding to the epidemic. They argued in favor of a 'radical solution',[46] including measures such as an automatic quarantine on all arriving ships during the rainy season, the expulsion of the floating population and the total elimination of the *indigènes* from the city-island. Radicals contended that the sanitary measures adopted to that point were ineffective because they were always either partially implemented or postponed, or simply rejected for a variety of reasons once an epidemic departed.[47]

With yellow fever taking such a significant toll on the lives of the colonial city and creating terror, the government had to act more forcefully. Indeed, the decree of 29 August 1884 that reorganized the Sanitary Service, especially article 113, title V, imposed an automatic annual quarantine of five days between 1 June and 15 December on all ships arriving from the areas situated between the Pointe Sangomar and Gabon even if the ship captains had a clean bill of health, since the region was perceived as 'dangerous' and the ships 'suspect'. The provisions of the decree required a considerable number of sanitation workers, the presence of a doctor aboard postal ships or any ships carrying 100 or more Europeans for more than 48 hours, the interrogation under oath of ship captains on health matters and the building of infrastructure (lazarettos, or isolation hostels, observation posts and equipment for disinfection). For those who contravened these measures, the decree imposed draconian provisions, ranging from the death penalty to life in prison and fines.[48] But the authorities did not make any effort to evaluate the challenges presented by such a costly surveillance program in terms of qualified and motivated personnel, and financial and material resources. Their decision rested upon the questionable assumption that sanitary citizens would cooperate in epidemic preparedness. But the authorities encountered opposition from both unsanitary subjects and sanitary citizens.

CONFLICT OF INTERESTS: PUBLIC HEALTH, COMMERCE AND PRIVACY RIGHTS

Objections to the automatic quarantine came mostly from French, British and Portuguese merchants who were angry about the interruption of all

[43] ANS AOF H 32-36, ordinance of Governor de Lanneau, 29 July 1881.
[44] ANS, General Council meeting, 17 Feb. 1882, 48–9.
[45] ANS AOF H 33-173, Dr. Chassaniol to Governor Canard, 7 Sept. 1881.
[46] ANS H 32, Hygiene Commission meeting, 25 July 1881.
[47] ANS H 22, Dr. Desgrange to governor, 28 Apr. 1883.
[48] ANS AOF H 2, sanitary police law, title II, art. 7–14, 4 Mar. 1822; decree reorganizing the Sanitary Service in Senegal, titles I–XI, 26pp, 29 Aug. 1884.

kinds of communication and exchange between colonial port-cities under the new measures. Moreover, the authorities restricted the quarantine to imported merchandise and exported products. On 12 September 1885 British merchants operating in Sierra Leone addressed a letter to V. Bareste, French vice-council in Freetown, in which they expressed their concern about

> the great inconvenience, loss of time and money, entailed upon us by the existing quarantine regulations in the Rivers to the North of this port. In view of the fact that there is no epidemic or disease of any kind prevalent (except the ordinary African fever, of which there are only very few cases, these cases confined to natives of Sierra Leone) we feel that your government would be justified in raising the quarantine.[49]

Many of the merchants' complaints were justified. Ships were inspected and quarantined for five to twenty-three days depending on the presence or absence of morbidity or mortality at the port of departure or aboard the ships, and on the nature of the commodities. Merchandise was unloaded and disinfected at the lazaret, often resulting in long delays that were due either to the incompetence and the unwillingness of the sanitary workers to fulfill the required tasks or to inadequate infrastructure. Merchants and ship captains wanted to avoid medical inspections and quarantines at all costs. Some ship captains were unloading their passengers before entering the ports.[50] There were reports that British doctors in Sierra Leone and Gambia were issuing fraudulent bills of health that had no mention of yellow fever, thus giving an unfair advantage to British merchants vis-à-vis their French competitors. Very often, yellow fever was disguised by describing other, less frightening diseases.[51] The reference to the 'ordinary African fever … confined to natives' can be understood in this context. It was presented as a fever that was natural to Africans and did not require any special medical attention, thus corroborating the idea that as long as a disease affected the natives, it did not require intervention. In any case, British merchants' misrepresentation of the sanitary situation, inspired by greed or profit motives, underlined the problems that the colonial powers had to resolve in their effort to establish a regional surveillance system of outbreaks. Besides these managerial problems, merchants raised serious doubts about the scientific knowledge on which all these 'radical measures' and 'irrational practices' were based, at the time when newspapers featured commercials about new disinfection machines 'capable of destroying the microbes of yellow fever in a few minutes at a temperature of more than 100 degrees'.[52] Navy officers too contended that the quarantine was detrimental to the conduct of war in Soudan because it affected the supplies to the troops.[53]

[49] ANS AOF H 37-58, 'Merchants and traders of Sierra Leone' to Mr. V. Bareste, 12 Sept. 1885.

[50] ANS H 2, chief medical officer's report, 3 May 1889; ANS H 2, governor to interior director, 27 May 1889; ANS H 2, E. Etienne, undersecretary of state for colonies to governor, 29 June 1889; ANS H 4, Sanitary Commission meeting, 25 Aug. 1892.

[51] ANS H 2, chief medical officer's report, 3 May 1889; ANS H 2, governor to interior director, 27 May 1889; ANS H 2, E. Etienne, undersecretary of state for colonies to governor, 29 June 1889; ANS H 4, Sanitary Commission meeting, 25 Aug. 1892.

[52] ANS H 4, Sanitary Commission meeting, 25 Aug. 1892.

[53] ANS H 4, Sanitary Commission, 1 Sept. 1892.

Despite biomedicine's increasing role in shaping and maintaining the colonial order, the pressure from sanitary citizens and various chambers of commerce was such that the authorities in Saint-Louis and Paris had to find ways to reconcile the interests of commerce and those of public health. The outbreak of cholera in Saint-Louis in 1893, which killed 900 - *indigènes* – 1,500 to 2,000 according to missionary sources[54] – and 90- Europeans,[55] did not prevent Governor de Lamothe from recommending the abrogation or at least the modification of articles 113 and 114 of the decree of 29 August 1884. The annual quarantine was eventually lifted.[56] In compliance with the resolutions of the 1892 Venice international convention, the 1893 Dresde international sanitary convention, the 1896 decree applied in France and Algeria and the 1897 Venice international convention on sanitary police, a new surveillance system that unified and consolidated the legislation previously applied was put in place in 1897. It required passengers to obtain sanitary passports. For suspect ships or passengers without sanitary passports, it imposed a quarantine of seven days for cholera and nine days for yellow fever or plague at the lazaret, and the unloading and disinfection of merchandise and the ship.[57]

The implementation of the 1897 decree created serious problems. The infrastructure was inappropriate and, in many places, simply non-existent. In addition, the majority of merchants voiced their opposition to the new quarantine measures, which they described as 'inefficient and absurd', in part because of the deficient organization or the underdevelopment of health services. The Chamber of Commerce and the Sanitation Commission even recommended the acquisition of disinfection machines as a solution to 'the costly and unpopular quarantine'.[58] The debate about the quarantines can be understood in the framework of a larger debate that was going on in France and was animated by the members of the Colonial Party, who were pushing for a policy of *mise en valeur* of the colonies. In June 1899 the two-year-old quarantine was in fact abandoned because of its negative effects on commerce, despite the doctors' apprehension that the return of the epidemic 'would be a calamity, and the ruin for the colony'.[59] The doctors' fear was not irrational given the unresolved problems of preparedness for epidemics.

On 19 May 1900 several cases of yellow fever were reported in Dakar. Rumors and anxiety spread in Saint-Louis as residents feared that, in the case of an epidemic, the quarantine and cordons sanitaires would eliminate the limited opportunities for escape.[60] On 10 June, the imposition of a quarantine on Dakar and the confirmed news that yellow fever had spread to Gorée and Rufisque provoked hysteria among residents in Saint-Louis. Yellow fever reached the city's garrisons on 18 July and unconfirmed rumors

[54] ACSE, 146-A, Sénégal IV, Histoire du Sénégal 1845–98, entry for 1892–3, 205.

[55] ANFSOM, Séries géogr. Sénégal, XI d. 30, Chief Medical Officer H. Rulland to governor, 'Rapport sur l'épidemie de cholera de Saint-Louis', 3 Jan. 1869.

[56] ANS H 46, decree of 29 Dec. 1893 modifying the decree of 29 Aug. 1884.

[57] ANS, *Bulletin Officiel du Sénégal*, 1897, decree of 31 Mar. 1897, 343.

[58] ANS H 4, Chamber of Commerce to Colonial Commission, 11 Sept. 1898.

[59] ANS H 22, chief medical officer to governor-general, 2 June 1899.

[60] For more on panic, see J. B. Perry, Jr, and M. D. Pugh, *Collective Behavior: Response to Social Stress* (New York, 1978), 100–1.

circulated that the authorities were making plans for a rapid repatriation of civil servants and troops. The onset of a dangerous situation gave rise to panic. Merchants mobilized for flight. As new cases were reported, the authorities finally used the tools at their disposal, especially quarantine, repatriation of non-essential personnel and the liming of suspected houses to protect the city and its 30,000 residents, including 1,500 Europeans, from the epidemic. Between July and September, when the last cases were reported, 228 residents, including 49 Europeans, had succumbed to yellow fever; hundreds of Europeans were repatriated, including Governor-General E. Chaudié, and some prominent civil servants. Many métis and other African residents had also deserted the city.[61] *L'Echo de Paris* reported that 'a complete anarchy exists in Senegal since the hasty departure of M. Chaudié and the shameful flight of some civil servants following the example of their chief; it is unacceptable that the telegraph no longer functions'.[62] Dr. Noël Ballay, governor of Guinea, went to Dakar to replace Chaudié.[63] The quarantine was lifted in early January 1901. The 1900 outbreak proved that the city was better prepared to handle a new epidemic crisis, as evidenced by low mortality rates compared to previous years.

In their zeal to protect the city against the new outbreak, the authorities targeted the unsanitary subjects they suspected of spreading the disease. Thirty-five suspected Syrian peddlers operating between Saint-Louis and other coastal cities were blamed for buying and selling contaminated clothes previously used by people who became victims of yellow fever. They were ordered to submit to medical examination and issued identity cards in order to control their movement.[64] Four single women working for the Sarrazin family on Parquet Street as domestic servants, and who had friendly relations with the crew members of the ship *Saint Kilda*, were blamed for the spread of yellow fever. A local publisher and notable, Cornu, affirmed that the crew of *Saint Kilda* brought the 'germ' of yellow fever and passed it along to the women, who in turn contaminated the troops. Another source of infection, he believed, was a small house located at the end of the same street where other *négresses de mauvaise vie* (prostitutes) lived and were visited by French troops. He felt that it was his duty to report these 'facts' to the authorities.[65] The police chief, J. Avrial, confirmed these allegations and recommended that Mrs. Sarrazin's house be disinfected.[66] The authorities considered single women dangerous: they were saturated with sexuality and, thus, a threat to city's health.[67]

[61] ANS H 25, Municipal Council, 30 July 1900; ANS AOF H 45-107, lists of deaths; ACSE, 'Journal', entry for 11 Aug. 1900, 385–6.

[62] *L'Echo de Paris*, 5 Sept. 1900, 1.

[63] Jean Suret-Canale, *French Colonialism in Tropical Africa, 1900–1945* (New York, 1971), 395.

[64] ANS AOF H 41-3, decision of governor-general, 22 May 1900; see also ANS H 41-6, chief medical officer to governor-general, 27 May 1900.

[65] ANS/H44/234, Cornu to governor-general, 21 July 1900.

[66] ANS AOF H 45-235, J. Avrial to governor-general, 21 July 1900.

[67] For more information on the 'hysterization of women's bodies', see Michel Foucault, *The History of Sexuality*, vol. 1: *An Introduction*, trans. from the French by Robert Hurley (New York, 1976), 104–5.

Throughout the epidemic crisis, opposition to anti-yellow fever measures increased. The office of the governor-general was flooded with complaints from all over Senegal and French West Africa about the negative impact of the quarantine and cordons sanitaires on food supplies and prices of commodities. The 'Europeans and inhabitants of Tivaouane' protested against the suspension of the delivery of ice made in Saint-Louis described as 'a precious resource for the society' and 'the most precious auxiliary for the doctor during the rainy and hot season'.[68] By August eight Muslim merchants from the same town requested permission to get kola nuts, their 'only resource', shipped from Rufisque. They expressed the fear that the interruption of commerce and the lack of money for food and other basic necessities would destroy their lives.[69] Protests continued throughout the summer months. Traders from the hinterland of Dakar, Rufisque and Saint-Louis, who were directly affected by the quarantine measures, voiced their opposition to measures they found 'radical'. In a strongly worded letter to the governor-general dated 7 September 1900, M. Meyer, the representative of the *Société le Syndicat du Soudan Français*, opposed the rigorous quarantine, which resulted in a great loss for the traders. He wrote that he could not find one example in Europe or elsewhere in other colonies where commerce was completely stopped because of the epidemic. He emphasized that because the quarantine intervened between August and September, at exactly the same time when the Senegal River was navigable until Kayes, the flow of goods along the river was reduced dramatically.[70]

The local Saint-Louis elite also opposed the quarantine. During the meeting of the Colonial Commission of 28 July 1900, Justin Devès shifted emphasis from economic, administrative and psychological reasons to medical reasons for the suppression of the quarantine. He contended that physicians were helpless against a disease 'that escaped modern science and empirical processes', and that yellow fever affected only a small percentage of the urban residents (Europeans), but it interrupted the economic and social life of all. Instead of quarantine, Devès argued, the best solution would be to provide Europeans with medical leave and/or home care during the summer rains. This proposal suggested that the métis and other Africans perceived yellow fever as the 'white man's disease' that did not affect them, thus reflecting the official thinking concerning racial susceptibility. Indeed, the general consensus among health officials was that yellow fever provided immunity to Africans who were infected in childhood; as a result, adults who were reinfected developed only attenuated or mild symptoms that went unnoticed though they remained 'active carriers of the epidemics'. It was believed that Europeans, in contrast, did not have that acquired immunity; the most vulnerable among them were not those who had survived yellow fever and were 'seasoned', but the newcomers and those who were experiencing their second or third *hivernage*. This inequality before death was summarized in a popular saying which stated that 'the bourgeoning of the baobab leaves (*hivernage*) announced the imminent death of the Europeans,

[68] ANS H 42-108, Administrator Decressac-Villagrand to governor-general, 4 July 1900.
[69] ANS AOF H 41-114, 'Habitants of Tivaouane' to governor-general, 2 Aug. 1900.
[70] ANS AOF H 41-75, Meyer to governor-general, 7 Sept. 1900.

and the cold season that of the Africans'.[71] The saying referred to the perceived European vulnerability to yellow fever during *hivernage* and African susceptibility to waterborne and respiratory diseases during the cold season. Devès was certainly alluding to this widespread belief. The Municipal Council, dominated by the métis, also shared the same views and recommended that the sanitary measures affecting trade be implemented with 'wisdom and prudence'.[72] But Devès's proposed solution to the quarantine also reflected the bad blood between the Devès clan and the administration. The Devès brothers had sponsored the publication of a satirical newspaper, called *Le Réveil du Sénégal*, that was very critical of the governor, prominent civil servants and the Catholic Church.[73] Despite the pressure from the merchants and local elite, the quarantine remained in place. The economic, social and psychological consequences of yellow fever were such that the central administration in Paris decided to investigate the situation.

The Grall-Marchoux mission arrived in Senegal in February 1901 to identify the causes of yellow fever epidemics and to suggest the solutions. Its conclusions favored the hypothesis of the external origin of yellow fever, but opposed the annual quarantine, incineration and disinfection. The mission recommended new legislation consistent with the logic of 'modern science', a reference to the discovery of the mode of transmission of malaria and filariosis verified by Ross in 1898, which called for the destruction of the mosquitoes and larvae and the isolation of the infected persons as soon as the first signs and symptoms of the disease appeared.[74] The administration had to drain swamps, bogs, moats and other bodies of standing water in the northern part of Saint-Louis, Sor and on Bop-N'Kior island which were the breeding grounds for mosquitoes. The authorities needed to build new garrisons and a new hospital with sufficient ventilation and light, and to install screens on the windows in order to keep out insects and mosquitoes. The new scientific knowledge also required that the authorities apply insecticides in houses, prisons, meeting places and ships in order to prevent further exposure to infectious agents. Other recommendations included filtering the drinking water, and flushing refuse from areas of human habitation.

Convinced that the natives and other foreign minorities (Moors, Moroccans and Syrians) were 'active carriers of epidemics', thus 'dangerous groups', the Sanitary Mission also strongly suggested a form of 'sanitary segregation' in order to prevent European troops from interacting with African troops or, at least, to authorize a limited interaction with an indispensable fraction of their European cadres necessary for the daily running of the service. In brief, the mission suggested an ambitious program that required a commitment of considerable financial resources, estimated at 4,908,000 francs.[75] The measures reflected the sanitation syndrome that

[71] See Georges Courrèges and Fadel Dia, *Saint-Louis du Sénégal* (Clermont-Ferrand, 1982).

[72] ANS H 25, Municipal Council meeting, 30 July 1900.

[73] François Zuccarelli, *La vie politique Sénégalaise (1789–1940)* (Paris, 1987), 62–3.

[74] See Constant Mathis, *L'Œuvre des Pastoriens en Afrique Noire* (Paris, 1946), 9–14; Oldstone, *Viruses, Plagues, and History*, 45–72.

[75] ANS AOF H 48-1, 'Mission Sanitaire du Sénégal (février–mars 1901)'; ANS AOF H 49-12, Colonial Hygienic Committee meeting, 6 Mar. 1901.

characterized the colonial mentality and corroborated the idea that the germ theory coexisted with the miasmatic theory during a transitional period ending in 1914.[76]

Despite the hopes raised by the new knowledge and the formulation of a rational sanitation program, when three new cases of yellow fever were reported in early October 1901, another great wave of fear and panic spread throughout the city. The government reimposed the quarantine. Merchants of Saint-Louis protested these 'excessive cordons sanitaires' and 'unnecessary draconian measures' that created hardship for the city residents. The fishermen were unable to get out of their quarters for ten days. The officials faced the possibility of social unrest if the chief medical officer did not extend the perimeter of the cordon sanitaire to allow food movements into the city.[77]

IMPROVING EPIDEMIC PREPAREDNESS AND THE CHALLENGE OF STIGMA

In early 1902 Governor-General N. Ballay died after less than two years in office and was replaced by E. Roume, a former director in the Ministry of Colonies, who had connections with the financial circles in Paris. Under the new leadership, the government of French West Africa obtained fiscal autonomy and a centralized bureaucracy. Roume's strategy in 1902 and 1903 included both preventative measures and a contingency repatriation plan for non-essential personnel in case of medical emergency.

But the authorities' concern for epidemic preparedness was not matched by city residents, who either ignored the new preventive measures or applied them with skepticism. The *marabouts* (Islamic clerics) from Guet Ndar protested against what they considered as the violation of their homes by sanitary agents. Even the municipal authorities believed that health officials were too severe in the implementation of sanitary laws and that such severity was not justified. Unsanitary houses were burned down and fines for contravening sanitary regulations were issued during house-to-house searches.[78] There were reports of corruption among sanitary agents because of these draconian measures; some violations were not reported to the chief medical officer. The agent Demba Seck is a good case in point. His area of operation was Ndar Toute and Guet Ndar. Eyewitnesses testified that he received gifts from residents who did not want their names to be reported as violators of sanitary laws. He was fired.[79]

The ultimate success of the control measures came in 1909 with the elimination of the main breeding grounds for mosquitoes constituted by the swamps in the northern part of the city and a section of Sor. The cost was

[76] Curtin, *Death by Migration*, 80, 107–9.

[77] ANS H 25, Sanitary Council meeting, 21 Oct. 1901; ANS AOF H 50-125, Deputy-Mayor Dumont to governor-general, 13 Oct. 1901; ANS AOF H 50-127, chief medical officer to governor-general, 14 Oct. 1901.

[78] ANS H 32, Annual Report 1907; see also H 33, hygiene service physician to head of health service, 31 Dec. 1909; ANS AOF H 54-31, Governor-General W. Ponty to governor, 30 Mar. 1910.

[79] ANS H 8, head of health service to governor, 15 Feb. 1913.

estimated at 818,000 francs.[80] The sanitation program in the remaining part of Sor and Guet Ndar and Ndar Toute continued between 1911 and 1914, when it was interrupted by the First World War. The medical authorities were less successful in convincing sanitary citizens about the importance of isolating the individuals who came down with fever in their homes or in a hospital ward. Doctor Huot argued that such isolation could 'demoralize' the patient and provoke 'a dangerous panic' among the European neighbors.[81] Nevertheless, the combination of police surveillance, fines, health education (*propagande éclairée*) and the implementation of the sanitation program had contributed to the reduction of the incidence of yellow fever, malaria and dengue fever, and it had reduced the exposure to garbage and other waste. Yellow fever remained under control and no major epidemic struck the city again until 1927. In the meantime, the health of the European population and, indirectly, that of the *indigènes*, was increasingly protected.

CONCLUSION

The growth of Saint-Louis in the framework of international trade created serious health problems which highlighted the inadequacies of public health policies. In this article, I have argued that the miasmatic theory and the policies that it inspired provided health officials with a key tool in the management of the urban society and race relations. To make sense of the epidemics, the authorities adopted some sanitary measures that were influenced by social prejudices. These measures, which identified targets for attack, had profound effects on urban life. More and more areas of peoples' lives came under the administration's control. The implementation of sanitary measures revealed a conflict between the interests of commerce and those of public health. The mosquito theory suggested that the solution was the destruction of the mosquitoes, their natural breeding sites and human-made sites. But the paradigm did not change the stigmatization of the urban poor and the imposition of a form of 'sanitary segregation'.

The evidence from Saint-Louis does not support the conservative views concerning the 'successes' of biomedicine in reducing mortality in Africa before the germ theory of disease and the availability of specific drugs. Rather, other factors played a key role in the process, including better sanitation, salubrious housing, the provision of clean drinking water and the general improvement in living conditions that reduced exposure to pathogenic microorganisms. From this perspective, the French and British experiences with sanitation were similar from the beginning of the public health movements animated in France by Louis René Villermé and in England by Sir Edwin Chadwick in the mid-nineteenth century; both had established a correlation between poverty and disease and had underscored the role of public health measures in saving lives. Some of the sanitary measures adopted by the authorities in Saint-Louis contributed to the reduction of mortality.

[80] ANFSOM P165-36, Sanitation of swamps in Saint-Louis: Situation of Expenses Made, by the Director of the Public Works, 24 Dec. 1909.

[81] ANS H 8, Dr. Huot to governor, 22 July 1913.

Nor does the evidence support liberal accounts of an unqualified balance in the record of colonialism on health issues. These accounts have been based on the postwar period that witnessed the elaboration of development plans inspired by the discussions on 'the native problem in Africa' that went on in the 1920s and 1930s. The population decline that accompanied the colonial conquest was not reversed until then. The evidence seems to corroborate the radicals' views related to infections and inequalities – based on race, class, gender and geographical location – but not their assumption centered for the most part on binary oppositions and class division along racial lines.