Of Medicine and Statecraft:
Smallpox and Early Colonial Vaccination in French West Africa (Senegal-Guinea)

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ABSTRACT

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Smallpox and Early Colonial Vaccination in French West Africa (Senegal-Guinea)
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The last two decades in nineteenth-century West Africa witnessed a two-fold movement, namely the territorial expansion of French colonial empire and the first attempts to extend biomedicine through mass vaccination to control smallpox epidemics. This study provides both a deep history and conceptual framework to analyze the relationship between the two phenomena in the long-standing French possession of Senegal as well as the recently established colony of French Guinea. Specifically, the dissertation examines the generative capacities of biopower (the power over life) in the fin-de-siècle period whereby new medical knowledges of smallpox melded with the initial experiments to vaccinate local African populations en masse.

Colonial biopower steadily became embedded in French West Africa through the medicalization of smallpox, particularly in terms of the statistical recording of epidemics over space and time, and the partial, yet effective creation of vaccination networks. These developments in turn helped to produce a new social constellation that redefined territory, population, and individuals and framed the broader conduct of political governance. Mass vaccination campaigns also changed the ways West African communities responded to smallpox epidemics as the vaccine gradually replaced, and
in time ultimately eliminated, a precolonial form of indigenous smallpox prevention (variolation). By focusing conceptually on the early period of this little historically studied disease and its control in colonial Africa, the study maps out the historical foundations of the massive twentieth-century vaccination efforts that ultimately led to the smallpox’s eradication.

More generally, the dissertation responds to the challenge to write empirically rich and theoretically informed histories of Western modernity in colonial Africa and throughout European empire. It combines insights from two different thinkers on the manner in which micrological processes produce larger socio-political foundations: Michel Foucault for the arts of government and productive modes of biopower and Bruno Latour for the ways technoscientific practices assemble social relations through networks and chains. As such, the thesis contributes to the historical literature on the relationship between medicine and colonialism, the shaping of African subjectivity, the meanings and experiences of modernity, and the means in which Western knowledges move within local, non-Western settings and throughout global terrains.
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Abbreviations

AMI  Assistance Médicale Indigène (Native Public Health Services)
ANG  Archives Nationales de la République de Guinée (Conakry)
ANM  Archives Nationales de la République du Mali (Bamako)
ANS  Archives Nationales de la République du Sénégal (Dakar)
AOF  Afrique Occidentale Française (Federation of French West Africa)
CAOM Centre des Archives d’Outre-Mer (Aix-en-Provence)
GF   Guinée Française (French Guinea)
GGAOF Gouverneur Général de l’Afrique Occidentale Française
LG   Lieutenant Général
Glossary of Maninkakan Terms

basi  medicine; fetish
basibola  healer; one who owns the fetish
dyankaro  sickness, illness
dyo  fetish
férenbenin  smallpox, alternate, less frequently used term
fida  leaf
fodoba  community
fodobadyankaro  epidemic
fonyo  wind
fura  leaf; variant of fida
furabola  healer; one who possess (knowledge of) the leaf
furakèla  healer; one who works leaves
gbungbudumaso  smallpox, alternate, less frequently used term
ka bolotee  to vaccinate; (lit.) to cut the arm
ka bon köröté  to cast a spell
ka nöö kè  to make dirty
ka pikè  to vaccinate (from the French verb, piquer)
ka so fudu  to variolate; lit., to marry smallpox
kirisi  incantation
köröté  spell, curse
kudu  pustule; pimple, spot
nyama  vital force, energy inhering animate and inanimate objects and harmful when released; trash, waste
li  honey
mori  marabout
nè  pus
nyalen sa  chicken pox
nyarèn  measles
nyönin  measles
sanyö  millet
so  smallpox
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Prolegomenon

Programmes don’t take effect in institutions in an integral manner … things never work out as planned. But what I wanted to show is that this difference is not one between the purity of the ideal and the disorderly impurity of the real […] the fact that this real life isn’t the same as the theoreticians’ schemas doesn’t entail that these schemas are therefore utopian, imaginary, etc. One could only think that if one had a very impoverished notion of the real […] These programmings of behaviour … aren’t abortive schemas for the creation of reality. They are fragments of reality which induce such particular effects in the real as the distinction between true and false implicit in the ways men ‘direct’, ‘govern’ and ‘conduct’ themselves and others.†

What was the effective labor of smallpox vaccination in colonial French West Africa? Its initiatives, programs, itineraries, surpluses as well as deficits? In terms of scale and importance for colonial medicine, we might well assess the impact of smallpox vaccination according to the quantity of operations performed and geographical scope. Some West Africans may never have sought or received forms of Western medicine in a hospital or rural dispensary throughout the colonial period (1880 to 1960). Many were vaccinated however. Concentrated in both urban locales as well as rural areas, vaccination campaigns aspired to be omnipresent, literally going from village to village. In fact, vaccination against smallpox (variola) arguably represents the most intense and sustained contact between biomedicine and West African populations under French rule.

In the French West Africa Federation (*Afrique Occidentale Française* or hereafter AOF), smallpox vaccination immediately came to occupy a major focus of the colonial public health service, the *Assistance Médicale Indigène* (AMI), from its start in 1905 through its development during the first three decades of the twentieth-century. Teams of AMI personnel, which comprised French doctors and African male nurses, carried out vaccination campaigns under a two-tiered hierarchy of institutional medical authority: first, a health service directorship located in each colony’s capital, and second, the AOF Inspector General in Dakar to coordinate smallpox control efforts in the Federation’s colonies. Due to the sheer numbers of West Africans vaccinated, smallpox control represented in part the inaugural force of the AMI. Between the advent of formalized annual mass campaigns in 1906, and 1911, vaccination for a territorial population of approximately eleven million inhabitants increased ten-fold to more than one million annually in number (see Table 1). It would remain at this level until the outbreak of the First World War.

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2 After 1923, the AMI teams included African men trained at the École de Médecine in Dakar as physician-assistants (*médecins africains*), to which were added three years later Russian doctors (*hygiénists*) recruited to compensate for the lack of French physicians.


Table 1:
Vaccination in French West Africa by Colony, 1905-1911

<table>
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<th>1905</th>
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German and British vaccination campaigns in West Africa offer comparative measure to the French efforts. In German Togo, mass vaccination began several years earlier, in 1900, and recorded more than 500,000 total inoculations by 1913. Due to the sharp drop in reported smallpox cases, the public health administration declared, prematurely so in hindsight, that smallpox had been eradicated for the entire colony in 1912. Such robust German colonial measures to disseminate the vaccine derive in part from Germany’s relative advance among Western European countries to eliminate the disease during the last half of the nineteenth-century. Vaccination in British Ghana before 1920 paled in comparison to German and French colonies and eradication

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attempts in Liberia, where mass campaigns were few or nil, ranked the lowest among West African areas.\(^7\)

During the First World War and until the early twenties, annual vaccination rates grew less rapidly or fluctuated markedly due to the fact that many colonial doctors were repatriated to France for military service.\(^8\) In the interwar era, French West Africa witnessed the expanded growth of medical services as a result of new metropolitan rethinking of colonialism and empire. Government officials and public opinion in France saw the need to compensate the colonies for the large contributions, both human and material, made in war effort. Retooled and invigorated programs for the colonies now included policy initiatives intended to spur economic development, population improvement, and social welfare.\(^9\) The implementation of these modernizing projects led to increase in medical budgets and personnel in French West Africa. With the


\(^8\) The study of French colonial medicine in West Africa during the First World War faces a significant problem in regard to primary sources since no annual medical reports were issued for the Federation or the individual colonies.

change, vaccinations subsequently climbed to 2 million per year by the late twenties and then eclipsed to more than 3 million annually in the mid-1930s for an estimated population of 14.5 million. By the late 1930s, AOF health officials combined the smallpox vaccine with a newly developed vaccine for yellow fever, and the following decades until the independence saw vaccination programs receiving even more vigor as an integral part of colonial public health services.\(^{10}\) But smallpox prevention was now also included within the intensive *grandes endémies* treatment program for leprosy, sleeping sickness, and yaws. From 1938 onwards, colonial health officials created permanent mobile medical teams that traversed entire territories to identify and isolate the endemically sick while at the same time vaccinating those examined. The polyvalent teams continued campaigns through the independence era. In the late 60s and early 70s, smallpox was eventually eradicated in West African as well as globally, due to the massive campaigns co-directed by the World Health Organization and national public health services.\(^{11}\)

\(^{10}\) In addition to smallpox and yellow fever, French health officials also vaccinated West Africans against tuberculosis (via BCG vaccine), bubonic plague, typhoid, and cholera. Veterinarian services began the vaccination of cattle in the 1910s to control parapneumonia, a measure that continued throughout the colonial era.

\(^{11}\) Frank Fenner et al., *Smallpox and its Eradication* (Geneva: World Health Organization, 1988) provide the official history of these campaigns on a global level. Physicians participating in these efforts in West Africa have written several accounts. For the Republic of Guinea, see Breman et al., "Smallpox in the Republic of Guinea, West Africa. I. History and Epidemiology. II. Eradication Using Mobile Teams," *American Journal of Tropical Medicine and Hygiene* 26, no. 4 (1977): 756-764; 765-774. Of a different narrative genre is Imperato’s *A Wind in Africa: A Story of Modern Medicine in Mali* (St. Louis: Warren H. Green, 1975), which combines the literary styles of medical science, travel log, and ethnographic observation for smallpox eradication in Mali. I have learned much of the WHO campaign from Luise White’s unpublished
The steady growth of colonial vaccination over the first half of the twentieth-century also marked changes in the ways West African communities responded to smallpox epidemics. For one, vaccination came to replace gradually, if not eliminate entirely, a precolonial form of smallpox prevention called variolation. Whereas vaccination denotes the process of using cowpox to produce a temporary immunity to smallpox, variolation (or inoculation) refers to the preventive procedure of transferring smallpox artificially from an infected person to a healthy individual. The technique in West Africa included several forms, with the most common involving viral pus introduced into a small incision made on the arm.12 Variolated individuals ideally developed a milder, non-fatal case of smallpox that produced life-long immunity. Since the resulting cases were still contagious, the inoculated needed to be isolated to prevent the spread of the disease. Vaccination only afforded limited protection; continued immunity required revaccination every ten years.13 The practice of variolation in precolonial West Africa did not occur over the entire region, but rather existed with forms of isolating the sick.

The historical study of colonial smallpox vaccination in French West Africa is propitious for other reasons than its numerical quantity and temporal durée, or as an

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13 Previously vaccinated individuals sometimes could lose full immunity and develop a milder case of smallpox known as varioloid.
account of the first global disease to be eradicated. The dissertation argues that its history also raises the interpretive questions on the order of epistemological knowledge, in this case where medical science and therapeutic culture (both French and African) ends and the ontological phenomena of social realms (disease, institutions, the state, politics, agents, or even ‘society’) begins. The study of early vaccination further offers historians of colonial medicine, and of colonialism more generally, in Africa a rich terrain to examine microinteractions between colonial forms of power and Africans. Yet, the larger historical literature on colonial relations in Africa has generally ignored the place of vaccination to shed new empirical light on Euro-African relations. This should come as no surprise given that the quite sparse historiographical scholarship on vaccination in Africa treats the early period under discussion here as one of great failure, primarily due to the lack of administrative focus (weak colonial State), an inadequate supply of inert vaccine (poor technology), and evidence of Africans’ refusal to accept the procedure (failed social policies inherent to the logic of the colonial project itself). Analytically, though, these findings produce a negative logic of argument; on a macro-level, they tell us what did not occur. Theoretically, the arguments also rely on and reproduce a particular sociological vision of politics, science, and social relations, namely a series of bifurcated and opposed large entities. On one side, for example, stands the (colonial) State juxtaposed to Society (the others being famously Science/Society and Science/State). But what happened positively with vaccination on a micro-level in French West Africa? What actually did it produce in light of its failures?
Chapter One

Introduction

The last two decades in nineteenth-century West Africa witnessed a two-fold movement, namely the territorial expansion of French colonial empire and the first attempts to extend biomedicine through mass vaccination to control smallpox epidemics. This study provides both a deep history and conceptual framework to analyze the relationship between the two phenomena in the long-standing French possession of Senegal as well as the recently established colony of French Guinea. Specifically, the dissertation examines the generative capacities of biopower (the power over life) in the *fin-de-siècle* period whereby new medical knowledges of smallpox melded with the initial experiments to vaccinate local African populations *en masse*.

Colonial biopower steadily became embedded in French West Africa through the medicalization of smallpox, particularly in terms of the statistical recording of epidemics over space and time, and the partial, yet effective creation of vaccination networks. These developments in turn produced a new social constellation that redefined territory, population, and individuals and framed the broader conduct of political governance. Mass vaccination campaigns also changed the ways West African communities responded to smallpox epidemics as the vaccine gradually replaced, and in time ultimately eliminated, a precolonial form of indigenous smallpox prevention (variolation). By focusing conceptually on the early period of this little historically studied disease and
its control in colonial Africa, the study maps out the historical foundations of the massive
twentieth-century vaccination efforts that ultimately led to the smallpox’s eradication.

More generally, the dissertation responds to the challenge to write empirically
rich and theoretically informed histories of Western modernity in colonial Africa and
throughout European empire. It combines insights from two different thinkers on the
manner in which micrological processes produce larger socio-political foundations:
Michel Foucault for the arts of government and productive modes of biopower and
Bruno Latour for the ways technoscientific practices assemble social relations through
networks and chains. As such, the thesis contributes to the historical literature on the
relationship between medicine and colonialism, the shaping of African subjectivity, the
meanings and experiences of modernity, and the means in which Western knowledges
move within local, non-Western settings and throughout global terrains.

_**Literature: Part One—Studies of African Medicine**_

During the last three decades, the study of Western and indigenous medicine in
Africa has grown considerably, while at the same time there has been a significant
rethinking of the very terms in which to understand both Western science and the
relationship between Western empire and colonialism. The considerable growth of the
scholarly literature, mostly written in English and French, may be somewhat of an
understatement, given the fact that no less than nine historiographical essays have
appeared over the same period to discuss the scholarship. The following literature overview below sketches the main paradigmatic features of these bodies of work that notably has been carried out in a discernible and disconcerting division of scholarly labor.

For one, there exists an extensive body of anthropological literature describing local systems of healing in Africa. The first generation of these studies framed the analysis of African medicine in a way that sought to understand the cohesive cultural logic behind therapeutic practices of specific peoples. The work rightly demonstrates the effective and coherent nature of African therapy, though the approach of Evans-


Pritchard and subsequent scholars tends to overemphasize the closed nature of African medical systems as culturally homogeneous essences. Anthropologists writing in the tradition do not recognize the clear fluidity and syncretism in African healing methods, like the development of new treatments for new diseases and the blending of local and non-local notions and practices of therapy. Other anthropologists and historians of indigenous African medicine have importantly recognized change\(^3\) and plurality\(^4\) in African healing systems, but nevertheless see these systems as cohesive ethnically-based wholes or motivated within a structuralist logic whereby everyday forms (parole) of social phenomena may undergo change, while the deeper foundational and ordering principles (langue) of social and cultural codes remain intact and autonomous over the


course of time. Lastly, the scholarship fails to examine closely the interactions of African medical systems with Western biomedicine introduced during the colonial era. It is almost if healers, diviners, marabouts, and their patients existed in historical vacuum vis-à-vis other forms of medicine.

To take one postcolonial example from West Africa, the French medical anthropologist, Sylvie Fainzang, has described the influence of medical clinics on healing itineraries among the ethnic Bisa of southeastern Burkina Faso. Fainzang argues that biomedical institutions have only superficially altered local perceptions. While Bisa populations do visit the area’s clinic, they nonetheless translate the role of the doctor into a preexisting ideological schema of therapy—the choice to seek the services of a healer or diviner when ill. In the Bisa worldview, Western-trained doctors become African healers, according to Fainzang, yet there is slight problem with her evidence. Enigmatically, the author also reports that some Bisa informants, as well as local healers, refer to the clinic as the “house of the white man…that’s the house of truth”. Moreover, healers themselves often employ a mixture of both biomedical and traditional treatments to maximize healing. Not addressed by Fainzang are several key elements in this healing environment: the manner in which, historically, the Western clinic symbolically came to represent ‘truth,’ which meanings the word ‘truth’ may connote, and which relationships exist between healing practices and ideologies of successful therapy. In opting for a closed, culturalist model, Fainzang’s analysis

exemplifies a trend in Africanist scholarship that views Africans as supreme translators or appropriators of Western institutions and practices into local idioms. But translations and appropriations are never perfect or complete, and such an insistence on a ‘translation’ model gives Africans agency at the expense of erasing any sense of the history for African subjectivities or personhood. Left unexamined are whether and by which process African subjectivities may have been maintained and reproduced, if not transformed, in interactions with biomedicine over the course of the twentieth-century.

Exemplifying further this scholarly trend in the literature on healing and health in Africa is the rich and influential work of the trained anthropologist and historian Steven Feierman, whose work rightly deserves a more elaborated treatment and critique than provided here. A brief example nonetheless illustrates the general epistemological operation of Feierman’s cultural relativist and structuralist-inspired framework inherent in such studies. In a recent article on local norms for evaluating therapeutic care among the Shambaa of northern Tanzania, Feierman discusses the cultural and linguistic ways in which indigenous healing possibly appropriated idioms of Pasteurian germ theory to describe the disease *mpahazi*, or abscessed tooth (the term can also describe a second illness—relapsing tick fever).\(^6\) *Mpahazi*, according to one Shambaa informant, arises when small bugs (*vidudu*) are ingested with food and then bore into the teeth. In his analysis, Feierman notes that the word *vidudu* comes from a Swahili loanword *kidudu* (small bug), which itself is the diminutive of *dudu*. *Dudu*, in turn, is listed in colonial

dictionaries as meaning insect, vermin, yet also connotes smallpox in one dialect of Swahili. For his part, Feierman concludes, “we have, then, an old set of conceptions linking insects and diseases, which then in the colonial period absorbed some elements of bacteriological thinking about infectious disease.”

One may rightly pose the problem in a more philosophical or epistemological vein; apart from the act of absorption and addition (other widely used terms in this particular field of scholarship include translation, appropriation, and incorporation) of the external element, what in fact changed internally and logically for indigenous forms of healing as a result of interactions with European medical knowledges and practices? To be sure, one could demonstrate, as Feierman aptly does, that indigenous medical worlds did not change in their internal operation, but only grew larger in their array of practices and knowledges. But a historical question then arises as to the specific manner in which such cohesive, simultaneously augmenting worlds are able to reproduce themselves diachronically in time and space. Feierman’s answer is ultimately unsatisfactory. He maintains that it is heuristically possible at both and the same time to separate medical worlds for the purposes of comparison as well as see the two different worlds as impinging upon one another ‘continuously’. The analytical problem here is that Feierman only cursorily examines conceptually and historically over time the effects of these mutual impingements for the medical world of Ghaambo.

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An alternative and quite sophisticated examination of the historical interplay between Western and African medicine is provided by the historian Nancy Hunt.\(^8\) Focusing on British missionary maternity hospitals and clinics in the Yakusu region of Belgian colonial Congo, Hunt’s deep cultural microhistory explores the myriad ways in which “colonial medicine impinged on a local therapeutic and political economy” over the first half of the twentieth-century.\(^9\) Astutely, her analysis highlights the crucial role played by African ‘middles’—nurses, midwives, medical assistants, teachers, and ministers—not as uniquely social elites as commonly treated in the above revisionist literature, but as cultural translators of biomedicine.\(^10\) Translations of colonial Western medicine—its meanings, objects, and new opportunities—provided by ‘middle’ personnel were often debated by local communities and Hunt underscores how “Congolese subjects, whether subaltern or middles, letter writers or not, made meanings out of the objects of this new, mobile, and concrete modernity in new ways”.\(^11\) Out of these debates over biomedicine, argues Hunt, Yakusu society became gradually reconfigured into a hybrid colonial situation, unevenly medicalized. The making of

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medical hybridity in Yakusu society in Hunt’s account however is akin to the process described above for Feierman, whereby local Africans still interpret according to established cultural logics.

_Literature: Part Two—Histories of Colonial Medicine in Africa_

In addition to the scholarship on African indigenous medicine, there is another body of literature that addresses the diffusion of Western tropical medicine in colonial Africa. The first genre of these studies, written initially by colonial doctors, provides conventional descriptive institutional histories of colonial medical services and often adopts a triumphalist and hagiographic view of biomedical intervention in Africa. The scholarship, which arose during the interwar period, posits that late precolonial Africa was a disease-ridden environment wherein many of its inhabitants suffered from multiple, debilitating pathologies. It details the hostile disease environments and then attempts to catalogue the scope of and challenges faced by Western medical efforts to

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improve the health of local populations. The ‘institutional’ historiographical genre merits greater attention and a more extended analysis would address the ways in which institutional histories have shifted in form to include the role African nurses and doctors played in the diffusion of modern medicine. Like other trends in the writing of African history, so too, did this literature have its nationalistic and post-nationalistic tropes. One group conspicuously absent from the institutional literature, past and present, has been colonial midwives, yet some recent work has filled the gap.


Underpinning institutionalist approaches is a ‘realist’ conception of disease, the biomedical notion that diseases exist as autonomous entities occurring in nature, ontologically separated from society. A contemporary and slightly more critical offshoot of the genre has been research on the institutional politics within colonial public health services and their transformation over the first half of the twentieth-century vis-à-vis local and metropolitan administrations in attempts to control endemic diseases. One problem with institutionalist approaches, as Prins rightly notes, concerns the exclusive focus on European doctors and their efforts “in which patients figure only…as passive sufferers, playing no part in their own cure.” Another limitation is the strong tendency to employ anachronism in the study of colonial biomedicine. Scholars tend to transpose current understandings of disease pathology backwards in time to assess colonial medical efforts. Past actors and ideas inevitably fail or appear incomplete in this vision.

A further problem involves the concept of a ‘natural history’ of disease in Africa. Recent literature emphasizing the social history of colonial medicine has sharply tempered hagiographic interpretations of European medicine and now constitutes a

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significant and dominant field in African studies. One subset of the revisionist scholarship addresses the ‘unnatural’ histories of disease to document the ways Western medical knowledge and practices had at times deleterious effects on African

populations and environments. Moreover, the literature seeks to illustrate the ways colonial medicine tacitly colluded with imperial projects on the ground to further political and social control, made possible through forms of overt coercion over or effected consent with local communities as well as facilitating economic expansion and exploitation. Western medicine, in this historiographical purview, gained its institutional force in colonial societies by instantiating and elucidating health policies based on its close association with or even imbrications within the colonial ‘State’ as well as its discursive deployment of racist (if not outright racist) stereotypes of Africans as diseased. In this respect, this literature parallels a heightened interest in the history of Western tropical medicine and colonialism more broadly.

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Scholarship in the revisionist tradition is highly critical of the application of Western science, medical or otherwise, in colonial settings, but often forsakes close attention to workings of experimental science in non-Western milieu. An analytical divide, and indeed sharp intellectual tension, has emerged between scholars who examine 'pure' science and those who wish to analyze colonial science exclusively within a sociological frame. The difference has been acutely expressed in a debate occasioned by the publication of Lewis Pyenson’s monograph, *Civilizing Mission: Exact Sciences and French Overseas Expansion, 1830-1940*, an examination of exact scientific research (*sciences fondamentalles*) in Francophone colonies.21

In the work, Pyenson situates his study of experimental science within the larger context of France’s ideological motivations for imperial expansion. More than any other European imperial power, the French consciously spoke of the absolute significance to conduct a ‘civilizing mission’ (*mission civilisatrice*) in their overseas colonial possessions. Throughout the nineteenth century and into the early twentieth century, the civilizing mission consisted of exporting the French language, institutions, and culture to overseas colonies, whereby colonial personnel (military officers, administrative officials, school teachers, medical doctors, and Catholic priests, among

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others) promoted and applied the tenets of French civilization to the local ‘natives’ through daily practice and instruction. Prosographically, Pyenson documents the manner in which individual scientists headed the ‘civilizing’ calling to produce experimental knowledge, and thereby demonstrate to indigenous populations the merits and power of Western culture.

Moreover, the author argues that the pursuit of pure or ‘exact’ science differed from all other colonial sciences in that it did not always entail pecuniary reward or practical application. He thus shelters the study of scientific practice from the main scholarly currents in the sociology of science. Sociological studies place the development and uses of scientific knowledge within wider social contexts, institutions, and relations of power to illuminate how science is not just an objective and neutral search for insights into the natural world. In the case of empire, sociological studies have focused on how the practices of Western science served to facilitate the colonization and domination of non-Western peoples. Pyenson carefully avoids some of the strong and historically undifferentiated presuppositions inherent in this brand of sociology, namely that colonization was a monolithic project or that science always functionally served the interests of domination. Rather, his monograph shows how the pursuit of pure science repeatedly entailed its own delimiting force and, thus, could be marginal to the larger colonial project in that its practitioners chose to uphold the strict regiment and application of the scientific method.
In a critique of Pyenson’s burgeoning corpus on the conjoined history of exact sciences and European imperialism\(^{22}\), Palladino and Worboys illuminate what is by now the intellectually powerful and canonical sociological vision of science. Unfortunately, the vision also illumines some of major shortcomings within the sociological paradigm as well. For the two critics, Pyenson’s project falters on several grounds and, thus, is too limited for a research agenda that seeks to explain the relationship between science and imperial domination. First, they see the division between the ‘exact’ and ‘descriptive’ science as untenable historically. To defend their counter-claim and methodological agenda, they cite historical studies for the social processes and forces that created scientific boundaries in Europe between the seventeenth- and nineteenth-century. “This relative immunity,” they conclude, “was the consequence of intellectual orientations and institutional positions established through social negotiations under historical circumstances that no longer obtained in late nineteenth- and early twentieth-century society”\(^{23}\). Second, Palladino and Worboys chastise Pyenson for failing to explicate the terms, ‘cultural imperialism’ and ‘civilizing mission’, and question the author’s additional lacunae, a failure to treat historically the links between military, economic, or technological dominance and the cultural hegemony of colonial projects. Pyenson stands on suspect analytical ground, according to the two, since he literally

\(^{22}\) Beside the text discussed here, Pyenson published two previous monographs, *Cultural Imperialism and Exact Sciences: German Overseas Expansion, 1900-1930* (New York: Lang, 1985) and *Empire of Reason: Exact Sciences in Indonesia, 1840-1940* (Leiden: Brill, 1989).

\(^{23}\) Paolo Palladino and Michael Worboys, “Science and Imperialism,” 95.
places the motives of the ‘exact’ sciences and ‘civilizing mission’ on a higher terrain than the baser economic, political, military, and social motives behind imperial venture. Colonized peoples, they point out, often experienced the ‘civilizing mission’ in the same manner as other forms of colonial domination.

In his reply to Palladino and Worboys, Pyenson avoids a direct response to the criticisms and rather seeks to occupy a higher intellectual ground in stating that ‘a great deal must be said about a great many things before even simply-stated generalizations can be won.” Pyenson is no doubt correct to maintain that definitions of capitalism, imperialism, racism, and nationalism must contain nuance and contour, a flexibility often missed in the strong program of the sociology of science expressed by Palladino and Worboys. However, Pyenson’s methodological approach is ultimately unsatisfying, but only in part for the reasons advanced by his critics. To be sure, Pyenson does not address the debates between pure scientists and colonial officials, both in the colony and metropole, over funding priorities. The sociologist or social historian of colonial science would try to locate the connections between science and colonization within the social context of the colony, and in their studies, the nefarious connections are often recognized too quickly. On his part, Pyenson only reports the results of pure science, sometimes successful and other times not, and, most significantly does not examine how actual experiments were carried out: under what conditions, by whom, how many trials, etc. Throughout the text, the reader only superficially receives an idea of what the actual practice of pure science entailed in the colonies.
On their account, several historians for the French overseas science have described the connections existing from the very start of imperial expansion and the development of the colonial project.\textsuperscript{24} Wherever the French established administrative and economic presence in such places as Indochina or Algeria, so too did various state-directed and private scientific institutions set up research stations and missions. An apt example of the connection is the Pasteur Institute’s participation in French colonialism. Following right behind colonial regimes or, quite often in symbiotic relation with them, Pasteur Institutes spread to French colonies to develop public health programs and fight diseases, such as yellow fever, malaria, smallpox, bubonic plague, and cholera. The first colonial outpost of the Pasteur Institute was founded in Saigon in 1890, and shortly joined by stations in Tunis (1893), Algiers (1894) Nha Trang (1895), Dakar (1896), Tangiers (1914), Hanoi (1922), and Tananarive (1927). These colonial institutes comprise only part of the full listings of the Pasteur presence as laboratories were established throughout the entire French empire.\textsuperscript{25}


There is no question that the historical trajectories of the French scientific missions and colonialism were tightly connected. But, past attempts to explain the connection have been unsubtle as the scholarly consensus overwhelmingly treats colonial science as subservient to the needs of the broader colonial project. By putting the cart of science behind the horse of colonialism, or outright conflating the two, colonial science becomes emptied both of its cultural meanings and representations as a discursive regime of autonomous knowledge. To be sure, the Pasteur Institute is an illustrative example for how science (specifically the knowledge of the microbe) and colonialism (the ‘civilizing’ mission) grew out of the same social and cultural milieu of French Third Republic modernity. But, in the colonies, both the Pasteurians and colonial administration also maintained their own separate institutional cultures, out of which emerged different conceptions of personal identity and authority. Pasteurians created their identity and authority from an ability to represent themselves as objective scientists within the highly specific discourse of germ theory.  

In a study of the Paster Institute in colonial Algeria and Indochina that exemplifies the conflation of science and the needs of colonial projects, Marcovich misses the complex process of knowledge production and identity formation that takes place in a

scientific mode of production.\textsuperscript{27} The omission leads her teleologically to assume the success of the Pasteurians’ science and their subsequent scientific authority before they even produced ‘science,’ (i.e., revealed microbes) in colonial laboratories or on makeshift workbenches in the bush. Further, Marcovich’s analytical framework leaves little room to address the complex practice of tropical medical science. Before science could serve economic development (\textit{mise en valeur}) of an individual colony, Pasteurians first had construct a specific discursive map or spatial knowledge of microbes and parasites.\textsuperscript{28} Further, disease topologies in and of themselves serve no function if there does not simultaneously exist some other element to which they refer. Maps are never one-dimensional. The other necessary referent to make maps work is of course society. Society or ‘the social’ also needs to be constructed or imagined, a point almost always tacitly assumed. This dissertation centrally addresses the two-fold movement of making disease and the social that transpired with smallpox control in French West Africa in the late nineteenth-century.

\textsuperscript{27} Marcovich, “French Colonial Medicine and Colonial Rule,” 113.

Historiography of Vaccination in Africa

As stated above, the control of smallpox through vaccination campaigns represented the first and most sustained contact between European biomedicine and West African populations under French rule. The observation can in all likelihood be extended to all of twentieth-century colonial Africa, but further research on the subject is needed. Historiographically, there has been evident lack of scholarship on smallpox in Africa itself as well as colonial vaccination over the continent. The scholarly lacunae is especially striking in light of several significant phenomena: first, smallpox’s endemic prevalence and high mortality rates during the early colonial era (1890-1920); second, the central place devoted to smallpox control in colonial public health policies as evidenced by the great numbers of vaccinations carried out over the first half of the twentieth-century; and third, variola is the only disease to be completely eradicated in Africa as well as globally. Lastly, and what should be of particular interest for historians, is the relatively large amount of published primary sources on vaccination, especially for the francophone African colonies in the period between 1890 and the First World War.

The secondary literature on smallpox vaccination in colonial Africa comprises several articles, unpublished theses, and relatively brief treatments in monographs on colonial medicine more generally. A large part of the scholarship for the colonial period provides an institutional or disease focus and follows the same historiographical patterns described above for the larger literature on Western medicine in Africa. There exists an official biomedical history for French efforts written by two former doctors,
Robert and Antoine Fasquelle, and the historian Jean-Paul Bado has provides a brief institutional overview of the difficulties that tropical medical researchers and colonial public health officials faced in the attempt to extend vaccination in French West Africa during the first two decade of the twentieth-century. Most of the institutional studies for vaccination in francophone Africa comprise unpublished theses. Analyses for the aggravated disease environment that occurred with the advent of colonialism have mostly concentrated on British Africa. While former medical participants have analyzed the successful eradication efforts started in the late 1960s, much less has

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been written for the history of indigenous attempts to control smallpox via inoculation or variolation.34 One of the goals of the thesis is to bring a needed attention to the historical study of smallpox and vaccination in colonial Africa, which can also contribute to future comparative analysis with the growing literature on vaccination within Britain and other areas of British empire.35


The historical analysis of vaccination in West Africa over the first half of the 20th century also offers historians of colonial medicine, and of colonialism more generally, in Africa a rich terrain to examine interactions between colonial forms of power and Africans’ experiences of that rule. Past studies of European empire often discussed the historical processes of colonization through split divisions, that is, as either the trajectory of already-defined metropolitan systems of rule and ideology becoming manifest in the colony, or as the social, economic, and political histories of the colonized’s responses to foreign domination. Several recent studies of empire though have addressed the historical “tensions of empire” that acted to cut across the dichotomies of colonizer and colonized, colony and core. These works have just begun to describe and discuss

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whether and to what degree the hallmarks of western modernity -- individualism, liberalism, nationalism, science, culture and citizenship-- were not first clarified among Europe’s colonial exiles and by those colonized classes in Asia, Africa, and Latin America, and only then brought home to the metropole. The new scholarship thus pushes us to rethink how we conceive historical origins of western modernity and the constitutive place of the colony and colonized peoples within that moment. Just as central, this body of work calls for more subtle and complex analyses of “everyday” life during colonial rule since it was out of these daily contacts and conflicts that the very conceptions of what it meant to be ‘modern’ or ‘traditional,’ ‘colonizer’ or ‘colonized’ were forged not once, but continually redefined and made manifest.37

To address this process, the dissertation offers a framework that draws on and combines two thinkers who discuss the manner in which micrological processes

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produce things: Michel Foucault and Bruno Latour. Below I provide an overview of the particular theoretical concepts of Foucault and Latour that constitute the methodological tools of analysis employed in the study.

**Methodology: Part One—Foucault on Biopower and Governmentality**

Some historians have been more attuned to the specific operation of scientific and medical knowledge in colonial Africa, especially in its links to administrative power and social control. Quite explicitly, scholars in this vein engage with the work of the French philosopher and historian Michel Foucault, particularly his specific writings on the relationship between power and knowledge in the modern era. Before discussing the scholarship on the colonial construction of medical knowledge, it is important to elaborate first several key principles in Foucault's historical and philosophical analysis.

To begin, one needs to consider that Foucault never wished to provide a universal definition or ontological theory (‘what it is’) of power. His anti-philosophical stance stems rather from an abiding interest to analyze the operation of power, namely its effects, within determined historical contexts.\footnote{40}{For a concise outlining of his intellectual on power, see Michel Foucault, “The Subject and Power,” the Afterword in Hubert Dreyfus and Paul Rabinow, \textit{Michel Foucault: Beyond Structuralism and Hermeneutics}, 2nd ed. (Chicago: University of Chicago Press, 1983), 208-226. It would be pertinent to remember as well that Foucault viewed his successive projects—the study of madness, medicine, punishment, government, sexuality, art, and the self, to name but some—as different exercises in thought, each requiring its own set of theoretical concepts and analytical thematics.} Modern forms of power, for Foucault, do not connote the commonly understood (and transhistorical) idea of a repressive element, such as physical force or coercion;\footnote{41}{An intellectual history has not yet been written for Africanist historians’ conceptualizations of power in the study of the colonial era. If one were to make such an attempt, one would likely find, in addition to ‘repression’ and ‘coercion’ receiving an inordinate great amount of attention as a literary trope, the strong influence of Weberian...} in brief, he identifies coercion, repression
and prohibition as the predominant forms existing in the pre-modern or classical era where political rule inhere within a sovereign ruler or king/state. Instead, Foucault argues that, with the rise of the modern era, which he roughly dates at the end of eighteenth-century, different forms of power emerged to become dominant features structuring social and political life. The forms can be best characterized in their productive or generative features. Older types of power based on sovereign rule certainly did not disappear, yet over time they increasingly diminished as the main organizing principles of social relations. In fact, a Foucauldian analysis would maintain that the epistemological nature of coercion and repression also changed in modern era. For historians, such an analytical method suggests that disciplining functions such as the corvée or public displays of corporal/capital punishment that existed both in pre-modern Europe and colonial Africa were fundamentally different, particularly in light of their effects produced. Below, the discussion returns to this point in addressing critiques of Foucauldian frameworks to study colonial medicine in Africa.

Throughout his writings, Foucault wishes to illuminate the very nature of ‘modern’ forms of power by describing historically the effects or products of power in late eighteenth- and nineteenth-century Europe. The effects include the creation and organized operation of social institutions, or points of the application of power, such as the asylum, the prison or the clinic. Yet, just as central for Foucault, ‘modern’ forms of power produce new knowledges and epistemologies, that is, a ‘sense’ or ‘order of sociology, in particular its definition of the State as having the legitimate monopoly of violence.
things’. A key component of modern knowledge includes new ways to conceive of or define persons (i.e., subjectivity): who is healthy and who is sick, or who represents the mad or the criminal. Power, furthermore, is not just something that operates negatively on preconstituted subjects. Rather one of the prime effects of power concerns how “certain bodies, certain gestures, certain discourses, certain desires come to be identified and constituted as individuals”.

For Foucault, the relationship between subject formation, knowledge, and power rests on the utter refusal to view power solely as the ability of a person to make another do something or to constrain certain actions, peoples, or outcomes; it is as much about the possibility of producing these entities, including bringing into existence new kinds of individuals and groups. Power and knowledge, then, are not two separate elements, but rather each is constitutive of the other: “the exercise of power perpetually creates knowledge and, conversely knowledge constantly induces the effects of power”.

Foucault’s term for this power/knowledge complex is discourse, or a discursive formation, to signal a particular configuration during a specific historical period.

A further major feature of ‘modern’ power for Foucault, and key to the study of colonial vaccination in the following chapters comprises what he termed biopower or the

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‘calculated management of life’. According to Foucault, modern forms of society resulted from specific discourses and practices characterized by a doubled dimension of two poles. At one pole exists a first dimension that involves disciplinary attempts to define and regulate individuals and their behavior through an ‘anatomo-politics of the human body’. Disciplinary power centers on the individual body, optimizing its capacities, increasing its usefulness and docility, and integrating it into systems of efficient and economic controls. A second pole concerns the desire to create and regulate the life of groups or the species via a ‘biopolitics of population’ that takes as its target the entire species. Moreover, it aims to regulate the biological processes that affect an entire population: birth, mortality, health, and life expectancy. Over the nineteenth-century, institutions such as the army, schools, barracks, and hospitals or dispensaries came to embody the mechanisms used to discipline individual bodies, whereas the regulation of population was achieved by techniques in emerging fields such as demography, economics, statistics, and resource management. In these fields, the methods and techniques attempt to optimize life and its forces without also making it more difficult to govern. The careful shepherding of economic processes and the forces that sustained them became in turn a rationale for governance.

Neither of the two dimensions—anatomo-politics and biopolitics—was a new phenomenon in history. Rather, their uniqueness throughout the nineteenth-century, Foucault argues, relates to the fact that the two were now combined to produce a

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specific mode of power that sought to ensure the promotion and care of life. In the time before the modern era, which Foucault terms the classical period, it was the sovereign ruler or king who could ‘take life or let live’. With the arrival of modern epoch in the late eighteenth-century, this old right is not replaced, but rather displaced and becomes penetrated and permeated with a new right: to ‘make live and ‘let die’.

Lastly, the dissertation builds on the methodological concept of political rationality found in the later work of Foucault that sought to study the formation and institutional operation of the modern state. In an attempt to analyze the workings of the state that went beyond the generic notion of rationalization, Foucault wished to create a methodology that would allow a more empirical examination “somewhere midway between the state as a type of political organization and its mechanism”. Such a study of political reason would not be limited to political theories or choices; moreover, its focus would not exclusively center on objective conditions or subjective intentions.

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Rather, he aimed to comprehend how “the forms of rationality that that organize their ways of doing things” and inscribe themselves in…systems of practices”.⁴⁸ Like the concept of biopower, Foucault also viewed political rationalities as generative of new matrices and actions of government and its problems (i.e., to know population). The difference between biopower and political rationality stems not from the kind, but the degree to which power had spread through social life especially in the later half of the nineteenth-century in Europe when public and private institutions began to promote social health, welfare, and security.⁴⁹ The period also marked the time when states took on a different form, in which they became more active in the organization and administration of society as well as more centralized in their functioning. To describe the process in which new logics and modes of actions enter into the state, Foucault invented a neologism, that of governmentality. This dissertation employs the methodological analysis of political rationality and governmentality to examine smallpox vaccination in French West Africa since a similar movement occurred as the French colonial state also took its modern form at the same time as colonial physicians elaborated the foundational attributes of mass vaccination. In following Foucault, so too do I establish a methodological space in between the colonial state and the public health institutions promoting vaccination. The potential benefits of such an approach


⁴⁹ Michel Foucault, “Governmentality,” 100-103.
allows a more conceptual and nuanced framework for the study of colonial medicine than methodologies that only center on the institution or the state.

In one of the first studies of colonial medicine in Africa to adopt a Foucauldian framework, the historian Megan Vaughan concentrates on the ways in which biomedical discourse employed by state physicians and missionary doctors in British East and Central Africa, socially constructed ‘the African’ as a pathological object of knowledge as well as defined the natural environment of Africa as ‘sick’ (e.g., trypanosomiasis or sleeping sickness, the leper, the mentally ill). In terms of data, Vaughan draws predominantly from medical accounts produced during the era and reads the writings for codings and representations of Africans; she concludes “the power of colonial medicine lay not so much in its direct effects on the bodies (though this was sometimes significant) but in its ability to provide a ‘naturalized’ and pathologized account of those subjects”.

While *Curing Their Ills* brings a rich and close reading of colonial medical texts, its author does not move beyond the analysis of discourse. Reading texts only for the discursive representation of colonial power elides any analysis of the actual practices of medicine as well as the conceptual effects of those practices. While colonial physicians may have been conscious and explicit about their medical work and provided ideological justification, like all historical actors, they may not have been aware of what their practices unconsciously and inchoately effected or produced.

Moreover, in an attempt to apply critically Foucault’s approach to the study of colonial Africa, Vaughan offers three reservations for such a project. First, she

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maintains that the operation of power in colonial states differed systematically from its trajectory in modern Europe. “Colonial states,” in her view, “were hardly ‘modern states’ for much of their short existence, and therefore relied, especially in their early history, on a large measure of ‘repressive’ power”.\textsuperscript{51} By this critique, it was only in the later colonial period that colonialism took on the characteristic functions of the liberal, welfare state to “create the systems of surveillance and control common to Europe”.\textsuperscript{52} Second, the medical power/knowledge dispensation did not assume the same proportions for the purposes of colonial control as had transpired in nineteenth- and twentieth-century Europe, particularly in regard to the science of psychiatry. While modern European science urgently sought to demarcate the lunatic and the leper as the Other, Vaughan suggests that Africans were always already Other due to the very fact of the colonial situation. Further, she points to a dominant theme in colonial psychiatry, wherein physicians sought to define a conception of the ‘normal’ which in fact only served to pathologize ‘normal’ African psychology as the key difference from the metropolitan psychiatry. Lastly, Vaughan expresses a strong doubt to the extent to which colonial medical discourse created ‘individualized’ subjectivities as postulated by Foucault. While Africans may have been counted and weighed individually, these measurable units were only used to aggregate Africans into groups. \textit{Pace} Foucault’s account for biopower then, Vaughan argues that colonial medical discourse and practice conceptualized Africans “first and foremost, a members of groups (usually but not

\textsuperscript{51} \textit{Ibid.}, 10.  

\textsuperscript{52} \textit{Ibid.}.
always defined in ethnic terms) and it was these groups, rather than individuals, who were said to possess distinctive psychologies and bodies...group classification was a far more important construction than individualization”.\footnote{Ibid., 11.}

So did (bio)power’s trajectory differ in colonial Africa from modern Europe? Indeed, Foucault’s intellectual projects did not address the operation of modern forms of power in colonial settings.\footnote{For an excellent assessment of this lacunae in regard to sexuality and race as well as some of its ambiguities in Foucault, see Ann Laura Stoler, Race and the Education of Desire: Foucault’s History of Sexuality and the Colonial Order of Things (Durham,NC: Duke University Press, 1995) to be read along with a different reading of Foucault on race, Jean-Loup Amselle, “Michel Foucault et la guerre des races,” Critique no. 606 (1997): 787-800. Gyan Prakash constructively draws on Foucault to sketch a history of science and colonial modernity in British India, but also finds limitations with the strict use of Foucault in colonial situations, especially for the concept of liberal governmentality. Prakash, Another Reason: Science and the Imagination of Modern India.} European colonial projects attempted to establish rule by importing both modern institutions and knowledges (such as understandings of economy, governance, law and health). To be sure, modern European institutions and paradigms were neither created in the metropole and mechanically exported to the colonies nor did they meet unchallenged acceptance on the part of colonized subjects. Such an easy application of colonial rule was not possible due in part to the fact that European colonizers came up against quite different indigenous institutions, knowledges, and relations of power.

Furthermore, colonialism in Africa as a mode of power did indeed function through force. And, as much of the historical literature argues, colonial power was
never total since African communities and groups, men and women successfully practiced multiple acts of resistance to influence colonial policy. Yet, Vaughan begins her critique of Foucault in a perplexing manner. She simply dismisses any consideration of Foucauldian notions of power and quickly proceeds with a notion of power as a force or repression as emanating from above, such as in the institutions or apparatuses of the colonial state. If one leaves the study of colonial power under these terms, any resulting analysis in turn becomes locked into a game of only measuring repression, that is, asking whether power was strong or weak in any given instance. Colonial relations between and among groups, both for the colonizers and colonized, were a great deal more complex and multiplex in terms of medicine and the operation of power as this dissertation hopes to illustrate for the early history of vaccination in Senegal and French Guinea.

Vaughan raises important caveats regarding the application of Foucault in colonial Africa, but, rather than explore the reservations empirically through historical analysis, the criticisms remain simply stated as accepted truths for the history of colonial medicine in Africa. Additionally, her claim for the essential differences between modern Europe and colonial Africa is based on a selective reading of European history, especially in terms of the science of normality. Lastly, as Stoler had noted, Vaughan

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55 One of the best summaries of this literature remains Frederick Cooper, Conflict and Connection: Rethinking Colonial African History," American Historical Review 99, no. 5 (December 1994): 1516-1545.

56 The historian and philosopher of science Georges Canguilhem presents a more nuanced and sophisticated treatment for the emergence of the normal and abnormal in nineteenth-century Europe and substantially complicates Vaughan’s claim. See The
too quickly reads Foucault’s notion of biopower to typify the predominance of constructing groups in colonial Africa offset against the formation of individual subjectivities in modern Europe. Throughout nineteenth-century Europe, biopower was (and is still today although in modified form) a means of collective regulation, especially for the normalization of the social body of ‘population’.

Method: Part Two—How to Study Science in Action According to Latour

Missing from both the institutional and revisionist historiographies on medicine and empire is the theoretical contribution from the intellectual history and anthropology of Western science. In examining the formulation and practice of Western scientific


knowledge in society, this literature neither assumes the common realist conceptual and
analytical divide between nature and society. Nor does it take sides in the
contemporary scholarly debate that seeks to judge whether scientific knowledge is
determined by nature or constructed by society. Rather, the scholarship understands
that the knowledge of nature and society is “intimately entangled in scientific and
technological practice [and] practice is where nature and society and the space between
them are continually made, unmade, and remade.” The literature then critically
investigates both the domain of scientific knowledge and practice as it forms and
connects actors, institutions, politics and power. The dissertation will follow this line of
inquiry in a colonial context where one must consider not one, but several domains of
medical knowledge and practice and the interactions between them.

Bruno Latour’s recent rethinking of modernity provides an alternative vision
and methodology to explore colonial vaccination in French West Africa. In *We Have
Never Been Modern*, Latour defines this perspective as a symmetrical anthropology:

> To become symmetrical, anthropology needs a complete overhaul and
> intellectual retooling so that it can get around both Divides at once by
> believing neither in the radical distinction between humans and nonhumans at
> home, nor in the total overlap of knowledge and society elsewhere. 60

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Latour extends recent methodological and theoretical trends in the history of science to address the nature of modernity itself. He presents a model for and critique of the traditional understanding of modernity as evidenced by the entire corpus of modern Continental philosophy from Hobbes, Kant, and Hegel to Heidegger, Habermas and Derrida. Modernist thinkers of all intellectual stripes, argues Latour, have understood reality according to a model, which the author terms a ‘Constitution’, that is predicated upon two dichotomies.

The first dichotomy ontologically sets humans apart from nonhumans, or more commonly viewed, nature apart from culture and society. For this partition to work and produce modernist knowledge, moderns have always had to carry out what Latour describes as the work of purification: any given entity must essentially belong either to nature or society. The second dichotomy is much less understood and even denied in modernist thinking. Latour states that any given entity consists of mixtures of both human and nonhuman elements or what the author sees as ‘hybrids of nature and culture.’ This mixture, or mediation (‘translation,’ in the author’s terms), of human and nonhumans elements occurs all the time along networks or continuous chains. In his distinctly playful and provocative prose, Latour asks where does the meaning of a hole in the ozone come? For modernists, it’s either (here’s the purification) in the natural world (in the physical sky above Antarctica formed by fluorocarbons) or within society created and maintained by stable interests or a discourse or text. That’s only part of the picture though, since ozone holes exist concomitantly and in translation (again, mediation) with “scientific and industrial strategies, the preoccupations of heads of state
and the anxieties of ecologists.” If we attend to both realms of work, purification and translation:

we immediately stop being wholly modern, and our future begins to change. At the same time we stop having been modern, because we become retrospectively aware that the two sets of practices have always already been at work in the historical period that is ending. Our past begins to change.61

The intellectual driving force for Latour’s revaluation of modernist thinking interestingly comes from cultural anthropology. As a preeminent product of modernist thought, cultural anthropology rests upon the premise of relativism. That is, We know what we are and They are different from us. How does such an epistemology work, Latour asks? Relativism is centrally modern in that it accepts what Latour describes a two Great Divides. The first divide, as described above, relates internally to how moderns absolutely separate/purify nature from culture. The second divide transpires outside of modern systems of thinking, where the ‘natives’ confusingly overlap nature and society, things and signs. Thus, We are free and They are trapped.

Latour does not wish to assert a modified universalism: they are like us or we are like them, where neither party is conscious of the fact. Conversely, Latour grants and simultaneously limits the power of relativism. Anthropologists have to come home from the tropics and continue to use their same methodological precepts in their analyses of our cultures. Thus, like in the study of non-Western culture, home-spun ethnographers would not assume the internal divide between culture and nature. Furthermore, the new anthropology of science would not ascribe total difference

61 Ibid., 11.
between us and them. How could you, Latour maintains, since it is ontologically impossible to differentiate the essence of hybrid networks, those nature-beings. But there is some difference nevertheless. Latour clarifies this difference between collectives based solely on the size of the networks. Western science and technologies are different from, say, Dogon cosmologies, because science and technologies:

multiply the nonhumans enrolled in the manufacturing of collectives and because they make the community that we form with these beings a more intimate one. . . Modern knowledge and power are different not in that they would escape at last the tyranny of the social, but in that they add many more hybrids in order to recompose the social link and extend its scale.\textsuperscript{62}

Latour’s symmetrical anthropology is based on the principal of registering the differences only in size of hybrid networks and “at understanding the practical means that allow some collectives to dominate others”\textsuperscript{63}. 

Sources and Framework of Dissertation

The dissertation is based on the combination of multiple types of sources: publications, archival records, and oral historical interviews. The publications comprise nineteenth-century European travel and military expedition accounts in West Africa, late nineteenth-century; early twentieth-century Mande-language dictionaries; medical geographies (\textit{géographie medicale}) written by some of the first military post doctors

\textsuperscript{62} \textit{Ibid.}, 108-109, emphasis in original.

\textsuperscript{63} \textit{Ibid.}. 
during the last two decades of the nineteenth-century in Senegal, French Soudan, and Guinea; and colonial medical reports from French West Africa that appeared in the principle nineteenth- and twentieth-century French tropical medical journals. The tropical medical journals include the *Archives de médecine navale* (which was superseded by the *Archives de médecine navale*) and the *Annales d'hygiène et de médecine coloniales*. The journal articles are often published versions of the colonial physicians' official medical reports otherwise found in archival holdings.

In West Africa, I conducted archival research at the Archives Nationales de Guinée in Conakry, the Archives Nationales du Mali in Bamako, and the Archives Nationales du Sénégal in Dakar and in France at the Centre des Archives d'Outre Mer in Aix-en-Provence. At these holdings, I consulted administrative records specifically pertaining to smallpox vaccination as well as the monthly and annual medical reports, official correspondence and directives concerning the general operation of the colonial public health services. Lastly, the dissertation also employs some information from the twentieth-century records of the Catholic Holy Spiritans missionary order in Upper Guinea found at the Archives de la Congrégation de Saint Esprit in Chevilly La Rue, France.

For the oral historical sources, I draw upon information collected from interviews conducted in the Upper Guinea region between September 1998 and June 2000. In collaboration with a research assistant, we transcribed and translated (from Maninkakan into French) interviews with three different categories of informants: African consumers of medicine, indigenous healers, and African medical personnel (nurses and midwives)
who worked in the region with the colonial medical services. The pool of informants has included a roughly equal number of men and women, 65 years of age or older, who live presently in the cities and surrounding villages of Dabola, Kankan, Kouroussa, and Siguiiri.

The following five chapters of the dissertation each address a different stage during the last two decades of the nineteenth-century in French West Africa that contributed in the process to create later colonial mass smallpox vaccination programs in the twentieth-century. At specific places, they also make reference to the history of smallpox vaccination and medicine in France to contextualize better the events transpiring in colonial Senegal and French Guinea, especially concerning the development and operation of colonial forms of biopower, governmentality, and technoscientific networks. As illustrated in the dissertation, it was in the *fin-de-siècle* period that many of the foundations took root in French West Africa for future vaccination, whether to control smallpox or other diseases such as yellow fever and measles, as well as forms of twentieth-century colonial and postcolonial mobile medicine, such as the treatment of sleeping sickness, leprosy, and onchocerciasis (river blindness).

The first chapter examines the manner and effects at the time when colonial power became initially linked to smallpox control in French West Africa. It initially sketches the broader context for this linkage in the rise of French imperial expansion after 1880 in West Africa and the public health priorities of France’s ideological colonial project, the *mission civilisatrice*. The chapter then relates the modern biomedical
account of smallpox and provides a brief background history for the rise of vaccination in Europe. Next, to offer a contrast with European medical ideas of smallpox, I provide an account of local African knowledge of smallpox, specifically in area of northeastern Guinea where I conducted oral historical fieldwork. The final three sections turn to the workings of biopower and the creation of new practices to know 'population' through European narratives of smallpox in northeastern Guinea. Special attention is devoted to compare and contrast European travelers' accounts and the géographie medicale theses written by first naval physicians since they afford the earliest narratives describing smallpox in the interior of West Africa.

The two chapters that follow thematically treat the same topics, namely the late nineteenth-century medicalization of smallpox with its accompanying elaboration of vaccination in French West Africa, but in different geographical locales and phases: in urban coastal areas of colonial Senegal with long-standing European presence (Chapter Three) and regions recently coming under French military occupation (Chapter Four). Chapter Three discusses a major shift in colonial thinking concerning smallpox as the notion of the disease moved away from the inherent limits of medical geographical knowledge and their highly localized understandings to become increasingly an medicalized entity. A key event in this transformation was the 1887-88 epidemic that spread throughout Senegal; the outbreak occasioned new forms of statistical observation of the disease and importantly the first steps to inaugurate the technoscience of mass vaccination in French West Africa, particularly in the Four Communes of Saint-Louis, Dakar, Gorée, and Rufisque. Chapter Four turns to a
succeeding phase in the growth of the biopower of colonial medicine that centrally cohered around vaccination as a network that brings together knowledge, actors, and objects. A first section recalls the ways in which smallpox held a unique epistemological position so that it remained outside of the heated debates between competing mid-to late nineteenth-century medical theories to explain disease causality both in France and French West Africa. As such, the prophylaxis to prevent the disease, that is vaccination, could continue and expand technologically to take the form of massive use. There would be no objection or obstacles, at least in a medical and technological sense, to augment extension of vaccination and the remainder of the chapter delineates how expanded networks of vaccination in both scale and form moved away from traditional centers of its practice in urban locales to the newly occupied areas in the Western Sudan.

Chapter Five shifts the register of analysis to illumine the nature and presence of indigenous prophylaxis and attempts to control smallpox in the last half of the nineteenth-century and the first half of the twentieth-century in West African areas of present-day Senegal and Guinea. Two methods are found to coexist: the isolation of the sick and a form of inoculation known as variolation. Variolation has a long history of use in many non-Western societies and was even employed in eighteenth-century Europe as a major means to prevent the spread of smallpox and this chapter discusses examples of its practice globally as well as in precolonial Africa. I then assess more specifically its regional prevalence in Senegal and Guinea and argue that the historians of variolation in Africa have tended to make overgeneralized claims for its existence. As
an alternative historical interpretation, I present an empirical examination of indigenous smallpox control in these areas of West Africa to demonstrate the area’s highly fragmented topography of variolation as well as isolation. The historical and geographical variability of both techniques, I suggest, may possibly account for the reasons West Africans came to accept smallpox vaccination in the great numbers as they did in the late nineteenth- and early twentieth century. The chapter ends on a conjectural level to evaluate the process of translation Africans performed for the technological object-character of the vaccine.

The sixth chapter, “How to Make a Universal? or the Science-Social Effects of Vaccination in Fin-de-Siècle French West Africa,” returns to explore vaccination as a historical form of colonial biopower in colonial Senegal and French Guinea. All contemporary colonial medical observers, as well as subsequent historians of colonial medicine in French West Africa, viewed the last decade as one of little, if not totally negligible, progress to increase the scale of mass vaccination. In a technological and biomedical sense, they were correct. Smallpox outbreaks repeatedly transpired over the decade, at least in Senegal. And the vaccination programs as developed in the respective colonial capitals of Saint-Louis and Conakry remained quantitatively minor in overall capacity when compared to the huge number of operations carried out after 1905. However, I present a different historical interpretation of the period from 1892 to 1900 and argue that the colonial physicians and historians reflecting on the last decade were mistaken. Inspiration for the opposing argument comes from Bruno Latour and Michel Foucault, whose conceptual study of modern science, medicine, and functional
operational logics of the state inform the entire dissertation. From Bruno Latour, there is the call to open up the blackboxes that scientists enclose their practices as a means to produce the hard facts of past experiments, ones of both success and failure. From Foucault, there is the injunction to recognize that all programs of behavior fail on some level; hence it is rather more salutary to explore the social, political and intellectual effects of these failures. In the period under discussion, new and enlarged networks of vaccination emerged to connect a greater number of materials, persons, and knowledges. Furthermore, these new networks became increasingly more mobile so that, for colonial physicians and Africans, it was relatively possible for the first time to interface with a smallpox vaccine in Saint-Louis, Conakry or some interior locale far away from a colonial center and now visited by a mass vaccination expedition. The cumulative nature and effects of vaccination in the last decade of French West Africa in fact succeeded through failure. The technoscientific and biopolitical foundation for all future twentieth-century smallpox control had been put operationally into place.

Lastly, the dissertation’s Conclusion attends explicitly to one representative future of colonial smallpox vaccination that transpired over the first half of twentieth-century French West Africa. From the start of mass prophylaxis campaigns in the first decade, a good part of vaccination was actually conducted by male African nurses, who were then joined, after 1923, by male African doctors. Through an analysis of a photograph of an African nurse conducting smallpox in 1908 in the French Guinea city of Kankan, I offer a detailed reading of the image at once descriptively for presence of the technoscientific networks that emerged out of the history of biopolitics and the arts
of government in the last two decades of the nineteenth-century. I also frame the photograph temporarily to discuss the rise of African medical intermediaries as particularly kinds of new subjects, namely agents as mediating ‘middles’. To consider the place and import of these African actors, as this dissertation argues, historians would be remiss to ignore the productive and generative capacities of colonial biopower to effect new social imaginaries as well as the very persons and actors who inhabit and motivate them.
Chapter Two

Foundational Narratives and Geographies:
Smallpox Knowledge in Late 19th-Century French West Africa

Overlapping Contexts: Imperial Expansion and the Mission Civilisatrice

The following chapter begins to answer the questions posed in the Prolegomenon concerning the generative capacities of colonial smallpox vaccination in twentieth-century French West Africa. Notably, it will not start with a historical analysis strictly per se of vaccination policies and programs in or just prior to 1906, the year when mass campaigns were launched. To do so would too rapidly narrow an investigative frame and fail to see the manner in which those policies and programs actually emerged out of a matrix of preexisting Western imaginations for smallpox and its control. These imaginations have histories in their own right that were etched out of Europe’s earlier experiences with smallpox epidemics both at home and in late nineteenth-century colonial settings such as French West Africa. The dissertation argues that, for the last two decades of nineteenth-century French West Africa, colonial smallpox control via experimental vaccination was generative in and of itself of a particular social context and forms of imaging government. To be sure, other social formations and political rationalities were simultaneously emerging in the region and had developed out of the history of French imperial expansion and formal territorial acquisition in West Africa.
Starting gradually in the mid-nineteenth century, French colonial expansion in West Africa reached a torrid pace by the last two decades of the century. While administrative and commercial control had already been established along the coast of Senegal, specifically in Dakar and Saint-Louis, after the Berlin Conference of 1885, France renewed imperial expansion for much of the West African interior. The period between 1880 and 1905 witnessed military conquests and negotiated treaties with local African potentates leading to the creation of formal and separate colonies. Before the turn of the century, French rule throughout the region existed as a loosely organized affair, notably controlled from Paris without any local overarching authority to coordinate policy.¹ To remedy the problem of overcentralization and shift policy from strictly military expansion to the development of existing colonies, in 1895 the French government placed the colonies of West Africa under a federated authority headed by a Governor General in Dakar and officially put into practice an ideology based on ‘civilizing’ Africans, known as the mission civilisatrice.

To explain late nineteenth-century French colonial expansion in West Africa, successive generations of scholars have debated the role of competing historical causes (economic vs. political/nationalistic motives).² Arguments in France for imperial


expansion were no doubt framed around its political and economic necessity, but so too was colonization expressed ideologically as a “civilizing mission”. In fact, all forms of late nineteenth-century European imperialism entailed civilizing ideologies, but the French version of *mission civilisatrice* became far stronger and more prevalent in official imperial discourse. According to Conklin, French colonial planners were able to reconcile different political and public opinion for the pursuit of the imperial project by arguing that France would impart a more human and progressive version of expansion in that indigenous populations “would benefit morally and materially, to the point of eventually becoming civilized themselves”. France, in turn, would benefit economically through increased trade and significantly impart its Republican values and the French language.

In French West Africa, the civilizing mission prior to the First World War was defined according to two tenets. First, the colonial administration aimed to improve Africans’ standards of living through the rational economic development of local natural resources, a policy that came to be known as *mise en valeur*. To facilitate this goal, France organized the African territories under a single federated authority and concentrated its meager budget on two priorities: railway construction to facilitate the

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export of natural resources and public health programs to improve the existing poor health conditions and prevent the outbreak of diseases, such as smallpox. The second tenet concerned the potential conflict that might arise between indigenous culture and French civilization as the colonial administration sought to instill specific ideological values prevalent in the late nineteenth-century Third Republic of France. The values consisted of several key elements that were seen as universally applicable to all peoples: the human quest for freedom against all forms of political tyranny; the role of the state as providential or welfarist to assist the poor and ensure a productive social order; secularism as the dominant organizing force of social affairs; the absolute belief in reason and science to effect progress; the nation created from a body of educated and law-abiding citizens; and a deep adherence to individualism, private property, and morality.

As mentioned, one of the fundamental tenets of the mission civilisatrice concerned the importance of public health. Colonial officials believed that the introduction of Western medicine would provide a practical everyday means to demonstrate the utility of colonial rule for Africans. Furthermore, French West Africa could only develop and prosper economically if its inhabitants, both the small number of European and the large majority of Africans attained and remained in prosperous health. Later, after the turn of the century, the French administration realized that it lacked the financial and social resources, not to mention the personnel, to actualize its grand plans for colonial medicine.⁵

⁵ Ibid., cf. Chapter Two.
Conklin’s study of the official administrative discourse and practice of the civilizing mission importantly adds to the political, economic and military histories of French colonialism in West Africa. However, her approach as well as the other scholarly treatments leaves unexamined a salient feature of the colonizing process itself, namely the contribution of medical knowledge to represent ‘population’ and ‘colony’ in need of public health improvement and the science of Western medicine. Conklin does discuss the importance of public health for the second Governor General of French West Africa, Ernest Roume, who served from 1902 to 1908, who believed that “doctor and administrator together, in short, were to persuade the Africans under their command to change their way of life, by replacing what the administrators viewed as unhealthy ancestral habits with modern hygienic ones conductive to the mise en valeur of the federation”.6 During his tenure, Roume passed a series of decrees to improve public health and hygienic conditions known as assainissement (purification, sanitation). The new public health codes rigorously stipulated how officials should design streets, dig wells, and collect garbage, among other interventions. Furthermore, it was under Roume in 1905 that the colonial administration implemented for French West Africa the first organized public health program to provide free medical care for indigenous populations (the Assistance médicale indigène or AMI). Similar AMI programs were established more or less simultaneously throughout the French empire and all traced their lineage to a prior initiative, the Assistance médicale gratuite (AMG) of 1893, which

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established the first modern social protection program for the poor in France. Of significant note, however, it is the fact that when French colonial officials in Paris created AMI programs throughout the French empire, the Ministry of Colonies accompanied their implementation with a separate mandate to develop and extend mass vaccination for smallpox. The remaining sections of this chapter examine for French West Africa the creation and effects of late nineteenth-century smallpox narratives on later thinking for mass vaccination measures. Historical attention will specifically focus on one region of West Africa, that of northeastern Guinea, the area of pre-dominantly Maninka-speaking groups.

**Biomedical Narratives of Smallpox**

Vaccination in colonial West Africa was the attempt to eradicate smallpox. But what was smallpox? Smallpox only became a ‘modern’ disease relatively late when compared to the ways modern medicine or ‘biomedicine’ defined other diseases, especially in terms of causality. Our current bacteriological knowledge of the smallpox as caused by a virus only appeared in the mid-twentieth century with the development

of electronic microscopes.\(^8\) Previously, medical science did not fully understand smallpox’s precise etiology; although the term ‘virus’ in a general sense had long been identified as the agent responsible for smallpox, viruses as a separate class of organism distinct from large bacteria and protozoa first emerged in the 1890s. Newly found microscopic evidence at the time yielded a scientific consensus that viewed the variola virus as a protozoan parasite, much like those discovered in the same period as the cause for malaria. Standard medical encyclopedia published as late as the 1930s continued to list smallpox among diseases with uncertain causes. When colonial officials relied on vaccination to prevent transmission, they made their campaign against a “germe inconnue”.\(^9\)

By the 1970s, biomedicine recognized two chief clinical forms of smallpox, depending on the viral strain, variola major or variola minor. The former was quite devastating in both its symptoms and mortality (up to 30 percent) and was the sole species to exist globally until the late nineteenth-century. Near the turn of the century, the latter strain, also known as alastrim, appeared for the first time in Southern Africa and the West Indies before spreading throughout Africa and to North and South America as well as Europe. Variola minor produced mild symptoms and was usually non-lethal (less than 1 percent mortality). There also existed a third clinical form, called


varioloid, which resulted in a mild case of smallpox in previously vaccinated individuals. Throughout the colonial era, French medical and health reports never disaggregated the various forms in morbidity and mortality statistics.

Biomedically-inspired histories speak to the preexisting endemic nature of smallpox in West Africa, dating back for several centuries, which manifested itself as an acute and highly contagious viral infection.\(^\text{10}\) The disease was both frequent and nefarious due to its potentially high mortality rate. Case fatality as a whole for French West Africa during the colonial era has been estimated as between 6% and 20%.\(^\text{11}\) In the precolonial and colonial periods, according to French medical officials, the illness often spread via itinerant caravans of traders (dyula) or the migrant laborers (navetants). The relative ease of transmission could occur directly through skin contact (including the handling of a victim’s corpse) or indirectly by contact with an afflicted individual’s clothing, bedding, or personal possessions. The incubation period lasted from seven days to two weeks and during the first week an infected person would not realize that she was contaminated since there were no signs of sickness. Symptoms commonly became manifest on the ninth day when victims first experienced an intense, burning fever, soon followed by a rash, especially on the face and limbs. Over the next

\(^{10}\) For an apt discussion of smallpox epidemiology and its use and abuse by medical historians, see Marc Dawson, “Socioeconomic Change and Disease: Smallpox in Colonial Kenya, 1880-1920,” in Feierman and Janzen, eds., The Social Basis of Health and Healing in Africa (Berkeley: University of California Press, 1992), 91-93.

\(^{11}\) Fenner et al, Smallpox and its Eradication, 352.
several days, the rash changed into blisters and then multiple eruptions of pustules over the entire body.

Once infected, victims did not have any cure for the illness, and the occasional mortality resulted from the virus’ attack and deterioration of internal organs. If the infection did not kill, those surviving the disease were often disfigured by pockmarks covering the entire face, and, worse, blinded in one or both eyes from the virus’ deterioration of the cornea. \(^{12}\) Since survivors also became immune from further outbreaks, a major percentage of cases occurred among adolescents and children. In any year, minor epidemics could occur within villages, affecting small numbers, perhaps limited within a family, and remain isolated there due to effective therapy and measures taken against its spread. Periodically, however, outbreaks became full-fledged epidemics, striking not only a major proportion of a village population, but even spreading to other villages within or beyond the region.

Smallpox and The Rise of Vaccination in Europe

How did early and extensive smallpox vaccination in French West Africa become possible in the first place? Part of that possibility flowed from the rise of vaccination and the wane of variolation in nineteenth century Europe, along with the subsequent rapid

dissemination of the vaccine globally. In other words, French colonial vaccination programs in the twentieth-century would seek essentially to repeat a previous event of the European modern. The remainder of this section traces the genealogy of smallpox vaccination in the period from its debut in late eighteenth-century Europe where it replaced variolation as the unique defense against smallpox to when it achieved its ultimate predominance in France at the end of the nineteenth-century.

At the end of the seventeenth-century, smallpox emerged as the ‘greatest killer’ of European populations with its awkward, bifurcated reality. On the one hand, the disease was seen as a common affliction for all young children, almost as if required to initiate passage to adolescence, yet, on the other hand, it produced great fear and revulsion due to its gruesome, disfiguring symptoms and possible death. Since no preventive measures against smallpox existed, Europeans relied mainly on isolation and quarantine as a defense. By the 1720s, variolation or inoculation was introduced to Europe from China and Persia via Constantinople and slowly began to be promulgated by royal scientific societies in England. The method itself though dated back for centuries in non-Western areas, including in Asia and Africa; some accounts suggest that before 1720 inoculation existed a folk practice among some European

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peasants. After its arrival in Europe, the use of the procedure spread due to the
desperate need to bring smallpox mortality under control. In France, vociferously
opposition postponed its dissemination for several reasons, which included the
conservative, anti-innovative strains of medical thought, a patent resistance to any
British ideological innovation, and the uncertainty whether an inoculated person
received lasting immunity. After witnessing the technique in England, Voltaire, among
others, strongly advocated its adoption by the French government, and in the latter half
of the eighteenth-century its practice surged. In the nineteenth-century, variolation in
Europe quickly became replaced by vaccination.

Histories of vaccination, almost all hagiographic, start with the discovery of the
vaccine by the British physician Edward Jenner in 1796 and then point to the
development of more effective vaccines and vaccination techniques over the second
half of the nineteenth-century. In the 1790s, Jenner and colleagues drew on folk
knowledge to create medical experiments to determine smallpox prevention. English
farmers had known that cowpox, a periodic malady afflicting cattle, could produce a
mild, attenuated outbreak in human beings. Cowpox subsequently provided those
victims protection against smallpox. Jenner and others developed the first medical

16 Ibid.,

17 Genevieve Miller, *The Adoption of Inoculation for Smallpox in England and France*
(Philadelphia: University of Pennsylvania Press, 1957); American Medical Association,
*The History of Inoculation and Vaccination for the Prevention and Treatment of Disease*
(London and New York: Burroughs Wellcome and Co., 1913); Hopkins, *The Greatest
Killer*, 46-77.
experiments to test this folk knowledge and found that individuals infected with cowpox did gain immunity from smallpox.¹⁹ Soon after Jenner published and publicized the experimental results, European public health officials increasingly saw the potential opportunity for mass prevention campaigns against smallpox both within Europe and the colonies of empire.

Throughout the nineteenth-century, despite the use of Jennerian vaccine, improved isolation practices, and public prevention campaigns, outbreaks still periodically ravaged European populations.²⁰ Concomitantly, popular French reaction as well as scientific opinion remained mixed as some questioned the efficacy of the vaccine and feared its potential ability to create further outbreaks. According to one recent study of contagion in Europe during the period, anti-vaccination movements in Britain exemplified the greatest resistance, yet, despite their philosophical underpinnings in political liberalism, British governments nonetheless mandated obligatory vaccination early on. In France, to the contrary, resistance and government

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¹⁹ While many accounts attribute the first use of an effective vaccine against smallpox to Jenner, historians of medicine have demonstrated that this ‘discovery’ of smallpox vaccination was actually more complex and multiple. Several contributors in the edited collection by Anne Marie Moulin, *L’aventure de la vaccination* (Paris: Fayard, 1996), especially chapter 6, summarize and continue the debates on Jenner’s discovery.

promotion were weak and it was only the significant losses due to a smallpox outbreak during the Franco-Prussian War (1870-1871) that finally compelled action.\textsuperscript{21} While the invading German soldiers remained healthy due to the German law requiring vaccination, a major epidemic killed more than 200,000 in France.\textsuperscript{22} As a result, the vaccine then gained greater acceptance during the Third Republic, as successive decrees mandated its use for various social sections of the French population, such as military officers, officials and subalterns serving in the colonies, and metropolitan school children. Vaccination for the general population was made obligatory with 1902 Public Health Law.\textsuperscript{23}

By the turn of the twentieth-century, French colonies of Indochina and Madagascar had already experienced more than two decades of colonial smallpox vaccination campaigns; in Algeria, smallpox prophylaxis dated back to the first decades

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\textsuperscript{21} Peter Baldwin, \textit{Contagion and the State in Europe, 1830-1930}.
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\textsuperscript{22} Darmon, \textit{La longue traque de la variole} (Paris: Perrin, 1985), 358-360.
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of the nineteenth-century. Some colonies, like Indochina and the commune of Dakar, required vaccination of their subjects earlier than in the metropole. Thus, when French medical officials in West Africa established the public health programs, smallpox as epidemic threat did not reflect a new form of public health knowledge. In fact, mandatory vaccination in French West Africa was promulgated in 1904, one year prior to the creation of the AMI.

Local Epistemologies of Smallpox in Upper Guinea

For Maninka-speaking communities in northwestern Guinea, smallpox as an identifiable biological disease category did not exist. What did exist over the colonial period was highly amalgamative and multiple practices of naming, translation, and therapeutic action. Such practices transformed over time, intermixing with one another and conjoined to other meanings with the increasing use of vaccines and vaccination. Moreover, any naming of smallpox included other facets involving a relationship to possible illness therapies. One example of this relationship inhered in the established

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therapeutic idea and practice of variolation. Ultimately, smallpox never came to denote only one single notion, biomedical, ‘traditional’, or otherwise in the region.

Biomedical definitions and experiences of smallpox never became uniform in northeastern Guinea, a region administratively identified as Upper Guinea (Haute Guinée). Other definitions did and still do exist, even in the aftermath of smallpox’s eradication. In collecting oral histories for experiences of illness and healing in colonial Upper Guinea, I asked elderly men and women (over the age of 60 years) to discuss which diseases (dyankaro) were prevalent during the era. In both urban and rural areas, respondents often cited smallpox, called so in the Maninkakan language. Men and women did not relate the onset of the illness to any collective or individual social or cultural imbalance of forces, such as with those illnesses attributed to sorcery. Rather, they frequently only indexed its symptoms and nosological link to other childhood afflictions. Some informants remembered how the illness made an individual’s body dirty (ka nōō kê) with large pimples (kudu) filled with pus (nè). For them, smallpox as malady existed and, in fact, probably helped to create and reproduce discourses of purity, pollution, and danger. Many more others spoke without metaphor to the high fevers and distinctive large spots that appeared on the body, and especially the face. In rural villages, some informants gave other terms for the illness, such as férénbenin.

25 In Maninkakan, tubabu tele, or the “time of the whiteman”, is the most common term employed to designate the colonial era, a period separate and distinct from the independence era, Sékou Ture tele, for that matter the late precolonial era, Samori tele.

These disease terminologies all describe physical bodily states as the nature of swollenness and eruptions over the body. Moreover, almost all describe the illness by association with other common infant afflictions, such as chickenpox (nyalen sa, gbungbuduma so) or measles (nyönin, nyarèn). During the colonial era, according to official reports, chickenpox outbreaks transpired even more frequently than smallpox epidemic. There were several occasions when colonial doctors misdiagnosed smallpox as chickenpox; they also believed smallpox epidemics to be underreported by colonial officials. Lastly, Maninka-speakers group all three diseases (smallpox, chickenpox, and measles) within the general category of illnesses that can afflict the entire community (fodoba) and hence collectively refer to these maladies as fodobadyankaro, akin to the term epidemic or contagious disease.

In research conducted during the 1950s, Zahan found that Bamana-speakers in Mali defined diseases as Galenic humors, grouping them according to which categorical element (earth, fire, air, or water) became ascendant to rupture a previous internal equilibrium. Bamana supposedly placed smallpox in the category of the ‘earth’.

Maninka-speakers did not reference diseases humorally and I suspect that Zahan’s informants provided highly ‘esoteric’ knowledge. Other scholarship on smallpox beliefs in West Africa, as recently as the late 1960s and 1970s, has described the ways in which some communities interpret the disease as a religious deity and have

27 Zahan refers to smallpox as zo, but can be also written in Bamanakan as nso. Dominique Zahan, “Principes de médecine bambara,” Zaire 11, no. 9-10 (1957): 269.

28 My research on the cultural history of illness and healing in Upper Guinea concentrated on exoteric understandings.
developed accompanying practices of ritual and worship with the onset of epidemics. Research in Upper Guinea did not find such beliefs, and, in general, beliefs in smallpox as a deity have only been documented in Nigeria and Benin.29 In terms of causality, elders attributed the origins of smallpox (and other communal diseases) as arriving by the wind (fonyo). The wind as causal signifier for disease has several kinds of meaning at work simultaneously, or in other words, is highly overdetermined. Sickness can travel through the wind and frequently becomes linked to forms of sorcery. When discussing sorcery, many people will figuratively mention a sorcerer ‘throwing a curse’ (jeter un mauvais sort, Fr.; ka bon kórōté, Maninkakan) at someone through the wind, or, literally, a sorcerer is said to put aloft poisonous powders to strike an intended target downwind.30 In the popular memory of Upper Guinea, at least as existing in the late 1990s, no such linkage was elicited between the wind and smallpox.31 Throughout the Upper Guinea region, inhabitants remembered the affliction


30 I disaggregate the figurative and literal notions of the wind as delivery means of sorcery here. Most Maninka view the complex as a whole and speak to such phenomena as korote, a term with multiple meanings culturally (curse, poison, etc.), but always as an object or force thrown.

31 During the massive WHO-organized eradication campaigns of the early 1970s, Imperato found that in eastern Mali residents link smallpox to the sorcery. He did not find evidence for this pattern in western Mali near the areas that share a border with Upper Guinea. Imperato, A Wind in Africa: A Story of Modern Medicine in Mali (St. Louis: Warren H. Green, Inc., 1975).
as caused by the wind alone; when questioned if someone or something put any agent or thing in the air, informants responded most often that they did not know. This knowledge represents more non-knowledge rather than forms of secrecy. Much less common, Maninka-speakers attribute smallpox in the past to God (Alla), a pattern discussed below.

Recent medical anthropological studies in West Africa have demonstrated the analytical problems in attempts to locate and systematize local notions of disease causality, especially for common illnesses. From anthropological fieldwork in Mali among related Mande-speaking communities (Bamana and Maninka), Imperato records similar findings for smallpox ubiquity and causation attributed to the wind. Other medical ethnographies in West Africa recognize a regional phenomenon where ethnic communities ascribe a general tripartite division to illness origin (human—God—natural). Such an ascriptive pattern does exist for Maninka historical


memory of smallpox, yet such a cultural and etiological imaginary would have been recent given the historical trajectory of conversion to Islam in Upper Guinea. Further comparative ethnohistorical research is necessary to evaluate when such tripartite divisions, or at least the invocation of ‘Dieu,’ entered into local notions of causality.

Smallpox Definition as Translation: The Making of Commensurable Worlds

The preceding discussion of vernacular conceptions of smallpox in Upper Guinea is based on contemporary oral history and social memory. Other local understandings probably did exist in the past, but archival and published sources for those cultural meanings are unfortunately non-existent. Existing documentary sources for smallpox in Upper Guinea as well as the broader Mande region come mostly from materials published in the mid-nineteenth century by French travelers, colonial ethnographers, and missionaries. Some of the available materials include Maninkakan dictionaries and lexicons, which however do not provide much in the way of commentary for local epistemologies. Rather, these sources describe or offer an index of the purported frequency of the disease, especially the published dictionaries.

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36 An extensive search in colonial medical and Catholic missionary archival sources for Upper Guinea has not produced further data.
Among the many lexical entries in the dictionaries, only the names of few diseases appear, if at all. They always list smallpox though whose translation(s) is commonly given as so (or sometimes suu or sû). 37 Further evidence for its presence in the late nineteenth-century comes from the French military officer and linguist, Rambaud, who defines general sickness (maladie, Fr.) with three words. Two of the words are gwa and dimi, the latter term used today to signify pain or ache (e.g., konodimi(n) = stomach ache; kundimi(n) = headache). The third word is nso, the common Bamana expression for the smallpox. 38 The most extensive published definition is found in Delafosse’s La langue mandigue et ses dialects, where so is described as “rust, verdigris, spots or pimples on the skin, the marks of smallpox.” 39

Additional descriptions of smallpox in the region come from travel narratives. The earliest publications, such as Mungo Park’s classic late eighteenth-century account

37 Sigismund Koelle, Polyglotta Africana (Graz: Akademische Druck, 1963), first published in 1854; Ernest Peroz, Dictionnaire français-mandingue (Paris: J.-D. Maillard, 1891); R. P. Abiven, Notes grammaticales sur la langue malinkée suivies d’un petit lexique français-malinké (Saint-Joseph de Ngasobil: Imprimerie de la Mission, 1894); ibid., Dictionnaire français-malinké et malinké-français (Conakry: Mission des PP. du Saint-Esprit, 1906); Père de la Congrégation du Saint-Esprit et du Saint Cœur de Marie, Essai de dictionnaire pratique français-malinké (Morbihan [France]: Imprimerie de Saint-Michel en Priziac, 1896). I would like to thank David Schoenbrun for kindly pointing me to some of the references.

38 J.-B. Rambaud, La langue mandé (Paris, Émile Bouillon, 1895), 99. I appreciate the help of Valentin Vydrine, a linguist specializing in Mande languages, who shared his thoughts on nso/so terminology. Vydrine suggests that the inflected nasal ‘n’ sound disappeared at an indeterminate time in the past from usage in Southern Mande (Maninka) usage, while it retained a presence in Northern Mande (Bamana) speech. Personal communication, 1999.

Travels in the Interior Districts of Africa, or René Caillié’s Voyage à Tombouctou do not make reference to the disease. Later publications from the last two decades of nineteenth-century present accounts of contacts and diplomatic negotiations between French military representations and local African rulers, record some diseases, even smallpox. In A travers le Fouta-Diallon et le Bambouc (Soudan occidentale), Ernest Noirot writes of exploration in the Fouta Djallon region of Middle Guinea and briefly testifies to a smallpox epidemic in the village of Diaga, near Timbi-Tounni that forced their expedition to forego a visit to the village. Traveling in the environs just south of present-day Bamako, Binger writes in Du Niger au Golfe de Guinée where:

Chaque fois que je reviens du village, je suis écoeuré: on y voit des enfants chercher leur nourriture dans les fumiers, des grandes personnes couvertes de vilaines plaies, des femmes goitreuses et rien que des visages souffreteux et marques de la petite vérole. Dans quelques villages, on vaccine en prenant le venin dans les pustules du malade et l’on fait la piqûre au bras comme en Europe. Mais les noirs ne connaissent pas le vaccin de la vache.

40 Mungo Park, Travels in the Interior Districts of Africa (Durham: Duke University Press, 2000, originally published in 1799); Réné Caillié, Voyage à Tombouctou (Paris: La Découverte, 1996, originally published in 1830), vol. 1. Caillié traveled between 1824 and 1828 and was the first European to visit the centers of Kouroussa and Kankan.

41 Ernest Noirot, A travers le Fouta-Diallon et le Bambouc (Soudan occidentale) (Paris: Flammarion, 1885), 78.

42 [Each time I returned from the village, I was disheartened: one sees there children searching for their food in the trash, adults covered with nasty wounds, women suffering from goitre and nothing but sickly faces marked by smallpox. In several villages, [the inhabitants] vaccinate by taking the venom from the pustules of the sick person to make an injection on the arm like in Europe. But the blacks do not know of the cow vaccine.] Louis Binger, Du Niger au Golfe de Guinée (Paris, Hachette, 1892), 25. In popular nineteenth-century French usage, smallpox was commonly referred to as la petite vérole in contrast to the larger pox, syphilis (la vérole). Unless otherwise noted, all translations are mine.
In another account, Étienne Péroz provides a quintessential military *récit* of the accolades and ardors of the conquest campaign stopped in its track, if only momentarily, by the incursion of climate, famine, and a smallpox epidemic. Péroz was an officer in the French army during the war of conquest against the Mande regional leader, Samory Touré, whose empire included the region of Upper Guinea. Through annual military expeditions (*colonnes*), the French forces increasingly took control over the territory of Samory’s empire, and by the early 1890s, Samory was driven out of Upper Guinea to the area in the south near the present-day border between Guinea and Côte d’Ivoire. As the colonial army conquered further territory, French commanders steadily established new forts throughout the zone. At one such newly occupied region to the south of Kankan, Péroz writes how smallpox interrupted the military progression to wreak havoc on both the troops and local populations:

le poste de Kérouané commençait à s’organiser. . . Les ordres de départ furent donnés pour le 29 [février 1892]. Deux jours avant, des pluies diluviennes accompagnées de violentes orages nous avaient rappelé que dans cette région la saison sèche n’existe presque pas et l’hivernage est précoce. Elles avaient été aussi le signal d’un affaissement marqué dans l’état de santé général. Un certain nombre d’Européens étaient la proie des fièvres bilieuses, et la petite vérole qui s’était déclarée dans le camp et dans le village menaçait de décimer les indigènes. Les porteurs surtout, grâce à leur épuisement physique et aux déplorables conditions d’hygiène dans lesquelles ils vivaient, lui payèrent dès le début un lourd tribut. À la fin de notre séjour à Sanankoro, il en mourait quatre ou cinq par jour.  

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43 [The post of Kérouané has started to become organized…The orders to depart were given for the 29th. Two days prior, torrential rains accompanied by violent thunderstorms reminded us that the dry season in this region almost does not exist and the rainy season comes early. They were also the signal of a marked sagging in the state of general health. A certain number of Europeans fell victim to bilious fevers, and]
The three accounts by Noirot, Binger, and Péroz elide smallpox prevalence and any local African understandings for the disease. Their narratives concern themselves almost entirely with European movement through space, personalized emotion, and a repertoire mixed of constructed sameness/difference and affirmed alterity between European and African. Moreover, these descriptions of smallpox in the broader region remain generalized and partial as if to suggest that smallpox can be seen, but only in a glance or chance encounter. With the turn around the bend, the venture into the next village, the traversing of rivers or marshes, or bivouacking the forested plateau, these travel accounts produced specific topographical and social visions of Africans, but no definitive knowledge of smallpox or for that matter diseases in general. Hence the travel accounts do not provide any secure and stable foundation for the medical gaze upon smallpox. That accounting would come from other intellectual forms and sources.

smallpox that had broken out in the camp and the village threatened to decimate the native. The porters especially, due to their physical exhaustion and the deplorable hygienic conditions in which they lived, took a heavy toll among them. At the end of our stay in Sanankoro, four or five of them died each day.] Étienne Péroz, *Au Niger. Récits de campagnes 1891-1892* (Paris: Calmann Lévy, 1894), 251-252.

During the last two decades of the nineteenth-century, the French medical discourse of smallpox in West Africa underwent a remarkable change. By the 1880s, after more than two centuries of French presence, regional knowledge of the disease was still restricted geographically, emanating only from clinical observations conducted at the hospitals in French coastal cities at Gorée and Saint-Louis. French medical officers did not see anything particularly new in the disease, neither in symptoms nor treatment that differed from the illness entity in Europe. It was known that smallpox affected Africans more than Europeans since most of the latter had already been vaccinated. Those Europeans who contracted the disease were reported to “heal themselves infinitely better [for they recuperate] in better hygienic conditions.”

Epidemics visited the coastal colony, according to the author of a major treatise on local diseases, with arrival of ships from Europe as in the outbreak of 1869 or, like ‘many times’ from the African interior, whether spread by the ‘Moors’ traveling along the Senegal River or traveling up the coast from the south. Away from the coast, beyond the colonial frontier, the landscape of smallpox was empty, in biomedical terms.

A little more than two decades later, most, but not all, French military conquest of West Africa had been achieved and colonial administrative rule had been slowly consolidated. However, by 1907, the colonial physicians alerted the administration that

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46 Ibid., 113-115.
French West Africa faced a demographic crisis due to decreasing population. In an official survey addressing the causes of depopulation and potential actions to remedy the crisis, the AMI Inspector, Dr. Henry Gallay, listed two principal causal classes of the heightened mortality. The first class comprised “banal sicknesses engendered by misery, lack of treatment afforded to people, poor hygiene and the dirtiness of living areas and villages”. 47 The doctor added that “if these daughters of social misery for all African populations did not kill, they weakened and ruin organisms, and prepared them for the final invasion of the great liquidator: tuberculosis”. 48 Matched to the social affliction of consumption were the two other companions of human settlements the world over: syphilis and alcoholism. A second class of depopulating maladies comprised the threat of both endemic and epidemic diseases. The principal endemic sicknesses according to the report included beriberi, leprosy, sleeping sickness, and malaria. Among the various epidemic dangers stood meningitis, dysentery, and typhoid.

Gallay however ascribed the main cause of the demographic emergency to the mortal effects of smallpox. In Dahomey, it was ‘a true plague’ that decimated the population and district administrators reported from time to time how the villages would became deserted from its effects. Around the Kong area in northern Côte d’Ivoire, smallpox was said to have ‘raged’ permanently. For the provinces of the colony of


48 Ibid.
Upper Senegal and Niger, the disease could be counted among the most prominent class of epidemics. Gallay in fact likened attempts to combat the disease to a war with biological terror:

[T]hroughout all points of our African empire, we see [smallpox] as the most dangerous and murderous of our enemies. For [smallpox] has no season, no frontier, no race of man; at any time, in all the various areas of our territories, we know that it is without rest, always at work, decreasing and destroying entire populations.  

If, in an earlier period, the medical discourse of smallpox existed only as coming from without (e.g., ‘up along the coast’, down the river, arriving on the ship) to land at one particular point in space, Gorée or Saint-Louis, by the turn of the century a certain type of transformation has occurred. Smallpox has now become omnipresent and seemingly omnipotent. Smallpox in some sense would still be smallpox, that is, colonial officials would still recognize the same biological disease as European medicine had done for centuries. But colonial public health officials, like Gallay, would now speak of smallpox with greater depths and types of knowledge, namely the epistemology of ‘population’. In this sense, a new discursive recognition of smallpox emerged in the mid-1900s and would be based upon a completely different constellation of knowledge. Smallpox knowledge would now emanate from a specific category--defined populations within delimited geographical spaces. Later in the decade, through the creation of vaccination programs, the colonial government would seek to control and manage the health of these African populations. But a colonial discourse first had to ‘see’ population

49 Ibid., 25.
as tied to certain spaces and below I trace the emergence of a colonial medical gaze in northeastern Guinea wherein such ‘seeing’ arose.

The possibility to frame a defined and definite population in locatable spaces derives from one particular characteristic of modern power, what Michel Foucault has termed biopower or the biopolitics of population. According to Foucault, biopower operated according to two simultaneous and linked dimensions. On the one hand, a first dimension involved attempts to define and regulate individuals and their behavior through an ‘anatomo-politics of the human body’. The development of hygienism in the nineteenth-century is an example of this process where both the state and individuals incorporated new understandings of the relationship between health and daily habits of living. The second dimension concerned desires to create and regulate the life of groups or the species via a ‘biopolitics of population’. In French West Africa, a biopolitics of population flows from late nineteenth-century medical reporting of smallpox included in medical geography (géographie médicale) theses of the region written by naval physicians. Biopower operates with and from the géographie médicaux since smallpox was characterized in a specific manner: through its ontological construction as ‘epidemic’. Linguistically, the French term epidémie takes its genealogy from the Greek language, where the prefix, epi- connotes ‘on’, and, ‘démie,’ derives from ‘demos’ or people. In describing epidemics in late nineteenth-century West Africa, these medical theses along with other early medical reports from frontier posts not only

describe the prevalence of smallpox, they also furnish the first moments of biopower’s attempt to know population.

The medical geographies produced by military doctors are richer in detail than the travel and diplomatic narratives, and would ultimately be more important in defining later French colonial health policy toward smallpox. The physicians served at French frontier medical posts in late nineteenth-century West Africa and their accounts provide the some of the first documented evidence for smallpox in the interior of West Africa. The theses also describe the nature of indigenous therapeutic responses to epidemics. As such, they are valuable sources and, combined with other materials such as oral tradition, can aid historians to reconstruct the disease and healing environment of that particular epoch in this area of West Africa. Moreover, the early reports also exemplify the complex colonial ‘medicine of epidemics’ that was taking root and developing in parallel fashion with imperial conquest of the region. Army physicians accompanied the yearly offensive campaigns of French imperial conquest across West Africa to treat the troops and staff the first rudimentary dispensaries at frontier posts. These post medics provided a different dimension of disease knowledge that would go far beyond the older, bare forms of the travel accounts as the predominantly young doctors began to reconnoiter, map out, and create medical topographies of the newly acquired territories. Several doctoral theses

51 Unfortunately, the oral tradition of illness and healing in Africa remains understudied. I know of no published accounts for Upper Guinea or the Western Sahel.
in medicine, all of which are published, present some of the first forms of knowledge about West Africans and ‘African’ smallpox.\(^{52}\)

The written accounts, often published under the title of *géographie médicale*, literally and figuratively produce territory and population, both by containing and conjoining space and disease within a marked locale.\(^{53}\) The medical geographies typically include brief regional descriptions of typography, geology, hydrology, flora, fauna, and climate as well as a cursory ethnography of local inhabitants. Importantly, the largest section of the theses concerns disease and health for both Africans and Europeans. In this ‘pathological’ section, the authors normally document illnesses observed in the area and discuss local treatments by Africans. Lastly, some doctors also provided case-study accounts of ailments ‘chez les Européens’, the treatments proffered, as well as practical hygienic advice for military personnel in the region. The local prevalence of smallpox often featured in these ‘medical’ cartographies, if not as well the indigenous measures to treat epidemic victims.

One example comes from the medical student, Noël-Joseph-Dominique Duclot, stationed in the area immediately to the north of Upper Guinea at the early and

\(^{52}\) For a list of theses consulted, see the Medical Geographies section of the Bibliography.

important fort of Bafoulabé. Duclot describes smallpox's regional prevalence and effects as well as local views of its danger and defense against its spread:

C’est un fléau fort redouté des indigènes: les habitants des villages refusent l’hospitalité à leurs compatriotes atteints de cette maladie, et ils s’empressent, dès qu’un varioleux se présente parmi eux, de l’isoler dans une case éloignée de toute habitation. Malgré ces précautions, la maladie apparaît fréquemment sous la forme épidémique et occasionne une mortalité d’autant plus considérable, que les malades sont privés des ressources les plus élémentaires de l’hygiène. On les délaisse sur une natte, dans de mauvaises cases où l’humidité du sol et la fraîcheur des nuits entravent la marche de l’éruption. Dans ces conditions, la dysenterie complique ordinairement la maladie et les sujets sont rapidement enlevés.54

Duclot’s account is exemplary in several ways. First, his remark concerning the high mortality from smallpox reflects a trend and trope found in the medical theses to document outbreaks of the disease and its nefarious effects on the local population. And it is not just any population, but a specifically circumscribed grouping within a constituted territory. Other examples of this trope are common in the medical geographies. For another physician at the Podor post along the Senegal River, it is

54 [It’s a scourge much dreaded by the natives: the village inhabitants deny hospitality to their fellow citizens afflicted with the disease, and, once a smallpox victim appears among them, they hasten to isolate him/her in a hut faraway from all dwellings. Despite these precautions, the sickness frequently breaks out in epidemic form and causes an even more considerable mortality since the sick are deprived of the most basic means of hygiene. They are abandoned on a mat, in poorly maintained huts where the dampness from the ground and the cool of the nights slows the course of the eruption of pustules. In these circumstances, dysentary normally complicates the disease and subjects rapidly succumb.] Noël-Hoseph-Dominique Duclot, Contributions à la géographie médicale: Haut-Sénégal et Haut-Niger. Thèse de doctorat, Faculté de Médecine et de Pharmacie de Bordeaux (Bordeaux: Imprimerie Typo-Lithographique Olivier-Louis Favraud, 1886), 104.
smallpox that is disastrous for the Toucouleurs.\textsuperscript{55} The doctor in the Casamance area of Sédhiou talks of ‘ces peuples’ whom epidemics have more than once visited and whose numerous bodies wear the ‘profound traces’ of past outbreaks.\textsuperscript{56} Second, Duclot and the other students that cite smallpox in the theses all seek to evaluate whether the particular local population recognized principles of contagion. In the above case, Duclot describes a local pattern of defense against the epidemic’s spread, the isolation of the afflicted. The interest in contagion on the part of naval doctors reflected the new epistemological norms of medicine, cultures of bacteriology, and public health in France during the Third Republic.\textsuperscript{57} Such a discourse was transported to late nineteenth-century West Africa and served to differentiate further local populations.

If René Caillié provided the first European description of northeastern Guinea, it should not appear serendipitous that almost sixty years later one of the next published accounts emanates from a physician. One student at medical faculty in Bordeaux, Clément-Marc-Joseph Crambes served in the colonial army and wrote a doctoral thesis


based on his medical commission in the area just north of Siguiri. Crambes must also receive credit for his proper invention of group ethnicity, that of the ‘Malinké’, when he writes of and under the sign of the Maninka physical body afflicted by smallpox:

La variole est le plus terrible fléau de ce peuple soudanien. Tous les ans la population est décimée, et il est rare de trouver un Mali-nké ne portant pas sur sa face les stigmates de cette terrible maladie. La vaccination est inconnue, et tous les essais que nous avons faits à cet égard, pendant la durée de notre séjour dans le Haut-Fleuve, sont restés infructueux. L’insuccès de nos collègues a été identique : nous l’attribuons à la mauvaise qualité du vaccin qui nous était fourni.58

The early colonial trend of differentiating populations has received much attention by scholars of Africa. In the seminal article, “A chacun son Bambara,” Jean Bazin ably deconstructs the idea of ethnicity as a substantial and real entity through a critique of late nineteenth and early twentieth century ethnological writing on the ‘Bambara’. Bazin argues that early travelers (e.g., Mage, Golberry, Bayol), missionaries (Henry) and later ethnographers (Tauxier, Delafosse, Monteil) never developed a single set of definitional attributes for communities ascribed as ‘Bambara’.59 The concept of ethnicity then

58 [Smallpox is the most terrible scourge for this Sudanese people. Every year the population is decimated, and it is rare to find a Malinké not bearing on the face scars of this terrible sickness. Vaccination is unknown, and all the trials that we carried out in this respect, during the length of our stay in the Upper River area, remained unsuccessful. The failure of our colleagues was identical: we attribute it to the poor quality of the vaccine that was delivered to us.] Clément-Marc-Joseph Crambes, Contributions à la géographie médicale du Soudan occidentale: la région aurifère entre le Haut-Sénégal et le Haut-Niger. Thèse de médecine, Faculté de Médecine et de Pharmacie de Bordeaux (Bordeaux : Imprimerie Vve Cadoret, 1887), 55.

derives not from some aspect of ‘social reality’ but rather a mode of thought based on organization and classification of groups into rational taxonomies.\textsuperscript{60} It is from this systemized thinking that ethnicity derives its truth and becomes a term or entity with meaning (an \textit{énoncé}).

Medical reporting from the late nineteenth century in West Africa falls within the above pattern as well, but performs different and arguably more fundamental procedures: the use of statistics to demarcate space and population. Crambes’ thesis included the first extensive recording of census figures for population according to subregion and village in Upper Guinea (see table below). Later, in the early twentieth-century, the colonial statistical recording of ethnicity in French West Africa would become the norm, but in this early, transitional period, ‘race’ or ethnicity was not secure. For Crambes, the “real type of the [Malinké] race changes itself from day to day,” a fact which he ascribes to miscegenation produced by polygamy and slavery.\textsuperscript{61}

\begin{table*}
\end{table*}

\textsuperscript{60} Crambes, \textit{Contributions à la géographie médicale du Soudan occidentale: la région aurifère entre le Haut-Sénégal et le Haut-Niger}, 29.

\textsuperscript{61} \textit{Ibid.}, 29.
Table 2. Estimated Population for Siguiri Area, by Subregion and Village, 1885

<table>
<thead>
<tr>
<th>Subregion</th>
<th>Village</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sieke</td>
<td>Oudoula</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Kolita</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>Niafadié</td>
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</tr>
<tr>
<td></td>
<td>Manfala</td>
<td>900</td>
</tr>
<tr>
<td></td>
<td>Kénjeba-Kouta</td>
<td>300</td>
</tr>
<tr>
<td>Bidiga-Sakala</td>
<td>Dalamban</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>Bougourou</td>
<td>900</td>
</tr>
<tr>
<td></td>
<td>Sambaía</td>
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</tr>
<tr>
<td></td>
<td>Oufia</td>
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</tr>
<tr>
<td></td>
<td>Faraoualia</td>
<td>700</td>
</tr>
<tr>
<td></td>
<td>Diambaia</td>
<td>300</td>
</tr>
<tr>
<td>Bouré</td>
<td>Sétagua</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>Bougaría</td>
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</tr>
<tr>
<td></td>
<td>Fatoïa</td>
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<tr>
<td></td>
<td>Didi</td>
<td>900</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2300</td>
</tr>
<tr>
<td></td>
<td>Total Allafina</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>Total Médina</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>3000</td>
</tr>
<tr>
<td>Diouma (rive gauche)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4400</td>
</tr>
</tbody>
</table>

Summary:

- Sieke: 2300
- Bidiga-Sakala: 3000
- Bouré: 4400
- Diouma (rive gauche): 2300
- Total: 12000


Medical reporting in the form of *géographie médicale* then instantiates a pre-énoncé of ethnicity. By ‘seeing’ and positing ‘population’, the reports form a medical gaze of biopower and allow for the possibility that these entities, which later can be ordered or not, may actually exist.
Guinean Constellations of Smallpox

Late nineteenth-century medical accounts from the colony of French Guinea also offer the possibility to reconstruct the disease environment for smallpox. The reports moreover instantiate a similar colonial biopolitics in the manner they record observations of smallpox epidemics and evaluate local responses and ideas of contagion. The following section provides some of the available evidence for smallpox prevalence and elaborates further the construction of ‘population’, especially for the Upper Guinea region.

The earliest descriptions of smallpox in the area that would later become French Guinea come from the coastal area, where the European presence had been the longest. In the nineteenth-century, the area was known as the Southern Rivers (Rivières du Sud) region and existed as an administrative dependency of the colony of Senegal. In the 1860s, the French first established forts at the outlets of two major rivers, the Rio Pongo (the Boffa post) and the Rio Nunez (the Boké post). While stationed at the Boké fort in the mid-1870s, the naval physician, Armand Corre, studied and published the first ethnographic studies of the coastal communities in the area.\(^6\) In one publication, “Les peuples du Rio-Nunez,” Corre presents a version of the

géographie médicale where he describes the various ‘races’ and ‘peoples’ of the area. To differentiate the individual groups of communities, he provides visual observations of physical difference, but he also includes detailed anthropometrical data for body parts, such as the length of the foot and digits on the hand, the size of the cranium, and diameter of leg and thorax. Moreover, Corre defines the region through its panoply of frequent disease: “chez tous ces peuples, l’hygiène est nulle et les maladies sont fréquentes”. Smallpox figures as part of the definition and is considered by Corre to produce the most deaths:

La variole, importée depuis un grand nombre d’années, fait de nombreuses victimes, on ne prend aucune précaution pour l’éviter ou pour atténuer ses effets chez les malades; cependant, j’ai vu pratiquer, dans un but préservatif, l’inoculation du pus des boutons.

Once the discourse of ‘population’ is established for a particular region through the trope of smallpox prevalence in the medical geographies, a greater knowledge then becomes desired and further elaborated and refined in the reporting of epidemics.

In both the metropole and the colonies, the reporting of smallpox outbreaks was mandatory and hence there exists some record for epidemic outbreaks in Guinea. Recording of epidemics appears in both monthly and annual medical reports and these records also help shed light on the frequency of smallpox. The reports also represent


64 [Smallpox, introduced a great number of years ago, produces numerous victims, one does not take an precaution to avoid it or to alleviate its effects for the sick; however, I saw practiced, for the aim of prevention, the inoculation of pus from pustules.] Ibid.
the further definition and control of population. In an account from November 1889, the head doctor at Boké writes of an epidemic ‘raging’ in the Rio-Nunez area. The doctor reports how he proceeded to the Boké village and carried out a ‘meticulous investigation’, finding 48 cases out of the population of 255 inhabitants. He also learns of 8 deaths since the start of the epidemic in mid-October. Moreover, the doctor’s investigation also produced knowledge of the spatial distribution of the epidemic. The tracking of smallpox facts, that is, the cases and deaths of an epidemic, would emerge gradually over the late nineteenth-century and take fuller form in the first decades of the twentieth-century, especially with the emergence of mass vaccination.

For the early period, smallpox also came to be seen as quite prevalent in the French West Africa. In 1890, the naval physician, Félix Durand, who was posted with a military expedition in the Western Sudan, tells of the permanence of smallpox in the region, where it seems to be located (‘cantonner’) around several areas, namely Bakel, Kayes, Bamako and especially Siguiri. In his medical report on the expedition, the doctor would complain of the absolute impossibility to isolate the sick and to prevent them from getting up and moving around during the period of when the disease is the most contagious. In the same year, Durand briefly writes of 4 cases in Siguiri, among the tirailleur families where one victim dies during the month of March from a variole confluente. In Kouroussa, an epidemic broke out on February 8, with 29 men, 5 women, and 45 children affected, as well as 2 tirailleurs at the post, who were later...
evacuated to Siguiri. The epidemic, estimated as lasting for about 15 days, had been quite deadly since 24 men, 5 women, and 18 children died. Those surviving recovered without any consequential effects and it was observed that Africans employed as a treatment honey mixed with water and bodily applications of fresh shea butter (*beurre de karité*). Durand believed that the epidemic came from Kankan, the region’s large commercial and religious center, and probably arrived there by caravans of itinerant *dioula* traders coming from Sierra Leone. Later, by the mid-1890s, other post doctors also noted the endemic nature of smallpox and attributed its heightened regional frequency to the effects of the battles of colonial conquest against Samory:

La variole est endémique au Soudan, et des cas isolés sont très souvent signalés. Mais il n’est pas étonnant que la disette, les émigrations des villages entiers, suite des dernières guerres contre Samory, ait développé la maladie et lui ait donné l’allure épidémique.

Epidemics were also recorded in the Upper Guinea for the years 1898 and 1899.


67 [Smallpox is endemic in the Sudan, and some isolated cases are quite often reported. But it is not surprising that the scarcity of food and the emigrations of entire villages, in the wake of the last wars against Samory, have spread the disease and have given it the epidemic form.] ANS H 37, Doc. 120 Kayes, le 21 mars 1894, Le Dr. Collomb, Médecin de 1er classe des Colonies, chef du Service de santé du Soudan Français, à M. le Gouverneur du Soudan Français, no. 392, Mesures prescrites aux postes frontières contre la variole.

68 Archives Nationales du Mali (hereafter ANM), 1R38, Cercle de Dinguiray, Rapport commercial et agricole, 2ème et 3ème trimestres 1899; 1R47, Cercle de Kankan, Rapports agricole et commercial, mois de juin et 3ème trimestre, 1899; and 1R70, Region du Sud, Bulletin commercial et agricole, 1er trimestre 1899.
Conclusion

During the last two decades of the nineteenth-century, colonial biopolitics operated predominantly through a discourse of smallpox frequency and its effects on local inhabitants in West Africa. Significantly, this discourse also acted to create a more specified classificatory concept of ‘population’, that is, a more detailed knowledge of Africans living in the interior areas of the region. Population as category of colonial knowledge would be reworked in the twentieth-century through many different facets, including ethnology, politics, economy, and religion. But it was at this particular moment in the late nineteenth-century that colonial knowledge of population also created a specific crisis for health officials, namely the disappearance of population due to smallpox epidemics. In the face of the demographic crisis, the early base of public health in French West Africa came into creation. Much of that health initiative came to be centered on mass vaccination whose earliest history is treated in the next chapter.
Chapter Three

Epidemic Epistemologies and The Rise of Colonial Vaccination

Introduction

During the first half of the twentieth-century, large and expansive vaccination campaigns to combat smallpox operated across the landscape of colonial French West Africa. To situate historically the practices and effects of the campaigns, it is essential to illuminate first the logics that motivated the programs. To that end, this chapter analyzes the manner in which such programs resulted from particular combinations of medical and political rationalities developed in the last two decades of the nineteenth-century before the creation of the Federation of French West Africa (AOF) in 1895. The developments were multidimensional in nature. Part of their history transpired in the French colonial possessions of Senegal, but other elements came from medico-political thought and practice elaborated in metropolitan France as well as other sites of French empire. In fact, vaccination against smallpox was at one and the same time targeted at West Africans as well as colonial subjects generally across the entire French empire. As such, it represented a key medical component of a much larger project: to import modern forms of power into the colonial world. This project, David Scott argues, worked on a “polito-ethical level of producing subjects and governing their conduct” so as “to
alter the political and social worlds of the colonized.”¹ A newly combined formation (social, political, and medical) would emerge out of this history: that of colonial modernity. Colonial modernity “can be characterized by the development of a distinctive political rationality—a colonial governmentality—in which power comes to be directed at the destruction and reconstruction of colonial space so as to produce not so much extractive-effects on colonial bodies as governing-effects on colonial conduct.”²

Scott frames his understanding of colonial governmentality through the example of administrative and legal reforms in early nineteenth-century colonial Sri Lanka and takes analytical inspiration from political theory on law and liberalism. This chapter’s frame works in a different register as it engages and combines two separate scholarly threads: on the one hand, historical and epistemological arguments for the development of modern forms of medicine in nineteenth-century Europe and, on the other hand, theoretical and empirical claims for transformations in science and their resulting effects on the constitution of society. The chapter considers vaccination as a form of medical-scientific rationality and practice, as linked, but not reducible to political, economic, or social factors, structures, and desires. That is, smallpox vaccination knowledges and practices were not epiphenomenal to the political, the social or the economic orders of African and European communities living in French West Africa, but rather came to create colonial imaginaries of the social and the political.

² Ibid., 40.
Over the last two decades in nineteenth-century West Africa, as the preceding chapter notes, smallpox began to emerge in French colonial medical thought with increasing frequency as a discursive disease entity. Travelers’ accounts at the time provided observations of smallpox, yet the descriptions were quite crude according to biomedical thinking at the time in that the spatial existence of the disease is simply noted. By the 1880s, though, smallpox as knowledge equation and generative matrix for future colonial social imaginaries and medical practice would undergo change, not radical at first, but nevertheless crucial to the development for smallpox control later in the twentieth-century. One can speak here of the beginnings of the re-medicalization of smallpox, that is, a new framing of the disease within a medical knowledge complex.

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Concurrent to this new phenomenon included a constellation of political, economic, military, and social developments that substantially changed the nature of French presence in West Africa.

Despite a long history of settlement at the coastal cities of Gorée Island and Saint-Louis, France had a limited presence in the West African interior prior to 1850, which consisted of military and trading posts along the Senegal River (Richard Toll, Dagana, and Bakel) and in the Casamance region (Carabane and Sédhiou). Inward military expansion first began with the appointment of Louis Léon César Faidherbe, who, as Governor (from 1854 to 1861 and then 1863 to 1865), imagined fashioning Senegal as a new Algeria south of the Sahara. During his tenure, the French occupied new areas in the interior of Senegal and established in these areas protectorate Society, and History, in *Explaining Epidemics and Other Studies in the History of Medicine* (Cambridge: Cambridge University Press, 1992): 305-318.

regimes organized within a new and modern territorial system of governance based on administrative cercles and *arrondissements.* This era also saw the creation of several major colonial cities in Senegal, such as Dakar, Rufisque, Thiès, and Kaolack. Faidherbe moreover extended the number of forts and trading entrepôts along the Senegal River (Podor, Saldé, Matam, and Médine) as well as set the plans for three new posts on the coast of Guinea (Boké and Boffa in 1866; Benty in 1867). With the departure of Faidherbe, territorial expansion ceased due to official disillusionment in Paris over highly anticipated, but never realized profits from trade and the staggering costs of military operations.

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Calls for renewed colonial expansion emerged later in the wake of the Franco-Prussian War of 1870. Certain groups in Paris, namely the Geographical Societies, argued that a defeated France would only be able to regenerate itself with the birth of a Second Empire. Their promotion of colonial expansion finally captured political weight and popular support to the point where the last two decades of the century witnessed a further and larger military expansion into the Western Sudan, followed by occupation,
and, ultimately, colonization of much of territory that became Federation of French West Africa (AOF) in 1895.\footnote{A.S. Kanya-Forstner, \textit{The Conquest of the Western Sudan: A Study in French Military Imperialism}, \textit{op. cit}.} Participating in military campaigns as well as stationed at the old and new forts were physicians of the Naval Ministry, the French institutional body whose forces led the conquest of the West African interior.\footnote{The Ministry of Colonies was only created in 1894, after which naval doctors received temporary assignments (\textit{hors cadre}) to serve under civilian administrative authority. Marc Michel, “Le Corps de Santé des Troupes coloniales,” in \textit{Histoire des médecins et phamacien de marine et des colonies}, Pierre Pluchon, ed. (Toulouse: Privat, 1985), 185-214.}

From these doctors, new cartographies of space and African bodies would emerge out of further observations of smallpox, yet with a different nature: in the form of \textit{géographie médicale}. The \textit{géographies} provided early, sometimes detailed, rudimentary knowledge of diseases affecting rural Africans. One can analyze these writings on smallpox almost arithmetically for the particular values assigned to the disease. In a single region, at a particular fort, is smallpox present, and, if so, to which extent? Or, how does the absence of any reference to smallpox, its negative value, affect space and the African bodies within? The analysis in the last chapter added a different track, that of asking which kinds of medical rationalities or epistemologies emerge in these writings. The \textit{géographie médicale} operates in part to sow two movements. The first is in the realm of ontology: to see ‘population’ in its modes of being over space. Within the territory of West Africa (itself an emerging spatial construct), people or persons recognized as human beings could be named, described,
and placed into categories or types according to classifications for ethnicity or race, religion, social and political organization, particular economy (commerce, industry), and cultural mores, among others.\textsuperscript{9} Second, medical geographies defined the being of particular populations as linked to specific milieu through topology, climate, soil, plant and animal life (flora and fauna), and hydrology. An important element of the \textit{géographie} concerned observations and descriptions connecting the idea of population to a specific set of medical illnesses or pathologies.

Descriptions furnished in \textit{géographies médicales} served an important mapping function of population and disease for early colonial medicine in West Africa.\textsuperscript{10} The young student doctors authored the dissertations based on direct clinical observation and experience in treating familiar as well as relatively new diseases at the small fort dispensaries on the frontier. Moreover, the studies also enacted and continued the newly emerging formation of a professional corps of tropical medical physicians through allegiance and alliance. In the prefaces, the new doctorates warmly thanked their

\textsuperscript{9} Naval doctors were not the first to enunciate visions of raciology and population epistemologies in French West Africa. An important predecessor in Senegal was the famous mid-century ‘modernizer’ of the colony, Louis Faidherbe, who published influential texts on regional populations and languages. His writings have been analyzed in several studies, notably by Bathily, “Aux origines de l’africanisme: le rôle de l’ouevre ethno-historique de Faidherbe dans la conquête française du Sénégal,” op. cit.; Jean-Loup Amselle, “Faidherbe: Un racioloque républicain,” in \textit{Vers un multiculturalisme français: l’empire de la coutume} (Paris: Flammarion, 2001, 2\textsuperscript{nd} ed.), 117-150 and Anne Pondopoulo, “La construction de l’altérité ethnique peule dans l’oeuvre de Faidherbe,” \textit{Cahiers d’études africaines} 36, no. 3 (143) (1996): 421-441.

\textsuperscript{10} For the manner in which race was inscribed in these texts, see Richard Fogarty and Michael A. Osborne, “Constructions and Functions of Race in French Military Medicine, 1830-1920,” in \textit{The Color of Liberty: Histories of Race in France}, Sue Peabody and Tyler Stovall, eds. (Durham: Duke University Press, 2003), 206-236.
medical school professors; yet some also expressed deep appreciation to the other maîtres, those physicians already serving for some time in the field/frontier and under whose command the students acquired much uncodified knowledge of disease. By combining both old and new clinical knowledges, these dissertations could take on the status of quasi-training manuals for future physicians assigned to the newly occupied French territories in the region.

Yet, when considered in the scope of broader epistemological developments for nineteenth-century medicine as well as the necessary requirements for early colonial medicine to combat epidemic and endemic disease in Senegal, the géographies médicales represent a limit of a particular sort. The limit appears in regard to the knowledge and control of epidemics. Foucault has argued that, at the end of the eighteenth-century, there occurred a revolution in medicine with the rise of clinical knowledge and practice based on the precepts of pathological anatomy. Medical knowledge resulting from clinical observation and therapeutic practice came to supplement and gradually replace formerly dominant (classical) types of medical knowledge based in part on ideal types or species and tabular classifications of disease.¹¹ In this sense, the medical geographies with their inclusion of clinical observation and ‘facts’ fit well into this new schema of modern medicine.

Further transformations with the rise of modern medical knowledge would reveal the geographies’ limits. One change drew from the revised position of the ‘medicine of epidemics’. Classical medicine, according to Foucault, tended to marginalize the study of epidemics in that physicians saw “no difference in nature or species...between an individual disease and an epidemic phenomenon”.\textsuperscript{12} The abstract classificatory schemes of the ‘medicine of species’ did not require the recognition of time, that is, a temporal axis in which to determine the causality of disease, or of individuals or populations in specific places. The predominance of ‘species’ shifted though in post-Revolutionary France where medical science and society turned greater attention to the control of epidemics. This development allowed the ‘medicine of epidemics’ to usurp the central place formally held by the ‘medicine of species’. Foucault also asserts that the newly resituated pathology of epidemics needed to fulfill the same requirements as that of the medicine it replaced: “the definition of a political status for medicine and the constitution, at the state level, of a medical consciousness whose constant task would be to provide information, supervision, and constraint, all of which ‘relate as much to the police as to the field of medicine proper’”.\textsuperscript{13}

In light of the above discussion on the rise of modern medicine in France and the place of epidemiological knowledge in that transformation, it is odd that, despite frequent comments on the occurrence of epidemics, the great majority of the géographie médicale for nineteenth-century Senegal do not analyze the features of

\textsuperscript{12} Foucault, \textit{The Birth of the Clinic: An Archaeology of Medical Reception}, 23.

\textsuperscript{13} \textit{Ibid.}, 26.
epidemics in any great length. To say that their emphasis lies elsewhere, as an
adumbration of diseases, their particular symptoms, and treatment, would not imply that
the medical topographies adhere to some pre-modern 'medicine of species'. Rather,
these reports were confined both historically and epistemologically in terms of which
types of knowledge they could offer. They were historically circumscribed from context
in that the medical practice and clinical observation were limited to the small fort
dispensaries. During a local epidemic, whether at nearby African villages or in the
broader region, it was most likely impossible for doctors to “provide information,
supervision, and constraint” under the prevailing political conditions on the West African
frontier in the 1880s and 1890s. The only forms of possible surveillance and constraint,
that of the 'police,' partially existed in the coastal cities as an institutional body,
although, as described below, the rôle of the police and its relationship to colonial
physicians were far from established. In terms of epidemics, the géographies médicales provide much more medical knowledge than the coincidental travelers'
observations of smallpox. Nonetheless, their descriptions remain without an
epistemological foundation for a particular knowledge—the movement of disease in time
and space—and thus provide only partially a political/medical consciousness for a
colonial medicine of epidemics.
The Medical Realization of Smallpox

The locus in which knowledge is formed is no longer the pathological garden where God distributed the species, but a generalized medical consciousness, diffused in space and time, open and mobile, linked to each individual existence, as well as to the collective life of the nation, ever alert to the endless domain in which illness betrays, in its various aspects, its great, solid form.\textsuperscript{14}

Remarkably, prior to 1887, medical officials in Senegal did not have much knowledge of smallpox epidemics.\textsuperscript{15} In the aftermath of a major epidemic to visit the colony in 1887-88, Henri Girard, a naval doctor at the Saint-Louis military hospital, published the first and one of most extensive accounts on smallpox and early vaccination before the start of annual campaigns in the twentieth-century. In the report, he complained that, despite the frequency of smallpox, the colonial administration lacked any serious study on the problem. Admittedly, Girard wrote,

> It is true that when one realizes the difficulties one encounters, even today, to engage in some particular research on the subject, one should not be in the least surprised, not only of the absence of any statistics, but as well of the scarcity of [official] accounts that are left to us, of the few details that our predecessors have given about this disease and, hence, of the poverty of documents touching on the question held in the medical archives of the Saint-Louis hospital. We thus would not be able, with the rudimentary data we possess, to provide a very complete

\textsuperscript{14} Ibid., 31.

\textsuperscript{15} Smallpox epidemics in the nineteenth-century Senegal and measures, whether European or African, for their control have not received much historical treatment, apart from Ngalamulume’s brief analysis in “City Growth, Health Problems, and Colonial Government Response: Saint-Louis (Senegal), From Mid-Nineteenth Century to the First World War,” Ph.D. thesis, Department of History, Michigan State University, 1996, 286-289. As an area for future research, it would be important to analyze the ways discourses of smallpox and practices of vaccination operated and possibly changed prior to 1887.
and detailed history of the diverse epidemics that have appeared in the course of the century.\textsuperscript{16}

In a strict epidemiological sense, the outbreak of 1887-88 radically changed the way in which future smallpox control and vaccination transpired in French West Africa. More broadly, though, the epidemic and its accompanying effects on Europeans and Africans became a discursive and non-discursive event that marks a rupture in nineteenth-century colonial Senegal in which a new \textit{dispositif} emerges to define a common network of social, political, and medical spaces. Gilles Deleuze has described Foucault’s notion of the \textit{dispositif} “in terms of lines—tangled, multilinear ensembles of vectors and tensors making up a ‘social apparatus’.\textsuperscript{17} The section below retraces the narrative of the epidemic as well as colonial attempts to control its spread in order to illumine the outlines of a new social imaginary that simultaneously emerged over the course of the event.

Some knowledge of smallpox did exist for French colonial medicine in West Africa; after all, the disease was not a new phenomenon in late nineteenth-century Senegal. However, its realm was incompletely defined and drawn. An entire groundwork of medical knowledge and practice needed to be founded through the study

\textsuperscript{16} Henri Girard, "Variole et vaccine au Sénégal," \textit{Archives de médecine navale} 52 (sept.-oct. 1889), 200.

of fundamental questions. How quickly would smallpox appear? Did gender play a factor in the disease spread? Or, for that matter, age? Since the notion of ethnic groups or ‘races’ was already operative, would different ethnic groups contact smallpox in distinct ways? How did Africans in general cope with epidemics? French colonial physicians did have knowledge of a local African technique, variolisation, employed to prevent the spread of the disease, but what were its consequences? How did Africans treat the sick? Were local therapies efficacious? Moreover, although vaccination had been practiced in Saint-Louis and Gorée since the start of the century, its effects on different ‘races’ of Africans were never fully known, nor for which ethnic persons vaccination would ultimately succeed. Hence, what were the physical effects of vaccination and did racial difference mark other differences for inoculation as well? At what moment or length of time would the veritable signs of the vaccine’s power, the pustules, appear? Lastly, how would one conceive of public health in terms of law and police measures? Or, differently framed, what essentially would colonial public health be? The exact medical knowledge of smallpox, and just as importantly, the practice of vaccination, would change dramatically with the major smallpox outbreak of 1887-88. In fact, ‘exact’ observation of the outbreak, traced seemingly for the first time in both time and space helped to create new knowledges of smallpox for medical officials.

The epidemic itself probably began relatively uneventfully like the frequent outbreaks of the disease in the past. Sometime in 1886, the exact month was not known, smallpox erupted to the south of Senegal in the Rivières du Sud region and

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18 Girard poses all the following interrogations and provides provisional answers throughout the two parts of the published report.
spread northward into Gambia and Senegal. In early 1887, the outbreak traveled first to the Casamance region, then moved through the Sine, Saloum, and Baol littoral regions. At that moment, a French military campaign was underway to subdue regional Muslim rulers (Saër Maty and Mamadou Lamine) and expand the area controlled by the colonial protectorate. Refugees, who had come in contact with the disease, fled for safety to other areas northward along the coast and east along the tributaries in Saloum, thus spreading the disease. “The enemy contingents traveling in all directions” were said to be “easily able to take the germs of the affection, transporting them with themselves, and, as a result, contributing to disseminate them into the interior.” By August and September 1887, the epidemic reached the port city of Rufisque and, two months later, the surrounding villages of Dakar. The city proper witnessed its first cases in early December and Africans fell sick throughout the month with particularly severe forms (confluentes et hémorrhagiques) of the illness. Fifty-two persons died, twenty-three over the first half of month and twenty-nine in the latter half. The Dakar physician, Dr. Ropert, noted that these numbers were not exact:

Lorsque nous trouvions à la mairie un décès enregistré en deux jours par variole ou par autre maladie, nous savions pertinemment que sept ou huit cérémonies funèbres avaient eu lieu. Nous voyions bien d’ailleurs que la gravité des varioles observées n’était nullement en rapport avec le nombre des décès déclarés. Le maire voulut bien à la fin de décembre rappeler les indigènes qu’ils devaient


20 Girard, "Variole et vaccine au Sénégal," 207.
observer la loi…mais ils ne le feront que lorsqu’ils seront obligés d’enterrer leurs morts dans des lieux clos et désignés.\textsuperscript{21}

The first incidence on Gorée Island occurred on January 9\textsuperscript{th} in the following year, “furnished by a young unvaccinated négresse, recently arriving from Dakar and who just lived in a hut in contact with persons with smallpox (\textit{varioleux}).”\textsuperscript{22} She was quarantined at the Gorée lazaret, only to die two days later. The same day, another ‘native’ woman, likewise coming from Dakar, fell victim and was quarantined. On January 22\textsuperscript{nd}, a ship arriving at Gorée declared a further victim, an African, who was also sent to the lazaret. Apparently, the ship experienced an earlier case on the fifteenth. The vessel was washed, scrubbed, and disinfected. No further cases of smallpox were reported on the island.

At the end of January 1888, the epidemic started to move along the recently completed railway, first to Thiès and then onto Saint-Louis.\textsuperscript{23} In Thiès, specifically in the African neighborhood of Diakao, “composed of 300 to 400 tightly packed huts, grouped within a limited landscape and inhabited exclusively by a native population,” the first

\textsuperscript{21} [At the city hall, when we found one registered death in two days for smallpox or some other sickness, we knew full well that seven or eight funeral ceremonies had taken place. We moreover saw that the serious state of the observed smallpox victims was not at all in relation to the number of declared deaths. At the end of December, the mayor very much wanted to remind the natives that they needed to abide by the law…but they only would do it once they were required to buy their dead in enclosed and designated areas.] \textit{Ibid.}, 208.

\textsuperscript{22} \textit{Ibid.}, 210.

reported case appeared. Her name was Asfa, a young girl, fifteen years-old, who arrived on January 20th from Rufisque, the Commune which was then under a full epidemic, after having passed several days near one of her parents. On the 22nd, she fell sick, and on the 25th smallpox broke out in a benign form, and her recovery was rapid. In turn, her younger sister fell sick followed by two or three of the neighbor’s children. “The epidemic center (foyer) was created and, since then, the affliction spread rapidly, which is easy to explain given the agglomeration of the population in this area, the number and cramming in of huts built one atop of the other, and especially the remarkable griminess of the village.”

In a matter of several days, the epidemic traveled the 200-kilometer distance to the Saint-Louis region, first arriving at the peri-urban village of Sor and then reaching the city-island itself. Health officials knew of some smallpox cases in Sor near the end of December and that, by the 29th, the city’s sanitation commission instituted measures to protect the urban center. Here once more, medical observation attempted to yield exact knowledge, “because one could distinctly define the point where the infectious germs had been drawn and the precise mode of importation of the evil.” Coming by train from Dakar, a man and a small girl showed the first signs of smallpox a few days after arrival in Sor; the man died shortly thereafter in a hut located near that of the village chief. But the disease had spread to several other villagers, especially some children, including the grandson of the village chief. The chief medical officer in Saint-


25 Ibid., 211.
Louis, alerted by rumors circulating through the city of the poor state of sanitation in Sor, began to suspect the previously reported information for health conditions in the village provided by the Sor chief. When two French doctors of the public health service were sent to inspect and observe the epidemic in Sor, the village chief asserted that there were no longer any cases of smallpox among the villagers. However, several villagers came forward, “which our presence and our inquiries had intrigued,” and led the doctors to five sick persons, three of whom died before the doctors revisited Sor the next day. Now, the doctors visited the village daily and were able to observe and note new cases on each inspection, concluding that the epidemic had yielded high morbidity and mortality, with a daily average of six to seven new cases and one fatality.²⁶

Map 2. Saint-Louis and its Suburbs (Guet N'Dar, N'Dar Tout, and Sor), 1885.

The epidemic continued throughout the first six months of 1888 in Saint-Louis and parts of Senegal. In some of the hardest hit areas, like Tivaouane (the administrative center in the Cayor region located along the railway and religious center for the Muslim Tijaniyya brotherhood) or the villages near the border trading post of Dagana on the Senegal River, colonial health officials could not determine exact statistics for morbidity and mortality (see Table 3). The disease took a heavy toll on the population of Thiès, where half of the African inhabitants fell victim and, of those, one quarter died. Within the four Communes\textsuperscript{27}, more than one quarter of Dakar inhabitants

\textsuperscript{27} In the wake of the creation of the Third Republic (1870) in France, Gorée and Saint-Louis in 1872 were granted the same municipal powers and rights as metropolitan French communes or municipalities. Rufisque similarly received this status in 1880, while Dakar followed in 1887. Commune inhabitants received full legal rights and status as French citizens, a development that, for the first time, inaugurated one vein of
and a tenth of the Saint-Louis population suffered from smallpox; for Rufisque, only fatalities (14) were recorded. Since there were no reported cases in Gorée, except for Africans arriving from Dakar or sea ship and placed at the lazaret, medical authorities dismissed the landing of an infected ship as the epidemic’s spark in Senegal. Of the close to three thousand documented cases in Senegal, several comprised Europeans, including eight cases in Saint-Louis, one of whom died.

### Table 3: The 1887-1888 Smallpox Epidemic in Senegal.

<table>
<thead>
<tr>
<th>Localities</th>
<th>Population</th>
<th>Cases</th>
<th>Deaths</th>
<th>%mortality population</th>
<th>%mortality cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saint-Louis</td>
<td>8000</td>
<td>800</td>
<td>37</td>
<td>0.46</td>
<td>4.02</td>
</tr>
<tr>
<td>Sor&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1200</td>
<td>300</td>
<td>59</td>
<td>4.9</td>
<td>19.7</td>
</tr>
<tr>
<td>Dagana&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3000</td>
<td>500</td>
<td>30</td>
<td>1.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Dakar</td>
<td>3000</td>
<td>800</td>
<td>80</td>
<td>2.7</td>
<td>10.0</td>
</tr>
<tr>
<td>Rufisque</td>
<td>2800</td>
<td>n.d.</td>
<td>14</td>
<td>0.5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Dangou&lt;sup&gt;c&lt;/sup&gt;</td>
<td>500</td>
<td>n.d.</td>
<td>11</td>
<td>2.2</td>
<td>n.d.</td>
</tr>
<tr>
<td>Diokoul&lt;sup&gt;c&lt;/sup&gt;</td>
<td>300</td>
<td>n.d.</td>
<td>16</td>
<td>5.3</td>
<td>n.d.</td>
</tr>
<tr>
<td>Santiaba&lt;sup&gt;c&lt;/sup&gt;</td>
<td>400</td>
<td>n.d.</td>
<td>9</td>
<td>2.3</td>
<td>n.d.</td>
</tr>
<tr>
<td>Mérina&lt;sup&gt;c&lt;/sup&gt;</td>
<td>500</td>
<td>n.d.</td>
<td>17</td>
<td>3.4</td>
<td>n.d.</td>
</tr>
<tr>
<td>Trawlen&lt;sup&gt;c&lt;/sup&gt;</td>
<td>500</td>
<td>n.d.</td>
<td>4</td>
<td>0.8</td>
<td>n.d.</td>
</tr>
<tr>
<td>Thiès</td>
<td>400</td>
<td>200</td>
<td>50</td>
<td>12.5</td>
<td>25.0</td>
</tr>
<tr>
<td>Thiall&lt;sup&gt;a&lt;/sup&gt;</td>
<td>200</td>
<td>30</td>
<td>6</td>
<td>3.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Petitparis&lt;sup&gt;a&lt;/sup&gt;</td>
<td>30</td>
<td>3</td>
<td>n.d.</td>
<td>n.d.</td>
<td>n.d.</td>
</tr>
<tr>
<td>Nyanyank and Ouangock&lt;sup&gt;d&lt;/sup&gt;</td>
<td>150</td>
<td>60</td>
<td>2</td>
<td>1.33</td>
<td>3.33</td>
</tr>
<tr>
<td><strong>Totals/Average%</strong></td>
<td><strong>20980</strong></td>
<td><strong>335</strong></td>
<td><strong>2.88</strong></td>
<td><strong>11.08</strong></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Principal mainland suburb of Saint-Louis; <sup>b</sup> Military post situated northeast of Saint-Louis along the Senegal River and served as border town/trading entrepôt between Mauritania and Senegal; <sup>c</sup> neighborhoods of the Rufisque commune; <sup>d</sup> villages in the vicinity of Thiès, at the time a military post and railway station to the west of Dakar.

Source: Girard, “Variole et vaccine au Sénégal,” *Archives de médecine navale* 52 (sept.-oct. 1889): 266.

In Sor, where morbidity and mortality were high and cases still appeared as of mid-1888, the village chief continued to “refuse absolutely to signal natives afflicted with smallpox.” Moreover, health officials noted that the chief sought to convince the villagers to hide any victims, since, if the sick individuals were identified, colonial officials would isolate them outside of the village. The head of the city health services complained to administrative officials several times, but in vain, of the attitude and actions of the Sor village chief as his protests failed “before the inexplicable apathy of
those who would have the most interest in supporting them."28 The difficulty to attain
exact knowledge of the epidemic, in terms of the precise number of cases and deaths,
according to medical officials, stemmed from Africans’ distrust of colonial physicians.
Such a reaction ran counter to the latter’s desire to note the spread of the disease since
Sor deaths were often not acknowledged and reported to authorities.29

   Despite the failed utopian aspirations of the doctors arising from the (resistant?)
responses of Sor villagers, medical officials in Senegal nevertheless succeeded, if only
in incomplete measure, to classify disease, the diseased, and death in space and time.
Classification and its representation through public statistics played a determining role
in forming the social and moral world of the modern epoch.30 This structuration would
also occur in the colonial modern world of Senegal. Statistics bequeathed to the
epidemic an overdetermined agency to frame history itself, in three conventional keys of
past, present, and future. In effect, within the frame of biopower and colonial
governmentality, Senegal now becomes akin to a medical patient whose sick body
requires observation, diagnosis, and treatment under the gaze/glance and care of the

28 Girard, "Variole et vaccine au Sénégal," 213.
29 Ibid., 213.
30 For the historical argument and different case studies, see Theodore Porter, The Rise
of Statistical Thinking, 1820-1900 (Princeton: Princeton University Press, 1986); Ian
Hacking, “Biopower and the Avalanche of Printed Numbers,” Humanities in Society 5,
no. 3 (1982): 279-94 and ibid., The Taming of Chance (Cambridge: Cambridge
University Press, 1990); Geoff Bowker and Susan Leign Starr, Sorting Things Out:
Classification and its Consequences (Cambridge: MIT Press, 1999); and Joshua Cole,
The Power of Large Numbers: Population, Politics, and Gender in Nineteenth-Century
The first task is to establish a patient’s medical history. Girard describes how periodic smallpox epidemics came to the littoral area of Senegal, imported by boat from Europe or arriving by African traders and migrants from the hinterland, and almost continually hit in repetitive years, then paused only to reappear several years later. The nature of epidemics prior to 1887 was characterized as rapidly spreading and causing high mortality rates of up to one quarter of those afflicted. The outbreaks of 1818, 1824, and 1846 were said to be particularly deadly.

A ‘medical consciousness’ derived from multiple domains of knowledge for the 1887-88 outbreak also permitted the diagnosis of Senegal as a colonial body. Detailed observations and recordings of the epidemic’s arrival traced when and where it appeared, and thus provided a more exact and new understanding of the disease both temporally and spatially. Diagnosis of smallpox also proceeded to divide up the body along both lines and discrete zones as colonial physicians and health agents noted the epidemic's specific vectors of contagion over space and population. Contagion was then localized with information, albeit partial, on individual cases or groups that could be enumerated according to sickness and death. In essence, with the tabulation of morbidity and mortality, cities and towns of Senegal became separate organs within the colonial body to be assessed for differential degree of disease: Gorée remained...

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31 Girard gives the date of 1818 for the first official reported outbreak of smallpox and provides a list of the subsequent years: 1824, 1839, 1840, 1846, 1858, 1859, 1864, 1869, and 1886. Lucien-Ernest-Siméon Rigollet lists later epidemics serially as “1839, 1840, 1842, 1846, 1848, 1858, etc., etc., 1886, 1887-88”, “Rapport sur une campagne de vaccine au Sénégal,” Archives de médecine navale et coloniale 63 (janv. 1895): 36.

32 Girard, "Variole et vaccine au Sénégal," 264.
healthy, while Dakar fell sick in moderate proportion, and Thiès and its small village
suburbs suffered enormously. Although further research is necessary, especially in
terms of yellow fever, the 1887-88 smallpox outbreak might well indeed be the first time
any epidemic was as fully recorded in terms of cases and deaths in particular locales for
Senegal.\textsuperscript{33}

Before the outbreak relatively little was known about the specifics of smallpox,
especially its effects on the body. After the epidemic, answers came to fill in the voids
of the unknown like a painter applying colors and successive layers to a bare canvas.
Through clinical observations, physicians were able to determine the disease’s course
on individual and group bodies based on factors of age, gender, and ethnicity.
Diseased bodies could be examined and classified almost in fine aesthetic sensibility
according to precise manifestations and location on the skin and body (e.g.,
\textit{hémorrhagique, confluente, discrète} or \textit{varioloïde}).\textsuperscript{34} The physicians’ gaze made
African bodies further appear according to the timing and course of symptoms:
suppuration of pustules, nature of scarring and desquamation (peeling) of the skin.

\textsuperscript{33} Further research would include archival records for smallpox and yellow fever as well
as additional published reports for yellow fever epidemics. Published accounts for
yellow during the same period tend to concentrate on one locality, particularly either
Gorée or Saint-Louis. An area for future research would examine the nature of
observation and statistics for the deadly yellow fever epidemic of 1878 as well as
subsequent outbreaks of the disease in the 1880s. For an example of the
contemporary trend in localized observation and recording, see Pierre-Emmanuel
Duval, \textit{La fièvre jaune à Gorée (Sénégal): imminence de son importation en France}
(Bordeaux: A. Bellier, 1883).

\textsuperscript{34} On the fine art of sensibility in clinical observation, see Foucault, \textit{The Birth of the
Clinic}, 120-122.
Completing the bodily tableau were detailed descriptions of accompanying physical symptoms, such as the presence and degree of appetite, fevers, and diarrhea.\textsuperscript{35}

Recorded observations for therapy also helped to constitute new forms of the medical consciousness and colonial governmentality and indicate part of the hybrid nature of the new ‘medicine of epidemics’. In terms of therapy, colonial doctors in Senegal did not have recourse for much in the way of medicine to treat smallpox. The only treatment comprised providing a victim with doses of quinine sulfates or opiated ether. It would be a mistake, as evident in much of the historical scholarship on early colonial medicine, to suggest that physicians always demonized indigenous African therapy.\textsuperscript{36} Where colonial biomedicine possessed no effective remedy, the medical gaze often turned with great interest to local African methods. For the 1887-88 epidemic, Girard devotes more attention to indigenous palliative healing practices than biomedical treatment. At the start of the sickness, African caretakers covered the victim’s body with “old cast-off clothes, then, as soon as desquamation begins, apply lotions mixed with milk [on the skin] and plunge the totally nude [sick person] in a bath of hot sand”.\textsuperscript{37} To prevent scarring, physicians had found that, during suppuration of the pustules, victims had hot sand rubbed on the face and entire body. More research was

\textsuperscript{35} Girard, "Variole et vaccine au Sénégal," 261-66.

\textsuperscript{36} The point is elaborated much further in a later chapter that focuses on the interfaces between African healers and colonial physicians as well as the rise in colonial medical botany in French West Africa.

\textsuperscript{37} Girard, "Variole et vaccine au Sénégal," 265-66.
suggested to study the influence of this last method.\textsuperscript{38} Also noted were the reputed internal treatments provided by preparing herbal infusions, especially pain de singe, known as monkey’s bread or the fruit of the baobab. Some forms of care based on ethno-racial groups stood out for special mention: “Les Maures…prodigueraient à leurs varioleux les soins les plus touchants et d’une efficacité réelle; une femme laissée auprès d’eux ouvre les pustules à l’aide d’une épine et facilite l’écoulement du pus par des pressions modérées.”\textsuperscript{39}

Lastly, clinical observation over time and space of individual and group bodies (the principle of population) combined with inspection of urban and village housing, schools, prisons, and boats. Out of the energies in these gazes, a new medical network--consciousness emerges and is shared among a whole amalgam of subjects: French doctors, colonial administrators, rail operators, ship workers, and some Africans as well. The consciousness, partial and still incomplete, yet present, became affirmed both positively and negatively by Africans. For example, a key lever in the physicians’ visit to Sor was the fact that several villages became interested in the doctors’ presence and aided their inspection by indicating several of the victims. Who were these villagers? What about the visit so interested them? Were they foes of the local chief who wished to discredit his authority in this time of social crisis and community illness? Fearful relatives seeking any available medicine--indigenous, colonial or a mixture of

\textsuperscript{38} \textit{Ibid.}, 263.

\textsuperscript{39} [The Moors…would treat their smallpox victimes with the most touching care and a real efficaciousness; a woman left to care for them opens the pustules with the use of a thorn and helps the discharge of pus with moderate pressing] \textit{Ibid.}, 266.
both— at that terrible moment to heal or prevent harm to kin? How did French doctors figure in the villagers’ preexisting social, cultural and therapeutic logics of power? Might even the epidemic of 1887-1888 have brought forth new meanings and signs, including notions of evil, wherein the loss of and harm to life and the visit of French doctors offered up a moment generative of new social imaginaries attendant to the possibilities and desires of villagers to participate in creating them? And, who was Macau, the chief of Sor village, who concealed and prevaricated?

These questions are important ones to ask so as to explore the specific nature of different forms of African consciousness and experience (subjectivity) in the epoch and specifically during the epidemic. However, the aim here wishes to turn analytical attention away from the issue whether Africans accommodated, collaborated or resisted. Rather, what is of concern is less of a hermeneutic question and more of an interpretive pursuit: “how (colonial) power altered the terrain on which accommodation/resistance was possible in the first place”\(^4\) In terms of medicine, government, and bio-power, a shift occurs whereby Africans are placed in a new terrain “in which behaviors are obliged to assume their form”.\(^4\) This new form of the ‘social’ could be affirmed both positively and negatively. It was positively affirming in the example of the Sor villagers who came forward to report to the medical inspectors the sick or those Africans in different locales who cooperated to provide information throughout the epidemic to medical officials and colonial authorities. How else did

\(^4\) David Scott, “Introduction,” in *Refashioning Futures: Criticism after Postcoloniality*, 16.

colonial medical officials find out the vital, exact information about the girl Asfa from Rufisque and her travels, stages of illness, subsequent recovery, and kinship to her younger sister, who became sick in turn? It was also negatively affirmed for the Sor chief who urged village residents to hide cases and not to cooperate with the visiting physicians or for those Dakar inhabitants who disobeyed the law and did not inform the commune officials of death before burial.

The interpretive argument here for African actions as affirming a new consciousness-network is not to say that Africans had only one motive or were even completely aware of the effects of their actions. In fact, different Africans like different colonial representatives (doctors and administrators to name but two) probably held multiple and at times conflicting reasons for their actions. Rather, the point is that the discursive and non-discursive epidemic of 1887-88 constituted and instantiated a rupture in nineteenth-century colonial Senegal where a new dispositif emerges to define a common network of social, political, and medical spaces. To appreciate further how the new dispositif developed around a colonial medicine of epidemics, the analysis turns to the history of vaccine in nineteenth-century Senegal and, in particular, its new impetus during the 1887-88 epidemic.
It was during the 1887-1888 epidemic that colonial doctors in Saint-Louis conducted the most extensive tests of vaccination to date in Senegal. To be sure, the vaccine had been present in Senegal since the start of the century. In one of the most extensive nineteenth-century studies of disease in Senegal, Alfred Borius provides a brief note on the irregular nature of vaccination at the start of the 1880s:

Les indigènes n'éprouvent aucune répugnance à se faire vacciner. Nous avons fait, dans ce pays, un nombre considérable de vaccinations et nous avons pu constater l'empressement des indigènes à répondre aux appels faits par les crieurs publics. Cependant, il n'y a aucun service régulier de vaccination, et le vaccin manque souvent.

But a turn in medical practice, conjoined to the now transformed discourse of smallpox, would create the rudiments of a new social and political imaginary for colonial public health. The ensemble of knowledges and practices seeking to work together, but also existing with contradictions and failed connections ultimately took final shape some twenty-five years later in the new century, when vaccinal lymph is increasingly diffused across the region. Up to 1887, the vaccine had its own proper history, though there has

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42 None of the two published accounts that address the history of smallpox in Senegal prior to 1887, the one written by Girard and the other by Rigollet, discuss vaccination previous to the epidemic. Rigollet only describes Girard’s tests as those “more seriously tried.” See, Rigollet, “Rapport sur une campagne de vaccine au Sénégal (février-juin 1893),” 37.

43 [The natives do not have any reluctance to be vaccinated. In this country, we have completed a considerable number of vaccinations and we could notice a willingness of the natives to respond to the appeals made by the town criers. However, there is no regular vaccination service, and the vaccine is often lacking.] Alfred Borius, "Topographie médicale du Sénégal." Archives de médecine navale 37 (1882): 399.
been no published historical reconstruction of vaccination over the nineteenth-century for the coastal cities and military forts of Senegal. A schematic attempt at such a history follows here.

Soon after Jenner’s discovery of the cowpox vaccine in 1796, the new technique of vaccination spread rapidly out of England to Europe and then throughout the globe.\(^4^4\) In 1799, the cowpox vaccine came to Vienna and in the next year appeared in Paris, Boston, Geneva, Berlin, and Stockholm. Via Constantinople, the vaccine subsequently found its way to Bombay by 1803 and in the same year was exported from Iberia to Latin America. In France, the *Comité central de vaccine* in Paris furnished physicians and naval officers departing for the colonies with glass tubes of vaccine. For the established French colonies of the Indian Ocean, Reunion and Ile de France (Mauritius), the lymph arrived in 1803-04.\(^4^5\) The vaccine came to North Africa imported by an Italian physician in the employ of the last *dey* or Muslim ruler in independent Alger and to Indochina through French physicians hired by the Annam court.\(^4^6\) By 1804,

\(^{44}\) This paragraph relies on the study by Pierre Darmon, *La longue traque de la variole: les pionniers de la médecine préventive* (Paris: Librairie Académique Perrin, 1986), esp.182-190.


\(^{46}\) Darmon’s study is only marginally interested in areas of the French empire, which are relegated to an appendix. P. Darmon, *La longue traque de la variole: les pionniers de la médecine préventive*, 433; Annick Guénel, “Lutte contre la variole en Indochine: Variolisation contre vaccination?” *History and Philosophy of the Life Sciences* 17 (1995): 62.
Jenner’s new method and substance arrived in the French possessions of West Africa, namely to the original First Empire colonial settlements of Senegal, Saint-Louis and Gorée. During this period, some initial success to spread the vaccine did occur, notably in Martinique at the turn of the century, and later with French doctors visiting Madagascar (1814) and Zanzibar (1817), but the first attempts at vaccination generally produced few promising or lasting results. Darmon notes that, by 1826, the vaccine failed to remain active in the hot climes of the French colonial tropics; it was only in the North American colony of Saint Pierre-et-Miquelon that the lymph stayed active and thus allowed any regular and sustained program of vaccination. These meager results for the vaccine in the French empire contrast with those in the English and Spanish colonies, where the lymph took greater roots, especially in India.47

For Senegal, few published accounts of vaccination exist prior to Girard’s report on the 1887-88 epidemic. Even Girard seems unaware of earlier efforts as he dates the start of vaccination in the late 1830s.48 At this time, the head of the colonial medical services in Saint-Louis, Jean-Pierre-Ferdinand Thévenot, wrote one of the major


nineteenth-century treatises on disease and health for Senegal. In the work of 1840, published the same year that a severe smallpox epidemic arrived from north of the city transported by Moor traders and ‘decimated’ the city and the nearby areas, Thévenot only briefly remarks on smallpox.\textsuperscript{49} He notes that it was quite common in neighboring villages of the city and that marabouts opposed the introduction of vaccination.\textsuperscript{50} Yet, what exactly was the introduction of vaccination? The resistance on the part of marabouts to vaccination would be a recurrent theme at the close of the nineteenth-century (discussed below), yet further historical research is needed to frame and analyze in any adequate measure the phenomenon Thévenot cites. Little is known about colonial public health services in Senegal over much of the nineteenth-century, never mind the nature and degree to which vaccination took place or featured discursively as a part of an emergent public health practice. In a different French colonial arena, Algeria, where regular programs of vaccination did occur from the 1830s, a rich and heteroclite historical tableau exists, complete with sharp debates (including whether it was best to vaccinate preventatively or only during epidemics) and fluctuating emphases among physicians over vaccination as well as multiple and intersecting forms of dialogue and resistance between colonial doctors and local

\textsuperscript{49} Girard describes the date and supposed source of the epidemic, but does not offer any further information. “Variole et vaccine au Sénégal,” 202.

\textsuperscript{50} Jean-Pierre-Ferdinand Thévenot, \textit{Traité des maladies des Européens dans les pays chauds et spécialement au Sénégal ou essai statistique médical et hygiénique, sur le sol, le climat et les maladies de cette partie de l’Afrique} (Paris: J.-B. Ballière, 1840), 249.
Moreover, marabouts, Islam, and aspects of religious conversion within the entire Senegambian region entail complex and dynamic histories in their own right. It would thus be imprudent to trace any constant line or hypothesize a homogenous reaction over time for marabouts’ engagement with or resistance to vaccination between 1840 and 1890.

At mid-century, vaccination to curb or attenuate the spread of smallpox most likely occurred only in Gorée and Saint-Louis with vaccine lymph imported from France. By 1852, health officials in Saint-Louis held weekly vaccination sessions, later expanded to daily schedules, for European and African residents. For the early 1860s, the physician provost at the Saint-Louis military hospital, Alfred Borius, mentions that some of the local African population actively sought vaccination due to the great fear inspired by smallpox. Inhabitants’ peur might have resulted from the major outbreak in 1858, the first to come to the city in over a decade. During a three-month


54 Girard, “Variole et vaccine au Sénégal,” p.203
period, he vaccinated 580 inhabitants, “qui tous venaient spontanément se faire inoculer ou amenaient leurs enfants”.\textsuperscript{55} Borius also tells that, for a considerable period, the Senegal colony had not received vaccine shipments from the Académie de Médecine in Paris, suggesting then the possible irregularity of vaccination in this period.

Historical accounts differ regarding when and for whom obligatory vaccination first became enacted in the colony. Charles Carpot, a naval physician in the Saint-Louis medical service, describes temporary mandates decreed during an outbreak in late 1858, reportedly stemming from the regional influx of Africans recruited to create the army corps of soldiers or \textit{tirailleurs}. All school children, Europeans, and their African servants had to meet the new legal obligation during the epidemic.\textsuperscript{56} Ngalamulume writes that compulsory vaccination was first suggested in 1862, but never enacted, for school children and military recruits in the \textit{tirailleur} regiments. Later in the same year, and due to the reported fact of African disregard to vaccinate their children, the colonial Governor in Saint-Louis promulgated measures to make vaccination compulsory for Muslim children seeking entry into koranic schools without evidence of prior vaccination or previous infection with measles. In 1870, under a perceived threat of renewed outbreak and six years after the major epidemic of 1864 “when drought and famine in

\textsuperscript{55} A. Borius, “Quelques considérations médicales sur le poste de Dagana (Sénégal): observations faites pendant l’année 1862,” Thèse pour le doctorat, Faculté de Médecine de Montpellier, 1864, 64.

the hinterland forced thousands of country people to seek refuge” in the city, colonial officials acted to extend a mandatory vaccination decree to all school children in Saint-Louis.\textsuperscript{57} During the 1887-88 epidemic, Saint-Louis authorities prohibited students from attending school without a medical certificate attesting to previous vaccination, contraction of measles, and no infectious diseases.\textsuperscript{58}

The compulsory efforts on the part of the colonial authorities in Saint-Louis, Ngalamulume argues by citing Michel Foucault, created a “technology of control”.\textsuperscript{59} That is, they combined “disease and medicine as a means of social control” to force the city’s school children to undergo vaccination.\textsuperscript{60} Such an interpretation raises two sets of issues, one, empirical and the other, theoretical and interpretive. First, how, to what extent, and even whether authorities could have implemented vaccination measures for urban areas remains in question and need of further research. Neither Ngalamulume nor other historians provide evidence of regular vaccination, obligatory or otherwise in nineteenth-century Senegal.\textsuperscript{61} As noted above, sufficient supplies were erratic and,


\textsuperscript{58} Ibid., 289.

\textsuperscript{59} Foucault, \textit{The History of Sexuality: An Introduction, vol. 1}, 126.

\textsuperscript{60} Ngalamulume, “City Growth, Health Problems, and Colonial Government Response,” 288.

while Girard mentions that the colonial medical corps did carry out vaccination prior to 1887, “ce service n’ayant jamais fonctionné d’une façon régulière, il n’a pas eu tous les résultats qu’on eut dû attendre.” [this service, having never functioned with regularity, did not have all the results that should have been expected] 62 Even during the height of the 1887-1888 epidemic, compulsory vaccination was far from established practice in Saint-Louis. Physicians vaccinated local school children, but this action did not result from an established norm of obligation. In a letter of March 21, 1888 to the administration, the médecin en chef of the colony had to issue first a call to vaccinate administrative employees, school children, and Africans working in the public services. After the epidemic, medical officials once again urged appeals for compulsory vaccination, including school children.63

Second, in interpretive terms, Ngalamulume recapitulates a common reductive reading and (mis)understanding that some scholars perform when applying the writings of Foucault to the history of medicine. This reading is particularly captivated with part of Foucault’s oeuvre on modern government, namely the notion of disciplinary power and its relation to social institutions in general, and the analysis of the body and forms of ‘medicalization’ in particular. The reading operates from an anti-medical orientation wherein medicine becomes indistinguishable from state power. Furthermore, according to this view, state power aspires to become total since medicine only enters a social

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63 Girard’s study ends with a list of recommendations that includes a call for the legal obligation of vaccination. Ibid., 278.
arena negatively to colonize or control. Yet, the analytical problem and purchase here is that Foucault actively refrains from articulating a ‘theory’ per se of power, that is, “a context-free, ahistorical, objective description”. His corpus of writings seeks to analyze both historically and epistemologically the effects of power as linked to particular types of knowledge (truth-claims) in a determinate period or epoch. When pressed for a definition of power, Foucault talks at one point of “the exercise of power as a mode of action upon the action of others”. Power is not univocal and Leviathan, but rather multidirectional (coming from above as well as coming from below); in fact, there is neither a top nor a bottom from which power emanates since it operates over a grid or in a network. Moreover, power works positively, that is, it is not negative (i.e., repressive), but rather generative or productive in its effects and practices. Such a framework does not neglect the study of institutions (e.g., schools, prisons, hospitals, hospitals, hospitals).

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65 Dreyfus and Rabinow, *Michel Foucault: Beyond Structuralism and Hermeneutics*, 184.

66 Michel Foucault, “The Subject and Power,” in Dreyfus and Rabinow, *Michel Foucault: Beyond Structuralism and Hermeneutics*, 221.

asylums, etc.), yet maintains that power is not defined or held by institutions alone. Rather, modern (and colonial) institutions as well as their technologies are formed through specific combinations and trajectories of power/knowledge and act as its conduits. Thus, the effects of power create both institutions and subjects, that is, the individuals and groups that come into contact with them. Lastly, as power operates to constitute subjects, it simultaneously generates possibilities for forms of resistance and freedom.68

To understand the ways power flowed both through and from attempts to institute laws for obligatory vaccination in Saint-Louis, it is important to note that colonial physicians weighed arguments for local ‘compulsion’ measures within a broader canvas of liberal political rationality and government of health. This liberalism toward health developed in nineteenth-century Europe and had its expression in the politics of bio-power. Bio-politics concerns the “endeavor, begun in the eighteenth-century, to rationalize the problems presented to government practice by the phenomena characteristic of a group of living human beings constituted as a population: health,

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sanitation, birthrate, longevity, race".  Throughout most of nineteenth-century France, public health initiatives remained under local control and the national government broadly maintained a liberal, non-interventionist orientation toward public health. At the same time, the very definitions of the ‘state’ and the ‘social’ and the relationship between the two (the ‘political’) were under debate. The human sciences, especially medicine, entered these debates and increasingly came to define liberty in terms of health and normativity for the collective social body or nation. Society would come to define itself by the political and moral project it assigned to government (the providential state). Part of this new governmentality included the state’s central role to regulate disease and provide ‘normal’ health to all. In essence, the liberality of government would effect the transformation of “the free individual into a ‘social man’”.

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71 Quotation comes from Aisenberg who cites Foucault. Aisenberg, *op. cit.* 7-8.
The continuing nineteenth-century debates over government, health, and disease became manifest over the question of compulsory vaccination. Several different measures for mandatory vaccination and revaccination of pupils were proposed, but never ratified or had to be repeatedly re-mandated in the face of parents’ recalcitrance and legislators’ political defense of the sanctity of the family. One noted attempt, the 1868 bill before the Sénat, sought obligatory vaccination throughout the French empire of all children under the age of eighteen months. The measure required that “fathers, mothers, tutors [be] responsible for the application of this law” and to pay 3 francs per vaccination. A provision of free vaccination was included for the poor. The bill failed to be adopted. For obligation to gain ground, Third Republic legislators resorted to a series of increasing indirect measures: requiring vaccination for all women caring for infants and their nurslings (1874) and all military recruits (1876), revaccination for collège and lycée students and soldiers (1883), and lastly vaccination for students of all ages (1886). Partly responsible for driving the increasing measures were a group of physicians affiliated with the Académie de Médecine. Representatives of the group, such as Paul Brouardel and Henri Monod, supported arguments for obligation by

72 In France, and in sharp contrast to Britain, few organized anti-vaccination protests existed over the century. Their development appeared only after the ratification of 1902 compulsory law for all citizens. Peter Baldwin, Contagion and the State in Europe, 1830-1930 (Cambridge: Cambridge University Press, 1999), 264-65; 311-12.


comparing smallpox mortality in France and Germany. German forms of legal compulsion took root much earlier in the century and a national law was enacted in 1874. In 1886 alone, France recorded 15,000 deaths from smallpox while Germany had 225. Although most of the French medical establishment backed legal compulsion by the late 1880s, parliamentary obstacles throughout the 1890s blocked the passage of proposed bills. France finally enacted national vaccination measures in 1902 as part of a broader public health law; it was the last of all European countries to do so. The law contained the strictest requirements of any nation for vaccination and revaccination, yet inoculation services remained erratic throughout the first half of the twentieth century. The 1902 law was eventually extended shortly thereafter to the colonies, including the AOF in 1904.

The brief history illustrates not only the French aversion to compulsion, or “France’s hands-off approach,” it also speaks to the type of political rationalities informing government and public medicine in France. Nineteenth-century medicine in Europe, other readers of Foucault have argued, assumed its character from mentalities of liberal government. It thus markedly departed from earlier, eighteenth-century anti-liberal forms of government exemplified best in the notion of the medical police.

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According to a police science of public health, “the population to be governed was ideally to be comprehensively known, rendered visible and transparent to the gaze of authorities and crisscrossed by detailed regulations for all aspects of life from the weight of a loaf of bread to the proper dress to be worn on the Sabbath”. Over the nineteenth-century, historical forms of the medical police do not disappear in Europe, yet their prominence and totalizing projects diminish in stature with the rise of more liberal forms of public health. The liberal governing of public health moved away from earlier interventionist, all-encompassing, and disciplinary rationalities of the medical police and instead focused on specific and delimited points of application.

Thus, in France as well as in colonial Senegal, the medicalization of social space and individual bodies did not represent in any straightforward way the elaboration of ‘technologies of control’. Medical officials in France and the colonies certainly wished for such dystopic control. In a 1882 monograph on the hygiene and diseases of European peasants, Alexandre Layet, founding member of Société de Médecine publique in France and professor at the Faculty of Medicine in Bordeaux who trained many of the early colonial doctors in Senegal, argued favorably for obligatory vaccination of Europe’s unwilling peasants:

Rendre la vaccination obligatoire par une loi, c'est soustraire les campagnes à une des plus terribles épidémies. Si la pression légale n'existe pas: ce n’est pas avec des paysans ignorants, remplis de préjugés, que l’on pourra obtenir quelque chose de la persuasion ou de toute espèce de propagande d’ordre

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78 Rose, "Medicine, History and the Present," 64.
Medical officials in colonial Senegal expressed similar desires, yet had to accept the restriction of those desires not only due to limited territorial space of colonial authority, but also to the precepts of liberal authority:

Si la persuasion n’est d’aucune utilité vis-à-vis de la généralité des indigènes de l’intérieur, on devrait du moins user de mesures rigoureuses à l’égard de ceux qui vivent plus près de nous. La vaccine évidemment n’est pas obligatoire en France, à plus forte raison serait-il inutile de prêcher des moyens coercitifs vis-à-vis du libre noir; mais on pourrait...obliger les individus employés dans les diverses administrations, les enfants fréquentant les écoles, les indigènes engagés dans tous les services publics, etc., à passer par la lancette du vaccinateur et à refuser tout emploi à ceux qui ne voudraient pas accepter cette petite formalité. Dans les villes, où les pouvoirs locaux peuvent avoir une influence plus marquée sur la population noire, ces mesures seraient faciles à prendre, ou tout au moins devrait-on faciliter la tâche aux médecins qui s’emploient à cette oeuvre de propagation: or jusqu’ici on n’a pu constater qu’une chose, c’est la façon dont on fait bon marché de leurs efforts, et le mauvais oeil avec lequel les indigènes accueillent souvent leur concours pourtant tout bénévole.  

79 [To make vaccination obligatory by a law, that’s to shield the countryside from one of the most terrible epidemics. If legal pressure does not exist: it is not from ignorant peasants, full of prejudice, that one can obtain something out of persuasion or any kind of platonic propaganda. In this regard, as Professor Ulysse Trelat very strongly said: to order and require, that what would be better for them than to stress and promote.] Alexandre Layet, *Hygiène et maladies des paysans: études sur la vie matérielle des campagnards en Europe* (Paris: G. Masson, 1882), 493.

80 [If persuasion is of no utility vis-à-vis the majority of the natives in the interior, one should at least use rigorous methods in regard to those who live much closer to us. Of course, the vaccine is not obligatory in France, so much stronger the reason it would be pointless to preach coercive measures to the free blacks; but one might...require individuals employed in the various administrations, children who attend school, natives hired in all the public services, etc. to comply with the lancet of the vaccinator and deny any job to those who would not accept this small formality. In the cities, where local powers can have a more pronounced influence on the black population, these measures would be easy to take, or at the very least could ease the work of the physicians who devote themselves to this project of [the vaccine’s] spread: whereas
Several keywords and concepts in this passage—persuasion, rigorous measures, coercion, liberty, obligation, local powers—all echo and take source from the century-long elaboration of a political logic of biopower taking place within debates around compulsory vaccination in France. And, despite the stated desires of medical officials in colonial Senegal, the historical course of compulsory vaccination took its source from the logic of liberal rationalities. Why, for example, in the above citation, does Girard even make reference to persuasion and its possibility? Moreover, the conditional tense of the text instantiates the uncertain social and political conditions for obligatory vaccination in colonial Senegal. This uncertainty reveals practices and realities not only of the weak institutional power of colonial medicine, as traditional analyses of institutions and bureaucratic power would have. More fundamentally, it exemplifies and, in fact, poses for the colonial context in Senegal an epistemological problem of “a lack of medical intervention within the practices of government…which served …only to make the whole question of the links between medicine and government more acute”.  

But perhaps a preoccupied focus by historians on legal compulsion with its differing moments of instantiation and degrees of social reach obscures more than it reveals? Such focus frequently tends to describe the world and desires of the legislator, until now one can only note one thing, which is the way we make easy gains from their efforts, and the unfavorable light with which the natives often receive their [medical] aid however completely free.] Girard, “Variole et vaccine au Sénégal,” 271.

in this case, the physician-legislator. In this analytical frame, science only exists as a series of black boxes or *fait accompli* constants marshaled in the service of social and political actors and their projects. Submerged and, in fact, erased within the sociological (or social historical) view is medical science itself with its on-going, contingent, and incomplete knowledges and practices. Yet, what actually occurred with vaccination during the 1887-88 epidemic? Or, in other terms, let’s open up a few of those black boxes.

*Laying the Ground for New Subjects: Vaccination during the Epidemic*

As noted at the beginning of the previous section, prior to the 1887-88 epidemic, medical officials lacked any substantial clinical knowledge of the vaccine’s effectiveness in colonial Senegal. There is also a question of the extent to which medical officials previously employed vaccination to curb the spread of smallpox during epidemics. Smallpox arrived in Saint-Louis in early 1883 and particularly affected workers recruited from Algeria and Indochina to build the Kayes-Niger railway. ⁸² The disease also struck some children who were vaccinated. ⁸³ Yet, the predominant measures taken by

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⁸² Jones notes that the workers came from Morocco and China. For more on experiments to use imported labor during the 1880s, see Jones, *Industrial Labor in the Colonial World*, 8-10.

medical authorities to halt further contagion did not include vaccination, but was comprised of quarantines instituted in parts of the city and the isolation of the sick workers. The epidemic did not spread further.84

In response to the 1887-88 outbreak, medical officials shifted orientation to conduct the first serious tests of vaccination. Under the auspices of a newly created special vaccination service in Saint-Louis, vaccinations started in early January 1888 and would continue in several stages through the next seven months. Physicians employed the long-standing procedure at the time, the arm-to arm method, which relies upon body fluids (lymph or pus resulting from an original vaccination) transferred from one individual to another. For the specific trial in Saint-Louis, naval physicians made use of the standard chain of practice. Tubes of cowpox vaccine, produced at the Academy of Medicine’s Vaccine Institute in Bordeaux, France, were shipped to Senegal, where doctors inoculated (through the use of a lancette) small numbers of African children in Dakar and Rufisque. The first attempts did not yield suitable results, yet further trials in Dakar produced a vaccinal eruption of cowpox pustules on a young child. Cowpox pustules would appear on the arm in a matter of days and physicians would then harvest the lymph as early as the sixth day for further vaccinations. To continue the vaccination process, doctors would now have to keep a lymph-chain active, that is, find a group of new individuals to inoculate, wait several days for to see if

84 ANS 1H38 (Doc 21) Rapport sur la variole et les vaccinations dans la commune de St. Louis, Sénégal, [n.d]. The report’s author, Charles Carpot, was a mulatto doctor who was native of Saint-Louis and worked in city’s Civilian Medical Service. At the time of the 1888 epidemic, he served as post doctor at the M’Pal fort, located 30 kilometers to the south of Saint-Louis.
suitable eruptions appeared on any one person in that group, and, if so, harvest the new lymph and vaccinate a new set of persons. Along the chain, a number of problems could arise. Perhaps, the original vaccine in the tubes shipped from France became inactive during the journey and would not yield vaccinal reactions. Or, if pustules did occur, they might not have been of satisfactory quality from which to harvest more vaccine.

In early 1888, another problem arose in Dakar: few Africans would bring their children to be vaccinated. Only fifty vaccinations were performed over a three week period, leading medical officials to conclude that the African population showed itself to be rebellious to the “pressing appeals” to bring children for vaccination. The Dakar medical service, however, was able to vaccinate garrison soldiers and obtain several individual lymph subjects (vaccinifères) who were then transported by ship to Gorée, Rufisque, and Saint-Louis. Girard’s report does not state the identities of these individuals, but they were most likely young African children. In Saint-Louis, physicians placed a six-year old girl, who presented “six beautiful pustules of vaccine,” in the military hospital run by the naval physicians. Lymph from her body was utilized for the first vaccinations on the young children of the African staff nurses.\textsuperscript{85} The initial results were encouraging and over the next four months, Girard and his colleague, Dr.

\textsuperscript{85} Ngalamulume reports that, by 1897, military hospital personnel comprised twenty African nurses. He does not provide further biographical information on the nurses, yet gives good historical detail on the institution and operation of Saint-Louis hospital care through its varied and intermixing sources in Catholic missionary, military, and later civilian representatives. Ngalamulume, “City Growth, Health Problems, and Colonial Government Response,” chap. 5, “Therapeutic Options in Saint-Louis, 1850-1914”. Citation comes from page 160.
Cassagnon, held evening sessions to vaccinate and to verify results. The first results were relatively easy to verify since those vaccinated lived in the neighborhood of the hospital, yet with time, “children and adults presented themselves at the sessions, coming from all points of the city and the surrounding areas, [and] it had been impossible…to follow them and we obtained results by approximate means.” The two doctors also distributed inoculation cards to those vaccinated, on which the vaccination date and gender of the patient were noted. Recipients would then return their cards and the doctors would verify the vaccinal result. A summary of the sessions (see Table 4) provides approximate results of the vaccination test. Of the overall total of 2018 vaccinations, three out of four individuals formed cowpox eruptions.

Table 4. Vaccinations of Europeans and Africans in Saint-Louis, 1888.

<table>
<thead>
<tr>
<th>Month</th>
<th>#</th>
<th>P</th>
<th>N</th>
<th>V</th>
<th>NV</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>715</td>
<td>446</td>
<td>144</td>
<td>590</td>
<td>125</td>
</tr>
<tr>
<td>February</td>
<td>756</td>
<td>410</td>
<td>109</td>
<td>519</td>
<td>237</td>
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<tr>
<td>March</td>
<td>508</td>
<td>271</td>
<td>86</td>
<td>357</td>
<td>151</td>
</tr>
<tr>
<td>April</td>
<td>39</td>
<td>25</td>
<td>4</td>
<td>29</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2018</td>
<td>1152</td>
<td>343</td>
<td>1495</td>
<td>525</td>
</tr>
</tbody>
</table>

% 77.07 22.93 74

NB: P=positive result; N=negative result; V=verified; NV=not verified

The 1888 Saint-Louis vaccination experiment would encounter several problems over its course. First, in his report, Girard complained that the total number of vaccinations should have been greater if only adults would have accepted to be vaccinated.
vaccinated since the 2018 total figure comprised almost exclusively children. Moreover, the European inhabitants of Saint-Louis were practically absent from vaccination sessions given their racist prejudices towards Africans and refusal to have their children utilized to continue the arm-to-arm vaccine chain. “The white families did not wish in any way vaccine taken from the blacks, believing in a pernicious influence, and if by chance, having sacrificed a certain number of tubes to make a concession to them, several successes were obtained, they would have carefully concealed [themselves] and would have only come forward the day when the vaccinal pustule had run its course, that is, when it would have been impossible to use them.” The vaccine and vaccinations also created difficulties, due to the age and bad quality of the former and the often too rapid technique and lack of verification for the latter. Too many individuals still escaped verification and, in April, vaccination came to an abrupt halt, as there were no vaccinated children to serve as subjects from which to harvest more vaccine, all in spite of the chief medical officer’s many protests falling on the deaf ears of the municipal administration. The officer petitioned for police measures to be

87 Ibid., 273. Some adults were vaccinated. In his dissertation, Ngalamulume cites a correspondence from the chief medical officer to the Interior Minister stating that those came to be vaccinated were members of the upper classes, students, and Moors visiting Saint-Louis. Ngalamulume, “City Growth, Health Problems, and Colonial Government Response,” 290.


89 Vaccinating with lancets did involve a learned, precise technique. Scar the skin too deeply and the ensuing blood flow would carry away the vaccine; cut too lightly and the vaccine would not penetrate the epidermal tissue sufficiently to produce a reaction.
employed to facilitate the vaccination work and, according to Girard, was met with the usual empty promises on the part of the administration.  

During the epidemic, colonial physicians also came up against forms of African opposition to vaccination. Girard writes that Africans living in the outskirts (banlieues) of the cities were just as resistant to vaccination as “les indigènes les plus savages.” How did physicians to explain the African opposition? Africans stymied the physicians’ task generally since both “blacks and mulattos, blinded by the prestige accorded in their weak minds” to the practices of “maraboutisme and fetishism”, showed a quite marked defiance for everything that came from the white man (du blanc). More specifically, for colonial doctors, there was a problem of translation. Africans could not be made to understand the “non-identity of the vaccine and smallpox; for them, they both form one and the same illness; to vaccinate is to give smallpox (vacciner, c’est donner la variole), and consequently the absolute refusal to accept the vaccine, as long as an epidemic

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90 Such administrative tergiversation in the face of medical officials demands requires further historical scrutiny during the last half of the nineteenth-century for Senegal. Studies that examine part of the period, namely the dissertations of Ngalamulume and Gaye, and less directly that of Diop, do not address the division between administrative and medical authorities. In the report, Girard’s several references to municipal inaction, even unreceptiveness, to calls for further police measures seem to underscore not only a habitual state of affairs, but also a rich area for further analysis on the intersection of medical knowledge, hygienism, and colonial governmentality in Senegal during the Third Republic period. Ngalamulume, “City Growth, Health Problems, and Colonial Government Response”; Gaye, “La diffusion institutionnelle du discours sur le microbe au Sénégal au cours de la Troisième République française (1870-1940)”; Diop, “Santé et colonisation au Sénégal 1895-1914”.


92 Ibid.
has not broken out in the village. At that moment, it was no matter the source of the virus, whether from a sick person (variolique) or from a vaccine (vaccinal), whether from the white or the black: tradition prescribes vaccination [sic] and one practices it.” ⁹³ In the Sor village, seven infants and two adults contracted smallpox after having been vaccinated. The children developed mild cases, while one of the adults contracted a more severe form (confluent). The cases did not surprise medical officials since immunity from the vaccine does not develop until after ten days, while the incubation period for smallpox can last up to fifteen days or more. The children and adults had contracted the disease before the date of vaccination and only showed physical signs later. This development nonetheless worried physicians for the cases had “the regrettable consequence of arousing the defiance of the natives who were already much inclined to elude our treatments and our practices”. ⁹⁴

Science Inscribes Colonial Society

There would be one further problem. And its solution set a major precedent to change the course of vaccination for the rest of the colonial era. At the beginning of May, smallpox spread anew to the African troops stationed in Saint-Louis. In response, the chief of the colonial medical services, Pierre-Adolphie Doué, decided to attempt to

⁹³ Ibid., 270-271.

⁹⁴ Ibid., 275.
produce the vaccine locally. Such a possibility would furnish fresher and ostensibly a more abundant supply of the vaccine. Moreover, vaccination could continue without the unreliability of infant vaccinifères as well as other difficulties related to the technique. David Arnold notes that, in Europe as for colonial India, where vaccination had been much more extensive than in Senegal during the nineteenth-century, the process of human transmission with arm-to-arm vaccination often diminished the virulence of the live matter to a point where the vaccine became ‘lost’. And, although the method was relatively inexpensive, doctors viewed the technique as potentially liable to transmit epidermal diseases such as leprosy and syphilis.95

Budgetary considerations probably did play an important factor, especially if medical officials wished to impose the common, yet expensive measures of quarantine. For one, there was the question of where to house the sick. The Sanitary Commission in Saint-Louis had already decided in late December 1887 that the military hospital as well as the city’s civil hospice would not receive any victims due to lack of space.96 In May 1888, as the epidemic continued, medical officials debated the construction of a separate quarantine center, comprising five huts, for patients and staff. The project was never realized due to its high cost, estimated at 4,800 frs., which exceeded the available budget funds of 3,000 frs.97

95 Arnold, Colonizing the Body, 140.

96 ANS 1H37 (Doc. 57). Le Médecin en chef de la Marine DOUÉ (PIERRE-ADOLPHIE) à Monsieur le Gouverneur du Sénégal et Dépendances, mars 1889 [no day provided].

To find a vaccine that satisfied the combined aims of greater convenience, larger quantity, and cost effectiveness, Medical Chief Doué opted to experiment with locally produced animal vaccines. Again, like Girard’s study of the 1887-1888 epidemic and the detailed experiments with vaccination, such a decision marked a significant turning point in the some eighty years of the vaccine’s presence in Senegal. Further research may nuance this point in terms of the precise historical date for its West African start, nonetheless the experiments joined up with other contemporaneous efforts over the French colonial empire in the late 1880s to relocate the supply chains of the vaccine away from the metropole.

Animal vaccines were a relatively new phenomenon at the time in Europe. Although the use of animals to harvest cowpox vaccine dates to 1804 where hospital doctors in Naples (Troja and Galbiati) carried out experiments to vaccinate more safely with lymph from bovines. Since bovines were found not to be susceptible to human forms of syphilis, their use would eliminate the known danger of transmitting syphilis


99 Unless other noted, the following discussion comes from Darmon, La longue traque de la variole, 350-357.

100 There may have in fact been more experimentation with animal vaccines at the time. Burnet notes an earlier example from 1801 in which two French doctors in Reims transmitted the vaccine from a person to a calf in an attempt to rejuvenate the vaccine. Etienne Burnet, La lutte contre les microbes (Paris: Armand Colin, 1908), 278.
with the arm-to-arm method. Animal vaccines became popularized in the 1840s, but the French production of animal lymph was only instituted in 1864. At that time, two French doctors, Ernest Chambon and Gustave Lanoix of Lyon, imported from Italy a vaccine-producing calf (*genisse vaccinifère*) and began to conduct experiments with the Italian method, successfully finding new techniques to harvest lymph from pustules. The first vaccination and revaccination trials proved encouraging and, shortly thereafter, in Paris, Chambon and Lanoix created the *Institut de vaccine animale* to spread the cow lymph throughout the country. With the animal vaccine proven effective in vaccination trials, soon similar lymph producing institutes were established throughout Europe. But Chambon’s innovation also met forms of resistance on the part of the local administrative *préfets* and *département* vaccine committees, who exercised considerable influence over the decentralized, and as described earlier in this chapter, slow and uneven adoption of vaccination in nineteenth-century France. According to one historian, the use of the human lymph had become too habitual in practice and also possessed symbolic power as the great innovation against smallpox since the start of the century that many doctors refused to abandon Jenner’s original method. There may have also been problems with the preservation of animal lymph and difficulties concerning the most efficacious manner to harvest lymph without some diminution of virulence. Hence, part of French medical opinion did not fully endorse the animal vaccine.

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101 Chambon also introduced the animal vaccine to the United States during the 1870 smallpox outbreak in New York City. Darmon, *La longue traque de la variole*, 368.
The French historian of vaccination, Pierre Darmon, often adopts a heroic perspective for the advance of vaccination, terming opposition to the animal lymph as ‘obscurantism’ such as during the severe 1870 epidemic in France when local vaccine committees disallowed the use of the animal vaccine. Proceeding from 1879, after the human vaccine often proved incapable of responding to the French army’s increasing demands for vaccination and now revaccination, the animal lymph gained ground. In 1883, new legislation required revaccination for all collège and lycée students, a development that promoted further the animal vaccine with its ability for mass production. Lastly, it was from Chambon’s original Institut of 1864 and later in 1888 with the Parisian animal vaccine service created at the Académie de Médecine as well as similar institutions in several provincial municipalities (e.g., Lyon, Bordeaux, Montpellier) that glass tubes of cowpox lymph were sent to the French colonies. In 1890, the microbiologist Albert Calmette, a student of Pasteur and later director of the Institut Pasteur in France, established the first vaccine-producing laboratory outre-mer in Saigon.

A more illuminating understanding of the process draws upon the work of Bruno Latour to focus on the act of inscription, or in this case, re-inscription. Formerly,

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102 Ibid., 354-57.


vaccination was inscribed in a certain network or chain of persons, places and things. The network included at least (a) the French veterinarian scientist in Paris or Bordeaux who tended (b) the calves at the vaccine producing laboratory centers, (c) the bacteriological scientist who seeded and harvested (d) the cowpox lymph placed into (e) glass tubes which then were shipped [(f) crew and ship] in (g) special boxes over (h) the ocean hopefully in (i) favorable weather to land in the caring hands of either (j) a European customs inspector or perhaps even (k) an African porter, only then to be delivered to (l) the Saint-Louis military hospital where (m) a French colonial doctor and (n, o, p) multiple African nurses prepared the next step of which little is known. Yet, the French doctor and African nurses, in the aid of (q) an African local chief or authority, secured the willingness of (r) an African mother to allow (s) her young child to be scarified with (t) a lancette and vaccinated with the lymph. This network neared an end with (u) the resulting beautiful pustules on the young child’s arm. To be sure, the chain of persons, places, and things was not complete without the cooperation of more and even larger bodies and environments, that would include the local season, with its (v) humidity and (w) daily temperature and the equally important (x) political, (y) social and (z) economic bodies as well.

If successful arm-to-arm vaccination were to occur, then all of these elements in the chain needed to cooperate. As described above in part, any break in the chain and the whole network would collapse. French authorities, both medical and administrative,

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certainly did participate in the network, but not without the help of other elements. And, elite and non-elite Africans surely did have much agency too in the medicalization of their bodies, a point often ignored or downplayed by historians of colonial medicine with their analytical focus on domination, hegemony, and resistance. Africans surely translated parts of the chain elements into their own social and cultural worlds, and some of the types of translation are examined, especially in the next chapter. However, an analysis of vaccination that left the historical phenomenon in only these local or nativist terms would be just as circumscribed as an examination that left French colonial doctors and medical scientists uncritically on their own terms. Moreover, analytical space is required for all of the microactors comprised within the network, such as the latent and contingent agentive properties of the things in the chain equation. How often did the weather, whether in its humidity or temperature, not cooperate? Or, the calves, lymph, glass tubes, lancette, vessels to transport the vaccine and the smallpox virus itself? Why must the historical analysis of science and society necessarily repeat the modernist trope of dividing phenomena across what Bruno Latour terms the ‘Great Divide’, with human agents all on one side to be studied and analyzed and non-human agents on other side to be ignored completely? Africans, colonial doctors, and administrative officials certainly did not neglect these elements in response to smallpox or practices with vaccination.

To respond to the lingering epidemic, over May, June, and July 1888, physicians produced the animal vaccine for the first time in Senegal. The medical and veterinarian services in Saint-Louis formed an alliance not only among themselves, but with local African herders, indigenous young cattle, a new series of glass tubes, and obviously different calf lymph as well. From the local herders, nine animals were bought outright or exchanged against others at an insignificant total cost of 250 frs.. ‘Seed’ vaccinal lymph sent from the Académie de Médecine in Paris or the Institut vaccinogène of Bordeaux was used to inoculate young calves (both veau and génisse) for the experiments. At the local city stables (Compagnie des conducteurs), each calf received between 30 and 90 injections and incisions of the ‘seed’ lymph. In some cases, the successful results, that is the desired cowpox pustules of lymph appearing within five to seven days, were then transferred and tested on further calves. Eight of the nine calves produced usable lymph in varying quantity and quality. Later, in the early twentieth-century when vaccine manufacturing laboratories were created in almost all the individual French colonies of Africa, the animal lymph was placed in glass tubes and then transported on vaccination campaigns in a series of different vessels, whose properties physicians hoped would preserve the vaccine. In 1888, the animal itself was literally transported and its lymph harvested at the time of vaccination. One of the nine calves was then sent to Rufisque for vaccination sessions.

Another calf traveled with Girard in late May to Dagana, a military fort and trade center on the Senegal River to the northeast of Saint-Louis. A smallpox epidemic was visiting this area in the Futa Toro and local African traders, comprised of the Trarza
ethnic group, fearing contagion, refused to furnish the valuable gum arabic to French traders. With the threat of an impending commercial downturn, the Governor General of the colony authorized the request of the Chief Medical officer to attempt vaccination at Dagana. A special vaccination mission led by Girard visited camps inhabited by Moor populations. The team ran against hostile reactions on the part of the inhabitants, and, after four days of fruitless negotiations, the team abandoned the mission without any results. “It was in vain that we tried to persuade [them] who only viewed us with our vaccine, as the exporter of smallpox.”106

In Saint-Louis, Girard and his colleagues staggered ten sessions during May, June and July to vaccinate and revaccinate an additional 1,209 individuals. The inoculated included European and African residents (“tous les commerçants, employés civils et noirs qui voulurent bien se rendre à l’appel pressant addressé par le médecin en chef”), French and Senegalese soldiers, Catholic nuns of the Saint-Joseph de Cluny mission, African rail and dockworkers, school children and African prisoners. Positive results were low at 29.8%107, reflecting the fact that the inoculations comprised, for many, revaccinations, especially the European residents, Catholic nuns, children at the two schools (École du Nord and École de l’Ouvroir), and some of the city’s African


107 As is sometimes the case with colonial medical statistics, reported numbers do not always match analyzed results. For example, within the text Girard mentions that 1209 vaccinations and revaccinations performed May through July with a success rate of 29.8%. According to his own statistical table (pp. 282-283), divided along categories of those vaccinated, the net total is 1249 and a positive rate of 34.9%.
residents. For the African troops, the number vaccinated was disaggregated to indicate, for example, of 51 total *conducteurs* (horse drivers), 37 of whom presented negative results. Of note, Girard does mention that 39 of them had smallpox before incorporation into the troops.\(^{109}\)

### Table 5. Vaccination and Revaccination with Animal Vaccine, May-July 1888, Saint-Louis.

<table>
<thead>
<tr>
<th>Site</th>
<th>Identity</th>
<th>#</th>
<th>Pos.</th>
<th>Neg.</th>
<th>% Pos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Troupes</td>
<td>Europeans</td>
<td>261</td>
<td>46</td>
<td>215</td>
<td>29.2</td>
</tr>
<tr>
<td>École du Nord</td>
<td>Africans</td>
<td>425</td>
<td>253</td>
<td>172</td>
<td>59.5</td>
</tr>
<tr>
<td>Ouvroit</td>
<td>Children</td>
<td>150</td>
<td>20</td>
<td>130</td>
<td>13.3</td>
</tr>
<tr>
<td>Mission Saint-Joseph de Cluny</td>
<td>Nuns</td>
<td>30</td>
<td>4</td>
<td>26</td>
<td>13.3</td>
</tr>
<tr>
<td>Habitants civils</td>
<td>Europeans</td>
<td>93</td>
<td>25</td>
<td>68</td>
<td>26.1</td>
</tr>
<tr>
<td></td>
<td>Mulattoes</td>
<td>65</td>
<td>17</td>
<td>48</td>
<td>32.0</td>
</tr>
<tr>
<td></td>
<td>Africans</td>
<td>137</td>
<td>48</td>
<td>80</td>
<td>35.1</td>
</tr>
<tr>
<td>Aviso &quot;Cigale&quot;</td>
<td>Africans</td>
<td>33</td>
<td>2</td>
<td>31</td>
<td>6.0</td>
</tr>
<tr>
<td>Prison civile</td>
<td>Africans</td>
<td>15</td>
<td>11</td>
<td>4</td>
<td>73.3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1249</td>
<td>436</td>
<td>872</td>
<td>34.9</td>
</tr>
</tbody>
</table>


The vaccination trial with the animal lymph stopped in early July after the last calf, having provided pustules for two sessions, refused to cooperate further in the network. It scratched its incisions and slept on its side, bursting the many pustules. Temporarily, though, the network could continue. Having recruited African children from 108 The children’s identities are not indicated.

Smallpox victims did not have total immunity. The cowpox vaccine could produce, although in quite small proportion, positive results with individuals who had already suffered from smallpox. Moreover, there were rare cases where the previously sick could contract the disease a second time, though normally only a mild or benign case.
the hospital who had successfully undergone trials with the animal vaccine, Girard and his team returned in mid-July to the Sor village, and harvested their lymph for further arm-to-arm vaccinations. 240 children were vaccinated and yielded similar encouraging positive results (77%) as that of the first period (January-April) with the imported lymph. Moreover, on this second village visit, Girard could observe “among the children in good health milling about calabashes of couscous, there were others, barely convalescent, plunging in the mash their hands and arms covered with scabs [squames]. From these two circumstances, when our surveillance having been attracted to this [place], we should acknowledge that we did not observe subsequently any case of smallpox in these groups of the children who had been vaccinated by us previously.\footnote{Girard, “Variole et vaccine au Sénégal,” 221.}

The experiment was now over. At the end of the long report, Girard concludes with several sets of recommendations. A first set addressed the colonial administration and medical officials to improve the private and public health of Africans with the aide of “very severe police controls,” require all village chiefs to notify immediately civil authorities and the health service of smallpox outbreaks, establish quarantines in special local centers so as to “suffocate the epidemics in their germ”, institute a ban on variolisation, and prohibit all victims from circulating freely until complete recovery. Second, he called for the mandatory vaccination of all Africans employed in the colonial administration or those living in large towns and cities as well as those living near the interior posts, and all school children. Those attending koranic schools were to be watched closely (surveiller). Vaccinations should be undertaken during the rainy
season, particularly with the vaccine from the Academy of Medicine, and the administration should establish a regular service for vaccination missions in the colony’s interior. Lastly, he advised the colonial administration to create an office of vaccination, directed by its own physician, to work in tandem with a veterinarian. This institute would furnish the vaccine for vaccinations and revaccinations and should purchase calves as opposed to adult heifers, which would give the same results and be less onerous.111

Conclusion

The network though was just beginning. By no means the original or only moment, but nonetheless a powerful singular event, the 1887-88 smallpox epidemic in Senegal helped to instantiate a particular epistemological change in medical science and its capacity to assemble colonial society in early French West Africa. This transformation occurred in several distinct fields. One included the particular relationship of political rationality that a new knowledge of smallpox within a more clearly articulated ‘medicine of epidemics’ could engender between medicine and colonial government. Inside the field, the ‘medicine of epidemics’ relied on clinical observation over time and space to produce knowable bodies, definite social spaces, and visions of normative health. The boundaries of this first field were drawn by intersecting lines and comprised a series of more general questions: what is health?

111 Ibid., 278.
the public? and the government? And ultimately what is the nature of public health entrusted to a government? From the historical events that occurred in this field, there emerged a new medical-political consciousness mutually affirmed by colonial physicians and administrative officials as well as different groups of Africans.

Within a second field, the actual medical-scientific practices in establishing effective vaccination as a response to the 1887-88 smallpox epidemic worked to create concatenations of various persons and objects. From these new links of agents and their properties, a delicate, but workable actor-network developed. With further experiments on the vaccine, such as the local production of animal vaccines, even more adherents added their energies to this burgeoning actor-network to make its character further robust. Robustness also could have the definition of more ‘local’. Medical science was now able to assemble colonial society in Senegal, less and less directly through the metropole since a greater proportion of the chain expanded to include actors and objects in Saint-Louis and the other Communes.

But this development was still spatially restricted to the coast, found in fact, only in the city centers. Where were the suburbs of places like Sor and their actors? And what about places on the moving colonial frontier of the 1880s like Kayes, Kita, Siguiri, or Kankan? The next chapter considers the way networks can take on mobile aspects and provide for even larger assemblages of colonial society.
Chapter Four

Moving the Center of Calculation:
The Birth of The Vaccination Campaign

Introduction

Historians of colonial medicine in French West Africa commonly think of 1905 as the starting point for public health services across the confederate territories. To be sure, in terms of an institutional analysis, the year was inaugural as it saw the creation of the predominant colonial medical service, the Assistance Médicale Indigène (AMI). With the establishment of the AMI, medical authorities also combined to the AMI’s overall mission the mandate to carry out vaccination campaigns against smallpox. For the history of smallpox vaccination in French West Africa, the scholarship has steadfastly followed the path and logic of administrative decrees. Its historical frame treats vaccination in the pre-AMI period as either of near complete absence or disorganized failure.¹ But what would happen if one were to relinquish such a historical vision for smallpox vaccination?

The preceding chapter began to construct a different vision for early vaccination practice in which 'less may actually be more' especially in regard to smallpox control and its relationship of the formation of social and political rationalities of government. The historical analysis and argument sought to highlight the development course of vaccination for French colonial possessions on the West African coast and focused on the ways in which the coastal capital of the embryonic Senegal colony, Saint-Louis, started to become in the late 1880s a ‘center of calculation’ for smallpox/vaccination imaginaries and rationalities of government. A ‘center of calculation’, according to Latour, is a place where information is accumulated from maps, diagrams, logs, and statistics (among other forms of paper) provided by expeditions, collections, and enquires.² Here, a flood of inscriptions and calculations pours in and desperately needs to be unscrambled and shaped into stable, actionable networks. For Girard and his colleagues in Saint-Louis during the 1887-88 smallpox epidemic, their constructive work, that of creating the center of calculation, comprised finding allies to shore up an embryonic network of knowledges and practices that could combat the epidemic. The allies recruited to their cause were more detailed observations and statistics for one. In this sense, the center of calculation emerged and grew more robust from the supply of information. But the center also needed more extensive network chains. To that end, Girard et al. had to reconfigure vaccination and were contingently successful especially when they were able to produce a local, useable vaccine, a process linking many more

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agents into a web of relations. Yet, young networks can dissolve as easily as they appear. A key to their success and longevity involves the ability, at one and the same time, to remain stable and move. Most likely, vaccination would probably have remained stable if restricted solely to the Communes and the few growing towns. It would ultimately have failed though if the network did not move into newly constructed spaces. The logical choice for movement was into the interior of West Africa. How did that move transpire? This chapter continues the argument with a historical analysis of vaccination during the 1880s and 1890s within the spaces of the enlarging colonial frontier in Senegal and the Western Sudan. Before turning to those different moments, it is necessary to revisit ideas of smallpox and its exemplary place in early colonial medicine of late nineteenth-century French West Africa.

The Singularity of Smallpox

With this chapter and other parts of the dissertation, the historical argument focuses predominantly on smallpox. Some may object, and rightly so in part, that other epidemic diseases in the West Africa such as yellow fever informed and constituted late nineteenth-century colonial medical modernity as much or even more so than smallpox. Throughout the nineteenth-century, epidemics of yellow fever in Senegal were as frequent as those of smallpox and, unlike smallpox, killed significant numbers of
Europeans. The largest death toll occurred during the 1878 epidemic in the colonial capital of Saint-Louis where half (652) of the European population and untold numbers of Africans succumbed to the disease. To eschew yellow fever in an analysis of medical knowledge and practice in relation to colonial governmentality might then appear partial and unwise. There are salient reasons however to single out smallpox at least heuristically. One is strictly empirical for the study of colonial medicine in Guinea. The colony of Guinea differed significantly from Senegal in that yellow fever first appeared only in December 1901, when a single case was reported and attributed to an imported vector for the disease, the *Stegomyia* mosquito, arriving aboard a ship from

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Dakar to Conakry.\(^4\) It would be three decades before the next reported cases of yellow fever appeared in Guinea when small, separate outbreaks visited the colony during late November and early December 1932.\(^5\) Moreover, in terms of the effective labor of vaccination on the constitution of social and political imaginaries, yellow fever prevention in French West Africa arrived in the middle of the colonial period and its trajectory became literally tied to that of smallpox vaccination. A suitable yellow fever vaccine was first employed in the mid-1930s, initially in the form of separate inoculation from that for smallpox. However, by 1939 as a result of successful experimental trials led by researchers at the Institut Pasteur in Dakar, the yellow fever vaccine was found to maintain virulence when mixed with the smallpox vaccine. Thereafter, colonial medical services in French West Africa proceeded to use the combined vaccine in all further preventative vaccination campaigns until the end of the colonial period.\(^6\) Hence, for the evolving relationship between governmentality, disease, and medicine, yellow fever historically represented a minor element in that equation for Guinea and an attenuated one in terms of vaccination in French West Africa.

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\(^5\) The outbreaks occurred in three distinct areas: the Youkounoun (Koumbia cercle) and Mali subdivisions in Middle Guinea near the border with Senegal; the Friguiagbe-Koliagbe region near Kindia, and in the city of Kouroussa in Upper Guinea. Of the numerous cases, there were eight deaths, all Europeans, including the Koumbia post physician, Dr. Warrant. ANS 2G32.30, *Rapport médical annuel de la Guinée, Année 1932*.

\(^6\) For the experimental results and a description of the mixed vaccine’s first three years, see Maurice Blanchard, “Vaccination mixte contre la fièvre jaune et la variole,” *Bulletin mensuel de l'Office Internationale d'Hygiène Publique* 33, no. 7-8 (1941): 407-411.
A second factor for the singularity of smallpox relates to its epistemological place in debates on the nature of epidemics and their control within nineteenth-century European medicine. Before the discovery and spread of germ theory in the 1880s, two opposing medical theories sought to explain the nature of epidemics: one based on contagion and the other on infection. Contagionists subscribed to the age-old notion that epidemics arose out of the transmission of deadly substances from person-to-person. With its monocausal and reductionist focus, contagion theory advocated control of epidemics based on the rupture of chains of transmission or the circulation of carriers. Its common methods of control included quarantines, cordons and isolation; its adherents held much sway over government prior to the nineteenth-century, especially in securing the control of leprosy and bubonic plague. Infection theory differed from the former in that it stressed predisposition to a greater extent and saw the origin of disease in the environment, climate or communal life. Anti-contagionists viewed that the best control of epidemics was their prevention. They sought to remove noxious elements that could potentially cause epidemics, and disease more generally, through the

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promotion of sanitation efforts (e.g., building of sewers, drainage of stagnant water, cleaner cities), improved personal hygiene, and bourgeois values of moderation, especially in regard to sex and diet. These ‘environmentalists’ also wished to ameliorate the conditions of predisposition with communal social reforms like campaigns for better housing and improved nourishment. The early nineteenth-century witnessed the rise and influence of radical strains of anti-contagionism with the growth of industrialization and urban centers. The two theories did not entail strict binary separation as each one could overlap with the other to explain epidemics, but their divisions became accentuated as epidemics of yellow fever, cholera and plague visited Europe in the first half of the nineteenth-century.

Smallpox though did not feature as a part of theoretical and public health debates. The reason, Delaporte argues, is that all physicians, no matter which theory they held, accepted that collective diseases could be either contagious or infectious. Contagion and infection theory thus shared a unity around two complimentary principles: “the principal of the uniformity of nature (which eschews extreme variety) and the principle of the diversity of nature’s ways and means (which eschews extreme similarity)”.

Contagionists stressed the principle of uniformity in terms of the spread of contagious diseases (always person-to-person) and the principle of diversity or variability in terms of infectious diseases. Anti-contagionists emphasized the opposite. For both schools, “applying the principle of uniformity meant first of all of choosing a

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8 Delaporte, Disease and Civilization: The Cholera in Paris, 1832, 164.
'typical disease' as a point of reference.\textsuperscript{9} Epistemologically, the model disease became smallpox since, by the early nineteenth-century, physicians understood its general mode of contamination and had a technique for its prevention. Medical science of the era held that smallpox forms an organic substance that in turn serves as a vehicle of the virus. When this substance was mixed with the blood of a healthy subject, it produced a benign form of the disease, resulting in immunity for the individual.\textsuperscript{10}

To frame part of the context for vaccination's spread in late nineteenth-century West Africa, it is important to acknowledge the singular nature of smallpox and its control. In medical scientific thought and practice, there was neither debate nor conflict over smallpox within the French medical community by the 1880s. Over the course of the century, vaccination had proven to be an effective preventative technique against the disease, despite the fact that medical science lacked an explanation for the exact causal agent. One did not need a Robert Koch or a Louis Pasteur to disrupt existing scientific paradigms through some great bacteriological discovery to effect public health change. A comparison with attempts to understand other diseases within the medical and scientific community illustrates smallpox uniqueness or singularity.

The last three decades of the nineteenth-century saw the discovery of a great number of causal agents (microbes and viruses) and vectors for diseases. A partial listing of diseases includes dysentery (amibia, 1875), anthrax (bacillus, 1877), leprosy (bacillus, 1879), tuberculosis (mycobacterium, 1882), cholera (virus, 1883), bubonic

\textsuperscript{9} Ibid., 164.
\textsuperscript{10} Ibid., 164-65.
plague (bacillus, 1894), malaria (hematozoire, 1898), and sleeping sickness or trypanosomiasis (parasite, 1901). Many of these discoveries, based on the doctrines of germ theory elaborated by Pasteur and Koch, came under hostile attack by physicians at the time, especially some of the naval doctors with experience in Senegal. Even into the 1890s, physicians who adhered to the ‘miasma’ theory of disease origin would dominate the medical services in the region. And the medical concern for air and environment would be integral to the promotion and reporting of health and sanitation. Reflecting the fact were medical writings, spanning from the géographie médicale of the 1880s to the official colonial medical service annual reports in the first two decades of the twentieth-century, which notably included detailed meteorological data on average temperature, rainfall, barometric pressure, and hygrometry (humidity). Since ‘environmentalism’ held that decomposing organic matter in swamps and bogs or stagnant ponds of water in dirty urban spaces would emit noxious vapors of disease into the air, which in turn were liable to infect human beings, late nineteenth-century colonial urban planning drew great influence from miasmatic disease theory to build European living quarters in Africa on higher grounds segregated away from both ill odors and the perceived unhygienic African quarters. Armand Corre, who will be discussed below, 


served in Casamance and the Rivières du Sud regions during the mid-1870s and later published two major treatises on tropical medicine in which he contested both the role and existence of the microbe.\(^\text{13}\) Shortly after Alphonse Laveran’s discovery of malarial parasites in human blood in 1880, Corre would disavow the finding, arguing:

> On several occasions, we have fought against the application of microbial theories to paludal [malarial] diseases; today, like before, we do not understand that medical observation capitulates before some experiments poorly controlled, often full of obscurities and reticences, before simple affirmations almost immediately refuted.

In contrast, Corre emphasized the agent responsible for malaria as deriving from emanations:

> We can consider the noxious element as like a chemical agent. As in ptomaines [putrefied alkaloids from a cadaver], it grows from the decomposition of organic materials, it forms in the soil, under the most favorable influences for the combustion of these materials, and, more particularly, at the expense of the vegetal substance.\(^\text{14}\)

Yet Corre and his contemporaries in the naval doctor corps worked in the twilight hour of miasmic theory. A full historical account of the demise of miasma theory in the French colonial tropics remains to be written, but such an analysis of the waning group might start with its inability to provide a medical and scientific knowledge and practice to

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\(^{13}\) Mathis makes the point in his hommage to the Pasteurians in AOF, see his *L’oeuvre des Pasteuriens en Afrique noire: Afrique occidentale française*, 8-10. Corre’s two works are *Traité des fièvres bilieuses et typhiques des pays chauds* (Paris: Octave Doin, 1883) and *Traité clinique des maladies des pays chauds* (Paris: Octave Doin, 1887).

combat epidemic disease in Senegal, especially that of yellow fever.\(^{15}\) As Mathis notes, naval doctors produced tomes of medical knowledge, almost exclusively centered on detailed clinical descriptions of diseases and elaborate classification schemes of illness symptoms like those for ‘fevers’. Furthermore, and perhaps most debilitating, the older corps de la santé failed to conceive of any new therapeutic or prophylactic measures to counter deadly diseases. Might their reluctance or inability to recognize a world with non-human agents, particular microbes, have sealed their fate? The 1878 yellow fever epidemic in Saint-Louis practically did, killing close to half of the European population (652 deaths). Steadily, the naval doctors and, according to Mathis, their “imprecise, vague, obscure” clinical descriptions of disease symptoms gave way to a new generation of physician-scientists, the adherents of the microbe.\(^{16}\) These Pasteurians would forge their young careers in the tropics, bringing with them the new scientific revolutionary knowledge of bacteriology to recreate the ‘real’ world in the setting of the laboratory so as to find causal agents of disease. Constant Mathis, a Pasteurian himself and the movement’s chronicler for AOF, gives 1896 as the inaugural year, when Émile Marchoux established the first microbiological laboratory for all of Africa at the colonial hospital in Saint-Louis.\(^{17}\)

\(^{15}\) The analysis would also do well to include how some elements in the former ‘miasmatic’ model were carried over and refigured into the new ‘germ’ model.


Throughout this period of paradigm shifts in medical scientific knowledge and newly envisioned imaginaries of social and vital life, vaccination against smallpox continued in Senegal. With no internecine conflict over a scientific point-of-view on the disease’s etiology and a proven prophylactic means in hand, namely the vaccine, both generations of colonial physicians situated themselves within a tacit alliance. Although smallpox was not a key experimental focus of Pasteur, the idea of vaccination, especially the theory of employing an attenuated part of a disease to promote immunity, did influence his laboratory science and thought. And the Pasteurians would carry out experiments to study the preparation, virulence, and preservation of the cowpox vaccine. These experimental aspects though fell into a category of what may be called conflicts of implementation. They were not the conflicts of interpretation that spurred the battles between the ‘miasma-contagionists’ and the Pasteurians. Hence, smallpox and its corollary, preventative vaccination, existed on a different plane of colonial biopower and governmentality. Both functioned like a bridge connecting in alliance otherwise competing groups of physicians as well as colonial administrators, missionaries, and many Africans as developed in the next section.

In the West African interior, the French created the several trading posts and military forts in the first half of the century, predominantly situated along the Senegal River (e.g. Richard Toll, Dagana, Podor, and Bakel), and stationed with a physician. Vaccination was not practiced until much later, probably commencing around the mid-1870s or early 1880s. Dr. Alfred Borius, who served at the Dagana post for all of 1862, states that, despite frequent epidemics, local villagers did not know of the practice.¹⁹ The author of a géographie médicale for the entire Atlantic coast of coast of Africa, from Senegal to Angola, remarks on the absence of the vaccine in the Senegalese interior still by the mid-1870s.²⁰

One early attempt to vaccinate occurred along the Guinean coast in the region known as the Southern Rivers or Rivières du Sud (see map below). The region had a long-standing history of trade and commerce between its multiple African communities (e.g., Nalou, Temné, Landouma, Baga and Soso, among others) and the French, British, and Portuguese, including the export of slaves during the era of the Atlantic trade.²¹ In 1866-67, and in attempt to arrest growing British territorial claims within the

¹⁹ Alfred Borius, “Quelques considérations médicales sur le poste de Dagana (Sénégal): observations faites pendant l’année 1862,” Thèse pour le doctorat en médecine, Faculté de Médecine de Montpellier, 1864, 64.


littoral region, the coastline became dotted with French military posts at three major river outlets; Benty for the Mellacorée, Boffa for the Rio Pongo, and Boké for the Rio Nuñez. The posts were officially dependencies of Senegal until the creation of the autonomous colony of Guinée française in 1890. Evidence for vaccination there comes from the naval doctor, Armand Corre, who served at the Boké post between December 1874 and January 1876.


22 This region received administrative autonomy from Senegal in 1890 and shortly thereafter, in 1893, became its own colony under the name, Guinée française (French Guinea).
During this period, Corre was first assigned to Gorée, then was transferred to Boké, and finally received the directorship of the military hospital in Saint-Louis. As described above, Corre (1841-1908), like his superior in Senegal, Laurent Jean-Baptiste Bérenger-Féraud, represents the exemplary *savant* naval doctor to have served in French West Africa during the second half of the nineteenth-century. Both Corre and Bérenger-Féraud extensively published articles and monographs in the newly developing field of tropical medicine as well as on local cultures and peoples of the Senegambian region. Corre also wrote several studies on local botany and its use in
indigenous medicine in the Boké region as well as carried out some of the first research in West Africa on sleeping sickness the Casamance region of Senegal.  

Corre relied on the only available vaccine at the time, sent from France, to vaccinate local Africans, an experience that met with meager and odd results. He was able to vaccinate only twelve ‘sujets’ and with ‘incredible difficulty,’ and, to his dismay, local Africans saw the results as discouraging. They “compared among themselves the negative results with the beautiful eruptions of blisters that variolation produced on them. The idea did not occur to them to implicate [variolation] when smallpox carried off the patients!”

In the same section of the book, Corre not only uses the Boké example to illustrate the limits in the spread of vaccination in Senegal during the 1880s, much in contrast to the better organized and more successful French experiences in Indochina. He also situates the recollection to discuss more broadly the problems accompanying vaccination in other areas of empire. For Corre, the lack of confidence for the vaccine exhibited by local populations is solely due to the vaccine’s failure.

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Further evidence for vaccination in the interior during the 1880s comes from the young fort doctors who sojourned between twelve months and two years in the region and whose experiences and observations of smallpox were included in the géographie médicale doctoral theses. At Podor, Carrade notes how several doctors tried to introduce vaccination against the ‘disastrous’ disease, yet few ‘noirs’ responded to call. He also mentions that during his stay (15 months, 1882-1883) an epidemic broke out and he twice requested vaccine from Saint-Louis. The lymph arrived inert each time, evidenced by the negative results yielded from vaccination of the tirailleurs, African children and ‘les blancs’.26 During a different (?) epidemic, at the Bafoulabé fort in August 1883, which “decimated a part of the population”, the post physician complained that he “encountered among these peoples a great repugnance for the practice for whose efficacy [they] do not have even an inkling” (“dont l’efficacité n’est même pas soupçonnée”).27 Between October 1883 and August 1885, Clément Crambes, whose géographie médicale of Upper Guinea was analyzed in a previous chapter, repeatedly failed with vaccination trials. The source of failure was seemingly not popular rejection, which Crambes does not mention, but was attributed to the poor quality of imported

26 Louis-Raymond-Ernest Carrade, "Contribution à la géographie médicale: le poste de Podor (Sénégal)," Thèse de doctorat, Faculté de Médecine et de Pharmacie de Bordeaux (Bordeaux: Imprimerie du Centre, 1886), 65-66.

vaccine. The same occurred for his other colleagues at the fort.\textsuperscript{28} In 1886, at the long-standing Saldé post along the Senegal River, vaccination was said to have come up against the ‘stubbornness’ of the population and yielded only meager results.\textsuperscript{29}

Some of the doctors in the interior did not have vaccine to prevent epidemics or control their spread during an outbreak. Arriving in May 1882 at Sédhiou, a post in the Casamance region, the new physician witnessed the outbreak of smallpox. In a lament over its destructive effects, he questioned why more had not been tried to propagate the vaccine as had been successfully accomplished in another part of the French empire, namely in Indochina:

[La variole] avait sévi exclusivement sur les Noirs, chez qui elle avait trouvé un terrain favorable à son développement. L’institution de la vaccination n’étant pas, ni ne pouvant être connue de ces peuples, la variole les a plus d’une fois visités bien cruellement, car ne sont pas en petit nombre ceux qui en portent des traces profondes. Aussi, à part quelques gens venus des centres de la colonie et qui forment l’exception, n’ont-ils, pour se préserver de cette terrible maladie, que le bénéfice de précédentes atteintes. Ne serait-il donc pas à souhaiter que le médecin du poste fût muni de plaques ou tubes de vaccin, et que le commandement, en faisant comprendre à tous l’importance d’une telle mesure, en facilitât ainsi la propagation? On n’a pas moins fait pour les postes de la Cochinchine parcourus par des médecins dits “vaccinateurs”.\textsuperscript{30}

\textsuperscript{28} Clément-Marc-Joseph Crambes, “Contributions à la géographie médicale du Soudan occidentale: la région aurifère entre le Haut-Sénégal et le Haut-Niger,” Thèse de médecine, Faculté de Médecine et de Pharmacie de Bordeaux (Bordeaux: Imprimerie Vve Cadoret, 1887), 55.

\textsuperscript{29} Louis Porquier, "Une campagne de vaccine au Sénégal (1896)," \textit{Archives de médecine navale} 59 (avril 1898): 252.

\textsuperscript{30} Smallpox had been rampant exclusively among the blacks, where it had found an area favorable for its development. With the institution of vaccination not existing, nor could it have been known by these peoples, smallpox more than once quite cruelly visited them, since it was not in small number those who beared deep marks of it. Also, apart from several persons who came from the centers of the colony and who formed the exception, to protect themselves from this terrible disease, they only had the benefit
At Kayes, the fort physician never received tubes of lymph during a stay from August 1885 to October 1886 and, once, when an epidemic struck, could only treat the afflicted tirailleurs. He also noted that the smallpox rarely took an epidemic form as the local population “hurry to isolate and abandon without treatment” the victims. This observation for the non-endemicity of smallpox at Kayes differs from most of other French affirmations for smallpox frequency over the region, and particularly in Kayes, during this period. Along the Guinean coast in the Rivières du Sud region, for two outbreaks, one at Dubréka in early 1888 and the other in Victoria near Boké in November 1889, no supply of lymph disallowed the option to vaccinate. At Dubréka,
the post doctor encountered dual difficulties in the attempt to garner information on the epidemic:

L’empressement que mettent d’un côté les noirs, à dissimuler leurs malades, le mauvais vouloir, d’autre part, des autorités locales, qui, n’ont cure d’aider les services sanitaires dans leur rôle de préservation, ont mis toujours des obstacles à ce que l’on pût avoir des notions exactes sur la marche de l’épidémie.\(^{34}\)

The next year, the local Boké administrator, who also served as the post doctor, traveled to Victoria and could only investigate the epidemic. Of a total population of 255 inhabitants, 48 cases were counted that included 8 deaths since the epidemic began in mid-October. The outbreak had rapidly spread further to other areas in the Rio-Nunez region, attributed to the fact of that Victoria was an inspection stop for all commercial ships entering the river and also had direct links with other trading ports on the littoral. The physician finally could only issue health bulletins warning of the on-going epidemic.\(^{35}\)

In cases when a colonial doctor could visit a village to treat Africans, complete information was difficult to obtain. Dr. Jean-Marie Collomb recorded treatments at Bamako, whose military fort in 1884 was the furthest within the Western Sudan region from the coast and first occupied during the previous year. Collomb belonged to an

\(^{34}\) [The willingness that on the one hand the blacks showed to hide their sick, [and] the reluctance, on the other hand, of the local authorities, who cared little to aid the health services in their protection efforts, always created obstacles for the exact knowledge one could have of the course of the epidemic.] ANS H 37, doc. 36. Rivières du Sud, Poste de Dubréka, Rapport du 1\(^{er}\) Trimestre 1888.

\(^{35}\) ANS H37 Lettre de l’Administrateur, Lesguendieu, du Cercle de Rio-Nunez à M. le directeur de l’Intérieur, Poste de Boké, 9 Novembre 1889.
entire group of French naval physicians who served in West Africa during the last two decades of the nineteenth-century and published ethnographical articles and monographs on local populations. Their writings in this period contribute an important element in the construction of essentialized ethnic identities (the ‘Bambara’ or the ‘Malinké’). Other members forming this group include physicians such as Louis-Joseph Quintin, Jean Bayol, Louis Tautain, Dr. Bellamy, Paul Vigné d’Octon, Louis-Joseph Barot-Forlière, Paul Colin, Dr. Liotard, and Charles Maclaud. Henri Girard, discussed in the last chapter, would later contribute to this effort with a study published on West African populations after his colonial medical career and return to France to teach tropical medicine at the École de Médecine Navale in Toulon. Collomb differentiates himself from many of the other physicians in that he explicitly adopts an ethno-anthropometric framework for the analysis of population and races in the Western Sudan. Before coming to West Africa, Collomb served six years in the medical


services of French Indochina and, based on his service, published monograph in the 
mode of the géographie médicale.\textsuperscript{39}

In Bamako, whose estimated population was 5,000 inhabitants at the time, 
Collomb compared the number of Africans treated in 1884 with that of his predecessor, 
Dr. Julien Laferrière, from the previous year. His report also speaks to the difficulty to 
secure exact details of local diseases, which were said to be numerous and frequent. 
Medical treatments for Africans transpired both at the military fort as well as in the 
village of Bamako:

\begin{verbatim}
en 1883 et 1884, sur la garnison noire du fort, nous arriverions au chiffre énorme 
de 488 pour l'année 1883, et de 353 pour 1884, sur en effectif moyen de 200 
hommes. Mais ces chiffres ne doivent pas entrer en ligne de compte dans une 
éétude de la race mandingue seule, et nous nous bornerons à signaler les cas 
que nous avons eus à soigner dans le village même de Bammako. En 1884, le 
nombre de malades indigènes s'est élevé à 186, et la répartition se faisait ainsi:
\end{verbatim}

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enfants [Children]</td>
<td>13</td>
</tr>
<tr>
<td>Hommes [Men]</td>
<td>107</td>
</tr>
<tr>
<td>Femmes [Women]</td>
<td>66</td>
</tr>
<tr>
<td>Variole [Smallpox]</td>
<td>23</td>
</tr>
<tr>
<td>Bronchite [Bronchitis]</td>
<td>11</td>
</tr>
<tr>
<td>Embarras gastrique, fièvre [Upset stomach, fever]</td>
<td>22</td>
</tr>
<tr>
<td>Plaies (accidents) [Wounds from accidents]</td>
<td>33</td>
</tr>
<tr>
<td>Ulcères phagédéniques [Skin ulcerations]</td>
<td>97\textsuperscript{40}</td>
</tr>
</tbody>
</table>

\textsuperscript{39} \textit{Essai sur l'hygiène et la pathologie de l'Annam et du Tong-Kin} (Lyon: Imprimerie 
Lucien Duc et Francis Demaison, 1883).

\textsuperscript{40} [in 1883 and 1884, at the fort’s garrison for the black troops, we reached the 
enormous number of 488 for the year 1883 and of 353 for 1884, for an average force of 
200 men. But these numbers should not be considered in an accounting of the 
Manding race only, and we would merely like to point out the cases that we had treated 
even in the village of Bamako. In 1884, the number of sick natives rose to 186 and the 
distribution included the following:] Collomb, “Les races du Haut-Niger. Ethnographie-
The sick, according to Collomb, sought colonial medical treatment in the last instance and only after the failure of the marabout’s treatments. Throughout this early era, other physicians expressed similar disappointments regarding African unwillingness to receive treatment at the dispensaries. A young doctor, François-Louis Lota, who served between July 1885 and January 1887 at several posts and interpreted African unwillingness to seek out a post doctor as a sign of disbelief or fear of retribution or both: “les habitants du pays ne s’adressaient jamais à nous, soit qu’ils n’eussent pas grande confiance dans nos connaissances médicales, soit qu’ils craignissent d’irriter les forgerons, leurs médecins habituels, en se faisant soigner par un blanc.” Only on a single occasion over eighteen months were his medical services called upon, a result that produced an alarming effect of panic. Lota and his colleague were summoned to help a young woman who had been in labor since the preceding night. In entering the woman’s hut:

[N]ous la trouvâmes à genoux par terre, les cuisses écartées et maintenue dans cette position par deux matrones, tandis qu’elle soufflait de toutes ses forces dans une bouteille collée à ses lèvres; notre arrivée lui produisait un effet tel que

\[\text{\textsuperscript{41} Ibid.}\]

\[\text{\textsuperscript{42} Lota served at several posts while traveling with troop columns conducting military campaigns within the region between the Upper Senegal and Niger Rivers. Part of his service included a stay at the first frontier post of Upper Guinea, Niagassola, created in February 1885. Lota, “Deux ans entre Sénégal et Niger. Contributions à la géographie médicale du Soudan Français,” Thèse pour le doctorat en médecine, Faculté de Médecine de Paris (Paris: G. Steinheil, 1887), 56.}\]
The event is telling on a number of levels that speak in distinct, but combined ways to the logics of gender, race, generation, and the alterity of biomedicine in late nineteenth-century Western Sudan. What might have been the source of the implied woman’s shock upon seeing the white doctors enter the hut? Birthing spaces in many, if not all, West African communities are highly gendered sites and older women, usually those who have experienced menopause and received knowledge and training as midwives, assist with deliveries. A male presence is often seen as a taboo that violated this sacred rite and hence banned outright. Men, especially young adult males like the post doctor, simply do not interfere with or even come close to women’s ‘work’. When a French doctor in another West African colony, that of Dahomey, similarly witnessed a birth in this early period, “quite special and rare for a European, even if he were a doctor,” he consecrated an entire article to the event published in one of the leading French tropical medicine journals. Its details and narrative are akin to a marvelous récit de voyage of the nineteenth-century into unknown and darkest Africa. Later, during the colonial era before 1930, French medical officials were stymied in their attempts to convince African women to deliver at maternities and hospitals. Increased frequency of

43 [We found her on her knees, thighs spread and kept in this position by two midwives, all the while she was blowing with all her might into a bottle wrapped around her lips; our arrival produced an effect for her such that the delivery occurred immediately without our having to intervene otherwise.] Ibid., 56.

hospital deliveries came after concerted efforts to train African women as midwives and through innovative programs like those found in Guinea during the 1930s when colonial physicians actively worked with and supported local indigenous midwives. Hence, given the highly configured and constructed nature of local African birthing, it is highly instructive that the one incident where local inhabitants sought biomedicine in the appeal to Lota’s presence concerned perhaps the most sacrosanct, a woman in labor.

From this example, one should not overgeneralize or accept uncritically the colonial complaint for general African non-reception of colonial medicine. In his history of leprosy in twentieth-century colonial Mali, Eric Silla makes reference to several géographie médicale to argue that African reluctance to seek the colonial treatment was replicated at frontier posts between 1860s and 1880s and furthermore considers such evidence as contrasting greatly with physicians’ later, and according to Silla, presumed claims in the early twentieth-century of biomedicine’s great popularity. Silla cites several géographie médicale to support the argument for general early African disinterest in biomedicine. Actually, the majority of the dissertations do not reference local African reaction and response to colonial medicine. Further research is necessary on the question of the (non) engagement of rural Africans with colonial medicine prior to the twentieth-century. Some doctors, as the Collomb example suggests, did visit and


treat local inhabitants after local alternatives were exhausted. Another physician at Kayes, Anselme-Achille Lacarrière, likened Africans’ decision to seek cures first from “the empiricism of the marabout” before then deciding to visit a European doctor to the many peasants in the French countryside. Moreover, there existed major obstacles to offer treatment to local populations:

nous ne pouvions d’ailleurs, faute de temps et de médicaments, soigner tous les malades du village. Nous nous occuperons donc surtout des maladies rencontrées chez les troupes indigènes, les ouvriers de Saint-Louis et les manoeuvres qui avaient droit aux soins médicaux.\(^4\)

As Curtin notes for the military campaigns in the Western Sudan between 1883 and 1888, death rates among French troops were relatively quite high due to malaria, gastrointestinal infections, and typhoid fever, in order of frequency.\(^4\)

The reception of colonial medicine was probably uneven in this period. During the military campaign of 1887 in the Bundu area of the Western Sudan, colonial troops camped and established a small port at Bani, a village on the Falémé River. A naval physician, Dr. Liotard, accompanied the troops, whose goal was to secure the river trade with the Bakel fort and the comptoir at Sénoudébou. Over the four and half months of his service at Bani, Dr. Liotard treated more than forty local inhabitants of the

\(^4\) [we could not have done otherwise, given the lack of time and medicine, to cure all the sick of the village. We thus looked after especially the sicknesses found among the indigenous troupes, the workers in Saint-Louis, and the unskilled laborers who had the right to medical care.] Lacarrière, “Contribution à l’étude de la géographie médicale: souvenirs médicaux du poste de Kayes (Haut-Sénégal), 1885-1886,” 37.

village for a variety of ailments. Among the cases included two Africans with purulent conjunctivitis (ophthalmie purulente) that the troop doctor treated with silver nitrate solution and washed the victims’ eyes with an infusion made from baobab leaves. Liotard also mentions that he tried to use blood letting (phlebotomy) with leeches, but the African patients refused to follow the treatment.  

Some historians of biomedicine in Africa have likened twentieth-century colonial public health efforts in rural areas, such as vaccination, to that of military campaigns. Vaughan writes that “when it came to practice…the military type of campaign was the only model available, and in the colonial context such campaigns were liable to be read as aggressive expressions of colonial power”. The history of conquest and occupation of the Upper Senegal and Western Sudan regions may complicate the understanding both of the military model and mimicry performed by colonial health services. In 1882, the appointment of Lieutenant-Colonel Gustave Borgnis-Desbordes as military commander for the Upper Senegal Military Command sparked the period of military expansion in the Western Sudan that would endure for almost two decades. Vaccination missions accompanied the expeditionary forces of Borgnis-Desbordes and

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his command successors, like Louis Archinard who led French and African troops to capture the regional center of Kankan in Upper Guinea in January 1890.\textsuperscript{52}

During the Western Sudan campaign of 1887-88, the French achieved part of their aim to occupy all territory north of the Niger River so as to curtail and weaken the regional stretch of Samory Touré’s Mande empire.\textsuperscript{53} In the 1870s and 1880s Samory, a former itinerant dioula trader turned innovative military leader and strategist, created one of the largest regional empires in nineteenth-century West Africa.\textsuperscript{54} Samory’s wide-reaching state based in Upper Guinea developed through a complex and efficient military-political organization based on well-trained and -equipped professional soldiers or sofas. Within the Mande region, his rule also propagated Islam, sometimes through forced conversion, and inaugurated an era of expanded commerce and trade within and outside the zone. The geopolitical projects of the French and Samory first collided in 1882 when the respective armies clashed at the town of Keniéra, located on the right bank of the Niger to the southeast of Siguiri. By 1887, the Samorian empire was suffering several crises: from within due to local popular revolts against the state’s heavy exaction of resources and from without by gains of the encroaching French

\textsuperscript{52} Georges Treille, Organisation sanitaire des colonies. Progrès réalisés--progrès à faire. Exposition coloniale de Marseille 1906 (Marseille: Barlatier, 1906), 122.

\textsuperscript{53} Kanya-Forstner, The Conquest of the Western Sudan: A Study in French Military Imperialism, 142-156.

military and defeats suffered in an attempt to conquer further African kingdoms. In the 1890s, the French military campaigns pushed Samory and his state increasingly southward out of the Upper Guinea region into the forest zone of northern Côte d’Ivoire and southeastern Guinea where he was finally captured in 1898. Over this period, French troop physicians accompanied the annual colonne campaigns and published several medical histories of different phases of the conquest.⁵⁵

To achieve the goal of occupying all territory north of the Niger River, the 1887-88 campaign established a military garrison at Siguiri, then a small village along the Niger River in Upper Guinea. Dr. Laffont, who accompanied the troops and served as the post doctor at Siguiri, mentions prior unsuccessful attempts with the vaccine as well as the imagined future compensation for continued efforts to introduce vaccination in the Western Sudan:

> On a tenté plusieurs fois de propager la vaccine au Soudan français, mais, soit mauvaise volonté des indigènes, soit pour autre raison, ces essais sont restés infructueux. Dans un pays où la variole peut être considérée comme endémique il est pourtant indispensable de vacciner les enfants qui serviront un jour dans nos régiments indigènes, ou seront employés dans nos administrations; et on ne peut pas laisser subsister à proximité de nos établissements un facteur de mortalité aussi important, alors qu’il suffit d’une simple piqûre pour s’en préserver.⁵⁶

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⁵⁶ We tried several times to spread the vaccine in the French Soudan, but, whether it were the ill will of the natives, or for another reason, these trials remained unsuccessful. In a country where smallpox can be considered endemic it is even more indispensable to vaccinate the children who will one day serve in our native regiments or be employed
With the new campaign, vaccination along the frontier changed as well. In the published medical report of the campaign, Laffont records some of the earliest vaccination in the region. Between October 1887 and Mai 1888, his colleagues at the Kayes, Bakel and Médine posts vaccinated 1,058 inhabitants. While Laffont does not specify the identity of those vaccinated, they most likely included a high number of children.

**Table 6.**

**Vaccination Results in the Western Sudan, 1 November 1887 to 1 May 1888**

<table>
<thead>
<tr>
<th>Postes</th>
<th>Nombre de Vaccinations Pratiquées</th>
<th>Avec Succès</th>
<th>Sans Succès</th>
<th>Résultat Inconnu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kayes</td>
<td>836</td>
<td>494</td>
<td>224</td>
<td>118</td>
</tr>
<tr>
<td>Bakel</td>
<td>133</td>
<td>93</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>Médine</td>
<td>89</td>
<td>55</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Totaux</td>
<td>1058</td>
<td>640</td>
<td>262</td>
<td>156</td>
</tr>
</tbody>
</table>


The degree of success of these trials (Kayes: 69%; Bakel: 81%; Médine: 77%) was quite encouraging for the frontier physicians, given past experience with use of inactive vaccines. Laffont does not mention the source of the lymph. Might the vaccine have in our administrations; and one cannot allow to remain in the proximity of our establishments such an important factor of mortality, when a simple injection suffices to protect oneself from it.] Laffont, “Rapport médical de la campagne 1887-1888,” 438.
been furnished from Girard’s successful efforts to produce a local vaccine in Saint-Louis during the same period? The operative logistical chains to vaccinate in the interior were still embryonic however as Laffont remarks that further arm-to-arm vaccination at other regional posts did not occur during the trial due to a lack of glass tubes to transport the vaccine, despite two requests to his service superiors for additional provision.\(^{57}\) Moreover, of interest, is the fact that Laffont and his colleagues did not attempt to recruit young children as vaccinifers and transport the infants to other posts to continue arm-to-arm vaccination. Such an option was employed later in the 1890s for several vaccination missions conducted in the Western Sudan. One possible answer might be that tenuous French-African relations in the region at the time prevented any such initiative as the colonial troops were still carrying out military campaigns. Overall, though, this successful early vaccination trial altered the past course of attempts during the 1880s for the potential diffusion of the vaccine as the next decade would see the one of the first major vaccination campaigns in the interior of French West Africa.

The Birth of the Vaccination Campaign

The decade of the 1890s saw the rise of the vaccination campaign in Senegal and parts of the Western Sudan. With these campaigns, termed ‘missions’ at the time, vaccination expanded into the interior of West Africa to an unprecedented degree.

\(^{57}\) *Ibid.*
Contemporary colonial medical officials who chronicled the development identified the founding moment of its possibility to Girard’s successful experiments with the vaccine in Saint-Louis at the time of the 1887-1888 epidemic. However, one physician noted that, once the epidemic disappeared, the endeavor to develop further a local vaccine was abandoned and vaccination ceased outside of urban centers. In fact, there is little historical evidence that colonial physicians carried out any further major vaccination effort for a four-year period after the 1887-88 outbreak.

In late 1892, the status quo with the vaccine is punctuated and a remarkable shift occurs. The following and final section of this chapter presents evidence and analysis for a fundamental transformation in manner in which colonial governmentality and biopower intersected with smallpox control. Starting on 24 December and spanning more than three weeks, a vaccine mission took place in the Bambuk region carried out by the naval physician, Jean-Marie Collomb. The mission became unique in light of two facets. First, the Bambuk region was free of smallpox at the time, and thus the operation departed from the norm where vaccination only occurred as response to an outbreak. Completely new for the time, Collomb’s mission represented an early, if not the first, use of vaccination as a preventative measure in the West African interior under the burgeoning French colonial domain. Moreover, the Bambuk experience set an important precedent as well in that Collomb created an effective and influential model for proactive smallpox control. In the aftermath of Collomb’s mission, other preventative

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campaigns followed during the last decade of the century, and, their practices and experiences combined, all contributed to form a standardized model for later twentieth-century colonial vaccination. Lastly, and equally as important, smallpox prevention was not the sole purpose of the Collomb’s exercise. Vaccination in Bambuk was only one element in a broader project, whose goal included the need to carry out topographical studies as well as political reporting within the region. As examined in earlier chapters, the combination of these three elements—topography, politics, and vaccination as medicine—were the fundamental building blocks to put into operation the rudiments of colonial biopower and specific forms of political rationalities. The Collomb mission centrally intersected with this historical and epistemiological algebra and significantly added new formulas of its own.

Immediately prior to Collomb’s campaign in Bambuk, there had been an aborted attempt to restart vaccination in the Senegalese interior. In October 1892, a new outbreak of smallpox occurred at a post on the Senegal River, in Podor and medical officials in Saint-Louis sent Dr. Lorieux to vaccinate at the post, presumably with imported lymph. The account of Lorieux’s mission provides little in the way of exact details, yet it was reported that a large number of inhabitants underwent the procedure with mostly successful results, but the operation came to a halt due to the annual flooding of the area tied to the seasonal heavy rains of the time. Although Lorieux returned at the beginning of December, he could not extend the campaign.  

Rigollet does not elaborate the reasons for the mission’s subsequent halt in December. *Ibid.*, 37.
Importantly, though, the Lorieux mission, like Girard’s earlier and unsuccessful campaign to inoculate Trazas commercial traders in Dagana as noted in the last chapter, would establish a characteristic trend for vaccination throughout the twentieth-century in both the colonial and postcolonial periods. Once a smallpox epidemic was reported, the medical service responded with specially targeted campaigns of massive vaccination in the attempt to attenuate and eventually halt the spread of the disease. Girard’s attempt failed due to local unwillingness to undergo the procedure since the Moors, according to the doctor, identified the vaccine as the cause of smallpox.60 Additional research may provide further information on the nature of this local assertion, specifically in terms of whether there had ever been prior vaccination in Dagana. As will be discussed in the section on variolation, some Africans may have tended to interpret vaccination as akin to forms of variolation, and, from past experience, knew that the practice of variolation could have the unintended effect of continuing and spreading smallpox outbreaks, including causing the deaths of some individuals. In contrast, the inhabitants to Podor, which was situated just to the west upriver from Dagana, allowed the procedure. Again, the reasons for such a response may have been multiple and might have been framed around the fact that there had been previous, albeit unsuccessful, attempts to introduce the vaccine during local epidemics by post physicians, as in the example of Carrade described above.

Shortly after Lorieux carried out a campaign at Podor in the fall of 1892, Collomb started vaccination in Bambuk. The region in itself was relatively known and quite

60 Girard, "Variole et vaccine au Sénégal," 278.
economically important at the time. Bounded geographically in the area between the Falémé River to the west and the Senegal River to the east, Bambuk possessed a large renown, since the territory had attracted European interest as well as a bevy of travelers dating back for more than a century due to its rich gold deposits.\(^6\) Bambuk, like the neighboring region of Bouré (located to the southeast near the city of Siguiri in present-day Guinea) have long histories of indigenous and, later in the colonial and postcolonial eras, commercial mining for gold ore, which is some of the richest sources in all of West Africa. Travel accounts to Bambuk were many before the era of colonial conquest.\(^6\)

When colonial troops entered the region in the mid-1880s, part of their military goal was to establish French influence against the expansionist empire of Samory Touré by negotiating alliance and protectorate treaties with local confederations. Additionally, a

\(^6\) There is no single Maninka name for the region as a whole; rather, inhabitants refer to three sub-regions (Bambuhu, Konkadugu, and Gangarã). Since the seventeenth-century, the French used the term ‘Bambuk’ to refer to the region. On the question of terminology, see Curtin, “The Lure of Bambuk Gold,” *Journal of African History* 14, no. 4 (1973): 623.

military campaign of 1886-87 aimed to pacify the neighboring Bundu region. In Bundu, a Soninke Muslim cleric, Mamadu Lamine Drame, started a reformist jihad movement in 1885 to preach against the growing French control in the Upper Senegal River valley as well as Fulbe domination in Bundu. By early 1886, the purification message changed to armed revolt against local African enemies, resulting in complete control of the region and a serious threat of attack on the French fort at Bakel by Mamadu Lamine’s forces. To engage his forces, the French military troops cooperated with the small armies of local potentates, who had been displaced with the rise of jihadist movement. Mamadu Lamine was eventually driven out of Bundu toward the Upper Gambian region and in 1887 was captured and killed by his African enemies.63

In terms of the art of colonial governmentality and the mastery of territory, little precise knowledge of the region existed prior to Collomb’s mission. “At the start of the [1886-87] campaign”, writes the Commandant-Supérieur of the era’s military campaigns, Lieutenant-Colonel Joseph-Simon Gallieni, “one knew almost nothing about Bambuk, apart from the rivers in the Lower Falémé [area]…and the mining establishment of Kéniéba. This vast country, quite adjacent to our possessions of Khasso, Natiaga, and Bafoulabé, remained ignored.”64 Gallieni’s 1886-87 military


campaign, whose operations transpired during the eight to nine months of the dry season before being interrupted by the rains, involved little or no combat. All of the nine, fairly autonomous Maninka confederations of Bambuk had negotiated protectorate treaties with the French. In the campaign, several expeditionary columns of troops traversed the region, “dans tous les sens,” to complete topographical surveys, gather intelligence on political authorities and their degree of effective rule, and collect demographic and commercial data.\(^6\) As a result, the new information would enable the colonial military to create a territorial map “à peu près complète” and furnish an overall description of the region, including the total number of villages for each confederation, approximate population (18,000), and average population density (two inhabitants/km\(^2\)). Since the reconnaissance trips tended to travel along the main trading routes in the region, many villages were missed and the population numbers were approximate at best, as inhabitants of the smaller villages do not figure into the aggregate total.\(^6\)

It would be at this point in time that the Collomb mission in Bambuk would forge and operate on another plane of colonial governmentality in French West Africa. Oddly, in the mission’s official report, Collomb supplies no explicit information regarding the reasons for its launch.\(^6\) While he acknowledges the support that the mission received from the commandant de cercle in Kayes and Bafoulabé, the naval physician does not

\(^6\) \textit{Ibid.}, 299.

\(^6\) \textit{Ibid.}, 300.

\(^6\) ANS 1H37, Soudan Français, Service de Santé, Mission de vaccine, Dr. Collomb, Médecin de 1ere classe.
address the context of the mission or the administrative and medical rationales for its conception and authorization.\textsuperscript{68}

As one of the earliest recorded vaccination missions in the Western Sudan interior and possibly even for West Africa as a whole, the report reads much like an updated, yet abbreviated \textit{géographie médicale}. Its format is organized around two sections derived from observations of and most likely conversations with local villagers. The first section discusses agriculture in Bambuk. While the region’s principal crops consisted of fonio, cotton, indigo, millet, and some rice, overall local populations cultivated little, according to the author, due in part to poor soil fertility in some areas.\textsuperscript{69} A major competing element that detracted inhabitants from local crop production was the great attraction of the gold mines. For Collomb, the ‘natives’ would abandon the growing of millet, even to run the risk of famine, in order to search for gold.\textsuperscript{70} And, in the

\textsuperscript{68} Initial archival research at the colonial archives in Dakar and Aix-en-Provence also did not furnish information to contextualize further Collomb’s mission.

\textsuperscript{69} Since the Bambuk region lacked flood plains and its predominant laterite soil did not allow for much agriculture outside of the rainy season. Curtin, “The Lure of Bambuk Gold,” 632.

\textsuperscript{70} Indigenous gold mining in the Western Sudan, found mostly in present-day Mali and Guinea, is a seasonal activity that generally takes place three to four months preceding the first rains. For Bambuk, Collomb describes season as lasting between January and May, while in the Bouré region of Guinea, colonial observers refer to between April and July. Large groups of population, including entire families (men, women, and children), would temporally immigrate to mining areas and rent specified plots of land to dig vertical shafts (up to 10-12 meters in depth). Men tended to perform the digging, while women hauled up the soil to be washed for ore deposits. In late nineteenth-century Bouré, slaves often mined for their masters, and, when liberated during the first two decades of the twentieth-century, former captives used mining to gain large measures of new economic freedom.
eyes of the colonial doctor, that quest did not bring much in return. Mining yields were relatively small, and miners were described as exploited by itinerant commercial traders or *dioula*. When the mines operated (from January to May) *dioulas* imported large quantities of grains, especially rice and millet. Once the mining families had exhausted their own food supplies, the *dioula* would then barter at inflated price the now scarce grain against recovered gold and turn a large profit.⁷¹

The report's second part describes common local diseases. Respiratory (e.g., pneumonia) and intestinal ailments (e.g. dysentery) were the most frequent. Smallpox was reported to be endemic in the region and could appear in a quite lethal form to devastating effect. “Three years ago,” notes Collomb presumably from information based on local accounts, “a violent epidemic broke out in the Bambougou and took away all the young children. That is why at Faraba and Manifara, we never met any

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Accidents, such as cave-ins, were frequent, causing injury and even death. Africans attributed accidents and deaths to the malefic spirits (sometimes referred to as *djinns*) residing in the earth and who were proprietors of the ore. To diminish or nullify the powers of the *djinns*, Maninka miners developed complex sacrificial economies that included the wearing of protective amulets and gris-gris as well as practicing specifically timed ritual offerings of kola nuts, chickens and goats. In Muslim mining areas of Upper Guinea, like Didi, marabouts recited special prayers before and during the mining season to pacify the *djinns*. See Henri Coussieu, “L’or en Haute-Guinée Française,” *Bulletin de la Société de l’Industrie Minérale* 57 (1911): 509-58; Georges Balandier, *Ambiguous Africa: Cultures in Collison*, translated by Helen Weaver (New York: Pantheon, 1966), 65-75.

Lastly, the twentieth-century saw some European commercialization of mining in Bambuk and Bouré and, due to large population flows with the mining season, colonial authorities of French Guinea established an early, but short-lived medical post in Bouré. ANS 2G8.14. Inspection des services sanitaires civils, Rapport annuel 1908.

⁷¹ ANS 1H37, Soudan Français, Service de Santé, Mission de vaccine, Dr. Collomb, Médecin de 1ere classe.
child under five years old.” Other diseases provided numerous cases as well and included eye afflictions, especially cataracts among the elderly, skin wounds, filariasis (elephantiasis), Guinea worm, and phagedaenic or gangrenous ulcers. Lastly, skin infections such as scabies, pronounced eczema, and herpes appeared often. Much of this knowledge of local pathologies had already been reported in the earlier medical geographies for the areas around the French posts in the Upper Senegal Valley. Apart from vaccination, Collomb does not mention if and to what extent he treated villagers at the numerous stops on the mission’s itinerary.

Unlike almost all of the géographies médicales, however, Collomb’s report importantly discusses local indigenous therapeutics, albeit superficially, and marks another precedent for official medical reporting. For bodily aches, swelling of the limbs, and rheumatism, the Maninka treated with slight incisions of an iron-hot knife or sometimes the use of cupping at the point of soreness. To care for skin wounds, topical applications of macerated leaves or shea butter (tulu se in Maninkakan or beurre de karité in French) were applied. Finally, Maninka villagers employed the bark of different trees to produce herbal teas (tisanes) for internal diseases. While Collomb does not elaborate further on Maninka therapy, and even considers their ‘arsenal’

\[ \text{Ibid.} \]

\[ \text{Out of nineteen medical geography theses consulted, only one makes reference to indigenous treatments and significantly with some length and detail in its descriptions of herbal plants. See Antoine Auguste Victor Durand, Le fort de Bafoulabé (Haut-Sénégal, 1884-1886). Étude d’hygiène (Bordeaux: Imprimerie V\text{\textdegree}e Cadoret, 1887), 53-55.} \]

\[ \text{According to the New Shorter Oxford English Dictionary, the word shea is etymologically derived from the Mande cognate, se.} \]
limited, the fact of its inclusion into the report is quite important in its own regard. The admittedly brief acknowledgement of local herbal medical plants presages the subsequent growth of colonial botanical studies and interest in indigenous herbal medicine. Another colonial physician, when describing African forms of healing and therapy, compared Africans to French peasants in Brittany:

La thérapeutique du nègre ressemble à tous les points de vue aux pratiques des rebouteurs et des matrones de nos campagnes bretonnes. Il n’est pas en quelque sorte de plante qui n’ait une vertu particulière; le même médicament sert aux usages les plus divers.\(^7\)

These examples of French medical interest in African indigenous medicine presaged the development that commenced in the last years of the nineteenth-century and continued throughout the colonial era in French West Africa.\(^6\)

\(^7\) [The therapy of the negro is similar in all points of view to the practices of the bonesetters and the midwives of our Breton countryside. There is not some sort of plant that does not a particular virtue; the same medicine serves for the most diverse uses.] Durand, *Le fort de Bafoulabé (Haut-Sénégal, 1884-1886). Étude d’hygiène*, 53.

\(^6\) Throughout the colonial era in French West Africa, as biomedical science and public health programs developed, so too, did an active interest in the study and potential use of indigenous plant medicine. This phenomenon was complex and probably includes both an impulse to ‘westernize’ local herbal therapies as well as to acknowledge the multifold repertoires of indigenous healing. For the former, one would need to address the ways in which colonial representatives (administrators cum amateur botanists, professional botanists, and physicians themselves) identified and classified scientifically a large corpus of plants according to botanical genus and species. In terms of the latter, it would be prudent to examine how such recording also recognized simultaneously local terminologies and uses.

A related trend in this same period concerned the anthropological valuation of indigenous medicine and local animist religious beliefs in French West Africa. The best example is represented by the former administrator and ethnographical researcher, Maurice Delafosse (1870-1926). A former student of medicine himself, Delafosse began his career as colonial administrator in 1894 first in Côte d’Ivoire and then as vice-consul in the Republic of Liberia. He would later be appointed for a brief stint in Upper
Perhaps Maninka therapy appeared limited to Collomb given that he also provides one of the earliest accounts for local notions of Maninka disease causation, one which ran counter to late nineteenth-century biomedical etiology--

D’ailleurs pour les Malinkés du Bambouck, toutes les maladies sont produites par un sort qui leur est jeté: le corté, et leur préoccupation la plus grande consiste à prendre des précautions contre ce prétendu sortilège, et, au cas où ils tombent malades, à absorber des drogues destinées, non à combattre la maladie, mais surtout à détruire l’influence pernicieuse du corté.  

Collomb's brief invocation and definition of corté as a spell or curse cast upon its victim was not a completely alien concept to French colonial doctors in the late nineteenth-century. Witchcraft and sorcery have had long histories in France and, far from disappearing, were still practiced in the French countryside at the end of nineteenth-century. Senegal-Niger (later to become Soudan Français) and returned to Côte d’Ivoire as commandant du cercle. At the end of his administrative career in 1908, Delafosse returned to France and played an enormous role in the development of Africanist studies there, first as teacher of African history and languages at the École Coloniale and subsequently as Professor of Oriental Languages at the Institut d’Ethnologie (Université de Paris), which he co-founded in 1925. For Delafosse’s positive evaluation of indigenous medicine among the Senufo peoples of Côte d’Ivoire, see Robert Launay, “A Question of Character: Delafosse Among the Senufo,” in Maurice Delafosse. Entre orientalisme et ethnographie: l’intinéraire d’un africaniste (1870-1926), Jean-Loup Amselle and Emmanuelle Sibeud, eds. (Paris: Maisonneuve and Larose, 1998), 44-45. Biographical details are from other chapters in this collection as well as Alice Conklin, A Mission to Civilize: The Republican Ideas of Empire in France and West Africa, 1895-1930 (Stanford: Stanford University Press, 1997), 177-178; 196-197.

[Otherwise for the Malinké of Bambuk, all diseases are produced by a curse cast on them: the corté, and their greatest worry consists in taking precautions against this alleged spell, and, in the event they fall sick, in taking drugs intended, not to fight against the disease, but above all to destroy the pernicious influence of the corté.] ANS 1H37, Soudan Français, Service de Santé, Mission de vaccine, Dr. Collobm, Médecin de 1ere classe. Maninka-speakers most commonly express the term for evil spell or curse as körötè, along with its accompanying verb, ka bon körötè (to throw or cast a spell).
century and throughout the twentieth-century. Although the author does not offer further comment in the report on the belief in corté, in several of his published ethnographical studies on the Mande populations, Collomb repeats reference to sorcerers (which he terms Nama), especially their role during circumcision ceremonies.

The fact of Collomb’s presence in Bambuk to vaccinate may have in part effected a transformation in the use of corté, the potent and potentially malevolent magical weapon Africans employed among themselves to inflict harm and injury. Before Collomb’s visit, it is not known whether Bambuk sorcerers had ever previously directed magic spells against Europeans. During the mission, however, Bambuk cultural borders for the casting of spells changed in one significant sense. A form of cultural exchange occurred in that corté was now directed at Collomb. Yet Collomb and some Bambuk parents and their children mutually responded with another form of cultural exchange:

La crainte du Corté a aussi été quelques fois exploiter contre nous, mais toutes les mauvaises volontés, toutes les craintes superstitieuses disparaissaient rapidement devant l’appui d’un petit cadeau. En effet, un des facteurs les plus puissants, celui auquel nous devons le plus grand nombre de nos vaccinations est la distribution que nous faisons à chaque enfant vacciné de perles, de médailles, de petits jouets, glaces, aiguilles, sifflets, grelots, pantins en carton, que nous avons apportés avec nous. Nous donnions ces divers objets aux enfants arrivés les premiers et il n’était pas sans de voir alors les parents amener de force leurs enfants et n’être pas les derniers à demander et à recevoir un petit cadeau.79


79 [The fear of corté has also been sometimes used against us, but all the ill will, all the superstitious fears disappeared rapidly in face of the support of a small gift. Yes, one of the most powerful factors, to which we owe the greatest number of vaccinations, is the distribution that we made to each vaccinated child of pearls, medals, small toys, mirrors, needles, whistles, little bells, cardboard jumping jacks, which we brought with us. We gave these diverse objects to children who arrived the first and it was not without seeing
Gift exchange between French officials and Africans during the early colonial era in French West Africa has not received historical attention, despite the abundance of its activity in military reports of the time. In fact, even when faced with the threat of a potential curse to be cast against Collomb, it was gift exchange, according to the physician, that explicitly allowed for the overall success of the vaccination mission.

It would in some ways be sufficient to limit the analysis of Collomb’s vaccination in Bambuk as that of the already present, but now expanding social and cultural exchanges between Europeans and Africans in late nineteenth-century French West Africa. For example, to accomplish the mission Collomb greatly relied on the aid of local village chiefs. Most chiefs welcomed the doctor and some (in Dialafara, Yaléra, Kassama, and Koundian) were singled out as demonstrating particular zealousness in their desire to help. Yet, vaccination also revealed further levels as well as questions of chiefly political legitimacy and authority:

[L]a plupart des chefs de village ne jouissent pas dans leurs villages d’une autorité bien forte et sont peu écoutés; aussi, malgré leur bonne volonté, n’arrivent-ils pas à faire réunir les enfants pour les séances de vaccination.

then the parents bringing their children by force and not to be the last to ask for and receive a small gift.] ANS 1H37, Soudan Français, Service de Santé, Mission de vaccine.

80 Throughout the colonial era, but particularly during the first years of French control, gift giving often transpired between local colonial district officers and African village or regional authorities. Gifts included food stuffs, cattle, cloth, and cheap knickknacks (pacotille).

81 [Most of village chiefs do not have in their villages a very strong authority and are little obeyed; also, despite their goodwill, they were not able to summon the children for the vaccination sessions.] ANS 1H37, Soudan Français, Service de Santé, Mission de vaccine.
Some village chiefs were said to have opposed the mission with inertia, either by simply declaring that parents and children decided not to appear for vaccination or by stating that everyone (‘toute le monde’) had left the village to work in the gold mines, which Collomb maintained was a lie. Lastly, there existed a group of chiefs, particularly at Sekoto and Guibouyo, who were overtly hostile and “adopted a system of wickedness and contrition” toward the mission, and “as a result reduced in a sensible way the number of our operations”. At Guibouyo, an open form of revolt occurred when its chief “was aided and counseled in his act of resistance” by Demba Awa, a trader from Bakel and who had resided in the village over the last year. From a previous experience with his own son, the trader warned the village elders of potential future dangers accompanying scarification with the lancet. Collomb writes:

Dans la réunion des notables qui se tenaient sur la place près de mon campement, Demba Awa a déclaré qu’il ne fallait pas envoyer les enfants à la vaccine, que lui qui était à Bakel n’enverrait pas son fils parce que le Commandant de Bakel lui avait dit que c’était une marque que nous faisions aux enfants pour les reconnaître plus tard et en faire des tirailleurs, etc. Enfin, pour pouvoir pratiquer une vingtaine de vaccinations, nous avons dû faire [lui] saisir et l’enfermer dans une case. Après la séance de vaccination, nous l’avons interrogé puis relâché. Il nous a fait des excuses et a déclaré qu’il s’était trompé, qu’il n’avait pas compris ce que nous voulions faire, etc., promettant de ne pas recommencer. Il est vrai que nous l’avions menacé de le faire conduire dans escorte à Bafoulabé au cas où nous apprendrions de nouveau quelque chose contre lui.82

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82 [In the meeting of elders that took place in the area near my camp, Demba Awa declared that one must not send the children for the vaccine, that, while at Bakel, when he would not send his son because the District Officer of Bakel told him that it was mark that we made on the children to recognize them later and to make them tirailleurs, etc. Finally, in order to be able to practice twenty vaccinations, we had to seize and lock him up in a hut. After the vaccination session, we interrogated, then released him. He apologized to us and declared that he had been mistaken, that he had not understood]
The above example suggests that local forms of resistance to early colonial vaccination did exist in the Western Sudan and were based on the idea that scarification would mark African children for future military service.\footnote{Colonial physicians in nineteenth-century Algeria would also report some of the same reactions among certain populations. Paulin Trolard, “Vaccination antivariolique en pays indigène (Algérie),” in Raphaël Blanchard, ed., 
Compte-rendu de la section de médecine et d’hygiène coloniales, Congrès colonial français, 29 mai-5 juin 1904 (Paris: F. R. de Rudeval, 1904), 110-121.} Revolt and resistance, as Collomb states, more often took passive forms such as non-compliance by chiefs and local inhabitants to the call to present children for vaccination. In addition, it was probably the case that families were simply not present in the village and had left to work in the mines. Lastly, further historical analysis will need to look at the roots of the confrontation, as in the example of Demba, as well as its effects on later military recruitment in the region.

Yet, other actions also occurred during the visit and need to be considered in their own right as well as in their generative effects. What made the mission just as significant at this time was the fact and manner in which vaccination occurred in the first place. As noted above, the operation proceeded in an area where there was no present outbreak of smallpox and where no previous vaccination had ever been attempted. Hence, for the historical analysis of the relationship between colonialism and medicine, it represents an important opportunity to examine the way in which literal ‘first encounters’ unfolded over a determinate space at a particular moment in time. The
mission also provides a window to see how the actions of both Europeans and Africans became inscribed within a matrix whose results would be more than the aggregate of those actions.

Over the course of almost one month, from December 24, 1892 to January 18, 1893, Collomb visited some thirty-one villages in the Bambuk region. For each visit, several variables of precise information were recorded: date of vaccination, name of the village, approximate population, and total number of children vaccinated. Also measured was the exact distance between each village with notations on significant key topographical details. Significantly, Collomb also made an effort to document the nature of the welcome extended by village inhabitants, especially the disposition of local chiefs and rulers. The final report included the collected data in its annex, and is summarized in the table below.

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84 More than a decade later, another physician, Théodore Verdier, attached to a mission in the Bambuk to develop plans to complete the Kayes-Thiès railroad, remarked that, following Collomb’s tour, no further vaccination had occurred in the area. Local inhabitants still remembered Collomb. Verdier, “Extraits du Rapport médical de la Mission d’études du Chemin de fer de Thiès au Soudan,” *Bulletin de la Société de Géographie de l’AOF* 2 (30 juin 1907): 137.
Table 7. Vaccinations in Bambuk Region, December 1892-January 1893

<table>
<thead>
<tr>
<th>Date</th>
<th>Village</th>
<th>Pop.</th>
<th># Vacc.</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-24-1892</td>
<td>Tinké</td>
<td>300</td>
<td>78</td>
<td>benevolent welcome, chief well-disposed</td>
</tr>
<tr>
<td>12-25-1892</td>
<td>Sekokoto</td>
<td>200</td>
<td>8</td>
<td>hostile chief, refused to assemble the children</td>
</tr>
<tr>
<td>12-27-1892</td>
<td>Galadion</td>
<td>200</td>
<td>38</td>
<td>chief well-disposed</td>
</tr>
<tr>
<td></td>
<td>Dialafara</td>
<td>220</td>
<td>98</td>
<td>village comprises 2 hamlets w/ sep. chiefs; very cordial welcome, chiefs well-disposed</td>
</tr>
<tr>
<td></td>
<td>Sahindy</td>
<td>500</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bourdala</td>
<td>300</td>
<td>56</td>
<td>mines 1 km. from village</td>
</tr>
<tr>
<td></td>
<td>Baibou</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-1-1893</td>
<td>Yérala</td>
<td>50</td>
<td>21</td>
<td>chief absent</td>
</tr>
<tr>
<td>1-2-1893</td>
<td>Guenobanta</td>
<td>70</td>
<td>27</td>
<td>village is falling in ruin</td>
</tr>
<tr>
<td></td>
<td>Kégneti</td>
<td>79</td>
<td>26</td>
<td>new village w/large central place, large and wide streets; chief is former tirailleur, very disposed</td>
</tr>
<tr>
<td></td>
<td>Guibouya</td>
<td>300</td>
<td>20</td>
<td>chief hostile; ill-disposed</td>
</tr>
<tr>
<td>1-3-1893</td>
<td>Bourama</td>
<td>80</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yaléra</td>
<td>250</td>
<td>72</td>
<td>chief very welcoming</td>
</tr>
<tr>
<td>1-4-1893</td>
<td>Fara Counda</td>
<td>30</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>1-5-1893</td>
<td>Konfara</td>
<td>100</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kassama</td>
<td>300</td>
<td>78</td>
<td>capital of Diébedougou, king Famalé well-disposed; population easy, well-received</td>
</tr>
<tr>
<td></td>
<td>Dialakégong</td>
<td>60</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dambala</td>
<td>50</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>1-8-1893</td>
<td>Gondouma</td>
<td>60</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Faraba</td>
<td>60</td>
<td>28</td>
<td>few young children in village, died 3 years prior from smallpox epidemic; new home of king Gara</td>
</tr>
<tr>
<td>1-9-1893</td>
<td>Manifara</td>
<td>70</td>
<td>37</td>
<td>famine threatens in Bambougou province due to locusts having eaten all crops</td>
</tr>
<tr>
<td>1-10-1893</td>
<td>Keransita</td>
<td>40-50</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fail? [illegible]</td>
<td>100</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Koundian</td>
<td>500</td>
<td>223</td>
<td>well-received by Gara, king of Bambougou; 66 revaccinations</td>
</tr>
<tr>
<td>1-14-1893</td>
<td>Sekoto</td>
<td>50</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Médian</td>
<td>60</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>1-15-1893</td>
<td>Nantella</td>
<td>100-120</td>
<td>27</td>
<td>chief absent</td>
</tr>
<tr>
<td>1-16-1893</td>
<td>Dialacoto</td>
<td>70-80</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nghi</td>
<td>19</td>
<td></td>
<td>indifferent welcome</td>
</tr>
<tr>
<td>1-17-1893</td>
<td>Fataly</td>
<td>200</td>
<td>52</td>
<td>capital of Gangaran province; chief died a few weeks ago; well-received by his brother</td>
</tr>
<tr>
<td>1-18-1893</td>
<td>Daraou</td>
<td>33</td>
<td></td>
<td>well-received</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>1258</td>
<td></td>
</tr>
</tbody>
</table>

Source: ANS 1H37, Soudan Français, Service de Santé, Mission de vaccine, Dr. Collomb, Médecin de 1ère classe [Mopti, 24 Avril 1893, Signé: Dr. Collomb].
Conclusion

Of some remark here is the fact that, unlike Girard and Laffont, Collomb does not provide any actual results, whether positive or negative, of the vaccinations carried out over Bambuk. How then is one to assess the accomplishments of mission? In lieu of straightforward technoscientific results per se, it is arguable that the Collomb mission was more interested in identifying and recruiting allies to its cause, which included on a literal level the diffusion of the vaccine, collection of topographical information, and assessments of local political authority. Local Africans, it might be argued, just as equally not interested in technoscientific results since they were more preoccupied with recruitment for their own causes: locating and forging exchange relations with the new powerful outsiders who had just secured greater territorial control over the region. In several instances, some Africans did not wish to interact at all, at least under the conditions for which they could already perceive the results (i.e., military recruitment). Still others wished to close completely existing social and cultural borders to the outsiders through threats of magical harm.

Yet on another level, perhaps just as literal, a different phenomenon was occurring with the Collomb vaccination mission as well as other post vaccination (e.g., Laffont) in the interior at this time. First, a new and additional center of calculation for vaccination science was emerging in a remarkable shift from the past. Four years prior, during the 1887-88 epidemic, one center had been geographically and epistemologically created in Saint-Louis into which flooded statistics, charts, maps,
politics, agents, and objects. Now, such a center of calculation appeared within the borders and frontiers of French West Africa, in places such as Bambuk. The networks and links between knowledge, practice, and actors that helped move the center of calculation to the frontier was indeed young attested by the fact naval physicians did not even know if vaccination worked.

For a center of calculation for controlling smallpox to become stronger and more solid, it would need further webs of relations to link many more actors, allies, and objects. Eventually in the twentieth-century, a large number of these actors would be West Africans, who notably had their own practices to control and stop the spread of smallpox. The next chapter will consider in more detail forms of smallpox control and therapy employed by Africans that existed immediately before the introduction of vaccination campaigns in late nineteenth-century French West Africa.
Chapter Five

Mosaics of Disjuncture:
Smallpox Therapeutics in Precolonial and Colonial Senegal and Guinea

Introduction

Earlier chapters of the dissertation address the nature and degree of early French colonial vaccination in West Africa, both for urban and frontier environments of the late nineteenth-century. At several moments, the historical analysis had examined African responses or reactions to vaccination measures, particularly during colonial initiatives to stem or stop the spread of epidemics. However, French colonial vaccination did not simply enter or occupy an empty therapeutic terrain. To the contrary, this preeminent mode of Western medicine intersected with a heterodox field of smallpox prevention and healing comprised of multiple meanings and practices. The present chapter shifts the register of analysis to describe the preexisting forms of indigenous smallpox prophylaxis in West Africa.

Prior to the introduction of colonial vaccination, West African communities utilized several different measures at the onset of an epidemic to prevent the spread of smallpox. Historical sources most frequently describe two general strategies mutually coexisting within and over the region: isolation and variolation. Isolation consisted of the immediate removal of afflicted victims to a designated and isolated area outside of
the village. Persons who previously had contracted the illness provided care and
treatment, thus sparing non-afflicted villagers of the readily contagious disease.

A second strategy, variolation, was also employed at the first outbreak of an
epidemic.\textsuperscript{1} In a separate section below, this chapter will discuss the global history of
variolation, including its introduction and use in eighteenth-century Europe before the
discovery of the cowpox vaccine. For West Africa, the practice of variolation involved
several different techniques across the region, yet, most typically, the procedure
involved previously inoculated individuals—often, older men or women, marabouts, or
blacksmiths—who would burst the pustules of an infected person and collect the live
viral pus material. Then, by breaking the skin (e.g., on the back of the hand, upper
forearm or forehead) with a sharp or burning object, the specialists would transfer the
virus to non-inoculated members of the community. These individuals tended to be
younger adults and children who had not experienced a previous epidemic.\textsuperscript{2} The
procedure produced a benign case of smallpox in the form of small lesions or pustules
around the inoculated area, which the body then fought off to secure a lifelong immunity
against smallpox.

Variolation was advantageous in that it offered lifetime immunity. Yet, the
method also incurred significant danger and risk. The use of live human smallpox

\textsuperscript{1} In historical accounts, variolation is also commonly referred to as inoculation. Today,
the latter term now signifies vaccination. In the chapter, the term ‘inoculation’ appears
for both variolation and vaccination. To avoid confusion, I clarify whether the reference
is to variolation or vaccination by the context in which it appears.

strains could produce serious cases of the disease, some even resulting in death. In eighteenth-century England, it has been estimated that two to three percent of those inoculated died from smallpox. Moreover, since variolation formed pustules of the live virus, any bodily lesions could spread the illness to other susceptible individuals.\(^3\) It was partly due to these dangers that spurred Jenner and others to develop an alternative means of smallpox prevention through experiments with the cowpox vaccine. By contrast, the vaccine developed from the cowpox virus only offered temporary immunity and, if the smallpox remained endemic in any one area, individuals had to be revaccinated every two to three years depending on the quality of the original vaccine. While vaccinated persons did develop a slight fever, other associated symptoms were quite rare.

Addressing the presence and trajectory of West African variolation in the late precolonial era as well as its transformation during the colonial era presents several problems for historical analysis. One dilemma of research is the fact that, while West Africans did not abandon variolation during the colonial era\(^4\), its gradual elimination nonetheless transpired over the first half of the twentieth-century with the expansion of vaccination and the corollary diminution of smallpox outbreaks. Second, in terms of


written source materials, the few sources that exist are highly variegated and contradictory. Some sources speak to the absence of variolation in one locale at a particular time while other accounts at approximately the same time suggest that variolation was practiced entirely throughout a region. In the face of conflicting, paradoxical evidence, it is even more incumbent on the part of historians to examine closely available data when interpreting for regional incidence and models of indigenous treatment. The existing, albeit meager, historical scholarship on variolation in Africa, as discussed below, has opted for a unifying approach in regard to this data in its search for patterns and constants.

In contrast, this chapter argues that historical evidence for areas of Senegal and Guinea illustrates the absence of identifiable regional patterns for smallpox prevention and treatment. As such, the argument offers up a preliminary counterpoint to recent African historiographical writing that promotes the value of ‘region’ as unit of historical analysis. According to this scholarly schema, the past of African societies cannot solely be captured by the globalized grand narratives of European history--capitalism, Christianity, or colonization--for there existed many precolonial social and cultural trends, such as healing regimes and kinship relations, within African regions that were not influenced or impacted relatively little by external global forces. Moreover, local

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histories alone do not suffice since African communities across a region came to experience commonly attributes such as language and a shared history over many centuries in the precolonial past. Lastly, ‘region’ as unit offers the interpretative possibility of understanding the processes and elements of circulation across borders and boundaries. Yet, for smallpox healing and imaginaries in West Africa, regionality did not necessarily emerge and historical evidence instead illumines the potentially important place and study of disjuncture and the fragmentary.

Variolation in Global History

Historical sources trace the origins of variolation to ancient China and India where its practice developed and became widespread within religious contexts in which specific deities were ascribed to smallpox. Chinese medical specialists often employed a different technique that consisted of collecting bodily scabs (formed from dried pustules) that were ground into a fine powder. The powder was then blown into a

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person’s sinuses to produce an immune response. In India, inoculation appeared much more commonly among Hindu populations than Muslims where variolators (tikadars) existed as a distinct artisan group. Like the Chinese specialists, tikadars sought to introduce an attenuated form of the disease by never applying ‘fresh’ pus material on the broken skin. Inoculating material was often aged, carefully selected from the previous year and kept in cotton swabs where it could be easily moistened when eventually needed.

Via trade routes, variolation spread across Asia and into the Middle East. It was employed throughout the Ottoman Empire (1299 to 1923) and most likely arrived in northern Africa through the expansion of the Caliphate. Most historical accounts of the procedure’s advent in Europe rely on an elite or aristocratic narrative. According to this dominant vision, variolation came to Europe from Turkey at the start of the eighteenth-century through the efforts of Lady Mary Montague. A childhood victim of smallpox herself, Lady Montague learned of the practice while living in Constantinople as the wife of the British ambassador and requested the embassy surgeon, Charles Maitland, to inoculate one of her sons in 1718. Upon return to England, Montague and Maitland repeated the procedure on another of her children as a demonstration to the physicians of the Royal Court. Maitland was then granted a license to variolate six prisoners, who in turn developed immunity to smallpox. Inoculation then grew in practice and eventually became widely accepted throughout Europe well into the nineteenth-century. The aristocratic account of variolation’s entry into Europe probably requires
greater nuance as other historians suggest that European peasants had practiced forms of inoculation by the early eighteenth-century as well. To which degree a ‘peasant’ narrative of European variolation might further coexist and complicate the common version based on Lady Montague remains to be seen. There have been far fewer scholarly treatments of its rural roots and virtually none for its causal effects on the broader adoption of variolation within Europe.  

Of historical irony, the first European account of variolation in Africa comes from its initial use in the New World. In the second decade of the eighteenth-century, Reverend Cotton Mather, a Puritan minister in Boston, learned of technique from his African slave, Onesimus. Shortly thereafter, during the 1721 smallpox epidemic, Mather propagated the practice throughout colonial New England. In his writings, Mather describes the ethnicity of Onesimus as ‘Guaramantee’ and further mentions the common practice of inoculation among Africans in ‘Barbary’. Most historical surveys of variolation have subsequently come to describe Onesimus as North African, yet Herbert suggests that ‘Guaramantee’ may in fact allude to the Kanuri-speaking population of Central Sudan, where the practice was widespread. In Boston, Mather also conducted further research and found that captains of slave ships trading on the African coast, most likely at Senegambian or other West African ports for the early eighteenth-century,

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would variolate slaves before crossing the Atlantic. Protected from the disease, the slaves sold for higher prices in New World markets.\textsuperscript{10}

For precolonial West Africa, several European travelers documented the practice of variolation, although these sources are few and quite brief in description. The earliest European account comes from the late eighteenth-century Scottish explorer, Mungo Park who traveled across Senegal and the Western Sudan to Segou, thus famously becoming the first European to reach the Niger River. In 1795, Park started his journey from the Atlantic coast by visiting British trading settlements along the Gambian River. At the trade factory in Pisania, a physician-resident informed him that Mande communities along the Gambian River utilized inoculation to curb smallpox outbreaks spreading from Moorish regions in the north.\textsuperscript{11} The French traveler, Gaspard Théodore Mollien, also commented on inoculation during his exploration of western Senegal and the Fouta Djallon region of Guinea in 1818 to discover the sources of the Senegal and Gambian Rivers. Many individuals of the Cayor region (western Senegal), Mollien observed, were saved from the locally seen, dangerous threat posed by the disease.\textsuperscript{12}

Descriptions of variolation in areas further into the Western African interior do not exist until the era of French imperial military conquest and annexation through

\textsuperscript{10} \textit{Ibid.}, 540-543.


diplomatic treaties. In the late 1880s, several diplomatic missions were sent to negotiate with local African rulers, such as Samori Touré, who based his empire in Bissandougou, a village located to the immediate south of Kankan. Leading one such mission to Samori was Louis Binger (see Chapter 2), who observed variolation practiced among animist populations on the eastern border of Upper Guinea near Bougouni in the Wassolon region.\textsuperscript{13}

\textit{Historiography of Variolation in Africa}

The few historical analyses of variolation in Africa focus primarily to document its long-standing existence on the continent as well as to signal the African origin of its spread to the New World.\textsuperscript{14} More or less implicitly, the writing aims to show that, among their medical arts, Africans possessed a successful preventative method against smallpox before the arrival of European vaccination. Whether as cause or effect, such an historical vision has influenced the nature of scholarship whereby historians have opted to promote generalized claims of its practice throughout the continent or any single region at the expense of more detailed studies of local use (and non-use) in a


particular region. Moreover, the scholarship avoids any mention of the deleterious effects of the preventive method, namely the potential to transmit smallpox to others and thus extending an epidemic, and, second, the risk of producing a severe, even fatal, case in the inoculated person.¹⁵

Herbert, for example, documents well the continent-wide evidence for the procedure to argue for regional patterns of diffusion, namely through trade. Yet, problems emerge with the rapid nature of such a survey and its broad conclusions, at least for parts of West Africa. Relying primarily upon travelers’ accounts for data, Herbert uncritically adopts these narratives’ trend toward quick summary and generalization to argue in similar fashion for variolation’s seeming ubiquity. Although Herbert prefices the argument with the need for further ‘field research’, such caution is abandoned in the bulk of the paper. Herbert does not examine colonial medical reports published in late nineteenth- and twentieth-century that record the absence of the practice in certain areas of West Africa.¹⁶ Similarly, White also states that ‘most Africans’ practiced some type of variolation; such may have been the case in nineteenth-century East and Central Africa, the regions examined by the author, but, in


¹⁶ Several of the reports are examined below.
making the claim without additional regional evidence, she unnecessarily overextends the argument.\textsuperscript{17}

Scholars also downplay or ignore the potential risks with the procedure, recognized at times in the past by Africans, colonial doctors, and historians of medicine in Africa. Subsequent sections of the chapter provide evidence for the recognition of this risk in colonial Senegal and Guinea. Other historians have previously documented accidents with variolation. For colonial Ghana, Scott notes that during the Accra smallpox epidemic of 1920 a “fetish woman” convinced a number of people to be variolated and the procedure was carried out on the forehead. Those variolated subsequently suffered high mortality. In another example, in this case from Northern Ghana in 1930, Scott indicates that indigenous inoculation had the effect of increasing the size of an outbreak. It was found that two Muslim scholars (Mallams) introduced the disease into the Yendi district by the arm-to-arm method. Before the epidemic burned out, 600 cases were recorded with 44 deaths.\textsuperscript{18}

Since variolation did confer lifelong smallpox immunity, Herbert concludes, Africans remained attached to the practice and it was “small wonder that the vaccinators encountered resistance in some areas where inoculation was firmly entrenched, given the unreliability of vaccines in the tropics …and the shorter term protection even a

\textsuperscript{17} White, \textit{Speaking with Vampires: Rumor and History in Colonial Africa}, 102.

successful vaccination provided."\(^{19}\) It is difficult to accept this conclusion for Herbert neither provides evidence for the claim nor seems aware of its latent assumptions. Acts of resistance did occur during the colonial period in the presence of vaccinators, though correlation might not necessarily imply causality. Africans have historically carried out forms of resistance for a multitude of reasons and scholars now tend to agree that monocausal explanations miss crucial parts of a complex phenomenon as enacted in particular localities.\(^{20}\) Moreover, without giving any account of vaccine technology in the ‘tropics,’ Herbert does not address the important differences in smallpox vaccines as they changed throughout the colonial period, whose history is treated in a subsequent chapter.

Lastly, Herbert does not consider cases where Africans abandoned variolation to demand vaccination. In Ethiopia, an area in which Herbert identifies the long-standing presence of variolation, such a transformation occurred during the 1898 epidemic. The preceding year, Dr. Robert Wurtz, a trained Pasteurian in clinical bacteriology, had been sent to Ethiopia by the French government to study a particularly severe rinderpest epidemic.\(^{21}\) The disease had been raging for nine years with enormous consequences

\(^{19}\) Herbert, “Smallpox Inoculation in Africa,” 559.

\(^{20}\) For a critical reassessment of the resistance paradigm in African historiography and a lucid statement of the above argument, see Frederick Cooper, Conflict and Connection: Rethinking Colonial African History,” *American Historical Review* 99 (December 1994): 1516-1545.

\(^{21}\) On the mission, Wurtz also studied hygienic practices, indigenous medicine, and pathologies such as leprosy, syphilis, and gonorrhea. He published the research and experiences offering medical treatment in “Hygiène publique et privée en Abyssinie,” *La
for the population. One third of the inhabitants had died from famine, which also had greatly contributed to several serious human epidemics, such as cholera, influenza, and smallpox. Wurtz also arrived in Ethiopia with the *first* smallpox vaccine. Despite the fact that there existed established indigenous specialists of variolation and even some European missionaries, “faute de mieux,” who also relied on the procedure, Wurtz encountered a large popular demand for the vaccine, much to his surprise (*incroyable*, in his words). His efforts were certainly aided when the Ethiopian emperor, Menelik II, rendered an edict in May 1898 for compulsory vaccination in Addis Ababa. For the vaccine supply, Wurtz produced the pulp locally, and between February and August, both he and another physician, Gilbert Fenski, vaccinated approximately 20,700 individuals in the capitol. Vaccine doses for an additional 250,000 persons were given to indigenous vaccinators trained by Wurtz and sent with stylovaccin instruments to operate in the provinces. Upon his departure, Wurtz further instructed two Ethiopians, appointed by the Emperor, on the technical methods to continue local vaccine production.  

In the same spirit as Herbert, White avers that variolation “conferred as much immunity as any vaccine therapy did in the early twentieth century.”

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Semaine médicale 16, no. 61 (1898): 489-494. Information for the remaining of the paragraph comes from the article.

22 After the Ethiopian mission, Wurtz was appointed to the Faculté de Médecine de Paris and later published several works on tropical medicine and colonial hygiene in the Horn of Africa. He also edited the annual report of 1910 for vaccinations in France and the colonies presented by the Académie de Médecine to the French Interior Ministry.

claim, White cites an event from Uganda in 1899 to illustrate “the most dramatic case of observing African variolation and reinscribing it with all the violence scientific method required.” In an antimedical polemic, White wishes to exemplify the manner in which “early medical observers tended to ignore variolation wherever they found evidence of its efficacy”.

However, a close examination of her primary source for the claim actually weakens her argument since she has mistakenly read the incident. The event she understands as variolation was instead vaccination during a smallpox epidemic in Kampala.

The incident in question concerns Albert R. Cook, a doctor at the Christian Missionary Society Hospital, who vaccinated close to 800 persons via the arm-to-arm method with much success. According to White, Cook and his wife obtained the initial vaccinal lymph by drawing pus from two locally variolated Africans. Cook then observed that, “in their eagerness,” how Africans “almost stormed the dispensary to get in.” The superlative drama of the moment, White argues, exemplifies acutely the denial by Western physicians of variolation’s efficacy as well as the violent erasure of African medical practice by Western science.

A closer reading of Cook’s memoire though speaks differently of the event. Nine months prior to the epidemic, Cook’s older brother, also a physician, presented him with two tubes of vaccine as he departed to Uganda. After the six-month journey to East

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24 Ibid., 102.

25 Cited in Ibid., 103.
Africa, the mission doctor completely forgot about the lymph until the onset of the outbreak. From his limited knowledge, the local Baganda communities did not practice variolation and smallpox epidemics exacted a terrible toll on the population. “When conveyed to a village,” he observes, the disease:

swept through it like a destroying pestilence, killing many, blinding others, and leaving a trail of disfigured faces behind it...no native remedy touched it, and the sick were put out in little huts to live or die. It was therefore with very real anxiety written on their faces, that a few months after our arrival, the natives came to tell us that smallpox had broken out in a village near by—could we help?²⁶

Faced with the immediate African demand for help, Cook recalled the stored tubes of lymph and proceeded to vaccinate some male youths with an injunction to return in a week, ostensibly to verify the results and continue vaccination with the arm-to-arm method. In a comment of his own minimal authority, the recently arrived doctor acknowledges:

our ignorance of Baganda boys at that time was colossal. Of course they did not turn up again, and there the matter would have ended, had not Miss Timpson happened to see a native boy running about the market place at Namirembe with an obvious vaccination mark on him. So she collared him and brought him into the dispensary, and with somewhat trembling fingers, knowing the issues at stake, we extracted the precious drops of lymph, and with then vaccinated half a dozen others, whom we contrived to keep under observation. From them a week later, we inoculated twenty, and from them fifty, and so on, till one day we vaccinated over eight hundred by this arm to arm method, with but very few failures, as might indeed have been surmised in an unprotected population. In their eagerness, they almost stormed the dispensary to get in. There were no conscientious objectors in Uganda!²⁷

²⁶ Cook, *Uganda Memories (1897-1940)* (Kampala: The Uganda Society, 1945), 52.

White’s dramatic case for the erasure of African practice and instance of biomedical violence does not tellingly involve variolation, but rather vaccination.

Such an orientation tends to dehistoricize Africans’ use of variolation and interactions with vaccination in the early colonial period. In some cases, as in colonial Morocco, the unintended and mortal results of variolation prompted some communities to quit the practice. Moreover, the fact that different methods of smallpox prophylaxis, isolation and variolation, could simultaneously exist in one village, but not in another locale within a single region, attests to a complex topography of multiple and disjointed medical knowledges, including local notions of contagion. As the discussion below illustrates, these knowledges sometimes spread in certain moments and spaces; in other circumstances, borders could emerge to prevent diffusion within and over regional domains thus creating heterogeneous sites in any single landscape.

*Mottled Topographies: Responses to Smallpox in Colonial Senegal and Haut-Sénégal et Haut-Niger*

Herbert’s survey of the historical evidence for African variolation importantly brought needed scholarly attention to the practice and its varied techniques on the

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28 By the late 1920s, according to the colonial director of the Hygiene Office in Casablanca, the fear of accidental deaths led to a change in its Morrocan practice: variolation ceased to be performed in city environments and was only carried out by ‘matrones’ in isolated rural areas. D’Anfreville de la Salle, “La variole et la vaccination au Maroc,” *Annales d’hygiène publique, industrielle et sociale* 5 (mai 1927): 268.
continent as a whole as well as within distinct geographical regions. While admittedly written as a preliminary survey with a proviso for further research, especially for regional and sub-regional trends, the article nonetheless opts for a unified mapping of the phenomenon. The argument works almost akin to a connect-the-dot diagram. By citing varied historical sources for a region, categorically divided into pre- and post-1900 evidence, Herbert then literally draws a cluster map of variolation’s practice in Africa.\(^{29}\) To conclude, he suggests that variolation entailed “regional patterns of diffusion, frequently linked with trade routes” and so the dots become connected.\(^{30}\) Missing from this interpretive picture, at least for West Africa, is the equally documented practice of isolation as a therapeutic response by Africans in the face of a smallpox epidemic. When considered topographically, the recorded fact of isolation provides for a much less tidy depiction of variolation’s practice in the Senegambian and Mande regions of West Africa. Sub-regional evidence suggests rather the need to consider an ensemble of fragments comprising a more ambiguous and mottled regional map for African response to smallpox.

The historical sources cited by Herbert for variolation in Senegal include the singular accounts of Mungo Park for the late eighteenth-century Gambian River region and Mollien who traveled through Cayor in 1811 (see above). By the late 1860s, its practice as a prophylactic measure may not have been widespread in the region. The two, most complete studies of local pathologies for nineteenth-century Senegal prior to

\(^{29}\) Herbert, “Smallpox Inoculation in Africa,” 556.

1880 note its rarity. The naval surgeon and ethnographer, Bérénger-Féraud, who first served on Gorée and then in Saint-Louis as Chief Medical Officer, describes how Africans knew of the procedure wherein pus was applied with a piece of tinder wood to a small burn on the forearm, “mais cette inoculation est assez rarement employée”. Another naval doctor also with much medical experience in Sénégal, Alfred Borius, mentions that smallpox epidemics tended to arrive from the north, brought by Maur traders who also “instructed inoculation to ‘les noirs’ [although it was] rarely put into practice”. While Africans in Senegal might have rarely employed variolation during the 1860s, it is pertinent to note that colonial naval physicians sometimes had recourse to the procedure in the face of epidemics, presumably before the regular availability of vaccinal lymph in the second half of the nineteenth-century.

Further observations of indigenous responses to smallpox in Senegal come from the géographie medicale theses written in the 1870s and 1880s. When examined for the prevalence of variolation within the different regions of Senegal, these accounts reveal a speckled pattern of its practice. In Dakar, Dr. Santelli, a post doctor in the late 1880s, note its rarity. The naval surgeon and ethnographer, Bérénger-Féraud, who first served on Gorée and then in Saint-Louis as Chief Medical Officer, describes how Africans knew of the procedure wherein pus was applied with a piece of tinder wood to a small burn on the forearm, “mais cette inoculation est assez rarement employée”.

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32 Borius, “Topographie médicale du Sénégal,” *Archives de médecine navale* 37 (1882): 398. This large study, published in serialized form between 1880 and 1882, was then collected into a single tome of more than 360 pages, entitled *Les maladies du Sénégal: topographie, climatologie et pathologie de la partie de la côte occidentale d’Afrique comprise entre le Cap Blanc et le Cap Sierra Leone* (Paris: Baillière, 1882).

33 The historical source of the observation only makes mention of the colonial practice and does not provide any further commentary on its specific frequency or historical precedents. See Rigollet, “Rapport sur une campagne de vaccine su Sénégal (février-juin 1893),” 36.
1870s, found evidence of the technique as well as the quite unique form of transferring the viral pus: “avec un morceau d’amadou enflammé, ils font une vésicule sur la peau, enlèvent l’épiderme et mettent sur le derme dénudé un morceau de laine imprégnée du pus variolique”. 34 No other published description of the variolation technique in French West Africa mentions the use of wool material to apply pus to the skin. To the south of the Gambia River, in the Casamance region, Garnier arrived at the Sédhiou post just as a smallpox epidemic was coming to an end. While the young doctor might not have had the opportunity to observe indigenous reactions (he provides no other remarks on the outbreak), a second epidemic arrived the following March at the end of the dry season during his service. Garnier stipulates that local inhabitants may not have had any measures to protect against the disease since “not a small number of them” showed deep scarring on the face and would only receive immunity from having previously contracted smallpox. 35 Though not conclusive, the comment suggests that isolation may have been the norm in the Casamance.

To the north, in the immediate interior areas from Dakar, specifically Cayor, Baol, and Sine-Saloum, medical officials writing in the last decade of the nineteenth-century explicitly signaled out these regions for the practice of variolation. The procedure was administered by Muslim clerics, or marabouts. There is some contemporary evidence

34 A. Santelli, “Quelques considérations médicales sur le poste de Dakar (Sénégal),” Thèse de doctorat, Faculté de Médecine de Montpellier (Montpellier: Imprimerie Centrale du Midi, 1877), 23.

that speaks to variolation spreading in tandem with the expansion of Islam. Dr. Judet de la Combe, stationed in Thiès, compared the practice among different ethnic populations to find variolation widely practiced in some areas, but not in others. Indeed, local practices were undergoing change with the spread of vaccination. In the Salao province, Judet de la Combe described Wolof communities as dominated by the influence of marabouts, who incite local populations to resist the colonial vaccinator. Villagers admitted to the doctor that the itinerant clerics told them that the doctor would pierce their arms completely through with long needles. The Thiès médecin could only counter these ‘legends’ with the aid of the colonial officer who accompanied him on the vaccination tour. The officer used his knowledge of local languages and authority to enjoin recalcitrant communities to accept the lancette. Other Wolof groupings voluntarily renounced variolation after a marabout supposedly caused the death of 60 persons via the practice. Fulani villagers in the same area also relinquished ‘the dangerous practice of their marabouts’ and regretted that they had not known of the vaccine earlier. Lastly, the animist Sereer communities, according to Judet de la Combe, have ‘no religious ideas to guide them’ and hence readily abandoned variolation.

36 Louis Porquier, “Une campagne de vaccine au Sénégal (1896),” Archives de médecine navale 59 (avril 1898): 251. An extract of this report also appears in Rapport général présenté à M. le Ministre de l'Interieur par l'Académie de Médecine sur les vaccinations et revaccinations pratiquées en France et aux Colonies pendant l'année 1897 (Melun: Imprimerie Administrative, 1898), 77-78. The next chapter treats the phenomenon in more detail.

37 Judet de la Combe, “Extrait: L'épidémie de variole 1895-96.—La variolisation,” in Rapport général présenté à M. le Ministre de l'Intérieur par l'Académie de Médecine sur
In several areas of Senegal, there is evidence of both isolation and variolation, a fact that likely indicates the highly mixed terrain of both procedures practiced codeterminously. In Saint-Louis, Girard did not observe variolation during the 1887-88 epidemic and, from accounts of later epidemics in the city analyzed in the next chapter, the practice of isolation predominated among urban African residents. As described in a previous chapter, several villagers of the Sor suburb at first refused to present their ill to Girard’s inspection—while this village action may have been an attempt to shield vulnerable community members from Girard and his team, it equally could have been an instance of successful isolation misinterpreted by the colonial physician. Traveling up the Senegal River from Saint-Louis to the fort at Dagana, Girard mentions a woman who, having contracted smallpox herself, then inoculated her children and the rest of the community. Out of a population of 3700 inhabitants, one fifth (500) fell sick to the disease. The Chief Medical officer drew a connection between variolation and Muslim communities during the epidemic, writing that:

l’inoculation du pus variolique a été pratiquée à peu près sur tous les points où a sévi l’épidémie, ce qui ne doit pas paraître étonnant étant donné que notre enquête porte ici sur des populations musulmanes qui ont recours à cette pratique d'après la tradition arabe.

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les vaccinations et revaccinations pratiquées en France et aux Colonies pendant l’année 1896, (Melun: Imprimerie Administrative, 1897), 78-82.

38 ANS 1H38, Doc. 21, Dr. Carpot, Rapport sur la variole et les vaccinations dans la commune de St. Louis, Sénégal (12 décembre 1898).


40 [the inoculation of smallpox pus had been practised nearly in all the places where the epidemic broke out, which should not seem astonishing given that our survey here
Further along the river, in Podor, a post doctor witnessed an outbreak in the early 1880s among the Toucouleur population. Local forms of isolation seemed too crude in his eyes, or, alternatively, his observations may have been too superficial:

Pendant cette épidémie, qui fut d’ailleurs assez grave, il me fut facile de voir le peu de courage et de dévouement dont ce peuple est capable: aussitôt que dans les villages un des leurs était atteint, on l’abandonnait dans une case en lui plaçant à côté de l’eau et du couscous, et, si l’épidémie prenait des proportions trop grandes, on quittait le village et chacun fuyait de son côté, laissant les malades se soigner tout seuls. En 1879, pendant une de ces épidémies, le fils du roi Maure, ainsi abandonné dans une case, ne dût sa vie qu’aux soins et au dévouement d’un blanc, le docteur du poste.  

Within the Fouta Toro region, which was predominantly Muslim in the late nineteenth-century, Dr. Porquier carried out the first vaccination campaign in villages located inland to the south of the Senegal River between Saldé and Matam. While the physician did not witness a smallpox outbreak, he did observe more than 3200 arms. And those arms told their own histories, narratives of isolation:

l’influence des ‘marabouts’ ou prêtes-médecins paraît moins prononcée qu’ailleurs dans cette région. Je n’ai guère trouvé trace de variolisation, et à toutes mes demandes dans les différents villages, on répondait que l’inoculation de la variole ne s’y pratiquait pas.  

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41 [During this epidemic, which moreover was quite serious, it was easy for me to see the little courage and devotion of which this people is capable: as soon as one of their [people] in the village was affected, she is abandoned in a hut, with water and some couscous, and, if the epidemic took on a too great proportion, the village was vacated and each person fled her own way, leaving the sick to care for themselves all alone. In 1879, during one of these epidemics, the son of the Moor king, thus abandoned in a hut, owed his life only to the care and devotion of a white person, the post doctor.] Carrade, "Contribution à la géographie médicale: le poste de Podor (Sénégal)," 65-66.
Eleven years later, Toucouleur bodies in Matam and the areas immediately upstream recounted different stories of healing. “For a long time”, avers a vaccinating doctor in 1907, the natives of Matam have employed variolation as a smallpox prophylaxis. In the Toucouleur language (more precisely, the Fulani or Fulfulde language), it was referred to as ‘to ask for’ (in Peul, *niogoundé*, demander, Fr.) or ‘to buy’ (*thiougou*, Peul; *acheter*, Fr.). The French physician framed the practice in terms of an exchange relation. The indigenous variolator would offer or sell the procedure in exchange for small gifts, such as a millet or cotton. Lastly, the practice was said to have progressively diminished since the start of vaccination missions in the area.

[the influence of marabouts or priest-doctors seems less pronounced that elsewhere in this region. I no longer found signs of variolation, and, to each of my questions in the different villages, it was replied that the inoculation of smallpox is not practised there.] Porquier, “Une campagne de vaccine au Sénégal (1896),” 269.

“Rapport de Mission du Docteur Malouvier sur la vaccine et l’Assistance médicale indigène dans le cercle de Matam, pendant le 1er trimestre 1907” in *Journal officiel du Sénégal* 52, no. 335 (jeudi, 30 mai 1907): 274. In the report, Malouvier translates the Toucouler terms for variolation into French as transitive verbs, when in fact *thiougou* (or alternatively *coggu*) is the nominative substantive for money, payment, currency, change or payment. I would like to thank Rebecca Furth, a researcher who has conducted extensive ethnographical fieldwork in the Fulfulde-speaking region of the Fouta Djallon (Guinea), for pointing out this linguistic usage.

In West African areas where indigenous inoculation was practiced, the notion of variolation as ‘buying’ smallpox may have been common. Among Mossi communities in present-day Burkina Faso, Dim Delobsom wrote in the 1930s that the same concept--‘buying the disease’--prevailed for variolation. Delobsom came from Mossi communities and one of the few African anthropologists trained and working in colonial French West Africa. See Dim Delobsom, *Les secrets des sorciers noirs* (Paris: Librairie Émile Nourry, 1934), 204.

“Rapport de Mission du Docteur Malouvier,” 274.
Further west in the Senegal River Valley, for the area near Bambuk, local Khassonké populations at the French fort of Médine practiced variolation. According to Bourillet, the fort physician in Médine, Khassonké communities were hybrid ones, stemming from intermarriage between Peul and Mande groups. In this syncretic environment, local variolation involved the use of a burning stick to produce a blister on the upper arm. The blister was then broken and pus applied to the open wound. The post physician also mentions that area inhabitants only variolate “under pressure of the terror” of an outbreak due to anxiety with the procedure.\(^4\) While Bourillet describes Khassonké populations as comprising both animist and Muslim groups, he does not identify variolation with any specific religious practice or community of believers.

Immediately to the east of Bambuk region, which administratively fell under the territory of the *Haut-Sénégal et Haut-Niger* colony, historical sources invoke isolation as the common treatment for smallpox. Late nineteenth-century observers noted that the disease existed in an endemic state between the regional administrative center of Bafoulabé and Bamako. Since the disease was strongly feared by local inhabitants, news of an outbreak prompted isolation of victims in isolated huts. Despite these precautions, it was said that epidemics still claimed much mortality in the region.\(^5\) However, the colonial administrator, Eugène Béchet, stationed for five consecutive

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45 Bourillet, “Essai de topographie médicale sur le poste de Médine (Sénégal),” Thèse pour le doctorat en médecine, Faculté de Médecine de Montpellier (Montpellier: Boehm et Fils, 1875), 35-36.

years during the mid-1880s at the small post of Longtou, located between Kayes and Bafoulabé, witnessed an outbreak and found neither isolation nor variolation practised by local populations. Much to the consternation of the official, the indigenous response instead relied on therapeutic diet and bodily care. When the epidemic appeared at the post, Béchet noted:

en quelques jours une dizaine de jeunes gens des deux sexes sont atteints; contre toute vraisemblance, les noirs ne croient pas la maladie contagieuse et continuent à vivre sans aucune précaution avec les maladies qu’ils traitent par des fumigations énergiques sous une couverture et auxquels ils ne donnent de l’air que lorsqu’ils sont à peu près asphyxiés et qu’ils perdent connaissance; puis quand les pustules commencent à sortir on les plonge dans l’eau froide, et pour réparer les forces qu’ils ont perdues, on les bourre de couscous. Malgré cette médication fantaisiste, il y a relativement peu de décès, mais l’épidémie fait de rapides progrès. Concevant des craintes pour la sécurité de ma petite garnison, je prends sur moi de faire transporter tous les malades à deux kilomètres dans un grand gourbi en paille construit à la hâte; trois laptots intelligents remplissent les fonctions d’infirmiers et interdisent l’approche de l’ambulance. Les varioleux, à leur grande stupéfaction, sont mis à la diète; ils ne s’en plaignent pas, mais ce sont les gens du village qui, malgré la confiance qu’ils me témoignent, ne peuvent admettre que leurs malades restent sans manger, et les infirmiers ont toutes les peines du monde à empêcher l’entrée des calebasses de couscous qu’on essaie d’introduire en cachette. Du bouillon et des œufs sont distribués aux pauvres diables, une ou deux fois par jour, suivant leur état; ils ont des tisanes, mais tout cela est liquide et ne doit pas les nourrir. En peu de jours, l’épidémie semble enrayée et j’ai la satisfaction de voir presque tout mon monde hors de danger; sur treize malades, deux seulement sont morts et les indigènes m’assurent qu’ils ont été tués par la diète. J’ai beau essayer de leur faire comprendre que tous ont suivi le même traitement et qu’à présent la grande majorité se porte bien. Ils m’exaspèrent par leur obstination à me répondre: ‘Ils sont mort de faim.’ À partir de ce jour, je refuse de m’occuper des malades.47

47 Over several days, a dozen of youth of both sexes were stricken; against all probability, the blacks do not believe the disease contagious and without any precaution continue to live with the sick who they treat with vigorous fumigations under a blanket and whom they do not give fresh air until they are almost asphyxiated and lose consciousness; then when the pustules begin to appear the sick are plunged in cold water, and to restore the strength they have lost, one stuffs them with couscous. Despite this fanciful medication, they are relatively little deaths, but the epidemic makes rapid progress. Seeing the fears for the security of my small garrison, I take it upon
The account, in all its shrill hyperbole and spectacle, contradicts all colonial medical testimonies during the same era that document that Africans understood smallpox to be contagious. The fact that villagers chose to treat the young victims without resorting to isolation may indicate a different and local notion of contagion in operation. Throughout West Africa, populations developed smallpox prophylaxis based upon a shared understanding that, once an individual contacted and survived the disease, whether a fully developed case or a benign case through variolation, he or she received life-long immunity. In his blind haste to impose forcefully, first, isolation at some considerable distance from the village and, second, a restricted diet, the administrator absolutely refused to consider that Longtou villagers may have shared some alternative notion of contagion for smallpox that did not necessarily involve isolation. Hypothetically, a different idea of contagion could have existed and would not have become expressed.

myself to have all the sick transported two kilometers away to a large straw, hastily built shack; three boat workers fulfill the functions of nurses and forbid any approach to the clinic. The smallpox victims, to their great amazement, were placed on a diet; they do not complain about it, but it is the people of the village who, despite the trust they attest to me, cannot accept that their sick remain without eating, and the nurses have all the trouble in the world to prevent the entry of gourd containers of couscous that one tries to introduce on the sly. Some bouillon and eggs are distributed to the poor devils, one or two each day, according to their state of health; they have tisanes, but all of that is liquid and will not nourish them. Over a few days, the epidemic seems curbed and I have the satisfaction of seeing almost my people out of danger; of the thirteen sick, only two died and the natives assured me that they had been killed by the diet. I strongly tried to make them understand that all had followed the same treatment and that at present the large majority feels fine. They exasperate me by their stubbornness in replying: ‘they died of hunger’. From this day, I refuse to take care of sick persons.] Eugène Béchet, *Cinq ans de séjour au Soudan Français*. (Paris: E. Plon, 1889), 87-89.
Given the above evidence, what sort of map for smallpox therapy would then arise in late nineteenth- and early twentieth-century Senegal and Western Sudan? Variolation seems to have had a core presence among Wolof Muslim communities in Cayor as well as in the northern Trarzas areas near Dagana along the frontier with Mauritania. Yet, for the rest of the Senegalese territory, historical sources for the period illustrate a greatly muddled tableau of variolation and isolation co-existing within the same subregion. Variolation most likely spread with the expansion of Islam in Senegal and Haut-Sénégal et Niger, as colonial medical officials observed. Hence, inoculation may have only been practiced more widely in the last two decades of the nineteenth-century and into the first decade of the next century concomitant with the growth of Islam in Senegal, especially driven by emergent Murid and Tijaniyya brotherhoods.  

Further research, which quite possibly would be based primarily on oral historical memory, may shed light on the question whether variolation ever developed into a regional ‘pattern’ or rather remained highly mosaic-like as the above analysis suggests.

Smallpox Prophylaxis in 19th-and 20th-Century Lower Guinea and Fouta Djallon

In similar fashion to Senegal, evidence for indigenous smallpox treatment in precolonial and colonial Guinea is quite uneven. However, one must consider the fact

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that for Guinea there is relatively a far more limited array of published sources for the late nineteenth- and early twentieth-century. Hence, historical examination becomes even more difficult for Guinea to describe practices to control and treat smallpox in this area. The nature of European, especially French, presence partly accounts for the lack of data. There exist several early travelers' accounts, such as Thomas Winterbottom’s description of the Fouta Djallon or Réne Caillié’s journey through the Fouta Djallon and Upper Guinea. But descriptions of indigenous smallpox prophylaxis were only recorded if an epidemic occurred in the area at the time of the traveler’s passage. Second, while the Guinean coast experienced intensive contact and trade between Africans and Europeans dating back for more than three centuries, Europeans settled significantly later than in Senegal, only in the second half of the nineteenth-century and with a quite small presence. The first settlements arose in the 1860s, when three riverine areas (Rio Nunez, Rio Pongo, and the Mellacorée) became official dependencies of the colony of Senegal, which, in turn, led to the creation of military posts stationed with a colonial physician (see map below).49 For the late nineteenth-century, post doctors did

49 French Catholic and British Anglican missionaries also settled along the coast. In the Rio Pongo, the former created a mission at Boffa and the latter at Fallangia (1855), Domingia (1861), and Bramaia (1887). Anglican churches were also established on the Isles de Los, immediately adjacent to the capitol of Conakry, in 1867. For the history of Catholic mission in Guinea, see Gérard Viera, Sous le signe du laicat: l’Église catholique en Guinée, vol. 1 (1875-1925) and vol. 2: Le temps des prémices 1925-1958 (Dakar, n.p., 1992). One of the only published accounts treating the history of Anglican missions is Alfred Henry Barrow, Fifty Years in Western Africa; being a Record of the Work of the West Indian Church on the Banks of the Rio Pongo (New York: Negro Universities Press, 1969, originally published in 1900). Research for this dissertation only consulted Catholic and Protestant missionary activities in colonial Upper Guinea (Kankan, Baro, Siguiri, and Kouroussa).
complete géographie medicale theses and published articles on local disease environments and indigenous medicine, yet references to smallpox and its treatment are few, if mentioned at all. Third, with the creation of the colonial capitol in Conakry in the mid-1880s, colonial medical reporting became frequent, but not for smallpox. Over the last decade of the century, no smallpox epidemics occurred in Conakry, a subject treated in the next chapter. Lastly, colonial vaccination played a large role, in both Guinea and Senegal, on the diminishing frequency of smallpox epidemics over time. In the late nineteenth-century, when mass vaccination was much in its infancy, smallpox outbreaks transpired more regularly. Colonial medical services dispatched vaccination teams to stem the spread of disease, and mission heads generally documented treatment efforts as well as indigenous responses. Later, after the first decade of the twentieth-century, preventative vaccination developed exponentially to the effect that smallpox steadily decreased over French colonial territories in West Africa. Consequently, official reporting on indigenous responses also diminished.

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50 Only two géographie médicale theses were written for the areas of early French occupation on the Guinean coast. The dissertation on the Rio-Nunez area does not include any reference to smallpox, while Drevon’s more extensive description of the Rio Pongo and Mellacorée zones only mentions the fact of outbreaks and subsequent vaccination. The two theses include Louis Besson, “Topographie médicale du Rio-Nunez (Côte occidentale d'afrique),” Thèse pour le doctorat en médecine, Faculté de Médecine de Montpellier, 1886; Adolphe Drevon, “Contribution à la géographie médicale: le pays des Soussous. Topographie médicale de la Guinée Française, moeurs et coutumes des habitants,” Archives de médecine navale et coloniale 61, (mai 1894): 321-357; juin 1894): 415-448; 62 (juillet 1894): 5-39; (août 1894): 81-103.

51 Historical data for smallpox epidemics and vaccination throughout the entire colonial era in Guinea will be provided in the Appendix.
Variolation then disappeared, at least from the written record. After the First World War, official colonial medical reports (including correspondence) as well as the occasional scientific medical publications by colonial physicians serving in Guinea make no further reference to variolation, or isolation for that matter. Missionary sources might provide valuable supplemental information for local smallpox therapy, or they may not. The frequent, almost daily, notes taken over a period of thirty years by Catholic missionaries in Upper Guinea (who resided in Kankan and Kouroussa) discuss several local maladies and epidemics, but never include reference to smallpox or its
treatment. Did indigenous prophylaxis for smallpox simply disappear or just move ‘underground’ as Herbert suggests?

The remainder of this section as well as the proceeding one both examine the published sources as well as archival material prior to World War I to describe and discuss the nature of indigenous smallpox prophylaxis in Guinea. First treated here is historical evidence in two of Guinea’s geographical regions, respectively Lower Guinea and the Fouta Djallon. The following section then shifts focus to the area of Upper Guinea and concludes by addressing the enigma of variolation’s apparent disappearance with evidence collected from oral historical interviews conducted in Upper Guinea.

Not included in either section is a discussion of smallpox treatment in Guinea’s remaining geographical area, the Forest Region. A subsequent chapter will briefly treat the Forest Region’s reported incidence of epidemics as well as vaccination efforts documented in colonial medical reports. Published historical source material for smallpox and its forms of treatment by Forest communities is virtually nil; one potentially rich source, the géographie médicale, was never written for the Forest Region or, for

52 Archives de la Congrégation de Saint Esprit (Chevilly La Rue, France), cote 6I 2.3, Journal de Communauté, 1918-1947. The founder of the mission, Father Joseph Lacas, did provide a short notice on indigenous smallpox treatment in an unpublished document which is discussed below.


54 The Forest Region’s principal centers include Macenta, Guéckédou, and N’Zérékoré, with Kissidougou and Beyla as cultural and geographical border locales with the Upper Guinea region.
that matter, Upper Guinea. The only published record for smallpox treatment in the Forest Region preliminary research located comes from the ethnic Mano groups who were historically split apart by colonial drawing of Guinean-Liberian border. From the mid-1920s to the mid-1930s, the American missionary doctor, George Way Harley, lived and worked for ten years on the Liberian side of the border, in Ganta, where he also completed extensive anthropological research on Mano medical knowledge and practice. During his stay, Harley witnessed a smallpox outbreak and, in his published monograph, notes villagers’ rapid response to isolate the afflicted away from settlements in specific parts of the forest, the ‘sick bush’. Victims remained in a temporary shelter (the ‘pest house’) built by family members, and, once the illness finished, the shelter was burned. The Mano people, according to the study, overwhelmingly practiced isolation to prevent the disease’s spread and did not use variolation. However, Harley also found that some healers in the north of the area “vaccinate as a prophylactic measure, a practice introduced by the Mandingos. A Mano youth of about eighteen years had several of these kpono on his arm, resembling scarification marks. He said that he had been vaccinated thus by a Mano woman when he was about seven years old. She had taken the virus from the pustules of a man who was ill with the disease."

Coastal Lower Guinea, with its relatively long European medical presence, provides the earliest picture of indigenous smallpox therapy. In the 1870s, the Boké

55 George Harley, Native African Medicine with Special Reference to its Practice in the Mano Tribe of Liberia, (Cambridge, MA: Harvard University Press, 1941), 41.

56 Ibid., 45.
post physician, Armand Corre, witnessed indigenous inoculation among the Landouman and Nalou peoples. Variolation was practiced on the inner arm of adults; Corre does not mention whether the procedure was applied to children, the typical recipients of the procedure. Furthermore, unlike many later colonial physicians, Corre relates in a fairly positive light the results of the operation: “sometimes, the individuals thus inoculated were left with a very discrete eruption, or even, reduced to a single pustule at the pricked point”. Subsequent accounts from Boké, though, tell of a different scenario, almost as if inoculation or other effective local treatment disappeared from the therapeutic map. In November 1889, the post physician reported an outbreak in the same Rio Nunez region, specifically at the trading post in Victoria, where, after an ‘enquête minutieuse,’ 48 cases were identified out of a population of 288, including eight deaths. The particularly afflicted population at Victoria may have included Africans, itinerant traders or otherwise, who did not have recourse to variolation, and, for that matter, suitable isolation to halt the spread of the outbreak. Alternatively, this serious incident may have been due to improper use of inoculation. All accounts for variolation in Senegal and Guinea indicate the use of ‘fresh’ pus transferred during the operation, a method that incurred much risk and potential harm.


Further south along the coast, in the Rio Pongo area, historical sources do not establish whether variolation or isolation was the norm in the late nineteenth-century; additional research with missionary sources would most likely ascertain better the prevalence of either treatment means. One account nevertheless reveals how Africans transmitted knowledge of the technique. In 1905, the head of Guinea’s newly created vaccination service, Gustave Martin, conducted a series of the first mass campaigns throughout much of the colony. During the October campaign in hinterland areas of Conakry (Dubréka, Maneah, Friguagbé, Coyah), Martin met and interviewed an indigenous variolator concerning the local specialist’s recent operations. For colonial Guinea’s written sources, the recording of such a meeting in Coyah between French vaccinator and variolator was exceptionally rare. The indigenous man, most likely of the Soso ethnic group, which was predominant in the area, mentioned his treatment of several children six months prior in Coyah, then a small village 40 kilometers west of Conakry. The variolation session achieved a marked success, according to Martin, for the procedure produced a quite minor reaction of a few, small pustules on the children’s’ arms. In the interview, the healer also related his acquisition of the inoculation technique. Seven years previously, a severe epidemic transpired regionally and afflicted Coyah as well as areas some distance to the north, such as the Rio Pongo. When the Soso variolator first started the practice, according to Dr. Martin:

c’est en 1898, alors que la mortalité était énorme à Coyah que cet indigène, appelé par sa sœur mourante au Rio Pongo, où les décès étaient peut-être
With sister dying amid the terrifying and deathly crisis, the man’s journey and learning of the technique testifies sharply to the potentially open nature of knowledge-flow in late nineteenth-century Guinea. Muslim Fulbe (Peul, Fr.) traders from the Fouta Djallon had been visiting the Guinean coast for more than a century to transfer various goods (including hides, rubber, and slaves) as well as worldviews (Islam). The spread of healing knowledge, as in this above example for smallpox, exemplifies to a further degree the sometime conjoined histories of indigenous therapies and Islam.

Historical evidence for the Fouta Djallon also demonstrates the difficulty in positing a strong link between Islam and variolation. By 1896, the year when French military forces came to occupy the area, a Muslim theocratic empire had already existed for close to one hundred fifty years. Its rulers also exercised significant control over areas outside of its political boundaries per se, especially in regard to commercial trade with the coast. In the long era prior to conquest, not a few Europeans came to the area

59 [it was in 1898, when the mortality was great at Coyah that this native, called by dying sister to the Rio Pongo, where the deaths were perhaps still more numerous, learned from Peuls arriving from the Fouta the practice of variolation.] ANG 1H26, Le Docteur Gustave Martin, Médecin Major de 2e classe des Troupes coloniales, chargé du Service de la Vaccine, à Monsieur le Chef du Service de Santé de la Guinée Française à Conakry, [Conakry, le 2 Octobre 1905].

either as explorers or more often commercial agents seeking to negotiate trading agreements. Their published accounts furnish some information concerning smallpox treatment. In fact, one of the earliest descriptions for isolation in all of West Africa comes from Thomas Winterbottom, a British physician who worked in Freetown for the Sierra Leone Company from July 1792 to April 1796. Winterbottom used this time to develop his existing interests in natural philosophy and science by studying local African communities as he completed three separate exploration journeys to interior areas of the region.  

Similarly, his brother, Matthew, undertook an expedition in 1794 with James Watt, both agents of the commercial trading company, to Middle Guinea to negotiate trade agreements for British interests on the coast. Both Watt and Matthew Winterbottom kept journals along the three-month trip that departed from Boké and passed through Labé on the way to Timbo. When Thomas Winterbottom published a two-volume tome on African communities in the region as well as their medical practices, he relied much on his brother’s journal to discuss Fulbe (Fulani; Peul, Fr.) knowledge of disease and healing. After noting that smallpox was reportedly absent from Fouta areas for the past twenty years, Winterbottom writes:

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the appearance of this disease excites a general alarm: when any one is seized
with it, he is immediately removed to a place built for the purpose in the woods,
where no person is allowed to visit him, but such as have had the disorder. A
quantity of fine sand is spread upon the ground, on which are laid clothes to
serve for the patient's bed. The diet is restricted to milk, thin soups, and lean
meat; nothing cold is allowed for drink. The chief medicine made use of is an
infusion of a plant that tastes like sorrel...hibiscus, tea plant. When the pustules
are dry, and begin to desquamate, the patient is washed, and his body anointed
with some soft ointment.63

Further insight to the nature of smallpox control practiced in precolonial Fouta
Djallon comes from oral tradition. One Fulani historical poem recorded in 1980
documents the hostile relations between the empires of the Fouta Djallon and Gabou
during the mid-nineteenth-century.64 In 1853, the army of Alfa Yaya, son of the
politically dominant Labé ruler, attacked and occupied the Gabou center of Niabina, only
to be then harshly repulsed by a stronger contingent of neighboring villagers. The local
animist forces in turn ransacked the Fulani army camp and kidnapped some of invaders'
wives and children as booty, including a Labé princess, Koumanthio. Retreating with
his some 5,000 military troops to Saroudia, Alfa Yaya was preparing a retaliatory
campaign against the Gabou center to recover their kin when, according to the historical
poem, a smallpox outbreak occurred:

63 Winterbottom, An Account of the Native Africans in the Neighborhood of Sierra

64 Formed with arrival of Mande populations in the thirteenth-century, the Ngabou (or
Gabou) kingdom with its capitol in Kansala was located to the northwest of the Fouta
Djallon until its demise in the 1860s at the hand of Fulani conquerors. On the history of
the Ngabou, see Mamadou Mané, “Contribution à l'histoire du Kaabu des origines au
XIXe siècle,” Bulletin IFAN 40, sér. B, no. 1 (1978): 87-159; the special issue of
Ethiopiques 28 (oct. 1981); and Djibril Niane, Histoire des Mandingues de l'Ouest: le
Alfaa Yahyaa e koneeli mu'un
Alfaa Yahyaa et troupes lui

Yahi naati Saruudya Ko moyhy inagol
Allèrent rentrer Sarundya pour se préparer

Yaha donkina Ngaabu e yimbhe mu'un
Aller relever défi Ngaabu et population leur

Si bhe dyattita dyawle bhe hetta gebhal
Avant retirer richesses et avoir droit

Ko e nder dhun nyaw bade yaltitidhon
C'est dans cela maladie variole apparut

Fidhi konu ngun fow woni maayoygol
Attaqua troupe entière provoquant mort

Bade dhen adori Alfaa Yahyaa
Variole commença par Alfaa Yahaya

On faati dhun woni ghabouringol
Lui fut décédé on l'inhuma

Bade dhen wari yimbhe luudyi nayi
La variole tua hommes mille quatre fois

Dhun satti e Fuuta bhe bheydi munyal
Cela durement ressenti par Fuuta, ils augmentèrent résignation

65 [Alfa Yaya and his troops
Went to return to Sarundya in order to prepare themselves
To go take up the challenge of Ngaabu and their population
Before taking the bounty and securing rule
It was then the smallpox sickness appeared
Attacking the entire troops, provoking death
Smallpox began with Alfa Yaya
Who died and was buried
Smallpox killed one thousand four men
Which strongly affected the Futa people, they grew with resignation.]

El Hadj Thierno Abourahmane Bah, “Gimdhi taariika fii Fuuta-Dyalon Ngaabu (poème peul),”
*Ethiopiques: revue socialiste de culture négro-africaine* 28 (oct. 1981). The author provides the French translation of the poem as well as the date and place of its
With four-fifths of military contingent and its leader killed due to the epidemic, the remaining forces returned to the Fouta Djallon only to hear news of the simultaneous sacking of Timbo by an invading force of ex-slaves from the southeast. The above historical poem goes on to recite the eventual downfall of the Gabou kingdom when, in 1867, the Labé forces under Alfa Ibrahima finally captured the Kansala capital and killed the Gabou king, Dianké Wali. Such heavy military losses to smallpox may have been not infrequent in the precolonial era. During the consolidation and growth of the Fulbe empire in the 1780s, its leader, Almamy Sori, led military jihads throughout the region to conquer and forcibly convert animist populations. On one expedition in the Fouta area of Sérimma, his army was decimated by a smallpox epidemic. In recounting the ravages of smallpox on the Labé army in Gabou, the poem illustrates the fact that variolation as a preventive measure may not have been widespread in some areas of recitation (Labé, 3 March 1980).

66 The major popular revolt was led by a Qadiriyya marabout, Alfa Mamadu Dyuhe, and, with his organized warrior group of escaped slaves and minority populations (known as the Hubbus), they succeeded in capturing the capital of Timbo. The uprising arose in part as a result of the state’s oppressive rule and the Alimamies’ decadent abuse of popular support. While the Alimamies regained control over the capital and put down the revolt, the Hubbus soon turned to banditry and continued to plague the kingdom until 1884 when, in alliance with Timbo, Samori Touré’s army eliminated all vestiges of the rebel movement. On the history of Alfa Yaya’s campaign, see Alfa Ibrahima Sow, Chroniques et récits du Foûta Djalon (Paris: C. Klincksieck, 1968), 19; and El Hadj Thierno Mamadou Bah, Histoire du Fouta-Djallon des origines au XXe siècle (Conakry: SAEC, 1998), 109. Historical studies of the Hubbu movement include Ismaël Barry, “Contribution à l'étude de l'histoire de la Guinée: les Hubbu du Fitaba et les Almami du Futa,” Mémoire de diplôme de fin d'études supérieures, Département d'Histoire, Institut Polytechnique Julius N’yerere, Kankan, 1971; Roger Botte, “Révolte, Pouvoir, Religion: Les Hubbu du Futa-Jalon (Guinée)” Journal of African History 29 no. 3 (1988): 391-413.

the Fouta Djallon. If inoculation were commonly practiced on children during this era, the outbreak at Saroudia would not have claimed the massive number of adult victims. Isolation thus may have been the more common practice to control the spread of epidemics, a defense with its own limits, especially when severely contagious forms of smallpox swept into an area.

Almost a half-century later, isolation was seemingly still acknowledged as the regional norm in the Fouta, according to medical observers. In 1904, two doctors published an abridged version of a *géographie médicale* for colonial Guinea, a mischaracterization since the only regions examined were Lower and Middle Guinea. While conducting research in Middle Guinea, they did not find variolation present in the Fouta Djallon. 68 Local villagers, the authors write, would isolate afflicted individuals. Later official annual medical reports from the regional posts of Labé and Timbo also do not provide evidence of its practice. Moreover, in the major colonial study of Islam in the Fouta Djallon, Paul Marty found no evidence for variolation. 69 The reported absence of indigenous inoculation in the region represents a paradox, given the area’s long history of Islam, the factor ascribed by French colonial medical thinking for variolation’s presence and spread throughout late nineteenth- and early twentieth-century West Africa.


Other contemporary accounts for the early twentieth-century provide a counterpoint to this paradox as reports by vaccinating physicians touring the area on initial mass campaigns offer contradicting evidence. French Guinea’s first head of the vaccination service, Gustave Martin (see above), campaigned in most of the entire colony between April 1905 and January 1906. In the Fouta Djallon, Martin found isolation and variolation both commonly practiced, the latter especially among Muslims. In terms of isolation, Martin writes that “dès qu’un village est contaminé de variole, les Foulahs s’enfuient dans la brousse et s’enferment au milieu des cultures en un de leurs ‘foulasso’ comprenant quelques cases où s’abrite seulement une famille.” Inhabitants from suspect areas were then prohibited to enter untouched villages.

Evidence for variolation was also abundant where, once again, concrete testimony revealed itself on individuals’ bodies. Throughout the region, Martin observed variolation marks on upper and lower arms and noted that the procedure only rarely led to deaths. Nonetheless, and in line with most colonial medical thinking at the time, Martin attributed indigenous inoculation to cause the spread of epidemics. Most often, it was household heads, he noted, who variolated all free persons of the family as well as the family’s slaves. On the eastern border between the Fouta Djallon and the Upper

70 ANS 1H38. Variole et vaccine en Guinée Française, 1906.

71 Ibid. In the Fouta Djallon, slaves comprised 50-60% of the population and most lived in separate farming villages surrounding ‘noble’ centers. Slave owners also possessed household captives who performed domestic labor. For historical analyses of slavery in the region, see the above cited articles of Botte, including Roger Botte, “L’esclave, l’alimani et les impérialistes: souveraineté et résistance au Fuuta Jaloo,” in *Figures peules*, Roger Botte et al., eds. (Paris: Karthala, 1999); Ismaël Barry, *Le Fuuta-Jaloo face à la colonisation: Conquête et mise en place de l’administration en Guinée* (1880-
Guinea region, at Dinguiraye, variolation was common. Dinguiraye residents also took unique measures after isolating the sick: afflicted victims were first sequestered behind the village in specially constructed huts or abandoned dwellings, and, then, after recovery or death, these lieux were burned to the ground. Such health precautions were not documented elsewhere in Senegal or Guinea. Reporting on a subsequent vaccination campaign in Middle Guinea, Sibenaler observed that the Fulani recognize a link between vaccination and indigenous smallpox inoculation, “that they know and practice, without that the procedure is certainly very widely used, since they do not ignore its dangers.

At the base of the Fouta foothills in Kindia, an emerging center for rail trade and, as of 1906, site of colony’s vaccine production center, the director of said institute noted that inhabitants “pratiquent d’ailleurs eux-mêmes depuis fort longtemps la variolisation au moment des épidémies”.

Lastly, Louis Arensdorff, a colonial administrator who conducted research in the Fouta and published one of the few

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72 In the mid-nineteenth century, Dinguiraye served as the base of El Hadj Umar Tall’s jihadist empire, which French military forces under Faidherbe eventually defeated. Dinguiraye later became an early colonial district center.

73 ANG 1H8, Le Docteur Gustave Martin, Médecin Major de 2e classe des Troupes Coloniales, chargé du la vaccine en Guinée, à Monsieur le Gouverneur de la Guinée Française à Conakry, Conakry, 21 janvier 1906, “Mission de vaccine en Haute Guinée”.


colonial ethnographical studies of Fulbe indigenous medicine, aptly details the phenomenon in which isolation and variolation operated in tandem within a single locale. According to Arensdorff:

quand la variole (bade) sévit et qu’un habitant d’un village en est atteint, on l’isole dans la brousse, au loin et sous le vent de la misside (mosquée, paroisse), pour éviter l’épidémie. Un ancien varioleux (badâdo) lui sert de surveillant, de garde-malade, et lui fait prendre des infusions de dyabbe. Le malade ne doit manger que des céréales. Par l’action du dyabbe, les boutons se crévent; on en soutire la matière et, avec un rasoir, on communique la maladie par incision à tous les autres habitants du village. C’est la variolisation. Les variolisés vont alors s’exposer au soleil chaque jour, jusqu’à ce que le vaccin soit séché.

In the face of the conflicting historical evidence for variolation’s presence and absence in Lower Guinea and the Fouta Djallon, arguments promoting its generalized pattern in West Africa confront empirical problems. While variolation is documented in some areas, so too, are isolation measures in other milieu, where inoculation may have been avoided or simply ignored. Such radical heterogeneity of smallpox treatment has been noted elsewhere in Africa. Oral historical research conducted by Faye in north-central Côte d’Ivoire during the late 1970s did not find widespread memory of

76 Arensdorff also wrote an early manual of the Fulfulde grammar and as such falls into the cadre of French colonial administrators in pre-World War I era who became amateur ethnographers. See his Manuel pratique de langue peulh (Paris: P. Guethner, 1966, orig. pub. in 1913).

77 [when smallpox attacks and an inhabitant of the villages is stricken, he is isolated in the bush, far and downwind from the mosque, to avoid spreading the epidemic. A former smallpox victim serves as his nurse, a sick-guard, and makes him take infusions of dyabbe. The sick person should only eat grains. By the action of the dyabbe, the pimples break open; the matter is taken out, and, with a razor, the disease is transferred by incision to all the other inhabitants of the village. This is variolation. The inoculated then go expose themselves in the sun each day, until the vaccine becomes dried.] Louis Arensdorff, “La médecine chez les Peuls du Fouta-Djallon,” Revue d’ethnographie et de sociologie 4 (1913): 264. Italics are in the original citation.
violation. Within the same region, out of three ethnically mixed (comprising Senoufo, Dioula, and Tagouana populations) areas surveyed—Kong, Korhogo, and Sinématiali—Faye heard testimony in the last locale only. A former practitioner in Sinématiali told how he would travel to the bush and collect different leaves, roots and bark with the aid of “a thousand and one” ritual incantations. To carry out the procedure, pus was extracted from a smallpox victim and then mixed with an infusion of collected materials. The same ancien used a traditional knife or razor blade to make incisions on the inside of the upper arm, where the combined solution was placed.\textsuperscript{78} In the two other areas of Kong and Korhogo, inhabitants solely relied on the isolation of smallpox victims. Isolation took several forms, including the most widespread manner of building a hut some distance from the village. As was the case in Senegal and Guinea, Faye found caretakers could be selected from those individuals already immune. In some instances though, a non-immune person was designated, who, with the “protection de Dieu” would not contract the disease.\textsuperscript{79} Near Kong, in the Tagouana villages of Kroundjala and Sinanan, inhabitants did not send the sick outside of the village, but, rather, quarantined victims in their own dwellings. Family members of the concession provided treatment and prevented outside visits until the patient had healed.

\textsuperscript{78} Joseph Faye, “Les épidémies de variole en Côte d’Ivoire (1900-1940),” Mémoire de maîtrise, Département d’Histoire, Université d’Abidjan, 1979, 36.

\textsuperscript{79} Ibid., 35.
Faye attributes this intra-village practice of isolation to the strong communitarian sentiments extant in these locales.\(^{80}\)

The French geographer, Christian Seignobos, similarly describes a multiplex healing environment for northern Cameroon where the most severe recorded smallpox epidemic occurred in 1969, particularly in ethnic Mafa areas. During the outbreak, ethnic Muslim groups of the region (e.g., Kanuri, Mandara, and Fulbe) practiced forms of variolation, although neighboring non-Muslim communities seemed not to have known of its use. Seignobos also points out that indigenous inoculation was never systematically employed on any spatial level, including that of the village.\(^{81}\) Given the paucity of written sources on variolation and isolation in Lower Guinea and Fouta Djallon after the First World War, oral historical research in both areas could profitably investigate the same period to reveal the nature and possible patterns of smallpox treatment. The country’s last major disease outbreak occurred over the years 1967 and 1968; in 1967, Guinea and neighboring Sierra Leone had two of the highest smallpox rates globally. Almost exclusively affected were the southwestern zones as Lower Guinea and the Fouta Djallon contained 87% of all reported cases (1,530 with 193 deaths for 1967 and 330 with 23 deaths in 1968).\(^{82}\) In historical terms, though, as this

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\(^{80}\) Ibid., 36.


\(^{82}\) Locales with the most cases bordered on the frontier with Sierra Leone, the determined source of the epidemic. The above data is supplied in J. Breman et al., “Smallpox in the Republic of Guinea, West Africa. I. History and Epidemiology,”
section largely illustrates, regional patterns for smallpox prevention in Lower Guinea and the Fouta Djallon did not emerge. Prevalent instead was a highly amorphous and disconnected field where Africans employed the two strategies, sometimes in combination, but more often uniquely, on an almost village-by-village basis. The same trend of disjuncture historically characterized the other Guinean region under consideration, that of Upper Guinea.

*Signifying Bodies: Smallpox Prevention and Therapy in Upper Guinea*

Northeastern Guinea, commonly referred to as Upper Guinea, comprises savanna plains and intermittent forest terrains transected by several rivers, the Niger and Milo Rivers among the two largest. Prior to French military conquest in the late nineteenth-century, groupings of autonomous communities grew and sustained themselves on a variety of agricultural products cultivated on quite fertile lands as well as commerce tied to the trade of kola nuts, gold, cloth, salt, and slaves. Area inhabitants, known as the Maninka, were and still are quite heterogeneous in cultural practice and identity, reflecting, in part, the multiple histories of in-migration and settlement. The history of Kankan, the major commercial and Muslim religious center of

*American Journal of Tropical Medicine and Hygiene* 26, no. 4 (1977): 759. The authors all worked in Guinea on the World Health Organization-sponsored smallpox/measles eradication program for West Africa inaugurated in the late 1960s. Their two-part study of the eradication efforts in Guinea does not mention any local treatment practices, whether variolation or otherwise.
the region, demonstrates the phenomenon most vividly. In the early seventeenth-century, Sarakolé itinerant traders (*dyula*) of the Kaba family-lineage migrated from the middle Sudan and settled there among earlier Bamana migrants. The Kaba were shortly to be joined by other families, such as the Diané from Kong and the Chérif from Mauritania.\(^3\) These Muslim lineages came to be known as the *Maninkamori*, with *mori* signifying the Maninkakan term for scholar or marabout.

By 1870, political rule, once in the hands of multiple, relatively independent local chiefdoms (specifically seated in the centers of Kankan, Toumanea, and Niagassola, among others), congealed under Samori Touré’s growing regional empire with its rigid administrative hierarchy. Throughout the following decade, Touré successfully created a veritable empire through both alliance and conquest, and unleashed revolutionizing forces in the region. First, local economies grew more linked through increased itinerant *dyula* trading, and, further, the heterogeneous map of religious belief changed. Formerly, Upper Guinea contained several islets of Muslim zones, such as the Baté area and its capital, Kankan, or the Oulada region to the west near Kouroussa, co-existing within a larger landscape of animist communities. With the empire in full ascension, Touré now promoted, sometimes forced, greater religious conversion to Islam. By 1885, Samori Touré’s nascent empire had become one of the largest political bodies in nineteenth-century West Africa. Yet, it also began to fissure due to a failure to

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control internal contradictory dynamics and a new external force arriving on the horizon, the French military.\textsuperscript{84}

Despite long years of resistance until his capture in 1898, for which Samori gained historical renown, French colonization was popularly welcomed for its own set of liberating possibilities in local communities. From 1890 to the First World War, many slaves left their masters to return home, and villages renounced the forced conversion to Islam to revert to prior practices of animism. New economic opportunities appeared to groups and communities, either previously locked out of the monopoly held by Muslim dyula traders or greatly diminished due to the heightened risk made by frequent warfare. Possibilities included cash-crop production in the form of rubber cultivation, wage-labor remuneration on colonial infrastructure projects, and better access to markets, and higher revenues for the fruit of mining labor, that of gold. With the start of twentieth-century, French rule in Upper Guinea had fully shifted from a military to civilian administrative structure based around the three regional centers: Kankan, Kouroussa, and Siguiri.

European nineteenth-century historical sources for Upper Guinea in general, and specifically for indigenous medicine, are relatively few when compared to the two regions discussed above. While locally written Arabic manuscripts for the precolonial period may exist, these sources have yet to be identified and studied.\textsuperscript{85} Perhaps one of


\textsuperscript{85} The apposite place to find such documents is in Kankan, yet any search would confront the city’s historical past. The scholarly center was sacked and burned twice in the second half of the nineteenth-century; the latter time occurred when Samori set
the first accounts of local responses to smallpox comes from the oral tradition describing the creation of Bougouni, another regional center located immediately to the west of Kankan in present-day Mali. Sometime in the eighteenth-century, an epidemic visited the area in the village of Yorola and afflicted the family of a newly arriving immigrant, Midia Koroba Diakité. To protect other Yorola inhabitants against contagion, Midia Koroba transferred his family out of the village some distance to a place where he then constructed a small hut for isolation. After the epidemic, Midia Koroba and his kin remained at the site and there eventually prospered the new village of Bougouni, whose meaning in Bamamakan translates as ‘small hut’.

The first European traveler to visit Upper Guinea was Rene Caillié, who in 1820 traversed the Fouta Djallon to arrive and sojourn several weeks in Kankan. Despite the rich information in his travelogue, Caillié does not mention any local therapeutics in the area. The next Europeans to arrive in the region were the French military forces in the mid-1880s under Gallieni, who created military forts in the northern part of the region, first at Niagassola (1885) and then Siguiri (1887), in an effort to curtail Samori’s empire and enlarge France’s imperial control over the larger Western Sudan. Several Kankan ablaze in January 1890 as French troops approached the city. Immediately after occupation, military reports recorded that several large private libraries were destroyed. Preliminary efforts to locate manuscript sources in the late 1990s during dissertation research proved unsuccessful.


In the voyage log, Caillié makes no reference to smallpox or variolation. Réné Caillié, Voyage à Tombouctou (Paris: La Découverte, 1996, originally published in 1830), vol. 1.
French diplomatic missions were sent to Samori’s empire base in Bissandougou, located just to the south of Kankan. Leading one such mission was Louis Binger (see Chapter 2), who observed the use of variolation among animist populations on the eastern border of Upper Guinea near Bougouni in the Wassolon region. One géographie médicale was written for the region, the study completed by Crambes who served at Niagassola and Siguiri. Crambes’ brief treatment of smallpox does not include information on prevention and only makes reference to the disease’s seeming ubiquity as evidenced by the frequent physical scarring observed on inhabitants’ faces.

The first and incidentally most detailed account concerning the regional extent of variolation comes from Gustave Martin, who traveled to the area toward the end of 1905 as a part of a medical mission to study the prevalence of human sleeping sickness. During the trip, Martin also carried out an extensive smallpox vaccination campaign, visiting large and small villages along the route between the regional posts of Faranah, Dinguiraye, Kouroussa, Siguiri, and Kankan. Over close to three months, the campaign vaccinated more than 7,000 individuals. In Kouroussa, as in the locales


90 The study was subsequently published in Gustave Martin, Les trypanosomiases de la Guinée Française (Paris: A. Maloine, 1906).

91 Prior to Martin’s 1905-06 campaign, little vaccination took place in the Upper Guinea region.
mentioned above, Martin again came into contact with variolation’s historical traces on the body:

many natives show the traces of variolation on the lower arm or fist. They all have a great fear of smallpox, but they do not practice the quarantine, and rarely isolate a sick one. They neither burn his house, nor even his sleeping mat or clothes, and they keep all of his belongings after his death. However, as soon as one case breaks out in the village, the infected children of the ‘household’ or ‘tata’ allow themselves to be variolated by a blacksmith who works for free. Neighbors and other residents could take advantage of the opportunity, yet, they more or less showed willingness.92

At the regional centers, all schoolchildren came under the lancette and, unique to the Upper Guinea campaign, Martin specifically researched case histories for previous smallpox and variolation. In Siguiiri, 107 students were vaccinated, including 85 boys and 21 girls. Of the boys, 23 (27%) presented signs of past variolation, while 43 had had a previous case of smallpox; three of the 43 also had been previously variolated. None of the girls indicated variolation or smallpox. As to be expected from the above observation in Kouroussa, Martin found the élèves there with a slightly larger incidence of variolation: 29 (33%) of the 88 boys and 9 (45%) of the 20 girls. 16 boys and 6 girls suffered from past smallpox. Kankan was the regional post with the largest number of Muslim children potentially recruited for colonial schooling and, according to medical opinion of the time, should have presented the greatest incidence of indigenous inoculation (see Table 8, which shows large proportion of those children attending koranic schools). Youths’ arms though betrayed this logic. Only 7 (9%) of the 88

92 Quotation marks in the original. ANG 1H8, Mission de vaccine en Haute Guinée.
children evidenced variolation, while 14 students showed pox markings. Lastly, in the western border of Upper Guinea region (more precisely, the Sankaran area), all 50 of the Faranah students had no prior variolation scars, although 18 had been victims of so (smallpox, Maninkakan).

Table 8.

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Martin’s figures for the colonial schoolchildren, it should be noted, do not represent an absolute correlation between religious belief and the regional incidence of variolation due to the nature of colonial recruitment of children for schooling in French West Africa. Since Martin does not differentiate the school children according to religious

93 For the Kankan and Faranah écoles, Martin does not provide data for gender.

94 ANG 1H8, Mission de vaccine en Haute Guinée.

95 In the first two decades of the twentieth-century, district officers generally exerted much authority to fill the fledgling institutions. African cantonal chiefs (chefs du canton) and village heads (chefs du village) were required to furnish an annual quota of prospective students, usually young boys, for the schools. The body of recruits thus came only partly from the urban centers as rural areas also supplied candidates. In
belief, it is not possible to correlate completely religion and variolation, for example, whether the less-variolated Kankan students indicate the diminished practice of variolation in this Muslim area. The variolated youth (9%) could have been either Muslim or animist. However, in terms of a general pattern or trend, regardless of religion, variolation was probably less prominent in the Kankan area than in Kouroussa and Siguiri at the start of the twentieth-century. Alternatively, for the same period, indigenous inoculation occurred with greater frequency in Kouroussa and Siguiri. For additional research, it would be salient to examine the gender dynamics of variolation so as to account better for the disparity between the much greater number of Kouroussa girls variolated than their counterparts in Siguiri.

Recent oral historical research in Upper Guinea found that social memory still exists for past variolation and isolation practices, yet also indicates changes the two forms underwent over the colonial period. Memory of the practices over regional some areas of early colonial Guinea, particularly in the Fouta Djallon, Muslim chiefs chose the children of slaves to meet the recruitment quotas for secular education. The most thorough study of early colonial education in French West Africa is Denise Bouche’s 1974 doctoral thesis, L’enseignement dans les territoires français de l’Afrique occidentale de 1817 à 1920: mission civilisatrice ou formation d’une élite?, 2 vols., (Lille: Atelier Reproduction des thèses, Université Lille III, 1975). For colonial schooling, especially for girls, in the Fouta Djallon, see Djenabou Barry, “La scolarisation des filles en Guinée française: le cas du Fouta-Djallon (Guinea),” Ph.D. thesis, Université de Laval, Québec, 2002.

96 Between November 1998 and August 2000, I completed close to 200 oral historical interviews with the help of a research assistant, Aboubacar Kourouma, in the cities and surrounding areas (10-40 kilometers from the center) of Kankan, Siguiri, Kouroussa, and Dabola. Interviewees mostly comprised older men and women (<65 yrs.) who resided in the region during the colonial era. Some included indigenous healers, former male nurses, and doctors who worked in the colonial medical services. The large majority of the recorded interviews were conducted in Maninkakan and then transcribed
space reflects in part the patterns Martin found in 1905, with some important exceptions. All interviewees recognized smallpox’s contagiousness as well as the need to isolate victims, but exactly in which location the sick received treated varied in popular memory. Many elders remembered victims secluded only at home\(^\text{97}\), while others mentioned that the sick were placed “behind the huts” of the village.\(^\text{98}\) On the eastern Upper Guinea border with the Fouta Djallon, in the area of Dabola, inhabitants sent the infected completely outside of the village to farming plots where lemon juice was applied to the victims’ eyes to prevent against ocular damage.\(^\text{99}\) Immediately outside of Siguiri, in the fishing and farming village of Tiguibiri that flanks the Niger River, informants employed a specific name for the place of isolation. According to the current village head, Fodé Kéïta, smallpox victims were sent to sobugu (smallpox place and translated into French. A complete list of informants with date and location will be provided in the Appendix to the dissertation.

\(^{97}\) Mamadou Bah Sidibé, 2 February 1999, Dabadougou; Mansira Diakité, 29 April 1999, Balandougou.

\(^{98}\) Nantênèn Kéïta, 2 February 1999, Dabadougou. The informant is a female healer from a nearby farming village of Wolété Kignéro and moved to Dabadougou when she married. In her family, knowledge of indigenous treatments for fasa (stunted growth of infants), denbalen (malaria), and sisiradinmin (stomach aches), among others, was passed from mother to daughter. She also gained more knowledge by working as an apprentice with other healers. Among her children, only one son, Moussa, showed interest in healing and learned her treatments. Moussa subsequently left the village for seven years to travel to other parts of Guinea where he studied with different healers. At the time of interview, he had become “le plus grand féticheur (soma) et guérisseur du village” and lived in the village’s only Western-style (square) house.

\(^{99}\) El Hadj Sékou Sy Savané, 10 December 1999, Dabola. In severe cases, smallpox pustules could erupt on the eyes and the result was often blindness.
or hamlet), consisting of specially consigned huts.\textsuperscript{100} Asked if the hamlet was far from the village, Kéïta replied from experience, that it was “tout juste derrière le village, et, moi-même, j’avais eu deux de mes enfants gardés là-bas”.\textsuperscript{101}

In terms of variolation, little or no recollection exists in the Kouroussa area. While here additional oral evidence is necessary to confirm its decline (and disappearance?), but one former nurse from the area, El Hadj Sayon Kéïta, never heard

\textsuperscript{100} The Maninkakan language varies in dialect over the Upper Guinea region. To the north in Siguiri, the language takes on some attributes of the nearby Bamankan-language of southwestern Mali. Hence, speakers pronounce the ‘g’ in phonemes with a paired vowel (e.g., dugu, bugu, mogo) whereas inhabitants in Kankan, Kouroussa, and Dabola elide the ‘g’ (e.g., duu, buu, moo). [duu=place, site; buu=hamlet; moo=person].

\textsuperscript{101} Fodé Kéïta, 5 May 1999, Tiguibiri. At the time of the interview, the 86-year old informant was the chief (sotiikèmoo) of the village council of elders. In Upper Guinea, village authority today resides on two levels with separate representatives: administrative and customary. Customary chiefs (sotiikèmoolu, pl.) have existed since the precolonial era, while the positions of the village administrative chief (duutii) and the cantonal chief (dyamanatii) were a French creation. Appointed by the colonial administration, canton chiefs were paid a minimal salary to collect poll and supplementary taxes and recruit forced labor for transport and public works projects. This meager income combined with a desire for sumptuous displays of power often led to much abuse and corruption of the position. Shortly before Guinea’s independence in 1958, the anticolonial nationalist party (Parti Démocratique de Guinée) led by Sékou Touré successfully secured the elimination of highly weakened and delegitimated canton chieftancy. For historical studies of cantonal chieftancy in colonial Guinea from a nationalist perspective, see Jean Suret-Canale, “La fin de la chefferie en Guinée,” Journal of African History 7, no. 3 (1966): 459-493; and more recently, Elizabeth Schmidt, Mobilizing the Masses: Gender, Ethnicity, and Class in the Nationalist Movement in Guinea, 1939-1958 (Portsmouth, NH: Heinemann, 2005), esp. chap. 4. On changes concerning village and urban neighborhood chiefs, see Anne Summers and R. W. Johnson, “World War I Conscription and Social Change in Guinea,” Journal of African History 19, no. 1 (1978): 25-38; Odile Goerg, “De la tradition niée à la tradition revendiquée: les cas des chefs de quartier de Conakry (des années 1880 aux années 1950),” in Le retour des rois: les autorités traditionnelles et l’État en Afrique contemporaine, Claude-Hélène Perrot and François-Xavier Fauvelle-Aymar, eds., (Paris: Karthala, 2003), 25-45.
of the practice. While an AMI nurse, he frequently took part in vaccination campaigns that brought him in close contact with area populations. In addition to vaccination, his memories of work in the service include treating rural smallpox victims. If a local outbreak occurred, the village chief would alert colonial authorities and the medical services would arrive to vaccinate and isolate victims one to two kilometers outside of the village. Around the Kankan area, interviewees similarly did not know of variolation and only mentioned ways of isolating victims.

Popular memory of the variolation remains in some areas of Siguiri and Dabola where most informants referred to indigenous inoculation by the term *ka so fudu*, or

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102 Kéïta was born in 1921 near Kouroussa, in the farming village of Sangbarala, and, at the age of eleven, was recruited with two other village boys to attend primary school first in Kouroussa and then in Kankan. He successfully passed the examination for a primary school degree (*certificat d'études*) in June 1940 and, subsequently, returned to Sangbarala to farm with his parents throughout the next eighteen months. During the war, the colonial administration in Guinea instituted a series of harsh measures: particularly, mandatory crop cultivation to feed the fighting troops in France and increased forced labor recruitment to work on European plantations. The ‘war effort’ directly affected Sayon Kéïta’s life when, in November 1941, the Kouroussa district officer summoned him to volunteer at the local clinic. “On a besoin des enfants intellectuels pour faire le bénévole au dispensaire,” Kéïta recalled being told by the post commandant. For the next six months, his service work impressed the medical superiors that he was eventually nominated to the colony’s nursing corps. A one-year training ensued in Conakry and he began his professional career in 1943 with the health services (Assistance Médicale Indigène or AMI) at several posts in the Fouta Djallon (Gaoual, Mali, and Pita). Kéïta also worked two stints at Kouroussa dispensary (from July 1948 to June 1950; November 1953 until his retirement in 1981). Interview with El Hadj Sayon Kéïta, 18 and 20 June 1999, Kouroussa.

103 Ibid.

104 Interviews: Fanta Sidibé, Hadja Koyah Touré, and Balla Kéïta, 3 July 2000, Boussouran; El Hadj Saran Kaba Mady, Sidiki Sidibé, and Balla Doumbouya, 4 July 2000, Dalabanin.
literally, ‘to marry smallpox’ (ka fudu, to marry, Man.). There may have been other, less frequently used expressions for the procedure. One former nurse from Siguiri ville called the procedure so dyendyé, which can be translated as ‘to remove the sap of smallpox’ (dyen, sap, Man.).\textsuperscript{105} The more common Maninka name for variolation with its emphasis on marriage and alliance differs from the ostensible pattern of other regional appellations. As noted above, among the Fulani (Toucouleur) of western Senegal and the Mossi of Burkina Faso, the name connotes ‘to buy smallpox’. Further comparison of variolation’s meanings within Mande languages (e.g., Bamanakan or Bambara, Soninké, Soso) is difficult since almost all nineteenth- and twentieth-century linguistic publications (i.e., dictionaries, lexicons, and grammars) do not provide any terms for the practice.\textsuperscript{106} While entries for smallpox are common in these works, the only source to offer any translated term for indigenous inoculation is Delafosse’s Mande-French dictionary. When Delafosse translates variolation into Mande, he provides two terms, ‘sepu’ and ‘misi-bo-mbo-lu-so’, however these expressions are themselves ambiguously used.\textsuperscript{107}

Although inoculation was common to the Siguiri area, not all informants underwent or even knew of the procedure. One elderly woman, Dyanka Doumbouya,  

\textsuperscript{105} El Hadj Dyanko Mamady Kéïta, 23 February 1999, Siguiri.  
\textsuperscript{106} A listing of the Mande language publications consulted is provided in a separate section of the dissertation bibliography.  
\textsuperscript{107} Both terms are also the translation for the ‘vaccine’ harvested from a calf as the latter name indicates: misi (cow, Man.) and ka a bo (inf., to take out). M. Delafosse, La langue mandingue et ses dialectes (Malinké, Bambara, Dioula), vol. 1: Introduction, grammaire, lexique français-mandingue (Paris: Paul Geuthner, 1929), 659; 661.
knew of variolation performed in her native village of Waran (in the vicinity of Siguiri),
but was never variolated herself as a child. At Saint-Alexis, the Catholic mission four
kilometers from the centre-ville, two life-long residents were unfamiliar with so fudu,
while a third, Daniel Sidibé, never witnessed the practice, but heard its description in
informal conversations when he resided in other areas of Upper Guinea. After
completing mission schooling at Saint-Alexis and later in Kankan, Sidibé became a
Catholic schoolteacher in Kiniéran at the start of the 1950s. In Kiniébakörö, located
immediately to the southeast of Siguiri on the opposite bank of the Niger River, two
World War II veterans underwent variolation as children. One had the procedure
performed on the lower leg, while the other was inoculated on the dorsal surface of the
wrist. A former colonial nurse told how, in his youth during one school vacation in the
early 1940s, his family sent him to his father’s village (70 kilometers from Siguiri) where
a smallpox epidemic outbreak was underway. He was instructed to undergo variolation

108 Dyanka Doumbouya, 7 May 1999, Kignébakörö. In the past as well as continuing
today, almost all Maninka young rural women leave their natal village upon marriage,
like this informant (close to 100 years old) who moved from Waran to join her husband’s
family in Kignébakörö.

109 Réné Camara and Alexandre Doumbouya, 10 May 1999, St. Alexis (Siguiri); Daniel
Sidibé, 10 May 1999, St. Alexis (Siguiri).

110 Nana Moussa Traoré and El Hadj Doussou Mamady Traoré, 7 May 1999,
Kignébakörö. The two, unrelated men were both born in 1919 and, during their youth,
left the village to work in artisanal gold mines within the subregion. Upon return to
Kignébakörö in 1939, they were conscripted into the colonial army and fought in France
during the Second World War.
so as to protect himself from the disease. After his treatment, he felt that he received smallpox immunity for the rest of his life.\textsuperscript{111}

In addition to the Siguiri area, further evidence for indigenous inoculation comes from the Dabola area, the transitional zone between Upper Guinea and the Fouta Djallon. In the precolonial era, the region comprised the marginal eastern province of the Fouta empire with an ethnically heterogeneous, though spatially divided, population. To the north and west of Dabola center, Fulfulde-speaking communities predominate, while in the east and south, Maninka agglomerations are present. By the second decade of the twentieth-century, Dabola, once a small village, increasingly grew in size and stature with its placement along the Conakry-Kankan railway and later the colony’s principle major roadway. Europeans settled in the area to launch cash-crop plantations and significant numbers of Lebanese families successfully gained control of small trading activity. By the 1920s, the city became the administrative district (cantonal) center for the larger region, thus displacing two former centers, Faranah and Dinguiraye. Part of Dabola’s urban ascendancy derived from a major transformation of local regional politics. In 1912, with the backing of the colonial government in Conakry, the local French officer for the region, Thoreau-Levaré, completely dismembered administratively the precolonial provinces of the Fouta Djallon and transferred its last aristocratic ruler, Almamy Bokar Biro, and essentially the seat of political power, from

\textsuperscript{111} El Hadj Dyanko Mamady Kéïta, 23 February 1999, Siguiri.
Timbo to Dabola. Biro and his successors now became cantonal chiefs over this once marginal edge of the Fouta empire.\footnote{112}

Oral historical research in Maninka communities of the Dabola area found memory of variolation split spatially along a north-south axis. In Tanoula (53 kilometers to the northeast of Dabola), a small village of blacksmiths specializing in indigenous iron-ore extraction, elders remembered the procedure communally performed with a razor (\textit{lilan}, Man.) on young children. Asked if any particular specialist carried out the operation, the informants responded negatively, mentioning that it was simply the village elders (\textit{mööbalu}) who variolated.\footnote{113} Further to the northeast, at the Fulani village of Selouma, located along the road connecting Dinguiraye and Bissikrima, the current doyen du village pointed to the incision mark on the back of his hand in affirming inoculation’s practice locally.\footnote{114}

How variolation specifically declined and disappeared in the areas of Kankan and Kouroussa, but remained in practice and memory for the Siguiri and Dabola regions is an historical enigma. One possible explanation might see the role of colonial vaccination: greater vaccine coverage near Kankan and Kouroussa, given their large urban centers with a more developed transportation infrastructure (e.g., railway and roads) for mobile vaccination teams. In actuality, though, the number of vaccinations in


\footnote{114} El Hadj Maki Sow, 16 January 2000, Selouma.
the Siguiri region was equal to, if not more than, the Kankan area over the colonial period. Additionally complicating this explanation is the fact that the Kouroussa cercle had the less vaccination coverage than Kankan and Siguiri, but a greater incidence of reported smallpox outbreaks.\textsuperscript{115}

Another interpretative scenario might heuristically forego regional thinking and models altogether and, instead, focus on the contingent and particular factors playing out in individual villages and even family units. Admittedly this approach requires more empirical historical research, where one would pose the question of meanings and practices of interconnectedness. The ways one community imagined a relation to a center or indeed a neighboring village, between a human body and smallpox, may not have been uniformly shared across communities as the different local testimonies for the prevalence of variolation illustrate.

Generally, most informants told only how the bodies of the sick were healed.\textsuperscript{116} Caretakers treated the eruption of smallpox pustules by applying honey to the victim’s body and then covered the victim in banana leaves (\textit{namasafida}, Man.) to keep the skin

\textsuperscript{115} A subsequent chapter treats in detail the history of smallpox epidemics and colonial vaccination in these areas of Upper Guinea.

\textsuperscript{116} Interview questions employed an open-ended format to first collect information on informants’ medical histories and healing itineraries. My research assistant and I then inquired about local common illnesses during the colonial era, including epidemics. To the question of which epidemics occurred in the village, elders overwhelmingly mentioned smallpox in their initial responses that often included information on local forms of therapy and care. If interviewees did not initially speak to indigenous treatments, we directly posed the question as well as that of the response by colonial medical services.
cool and moist. If the skin dried, informants related, the pustules would break causing a further spread of the disease over the body. Different forms of herbal medicine were also probably given to victims to treat the disease’s accompanying symptoms. In the interwar period, Father Joseph Lacas, a Catholic missionary with the Holy Spiritans order in Upper Guinea, studied and compiled an unpublished list of plants and fetishes employed in Maninka indigenous medicine (basi, Man.). Among the fourteen items listed, Lacas included a treatment for smallpox. The remedy consisted of a decoction made by mixing the leaves of three trees: ‘sindin’ (Cassia

117 There were probably several variations of this treatment. One informant described red oil (tulu wulen, probably palm oil) and pounded millet (sanyö) mixed with honey and then applied to the body. Patients also ingested the oil. Fadimagbé Siyaran Konaté, 11 February 1999, Ourembaya.

118 Père Lacas (1875-1941) devoted much of his adult life to the direction of Catholic missions in Guinea, first in the Forest Region and then later in Upper Guinea. After the First World War, he simultaneously founded both the Kankan and Kouroussa mission stations (1916) and alternated parish duties between the two locales continuously for the next 22 years. Conversions to Catholicism in Upper Guinea were few during this period; by 1936, the number of parishioners in the region (comprising Kankan, Kouroussa, Dabola, Bissikrima, and Baro) included 132 Europeans, 162 Syrians, and 126 Africans. Lacas also published several short ethnographical articles in the Holy Spiritans’ journal, Annales des Pères du Saint-Esprit. Biographical details on Lacas’ missionary work come from Vieira’s two volume study, Sous le signe du laicat: l’Église catholique en Guinée, v. I (1875-1925), and v. II (Le temps des prémices 1925-1958) (Dakar: no pub., 1992, 1999).

119 Maninka medicine as a general category is commonly referred to as ‘basi’. However, basi also connotes fetishes, idols, amulets, and magical objects. A Maninka healer is often called ‘basibola,’ for this person is capable to extracting or taking out (inf., ka a bo) medicine. Other terms also exist for healers, but are less frequently used such as basitii, furakèla, and furabola (tii, owner or proprietor; fura, variant of fida, leaf). Since the introduction of vaccination, the Maninka have translated vaccine as basiji (ji water or liquid, Man.).
While Lacas does not mention how the decoction was employed, the leaves were most likely boiled and infused to prepare an herbal tea. The infusion was then ingested internally as well as rubbed externally on the body. In southern areas of Upper Guinea, ethnic Kissi communities treated victims internally by combining the root of a local plant, gbakeo (Fagara macrophylla), with the oil derived from the fruit of Carapa procera (kobi, Man.). In terms of dietary measures, informants mentioned that honey (li, Man.) was given to victims to ingest. Forms of restricted diet were probably also common, such as preparation of certain grains, especially millet (sanyö, Man.)

Lastly, in terms of therapeutic practices as well as a synecdoche for Maninka conceptions of smallpox, some informants acknowledged that there were no magical

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120 Archives de la Congrégation de Saint Esprit (Chevilly La Rue, France), Fonds Lacas, 6I 1.3b (V), Notes R.P. Lacas 1875-1941, “De quelques basi chez les Malinkés,” undated document. Lacas provides the Latinate names of the trees in the original document.

121 I derive the probably uses based on several botanical studies of medicinal plants in Guinea. Studies have indicated that all three trees are common throughout Guinea, but especially in Upper Guinea. Prepared as a tea, the three leaves treat internal and external disorders associated with smallpox cases. Cassia sieberiannaïs used as a diuretic and febrifuge and, when mixed with honey, treats diarrhea and gastric problems. Sarcocephalus esculentus (sometimes referred to as Nauclea latifolia) is also anti-febrile, whether ingested internally or utilized in a massage. Lastly, Mitragyna inermis is employed internally and externally for a fever and is applied on skin eruptions. See Henri Pobéguin, Les plantes médicinales de la Guinée (Paris: Augustin Challamel, 1912), 23, 47, 57; Vasileva Basilevskaia, Plantes médicinales de Guinée (Conakry: Imprimerie Patrice Lumumba, 1969), 57, 163, 171.

122 Basilevskaia, Plantes médicinales de Guinée, 107.

123 Nana Moussa Traoré and El Hadj Doussou Mamady Traoré, 7 May 1999, Kignébakörö.
incantations or verses to treat the disease.\textsuperscript{124} Spoken incantations (\textit{kirisi}, Man.) form an integral part of many Maninka treatments, with which healers combine herbal medicines. Specific incantations and oral formulas are highly guarded secrets that draw upon the magical powers and forces of orality channeled for the purposes of curing and protection against evil elements (\textit{nyama}, Man.) in the natural world.\textsuperscript{125} Specialized healers (\textit{basibolalu}, pl., Man.) (or, for that matter, as is often the case in Upper Guinea, any individual who may possess knowledge of a single treatment) recite specific verses at different moments in the healing process. When collecting medicinal plants in the bush or forest, healers pronounce a particular verse before cutting a plant so as to

\textsuperscript{124} Ibid. El Hadj Doussou Mamady Traoré included the observation as part of a response to my general question about smallpox treatment in the village. The subject of incantations had not previously been broached during the interview.

\textsuperscript{125} Throughout the Mande region, if not the broader West African region, it is common, shared belief that animate and inanimate objects possess vital forces called \textit{nyama}. When released outside of normal contained bodies or states, the forces produce a charged field that can be potentially harmful to unprotected individuals. Persons who regularly transform objects and come into contact with freed, circulating forces, such as blacksmiths working with metals, hunters killing prey, or healers collecting wild plant substances (e.g., roots, leaves, and bark) typically take protective measures before proceeding with the work activity. Circumcision for boys and excision for girls is often carried out by male blacksmiths for the former and their wives for the latter not only due to the fact that blacksmith families have access to or fabricate sharp instruments for the procedure. \textit{Numulu} (pl, Man.) also know magical ways to defend against \textit{nyama} discharged from the human body when the skin is cut.

Similarly, human speech is seen as equally powerful, and potentially dangerous, since the \textit{parole} originates from within and liberates vital forces through the mouth. Hence, Mande caste practitioneers of speech and oral tradition, the griots (\textit{jeli}, sing., Man.), are simultaneously respected and despised for they trade in powerful speech, whether to praise or castigate. Literally, griots spew forth \textit{nyama} out of their mouths and it is probably not inconsequential that the Maninkakan term for griot, jeli, is the same word for blood.
shield against the dangerous powers released from the plant. In preparing the actual medicinal substance, such as grinding or macerating roots, leaves, and bark, another kirisi may be spoken. Furthermore, before or during the act of applying medicine on the body, healers will often speak in the low volume of a whisper into their cupped hands, completing a kirisi phrase or sequence of words and then gently spit (or close the lips to mimic the act of spitting) to mix the power of the word with the medicinal substance.

In an ethnopsychological study of Maninka blacksmiths in the Malian village of Naréna (situated between Siguiri and Bamako), Nambala Kanté cites several spoken formulae by female healers that accompany herbal cures. To treat the acute onset of malaria in children (köönö, Man.), one therapy called for an infusion prepared from the twigs of

126 See the above example recorded by Faye illustrating the phenomenon in northern Côte d'Ivoire.

127 In the same village where elders told that no kirisi had existed to treat smallpox, I witnessed the use of kirisi in treatment. My research assistant and I had just started an interview with an elderly woman, Nounènèn Diawara, a locally renowned massage healer of infant maladies (e.g., stomach aches, köönödimin; diarrhea, köönöbori; thigh or hip pain, tëmadimin; and an ailment in which the feet, legs and buttocks become cold while the hips heat up, dino). Seated in the shade of her hut, we stopped the interview when a young mother, with her infant, approached and asked for help with the sick child. A close distance away, the healer treated the child with an incantation and massage.

The healer, who estimated her age as 100 years, acquired the kirisi after her first child was born premature and remained ill for the first three months. An old woman in her native village of Niamina performed treatment on the child with a therapeutic verse. After the child was cured, Nountènèn’s father, Batroumoussa Diawara, purchased the secret kirisi from the old woman and then proceeded to give it to her. The event started a process where the father acquired other secrets for her (and her children) usually through the payment of a chicken or five French francs (taman, Man.). Sometimes, healers did not seek any payment from her father for secret medical ‘recipes’, since, according to the informant, they knew that she would ultimately receive the secrets to treat her own children. Nountènèn Diawara, 6 May 1999, Tiguibiri (Siguiri).
**dubalen** (*ficus thonningii*). Over the decoction, a healer must recite the following words “exactly, if not the child would die”,

Tubisimilay
Le poulet du village et le poulet de la brousse.
Que le poulet du village vive,
que celui de la brousse meure. ¹²⁸

The apparent absence of specific *kirisi* to treat smallpox lends support to the argument developed in Chapter Two that Maninka communities classified the disease as part of a group of naturally occurring illnesses. Other examples of this etiological group include chickenpox (*nyalensa*, Man.) and measles (*nyöningsa* or *nyarënsa*, Man.). Smallpox, as informants almost unanimously noted, arrived via the wind (*fonyo*, Man.) to afflict potentially an entire community in the same temporal moment. This ascribed naturalistic etiology contrasts with afflictions that seemingly target only particular individuals; for those diseases, the Maninka assigned their causal origins to either the harmful practices of sorcery purposely instigated by a sorcerer (*soma*, Man.) or a misfortune and punishment meted out by God (*Alladyankaro*, Man.; literally disease of...

¹²⁸ [Tubisimilay
Chicken of the village and chicken of the bush
So the the chicken of the village may live,
The one of the bush dies.]

Nambala Kanté, *Forgerons d’Afrique Noire: transmission des savoirs traditionnels en pays malinké* (Paris: L’Harmattan, 1993), 171-72. Italics and French translation are in the original. The author interestingly describes how he learned the secret formulae for infant and female illnesses from his wife, who worked as an apprentice for Kanté’s own mother, a healer herself. He also notes that, while Naréna has remained predominately animist, newer religious influences have affected village rites. ‘Tubisimilay’ is the local creole borrowing of the Arabic ‘Bisimillah,’ spoken by area Muslims before reciting a prayer.
Allah). Yet, if recourse to the magical did not play a role in the Maninka therapeutic imaginary of smallpox, definitive modes of magical enchantment enacted the logic of smallpox prevention.

The Object Life of the Fetish: The Magical Prevention Against Smallpox

Figure 1.

Ram’s horn protecting against throwers of köröté

Ram’s horn containing a remedy against paralysis


The above discussion has focused on the historical nature and geographical degree of indigenous smallpox prophylaxis and treatment in precolonial and colonial Senegal and Guinea. And the analysis of isolation, variolation, and herbal therapy has adopted in large part the historiographical literature’s epistemological orientation, that of

129 As discussed in Chapter Two, köröté is the Maninkakan, and more broadly Mande, term for an evil curse. Across the Mande region, inhabitants invoke the word as an object thrown at a particular individual (ka moo köröté bon la=to throw a curse at someone, Man.) by a sorcerer (soma, Man.).
the foregrounding of material technique. All three responses did involve a technology in practice, and historians interested in the emergent relationship between African variolation and colonial vaccination might rightly bear technique in mind. Luise White, for example, has argued that Africans readily appropriated colonial vaccination to translate the vaccine into their own terms since variolation and vaccination involved a similar technique: scratching the skin. Translation between one form of inoculation to another may not have involved breaching a substantial phenomenological gap. Let's accept the reasonableness of the argument and leave aside momentarily the interpretive question whether Africans reinterpreted and appropriated vaccination or if its historical reverse occurred, the case in which the vaccine interpolated Africans to form new subjectivities.

This last section rather broadens the analysis of technical practice to address the medical and social imaginary of objects and things, particularly in relation to smallpox prevention in colonial Senegal and Guinea. Indeed, West Africans historically practiced other strategies against the threat of smallpox. The practices were of a preventative dimension and involved an array of matérielle and procedure: religious and magical objects such as amulets and charms (gris-gris) imbued with the power to protect individuals and communities in the case of a smallpox outbreak; and divinatory and sacrificial rites to attribute an epidemic’s causality as well as possible expiation. Most often, objects and rites specific to smallpox prevention represented a subset within a

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130 White, Speaking with Vampires, 103-104.
general field of arts and means against disease and social woes.\textsuperscript{131} Several examples illustrate the phenomenon, yet this section also poses the question of whether and to what degree the panoply of techniques against smallpox might be better understood in relation to the place and cultural meanings of fetishes. For historically, with the advent of vaccination, the term ‘fetish’ became a floating signifier to capture another preventative and magical material, the vaccine.

In the late nineteenth-century, Dr. Bellamy, a naval physician stationed along the Western Soudan colonial frontier (Kita—Kayes—Bamako corridor), published ethnographic observations on Maninka/Bamana animism, sorcery, and funerary rites.\textsuperscript{132} Bellamy reported on the relation between sacred forests, divination, and communal


\textsuperscript{132} Aside for one brief study, Bellamy did not publish other material from his service in the Western Soudan and there does not exist any secondary literature examining his colonial medical career in West Africa. Archival photos show him accompanying the Mission Quiquandon of 1883, an official topographical and reconnaissance endeavor led by naval officers to assess the future military conquest of frontier areas in the vicinity of Bamako. Bellamy most likely belonged to an older generation of naval physicians with some experience in the Western Soudan as some younger physicians who completed géographie médicale theses in the area acknowledged his guidance. For the archival photos, see \url{http://gallica.bnf.fr/ark:/12148/btv1b7702027v}, consulted 7/18/06.
sacrificial rites in the face of general epidemics in Mande areas. Over many parts of West Africa, sacred forests are located on the immediate outskirts of a village and comprise highly-marked, circumscribed or prohibited zones. The forests, according to Bellamy, were more rare and less well maintained among the Maninka than the Bamana; for the latter, the forests took a circular form surrounded by a path. Entry into the forest was by a smaller footpath, where one became surrounded in “un splendide bosquet formé par de beaux arbres, des plantes grimpantes, des lianes, entre autres de magnifiques lianes à caoutchouc”. In these socially regulated spaces, most often older males convene to carry out animistic rituals in proscribed, initiation-based village associations or ‘secret societies,’ such as the Komo or Koma among the Maninka and Bamana peoples of the Western Soudan. Within the protected areas, secret societies also stored ritual masks used in village ceremonies and fabricated ancestral totems and shrines. Ritual initiation ceremonies for youth to become adults also took place in these areas. Within the enclosed sacred forests:

133 Dr. Bellamy, “Notes ethnographiques recueillies dans le Haut-Sénégal,” Revue d’ethnographie 5, no. 81 (1886): 82. Cinematic depictions of sacred forests appear in Ousmane Sembene’s 1971 feature film, Emitai, and Souleymane Cisse’s adaptation of a Bamana oral epic, Yeelen (1987). Emitai examines clashes over military recruitment and forced requisition of crops on the eve of World War II between the French colonial administration and Diula (Mande) communities in the Casamance region of Senegal. Male village leaders hold secret meetings in the sacred forest to consult oracles and determine a course of action in the face of the outside threat. The link between the control over secret Koma knowledge and generational conflict is vividly expressed in Yeelen when the son of the village Koma cult wishes to destroy the corrupt, older society and ‘democratize’ its secret knowledge controlled within the confines of the sacred forest.

134 [a splendid grove formed by beautiful trees, climbing plantes, creeping vines, among others magnificent vines of rubber plants.] Ibid.
dans les grandes circonstances, en cas de guerre, d’épidémies, de dangers menaçants, etc., les sorciers sont appelés par les chefs du village pour prédire l’avenir. La tradition rapporte qu’autrefois on sacrifiait souvent des captifs, puis le zèle disparaissant, l’on s’est rabattu sur des bœufs, des chèvres et des poulets, presque uniquement employés aujourd’hui. Suivant la manière dont coule le sang, suivant l’aspect des organes, le sorcier porte un bon ou mauvais présage sur l’entreprise. Les chefs de village assistent à l’opération. La foule reste en dehors, anxieuse et pleine de confiance. Ces cérémonies, d’ailleurs rares, se terminent toujours par d’immenses libations et une ivresse générale.  

Additional evidence for communal sacrificial rites against smallpox outbreaks does not appear in colonial ethnographic accounts of the Mande peoples and Bellamy’s brief note stands as the only example of the practice. However, the practice may have been more common than reflected by its absence in colonial ethnography. Animist secret societies would not have easily allowed the non-initiated (i.e., Europeans) to observe certain rituals, let alone even enter sacred forests during their performance.  

Animist communities also employed magical (fetish) objects such as charms and talismans to protect against smallpox. The colonial administrator then later doyen of French Africanist colonial ethnography, Maurice Delafosse, illustrates types of amulets  

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135 [on the great occasions, in case of war, epidemics, threatening dangers, etc., the sorcerers are summoned by the village chiefs to predict the future. Tradition tells in other times slaves were often sacrificed, then the zeal having disappeared, one has substituted cattle, goats, and chickens, which almost uniquely used today. According to the manner in which the blood flows, following the appearance of the organs, the sorcerer gives a good or bad omen on the affair. The village chiefs watch the procedure. The masses stay outside, anxious and full of confidence. These ceremonies, otherwise rare, always end with a large amount of libations and general drunkenness.] Dr. Bellamy, “Notes ethnographiques recueillies dans le Haut-Sénégal,” 82.  

and social contexts where Africans relied on a magical defense to ward off the disease. In his multi-volume study of the Mande region (located in parts of present-day Mali, Guinea, western Senegal, and northern Côte d'Ivoire) published in 1912, Delafosse sought to debunk prevailing European conceptions of African religious practices, contemptuously dismissed as forms of crude fetishism based on the idolatry of objects.\textsuperscript{137} Against these negatives views, he argued that Africans possess their own set of veritable religious practices, that of animism. Animism as a conceptual religion was defined as a cult of the spirits whose stature could stand on equal footing when compared to that of Christianity and Islam.\textsuperscript{138} To argue the analytical validity of animism as a religious form, Delafosse relied on numerous examples ostensibly based on his fieldwork research while a district officer in Côte d'Ivoire (see previous chapter for biographical details on Delafosse) as well as reports from fellow colonial administrators. A key statement for his overall argument references a magical object, the ram’s horn, worn by individuals against the possible threat of smallpox:

Les fétiches sont du domaine de l’universelle superstition et de la crédulité humaine: ils existent chez nous aussi bien que chez les Noirs et n’ont qu’un rapport très éloigné avec la religion proprement dite; l’usage du scapulaire n’a rien à faire avec l’enseignement du Christ ou de saint Paul et, de même, le port d’une corne de bélier destinée à éloigner la variole n’a rien à voir le culte des ancêtres. C’est pourquoi je prétends que le terme de “fétichisme”, employé pour désigner les religions africaines indigènes, est souverainement impropre; le

\textsuperscript{137} \textit{Ibid.}, 160-215.

\textsuperscript{138} For a critical engagement with Delafosse’s oeuvre, see the essays in Jean-Loup Amselle and Emmanuelle Sibeud, eds., \textit{Maurice Delafosse, entre orientalisme et ethnographie: l'intinéraire d’un africaniste (1870-1926)} (Paris: Maisonneuve & Larose, 1998).
terme de “paganisme” ne l’est pas moins, mais il a cependant l’avantage de s’opposer aux termes islamisme et christianisme.  

In the larger section from which this passage is extracted as well as other of his writings that address magical objects, Delafosse in fact displays ambivalence toward fetishes. On the one hand, he argues that fetishes exist universally for all human beings, including Christians and Muslims, and do not define any particularity of Mande animism. The confidence in magical objects thus never enters into the core of animist religious belief. On the other hand, while Delafosse notes the widespread Mande use of fetishes, he never analyzes at any length the material meanings of these objects. His argument and in fact promotion of animism works by always acknowledging their existence in order then to dismiss them as universals, or in other words, a non-existence. This is not the place to address the manner in which Delafosse’s arguments for animism were motivated by theistic epistemologies, in the sense that West African animism could only be apprehended according to a Western logic of the monotheistic

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139 [The fetishes belong to the domain of universal superstitition and human gullibility: they exist with us as well as with the blacks and only have a very distant relationship with properly defined religion; the use of the scapulaire has nothing to do with the teachings of Christ or Saint Paul and, in the same, the wearing of a ram’s horn believed to ward off smallpox has nothing in common with the cult of ancestors. That’s why I claim that the term ‘fetishism’, used to designate African religions, is supremely improper; the term ‘paganism’ is not less so, but it has however the advantage of contrasting with the terms, Islam and Christianity.] Delafosse, Haut-Sénégal-Niger, v. 3, 161.

religions, namely Christianity, Islam, and Judaism. The point of emphasis here is the fact that some Mande communities fabricated powerful objects out of the natural world (see the above examples of ram’s horns) to protect against the imputed naturally occurring diseases such as smallpox. Technical practice to stem disease existed with a worldview in which nature contained powerful forces both to affect harm as well as to channel into fabricated objects against the same very harm.

In the same section on religious rites and beliefs, Delafosse also documents the functional role and influence of animist priests, or ‘magicians’. Magicians within the general Soudan region, argues the author, could wield enormous power to effect communal behavior so as to preserve groups and individuals from specific illnesses or even ward off epidemics and ‘imaginary evil’. One example of magicians’ charismatic authority cited by Delafosse occurred in 1904, at a moment when

le bruit se répandit depuis le Mossi jusqu’au golfe de Guinée qu’un magicien réputé—dont personne d’ailleurs ne connaissait le nom ni la résidence—avait déclaré que les plus grands malheurs allaient fondre sur les Noirs si l’on ne tuait pas toutes les bêtes domestiques de couleur noire; ce fut, en quelques semaines, une véritable hétacotme de tous les bestiaux et volailles noirs ou simplement bruns.¹⁴²

¹⁴¹ Robert Launay, personal communication.

¹⁴² [the rumor extended from the Mossi region until the gulf of Guinea that a reputed magician—that no one moreover knew his name or his residence—had declared that the greatest calamities were going to swoop down on the blacks if all domestic animals of the color black were not killed; over several weeks, that made for a true slaughter of all black or simply brown livestock and poultry.] M. Delafosse, Haut-Sénégal-Niger, v. 3, 182.
A second example Delafosse provides explicitly underscores the link between the figure of the magician, protective objects, and one Mande imaginary of smallpox. The event occurred while Delafosse served as the commandant de cercle at Korhogo in northern Côte d’Ivoire.

\[E\]n 1905, on put voir en pays sénoufo, à un moment donné, tous les habitants, étrangers et musulmans compris, porter suspendu au cou un fragment de calebasse: c’était parce qu’un magicien avait déclaré que c’était le seul moyen d’empêcher la variole de s’abattre sur le pays.\(^{143}\)

The practice of employing a gourd fragment to prevent the arrival of epidemics was also found by the French anthropologist, Denise Paulme, during her ethnographical fieldwork in the mid-1940s among Kissi populations located immediately to the south of the Upper Guinea region. Inhabitants balanced specific gourd fragments (yallo, Kissi) on top of sticks placed in farming plots and rice fields. The surface of the gourd was pierced with holes, and each hole filled with pieces of cotton, which symbolically represented the eruption of smallpox pustules. The women and young girls who harvested and prepared the grains and fruit, according to Paulme, became in turn symbolically exposed to smallpox and hence protected from future outbreaks in the village.\(^{144}\)

Some Muslim communities also ascribed to a similar logic relating magical power, objects, and prevention of smallpox. In one of the few studies on Muslim

\(^{143}\) [In 1905, one could see the Senufo areas, for a certain period, all the inhabitants, strangers and Muslims included, wearing suspended from the neck a piece of gourd: that’s because a magician had declared that this was the only means to prevent smallpox from raining down on the region.] \textit{Ibid.}, 161, 182.

amulets during the colonial period in French West Africa, Paul Marty noted the increasing prevalence of amulets in early twentieth-century Senegal. Still widely present today, amulets consist of pieces of texts written in Arabic often accompanied by numerological diagrams. The paper fragments are then folded and enclosed in leather pouches or small metal boxes to be worn on the body. Marty in fact attributed part of the expansion of Islam into formerly animist communities such as in the Casamance region of Senegal as tied to the superposition of amulets over traditional animist charms (commonly known as *gris-gris*). The Muslim marabouts who fabricated the powerful text-based charms spearheaded this particular transformation of symbolic object. Animist believers, Marty notes, came to view writing as possessing mystical powers to protect against evil forces and thus acquired “a written gris-gris to complete [their] collection of small horns, teeth, nails, claws, hair, stones, pieces of animal skin, rings, wooden pins, etc.”

In the published study, Marty reproduced and translated thirteen different talismanic texts produced for the purpose of obtaining various goals: to put one’s enemies to flight, to keep the fidelity of a slave or a wife, to produce fortune, or to protect against death and the destruction of gardens by cattle. Of significance, Marty cites only one amulet to preserve against a specific illness: smallpox (see Figure 2).

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Figure 2. Muslim Talisman to Protect Against Smallpox, Early 20th-Century.

Translation:

Au nom de Dieu le Clément, le Miséricordieux.
L’utilité de cette amulette est de préserver de la variole.
Quiconque écrira le tableau ci-dessous et le portera à son cou; puis
l’ayant écrit une seconde fois en boira l’encre dissoute dans de l’eau, ne sera
jamais atteint par le fléau de la variole, avec la permission de Dieu Très-Haut.

[In the name of God, the Benificent, the Merciful.
The use of this amulet is to prevent smallpox
Whoever writes the table below and wears it around the neck; then
Having written it a second time drinks the ink dissolved in water,
Will never be attacked by the scourge of smallpox, with the permission of God on
High.]

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</tr>
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</table>
In the historical record, objects as cultural preventive means against smallpox do not appear often, but the very fact of their existence illumines a further layer of imaginaries combined to the complex technical practices of isolation and variolation. Importantly, it was also within this layer of magical meaning that some West Africans historically intersected with the vaccine. With the introduction of colonial vaccination in Mande areas, there is evidence that some Africans would interpret the vaccine as a fetish, a magical object in and of itself. When the military officer, Louis Binger, led a reconnaissance mission through the northern Ivorian region in late April 1892, mission
members encountered a smallpox outbreak at Boundoukou, a village located to south of Kong. The epidemic was reported to be ‘devastating’ the inhabitants and two or three members of the mission’s African troops fell ill. The villagers though refused the offer of the vaccine, according to the mission’s chronicler, since “when it comes to allowing herself to be vaccinated, the black would not consent at any price. That there was a fetish ‘good for the white man’”.¹⁴⁶

Two decades later immediately after the declaration of the First World War, a French writer in Beyla, a major center to the south of Kankan, observed the summoning of African reservists and the selection of new recruits to be sent to France to fight in the First World War. The local French military commander informed the conscripts that they would be sent to France to be made into soldiers (*faire tirailleur*). France as a concept, according to the author, was almost unknown to them. What the recruits knew of ‘France’ was the local district officer who travels throughout the countryside, and “from whom one can go and ask for aid and protection, always sure to be listened to”. France was also the doctor, the *toubib*, who goes into villages to put bandages on wounds and give out ‘good medicine’. The doctor lastly would vaccinate, wherein he would “operate on the little ones, on the arm, the good gris-gris against smallpox”.¹⁴⁷


Something transpired here, in which the vaccine now appeared in local Mande imaginaries of the fetish-object styles and powers against smallpox. Within the therapeutic memories of local Maninka informants in the Upper Guinea region, the liquid vaccine itself needed to be translated: *basiji* (literally ‘fetish liquid’). How the possibility for such acts of translation will be the subject of the next chapter that analyzes the expansion of vaccination beyond the colonial urban centers and individual frontier posts during last decade of the nineteenth-century in French West Africa.
Chapter Six

How to Make a Universal? or The Science-Social Effects of Vaccination in Fin de Siècle French West Africa

Introduction

Quand les feuilles du baobab poussent, elles annoncent la mort du blanc; quand elles tombent, elles annoncent la mort du noir—Wolof proverb

Throughout the 1890s, the arrival of the dry season (generally from the months of November to May) portended outbreaks in the colonies of Senegal as well as in its southern territorial dependency along the Guinean coast (Rivières du Sud or Southern Rivers). The frequency of epidemics was so high that colonial medical officials considered the disease endemic for African populations. “À peu près tous les ans,” observed the Chief Medical Officer of Senegal in the middle of decade:

à l’époque de la saison fraîche, des épidémies de variole éclatent sur divers points de la colonie, constituant toujours un certain nombre de foyers qui s’étendent plus ou moins loin, suivant que la population est plus ou moins dense et suivant aussi que les relations de ces foyers sont plus ou moins fréquentes

1 [When leaves of the baobab grow, they announce the death of the white man; when they fall, they announce the death of the black man.] Cited in Lafaurie, “Considérations pathologiques sur les postes de M’Pal et Louga (Sénégal),” 27.

2 In 1893, the area became the colony of Guinée Française (or French Guinea).

avec les différents centres de la colonie. La maladie éclate simultanément sur plusieurs points qui ne paraissent avoir aucune relation entre eux.4

Despite the disease’s endemic nature, smallpox vaccination at the start of the decade in both Senegal and the Rivières du Sud was highly limited in its two forms of practice. On the one hand, doctors in the embryonic colonial health services carried out vaccination predominantly in the Four Communes (Saint-Louis, Dakar, Rufisque, and Gorée), as well as at the growing number of administrative posts (arrondissements) of the Protectorate area. Any regularized prophylactic sessions for the purposes of prevention likely occurred only in the Communes or in other recently established capitals such as Kayes (Soudan Français) and Conakry (Guinée Française), while inconsistent vaccination took place primarily in response to epidemics at the growing number of interior posts. This chapter treats vaccination in Conakry during the 1890s in a separate section below. For Kayes, by March 1894, if not earlier, the Chief Medical Officer of the Soudan Français colony, Dr. Jean-Marie Collomb, held regular weekly sessions on Saturday to vaccinate local children, new African military recruits as well as

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4 [at the time of the cool season, some epidemics of smallpox break out over diverse places in the colony, always forming a certain number of disease areas that more or less die out over time, according to whether the population is more or less dense and also whether the contacts of these areas are more or less frequent with different centers of the colony. The disease breaks out simultaneously in several points that do not appear to have any relation between them.] Édouard Sérez, “Des pratiques musulmanes de variolisation comme causes des épidémies annuelles de variole au Sénégal,” *Archives de médecine navale et coloniale* 64 (oct. 1895): 289. The publication is an extract of the official medical report for the first trimester of 1895 issued for the colony of Senegal.
orphaned boys and girls of the Catholic mission. \(^5\) Dr. Collomb also furnished tubes of vaccine to the nearby mission of the Holy Spiritans in Dinguira where former slave children underwent the operation.\(^6\) When smallpox entered the Western Sudan later in the same month, Collomb shipped tubes of lymph to military doctors stationed in Ségou and at the posts in the Région du Sud, the administrative province comprising the colony’s southern frontier areas of Siguiri, Kankan, Kérouané, Faranah, Beyla, Kissidougou, Bougouni, among others.\(^7\) The physicians were instructed to use the vaccine “dès son arrivée et alors qu’il possédera encore propriétés virulents”.\(^8\)

\(^5\) ANS H 37. Dr. Collomb, Médecin de 1er classe des Colonies, chef du Service de santé du Soudan Français, à M. le Gouverneur du Soudan Français, no. 378, a.s. séances de vaccination, le 12 mars 1894. Located on the banks of the Senegal River, the riverport of Kayes was established in 1881 when construction began on the future railway to the Niger River at Bamako. With the creation of the French Soudan colony in 1890, it served as the capital until 1908. In the late 1880s, the first small hospital (ambulance) in the Western Sudan was built in Kayes.


\(^7\) From the early 1880s to 1898, the Région du Sud area occupied great French military interest since it was the theatre of the long and famous combat against the forces of Samory Touré, the Mande (ethnic Konian) founder and leader of a large regional empire. The colonial military based in Kayes under successive military commanders, such as Joseph Simon Gallieni and later Louis Archinard, progressively moved southward in successive stages to take greater control of the zone through conquest or
On the other hand, as exemplified by Laffont’s 1887-88 attempt in the Western Sudan or Collomb’s 1892 endeavor throughout the Bambuk region (see Chapter Four), military physicians undertook rare vaccination campaigns or missions in the interior, both in and around areas of a long-standing French presence or those recently occupied by military troops. The naval physicians who practiced vaccination could not attempt more numerous campaigns given the small quantity of personnel as well as the high exigencies of post medical duties in caring for African troops and local populations. Beyond these two modes, concentrated efforts were nonexistent to extend further vaccination until late 1892.

Factors that gave rise to such a state of affairs remain ambiguous as published medical sources of the period give little explanation for the continued status quo. A negotiated protectorate treaties. Military posts created in the wake of military victories and treaties included Siguiri (1885), Kouroussa (1889), Kankan (1891), Kérouané (1892), Bougouni (1893), Faranah (1893), Kissidougou (1893), Beyla (1893). With the territorial reorganization of French Guinea colony in 1895 and 1898, these locales with the exception of Bougouni were eventually separated from French Soudan to form administrative cercles under Conakry’s jurisdiction.

8 ANS 1H 37. Dr. Collomb, Médecin de 1er classe des Colonies, chef du Service de santé du Soudan Français, à M. le Gouverneur du Soudan Français, no. 392, a.s. mesures prescrites aux postes frontières contra la variole. Available colonial archival materials in Dakar (ANS 1H37-- Variole 1886-1894 and 1H38-- Variole 1896-1909), Bamako (ANM [Fonds Anciens] 1H series), Conakry (1H series for health and 1D series for administrative cercle reporting and correspondence) and Aix-en-Provence do not provide any further evidence for vaccination in the Région du Sud province during the 1890s as a whole. Regular monthly medical reporting by post physicians only commenced in 1900s.

9 Rinderpest epidemics in 1891 and 1892 reduced considerably the number of cattle in Senegal, which in turn created great difficulty for colonial physicians to obtain calves necessary for the production of animal vaccine. Lucien Rigollet, "Rapport sur une
blockage nevertheless existed since medical authorities certainly possessed the rudiments for expanded vaccination. As described in Chapter Three, Dr. Henri Girard successfully produced a local vaccine in Saint-Louis that was then distributed and employed throughout parts of the colony to quell a major epidemic of 1888. Once the epidemic disappeared though, the local production of vaccine came to a halt and post doctors ceased to spread the vaccine. Over the next four years, no further serious mass vaccination missions were attempted in interior areas of Senegal.¹⁰ Physicians only vaccinated local populations beyond the immediate vicinity of principal military posts with “difficulty” and the “results were insignificant [since] the political state in the country did not permit to use the gains [of Girard’s efforts] to extend the vaccine further.”¹¹ Moreover, the colonial administration did not subsequently continue Girard’s successful effort and create a permanent vaccination service to produce and ensure a constant, viable supply of the large quantities of animal vaccine, an ingredient essential to effect mass campaigns of any significance. Hence, prior to 1893, the pulse of vaccination over space was highly sporadic and would only increase in tempo with the onslaught of a new epidemic.

After 1892, this chapter argues, smallpox vaccination in the emerging entity of French West Africa transformed. In essence, both the existing administrative centers as

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¹⁰ Ibid., 37.

¹¹ Ibid., 36.
well as the increasing number of militarily occupied territories became scientific laboratories for the extension of the vaccine. Over the period from 1892 until the end of the decade, an entire series of successive experiments sought to determine the very nature of the vaccine to employ as well as the form of vaccination to practice. The following four sections of the chapter respectively treat different moments of the period: first, the cumulative effects of an initial vaccination campaign that took place in 1893; second, the development and growth of the vaccination mission ‘model’ when medical officials attempted to combat the particularly severe epidemic of 1895; third, the changing character of urban vaccination as well as indigenous variolation during four successive epidemics (1889, 1895, 1897, and 1898) in the center of Saint-Louis; and lastly, the development of vaccination as a reproducible technoscience along the Guinean coast, particularly in Conakry, the capital of French Guinea.

It perhaps would seem injudicious to posit a transformative and watershed moment for this period. In total number, annual vaccinations throughout the decade still remained small; they are indeed quite minimal when compared to the results a decade later in 1910 where more than 260,000 operations were carried out annually; (see table in Introduction). To be sure, when colonial physicians reflected on the period, the decade of 1890s represented a time of failure. Upon arrival at Kayes in 1901, the new Chief Medical Officer for Haut-Sénégal et Niger (formally French Soudan), Dr. Henri Salanoue-Ipin, noted that smallpox vaccination had been completely abandoned in the colony due to the multiple, failed attempts with the vaccine. Before attempting during the same year what would ultimately prove to be a successful vaccination campaign
between Kayes and Kati (a military garrison 15 kilometers from Bamako), any vaccine prophylaxis was said to be “à peu près irréalisable”. Likewise, in the first major annual official report on smallpox and vaccination efforts in all French West Africa colonies, issued for 1903, Dr. Alphonse Houillon, a high-ranking assistant in the Civilian Health Services Monitoring Unit (*Inspection des services sanitaires civils*), despondently described past efforts where “the results can be regarded as insignificant and, if one excludes the large commercial centers and administrative capitals of French West Africa where vaccination has become common, all is to be done or restarted. The success does not correspond either to the efforts deployed or the accorded sacrifices”.

According to Houillon, previous vaccination efforts foundered due to *matériel* and method as well as the consequences of the latter on local African populations. The multifold problems for vaccinating physicians lay:

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dans l’envoi parcimonieux de quelques tubes de vaccin qui, arrivant sous forme de virus inerte dans des lieux éloignés, est inoculé à des indigènes bien confiants qui s’en retournent déçus pour semer la défiance. Le marabout a beau jeu, et la variolisation continue de plus belle quand elle trouve encore quelques sujets sains échappés à la variole. La méthode consiste aussi à diriger vers le foyer épidémique un médecin, distrait brusquement du service général, laissant son poste à l’abandon. Il a reçu au préalable une petite provision de vaccin, qu’il doit utiliser dès les premiers jours, sous peine d’insuccès. S’il est favorisé par les circonstances, de température et de lieu, si le pays lui offre des ressources en animaux qui ne sont pas eux-mêmes réfractaires au cow-pox, si la pulpe vaccinogène est encore apte à se régénérer…, le vaccinateur pourra étendre
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encore ses opérations. Il en est le plus souvent empêché par un brusque rappel que motivent les exigences de service.\textsuperscript{14}

Any systematic organization of regular vaccination campaigns during the 1890s also confronted a key obstacle still prevalent in 1905 when the AOF Civilian Health Services were inaugurated: the lack of sufficient medical personnel (see Table 9).\textsuperscript{15} For their part, contemporary scholars of the history of French colonial medicine in West Africa either ignore the period of the 1890s entirely or repeat official assessments.\textsuperscript{16}

\textsuperscript{14} [in the parsimonious shipment of several tubes of vaccine, which, arriving in remote areas in the form of an inert virus, is inoculated in the much confident natives who leave disappointed to spread defiance. The marabout has an easy opportunity, and variolation continues more than ever when it finds some healthy subjects who have eluded smallpox. The method consists as well of directing a physician toward the epidemic area, diverted brusquely from the general health services, leaving his post in abandon. Beforehand, he had received a small provision of vaccine that he must use in the first few days, for fear of failure. If the circumstances are to his favor, namely the temperature and the locale, if the area offers him the ressources of animals who themselves are not resistant to cowpox, if the vaccinal pulp is still capable of being regenerated..., the vaccinator could still extend his operations. Most of the time, he is prevented from doing so by a sudden call to return as warranted by the demands of the local health service.] \textit{Ibid.}


even to pose the question of insufficient medical personnel reveals a conditional assumption within the complaint itself, namely one has already recognized or imagined conceptually a social ‘reality’ for the present and future time for European medicine in French West Africa. A lack exists according to which logic and imagination?

Table 9. Medical Personnel in Senegal, 1876-1898a.

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<tr>
<th>Year</th>
<th>Chef Service</th>
<th>Médecin Principal</th>
<th>Médecin 1ere cl</th>
<th>Médecin 2eme cl</th>
<th>Médecin Auxiliaire</th>
<th>Aide-Médecin</th>
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a Not included are the two physicians who staffed the Civilian Hospital in Saint-Louis.

b An additional twelve medical personnel served in the colony of Soudan Français.

Source: Annuaire du Sénégal et Dépendances (Saint-Louis: Imprimerie du Gouvernement), (1876) 85-86; (1881) 128; (1882) 176; (1884) 217-19; (1888) 162, 208-10; (1891) 230-31; (1892) 189-90; (1898) 226-27.

Notwithstanding the obvious technological and administrative impediments, how then to interpret the decade of the 1890s as a transformative one? The interpretation becomes possible when one directs attention to the place of vaccination in the constitution of medical and social imaginaries for technological intervention during the epoch. In other words, rather than ask retrospectively as the early twentieth-century

physicians did why early vaccination schemes failed, this chapter interrogates alternatively the manner in which any type of vaccination in French West Africa operated in its actions. In fact, the following sections illustrate the ways in which the 1890s inaugurate a point of no return, wherein a highly specific social imaginary for colonial vaccination schemes gradually becomes locked in place in part through the successive, and ultimately successful, vaccine experiments. The new and organic social imaginary may be defined as an expanding network of individuals, communities, ideas (esp. of planning, management, and population), and non-human agents (the vaccine representing the most crucial part) imbricated with one and another in the pursuit to secure, sustain, and enhance the well being of population. Ultimately, over the period a new art of thinking about medicine and governmental rationality—“the right manner of disposing things”—arose in French West Africa in large part due to the effects of vaccination. Lastly, and notwithstanding the veritable predicament of insufficient medical personnel and poor technical quality of vaccine, it was out of this fledging, yet successfully instantiated medical/political art of government and ‘modern’ technoscience that the massive increase in twentieth-century vaccination ultimately emerges. Contrary to Houillon then, all was not ‘to be done or restarted’ in regard to

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17 Foucault, “Governmentality,” 87-104.

18 Ibid., 95.

19 One could extend the argument globally as well for the conjoined development of vaccination and colonial governmentality transpired throughout the French empire during the decade and into the new century. To cite a few of the representative sources for this movement, see regionally for Côte d’Ivoire, Vergoz, “Variole et vaccination à la Côte d’Ivoire, Juillet à Décembre 1897, Année 1898 et Janvier 1899,” Annales
vaccination. In fact, much, if not everything, had already been accomplished and practiced in a real, imagined sense by the end of the 1890s.

The Reenchantment with Mass Vaccination: The Rigollet Campaign of 1893

As indicated above, attempts at mass vaccination in the interior of Senegal ceased in the aftermath of the 1888 epidemic. Four years later, this medical-administrative desuetude changed. In October 1892 smallpox erupted at Podor, a post along the Senegal River, and medical officials in Saint-Louis dispatched Dr. Lorieux to vaccinate in the area (see Chapter 4). Immediately after Lorieux's successful, yet interrupted mission (whose cessation was due to the onset of the rainy season), the head of the Senegal's Health Services, Dr. Ayme, petitioned the local administration in January 1893 to create a permanent vaccination service for the colony. The credits


As discussed below, Lorieux had previously directed the health services in the Rivières du Sud colony where he instituted some of the first vaccination campaigns in Conakry and its surrounding area.
were voted and a service was soon created. Perhaps the first of its kind in sub-Saharan Africa, the new institution consciously followed an established precedent within the French empire: the Senegalese service in effect would attempt to mimic the vaccination service that had functioned in Indochina since 1878. The Indochina service began mass vaccination campaigns as early as 1867 and, within two decades, they had grown to more than 90,000 operations annually. By 1892, the number of vaccinations and revaccinations exceeded 122,000 with a success rate of 81.1%. Propelling the extension of vaccine coverage in Indochina were two determinate factors: the wide scale use of mobile vaccination teams and a vaccine-harvesting institute in Saigon to provide abundant and fresh supplies of lymph. Both the mobile teams and the Saigon laboratory were inaugural phenomena across the French empire as a whole.

With renewed attention given to the need for mass vaccination in Senegal, an array of questions confronted medical officials, some consciously raised at the time while others not apparent to the actors themselves as frames of power and practices positioned both physicians and Africans as subjects—persons with variable capacities for action and critique while simultaneously also subjected (positioned) within the

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22 The Saigon institute was created in December 1890 under the direction of the Pasteurian microbiologist, Albert Calmette. Later, the establishment became officially affiliated in 1896 with the Institut Pasteur of Paris. Albert Calmette and Édouard Lepinay, “Rapport général sur les vaccinatin effectuées en Cochinchine de 1867 à 1892 et sur le fonctionnement de l’Institut vaccinogène de Saigon en 1892,” Archives de médecine navale et coloniale 61, (1894): 210-225. For history of Calmette’s career in Saigon, see Annick Guénel, “The Creation of the First Overseas Pasteur Institute or the Beginning of Albert Calmette’s Pastorian Career,” Medical History 43 (1999): 1-25.
knowledges and networks. Apparent to the naval physicians was the problem of whether it would be possible in Senegal to replicate the successful experiences of the Indochina service: which mode of vaccination to pursue? The question also produces an additional inquiry: which type of social imaginary colonial medicine would entail? For example, would mass vaccination necessarily raise moral and political problems involved with French rule? Colonial regimes of power, it is necessary to note, were betwixt and between norms of classical practices of power based on the total authority of a sovereign ruler and modern practices of power based on the liberal rights of individuals as full citizens within a body politic. In other words, the desire to conduct mass vaccination campaigns entailed one hallmark of modern biopower—to allow life and let die (faire vivre, laisser mourir). Yet who would physicians vaccinate--African individuals or populations or both? A pregnant question for which the search for answers in effect constituted what would be the 'real' of medicine in its metonymic form and practice, that of vaccination.

A first mission under the auspices of the new vaccination service took place the very next month after its establishment in January 1893. The physician, Dr. Lucien Rigollet, departed from Saint-Louis on 12 February, ostensibly to vaccinate in two provinces, Dimar and Ouallo, of the Dagana region; for an unstated reason, the itinerary changed and Rigollet commenced in Dagana itself, the border trading post northeast of Saint-Louis on the Senegal River. The vaccine pulp had been sent from the military

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hospital of Bordeaux; Rigollet devoted particular attention to the age and nature of the
vaccine throughout his campaign. The first pulp had been harvested at Bordeaux on 4
January and arrived in Saint-Louis at the end of the month (30 January). Part of the
vaccine arrived pure and non-titrated, while another part was treated with glycerin, a
newly emergent laboratory technique employed for better preservation and
concentration of the lymph.

Starting in the last decade of century, researchers in the metropole and the
colonies, especially in Indochina, experimented with ways to produce a viable vaccine
for use in the tropics via harvesting pulp from animals. Pustules harvested from the cow
contained both pulp material and lymphatic fluid. The laboratory experiments sought to
determine how and to which degree pulp and lymph should be mixed. Research had
also found that, when glycerin was added to pulp and lymph, the vaccine conserved
better, but only in a certain fluid proportion or ratio of pulp, lymph, and glycerin.
Questions of purity, adulteration, virulence, conservation and transport also preoccupied
vaccine researchers over the decade to find the best liquid/pulp ratio and maintain an
active vaccine. Fluid ratios would also have to recognize seasonal variations of
temperature and humidity.\textsuperscript{24} The laboratory questions over the liquid state of the
vaccine paralleled in both symbolic and ‘real’ ways the liquidity of the social produced in
and out of vaccination. The laboratory vaccine became socially enclosed as well, as
part and parcel of the experimental constitution of the social. Rigollet’s mission would
be as much experimental for this social laboratory as for the vaccine.

\textsuperscript{24} Martin and Leger, “Vaccine et vaccinations aux colonies,” 559-587.
Once disembarked in Saint-Louis, the vaccine tubes for Rigollet’s mission were stored in an icebox at the military hospital. On route the vaccine traveled in a dry heat, approximately +25 degrees Celsius for the day and +15°C at night. At Dagana ville, five different sessions were held in mid-February where Rigollet vaccinated 68 children. The Dagana vaccinations were similar in procedure to all of those practiced throughout the entirety of the mission. First, the external face of the upper arm was washed; Rigollet states that ‘ordinary antiseptic precautions were taken,’ and then with a lancette the doctor made three vertical scarifications on the upper arm. Vaccinal pulp was then applied to the lacerated open wounds and patients were instructed to allow the vaccine to dry. To determine if the results of the operation were successful, Rigollet summoned parents to return with their children five to six days afterward to see if the vaccine produced a positive immune reaction (localized pustules in the scarified area). “The willingness was not great,” reports the doctor as, “the parents did not bring back the children to verify the results, and I was obliged to travel all over, after each series of vaccinations, a large village of close to 3,000 inhabitants to look for my vaccinated ones. The task was arduous, and with difficulty I found half of them for which I recorded a proportion of 25 for 100 for success.”

Undeterred, Rigollet conducted two further vaccination trials, almost simultaneously over the next thirty days. First, later in the same month of February, with the remaining vaccinal pulp, Rigollet performed the operation on additional children in Dagana and nearby villages as well as on 211 infants upriver at the Podor fort in

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three different sessions during March. All reactions for the second trial were negative, indicating that the vaccine had now turned sterile due to its progressive attenuation. The lackluster results, probably already apparent from the earliest of the five sessions, led Rigollet to switch methods and carry out a third trial. From the initial group of Dagana children who showed a positive reaction, Rigollet collected pus from the pustules on their upper arms and on March 1 he employed the arm-to-arm technique to vaccinate a further 24 Dagana children. These reactions produced a 75% success rate.

Rigollet remained at Podor to await the delivery of a new shipment of vaccine. On 7 April, the new provision arrived, which similarly had been produced at Bordeaux and comprised two different batches of tubes—one harvested on 9 February and the second on 7 March. Rigollet wished to study the comparative virulence of the two vaccines, fearing that the older batch would prove unsuccessful. On the same Podor children who had been inoculated without result in March, Rigollet now vaccinated them once again. Their left arms were scarified with vaccine from the 9 February batch and the right arms with the one from March. The final results between the two appeared almost identical with the only difference that the older batch on the left arm produced pustules twelve to twenty hours later than the younger March supply. Of the 78 children vaccinated, there included seventeen who had been previously vaccinated six months earlier by Dr. Lorieux. Excluding these false negatives, Rigollet obtained a 95% success rate. The mission’s vaccination trials subsequently came to a close in Podor,
according to Rigollet, as “the inhabitants fatigued by the uselessness of my first trials were no longer presenting themselves.”

Leaving the fort on 13 April, Rigollet traveled further upriver into the Fouta Toro region to the town of Aéré, where a smallpox epidemic had been reportedly present for several months. Three days later, the doctor arrived at the village only to be informed by the local population that there were no further children to vaccinate—all had already contracted smallpox or underwent variolation:

The convened inhabitants only presented me, after fairly long searches, a small young girl of several weeks old who had not been variolated! That was probably exaggerated, however their goodwill seemed evident to me; they told me that the mortality of children had been considerable, without counting those who remained blinded in one eye or completely blind. In fact, I did not see at Aéré the numerous bands of children who usually surrounded me upon my arrival in other villages.

Rigollet left Aéré and proceeded to a nearby village to vaccinate 28 children, 26 of whom showed positive results; the remaining two had already been exposed to the virus and contracted smallpox three days after receiving the vaccine. Further vaccination sessions took place in Aleïbé and N'Dioum where village chiefs were enlisted to control the results. The chiefs reported numerous successes, but did not provide Rigollet with exact numbers.

Additional provisions of vaccine were sent to Rigollet in the middle of the interior campaign, this time having their source from a different Bordeaux institution, the city’s

\[26 \text{Ibid.}\]

\[27 \text{Ibid., 38-39.}\]
local vaccination service. Two shipments, the first arriving on 19 April and the second on 8 May, permitted inoculations to continue throughout April in other Fouta Toro areas as well as another round in Podor. The former batch demonstrated a large success with 9 out of 10 children producing pustules, while the latter employed on the 14th proved to be inert. Rigollet explained its failure due to a delay in using the pulp immediately as the vaccine tubes remained in his room at the post under a dry heat of 40°C, “sans aucune précaution”.

In late May, while preparing to return to Saint-Louis, Rigollet was dispatched to southern Sine-Saloum region to respond to a different smallpox outbreak. The epidemic was said to have been imported from British Gambia where it had occasioned many victims. On 6 June, Rigollet arrived at Foundiougue, a port settlement on the Saloum River, with three tubes of vaccine, each of different age, and that had been stored previously in the icebox at the Saint-Louis hospital. Between the 9th and the 18th, he vaccinated 793 children at Foundiougue and in the surrounding villages, producing results that varied from 85% to 97%. With the vaccine now depleted, Rigollet then experimented again with arm-to-arm vaccination from the pustules of the children inoculated on the 9th. Pustules appeared four days later on the children and live viral material was transferred between arms on 19, 20 and 23 June. The results however were an almost complete failure; of 238 vaccinations, only some 5% produced an

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28 Rigollet writes that eleven days elapsed for the unprotected vaccine, a delay that differs somewhat from the actual dates he provides (arrival on 8 May and vaccination on 14 May).
immune reaction. Rigollet did not mention the reasons for the lack of success with the arm-to-arm procedure.

A new provision of vaccine arrived on 21 June after a journey of nine days and no protection from the sun. The next day, Rigollet employed the new lymph on a further nine children in Foundiougue which gave only three reactions. This same batch was also used at the end of the month in Kaolack, an administrative post further upriver, where 125 ‘subjects’ underwent scarification over two separate days (30 June and 1st July) without any success. Rigollet’s last vaccination session occurred on 9 July with another new provision of lymph. The doctor could not verify these last vaccinations on 75 children as a cholera epidemic broke out in Saint-Louis and upon order returned immediately, “without even having gone to the villages where a smallpox epidemic had been declared”. Subsequent to his departure, Rigollet received the final results in Kaolack from the local schoolteacher who signaled an 80% success rate.
Table 10. The Rigollet Vaccination Mission, February-July 1893.

<table>
<thead>
<tr>
<th>Locale</th>
<th>Dates</th>
<th>Vaccine Origin</th>
<th>Age</th>
<th>#</th>
<th>% Pos</th>
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<tr>
<td>Dagana</td>
<td>16-25-Feb</td>
<td>Inst. Mil. Bord.</td>
<td>17-23</td>
<td>68</td>
<td>25</td>
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<tr>
<td></td>
<td>1-Mar</td>
<td>arm-to-arm</td>
<td>na</td>
<td>24</td>
<td>75</td>
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<tr>
<td></td>
<td>7-Mar</td>
<td>Inst. Mil. Bord.</td>
<td>36</td>
<td>59</td>
<td>0</td>
</tr>
<tr>
<td>Gaé</td>
<td>23-Feb</td>
<td>Ibid.</td>
<td>24</td>
<td>108</td>
<td>0</td>
</tr>
<tr>
<td>Tékane</td>
<td>3-Mar</td>
<td>Ibid.</td>
<td>24</td>
<td>73</td>
<td>0</td>
</tr>
<tr>
<td>Podor</td>
<td>20-21-23-Mar</td>
<td>Ibid.</td>
<td>32</td>
<td>211</td>
<td>0</td>
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<tr>
<td></td>
<td>9-Apr</td>
<td>Ibid.</td>
<td>49-51</td>
<td>78</td>
<td>95</td>
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<td>14-May</td>
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<td>Aéré</td>
<td>18-Apr</td>
<td>Inst. Mil. Bord.</td>
<td>20</td>
<td>28</td>
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<td>Aleïbé</td>
<td>19-Apr</td>
<td>Inst. Mil. Bord.</td>
<td>21</td>
<td>45</td>
<td>?</td>
</tr>
<tr>
<td>N'Dioum</td>
<td>22-Apr</td>
<td>Ibid.</td>
<td>25</td>
<td>50</td>
<td>?</td>
</tr>
<tr>
<td></td>
<td>22-Apr</td>
<td>Inst. Munic. Bord.</td>
<td>9</td>
<td>51</td>
<td>?</td>
</tr>
<tr>
<td>N'Diaen</td>
<td>28-Apr</td>
<td>Ibid.</td>
<td>16</td>
<td>54</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>30-Apr</td>
<td>Ibid.</td>
<td>18</td>
<td>43</td>
<td>90</td>
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<tr>
<td>Dialmath</td>
<td>29-Apr</td>
<td>Ibid.</td>
<td>17</td>
<td>76</td>
<td>90</td>
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<tr>
<td></td>
<td>9-Jun</td>
<td>Ibid.</td>
<td>26</td>
<td>123</td>
<td>97</td>
</tr>
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<td>Foundiogu</td>
<td>19-20-23-Jun</td>
<td>arm-to-arm</td>
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<td>22-Jun</td>
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<td>9</td>
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<tr>
<td>M’Bame</td>
<td>10-Jun</td>
<td>Ibid.</td>
<td>27</td>
<td>110</td>
<td>95</td>
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<td>Tiarey</td>
<td>11-Jun</td>
<td>Ibid.</td>
<td>14</td>
<td>128</td>
<td>95</td>
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<tr>
<td>Soump</td>
<td>12-Jun</td>
<td>Ibid.</td>
<td>15</td>
<td>100</td>
<td>93</td>
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<tr>
<td></td>
<td>12-Jun</td>
<td>Inst. Mil. Bord.</td>
<td>23</td>
<td>166</td>
<td>93</td>
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<tr>
<td>M’Bassis</td>
<td>14-Jun</td>
<td>Ibid.</td>
<td>25</td>
<td>33</td>
<td>88</td>
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<tr>
<td>Guilor</td>
<td>18-Jun</td>
<td>Ibid.</td>
<td>29</td>
<td>133</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>30 Jun-1 Jul</td>
<td>Inst. Munic. Bord.</td>
<td>17</td>
<td>125</td>
<td>0</td>
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<tr>
<td>Kaolack</td>
<td>9-Jul</td>
<td>Ibid.</td>
<td>11</td>
<td>75</td>
<td>80</td>
</tr>
</tbody>
</table>

**Total** 2271


Rigollet’s mission and vaccine trials produced experimental findings as well as a whole array of conjectural conclusions for embryonic vaccination in colonial Senegal. Principally, the campaign was viewed an initial success to propagate the vaccine and make inroads to control smallpox epidemics. If physicians followed certain conditions
for the many levels that comprised viable vaccination, Rigollet then hoped that “in several years our African colony will never see any more of these severe epidemics that until now have decimated periodically”.29

The scientific findings and conclusions are discussed in some detail below for such a vision. It is however just as crucial to apprehend and interpret the mission not only in terms of some ‘internalist’ account of medical experimentation—where one describes procedure, data produced, and conclusion only within the logic of science itself. Rigollet has already given such a description. Likewise, it would not be wholly sufficient to understand the scope of the February-June vaccine trials only according to its social, economic, and political contexts, the ‘externalist’ vision. The mission and its results rather offer ways to understand the manner in which knowledges and practices accumulate into scientific as well as social ontologies. Thematically, it would now be possible to define and delineate further bodies, fluids, animals, temperature, time, technique as well as moral and political philosophy.

For some of the findings, Rigollet interpreted their meanings through the filter of racial biology: he described how Africans reacted to the vaccine differently from Europeans in that the vaccinal pustule developed less quickly and did not produce the same robustness or inflammatory reaction. Further, of the three distinct scarifications made on Africans’ arms, one or two often proved to be sterile. Lastly, there was not much information to be gained on the development of the pustules after eruption on the skin. Experimental observation, according to Rigollet, was quite difficult since

29 Ibid., 43.
vaccinated children, “abandoned to themselves without care and observation, continually scratched themselves to ease the itching, and most often only displayed at the verification exam burst pustules, covered by scabs and often ulcerated”.30

To explain the mission’s mixed results, Rigollet blamed the failed sessions on the storage and protection of the vaccine. He came to the conclusion in light of two major constants throughout the campaign. First, all of the different populations visited were the same from the standpoint of the vaccine, that is, they were ‘new’ or, in other words, never previously vaccinated--in each village, only children born after the last smallpox epidemic were vaccinated. Second, Rigollet did not doubt the effectiveness of the imported vaccine, prepared ‘perfectly’ in Bordeaux at the military institute or the municipal vaccine service. Hence, those sessions with poor results incriminated the use of the vaccine in the field, namely the prolonged exposure of the vaccine to elevated temperatures that led to its progressive attenuation and loss of virulence. Alternatively, when the lymph was stored adequately, the final results proved quite satisfactorily. Adequate or good storage for Rigollet included either placing the glass tubes in an icebox or wrapping them in a constantly dampened compress then exposed to an air draft or set in shade. Yet, if the vaccine became too old or was let unprotected from the sun, like the session of April 9 in Podor or June 30-July 1 in Kaolack, the operations proved inert. The solution now became obvious: one can have good results every time with fresh vaccine.31


A further finding from the mission attempted to settle the question of whether to use animal vaccines or human ones via the older method of arm-to-arm vaccination. The well-known disadvantage with the human vaccine, that is the possible transmission of contagious disease, particularly syphilis, became reaffirmed. Syphilis, according to Rigollet, “quite extensive in these countries,” and its transmission increased by the children’s frequent practice of bursting the pustules. The arm-to-arm method though presented further problems along two different orders in Rigollet’s view. One was physical or biological. Human bodies were not glass tubes. With the potential vaccine source embedded in a child’s arm, time was of the essence as Rigollet noted from the field trials in Dagana and Foundiougue. The doctor could not select the dates for vaccination since the viral pus to be harvested from a child not only diminished in virulence with time, but the harvesting pinpoint source, that is the pustules on the arm, dried up as well. Inconvenient with the human vaccine in terms of time were also the inevitable travel delays (*retards de la route*).

The second problem with the arm-to-arm procedure belonged to the domain of ‘moral’ and political order in terms of the manner and degree in which Africans would exist as possible colonial subjects. “Mais surtout,” writes Rigollet of the method:

> elle exige une série de sujets susceptibles d’être transportés de village en village à des distances souvent considérables, et la répugnance des indigènes à laisser ainsi aller leurs enfants serait telle, qu’il ne serait possible de la vaincre que par la force et qu’ensuite, elle suffirait à empêcher nombre de parents de faire

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vacciner leurs enfants, dans la crainte qu’on ne les leur prit plus tard comme vaccinifères.  

For the 1893 vaccination campaign, Rigollet does not provide much information regarding his interactions with local African communities, except for several cursory observations: in one locale, villagers did not return to be verified and had to be located; in another, the assembled inhabitants only produced a single newborn baby for vaccination while also offering mortality information on the recent outbreak; and in a third, the population, tired of the fruitless previous trials, no longer presented itself for additional sessions. Moreover, it is not known which kinds of alliances Rigollet required to accomplish the 2271 vaccinations. Did he employ a translator, travel with African nurses, or rely upon any degree of authority on the part of local post commanders and their African gendarmes? One might further ask how specifically were local inhabitants convoked to present themselves for vaccination and what role did local village chiefs play in these assemblings? While further research might illuminate some answers to these queries, it is nonetheless prescient that Rigollet poses the technical and medical difficulty of employing arm-to-arm vaccinations as a dilemma for moral order and behavior, of action and reaction between French medical authority and local African parental care of children. Viable vaccination could not forcibly broach and rend,

[But especially, it requires a series of subjects capable of being transported from village to village over sometime considerable distances, and the loathing of the natives to allow their children to depart in this manner would be such that it would only be possible to overcome it by force and, further, it would be enough to prevent a number of parents to allow their children to be vaccinated for the fear that they would be taken from them later as vaccine-carriers for variolation.] *Ibid.*, 42.
however temporarily, the African family. Negotiations with parents, such as in Dagana or Foundiougue, most likely did occur to allow their infants to be used in the arm-to-arm trials. As such, Rigollet’s conclusion for the impossible forced separation of child and parent instantiates and furthers liberal rationalities that contributed in part to colonial governmentality at this time.

If a colonial medical imaginary created by vaccination revolved around the vaccine itself and one would be required to adjudicate the subject in its several senses to the point where you could not employ the human arm as a container for the vaccine, then where would the vaccine originate? Where would a physical laboratory to produce the vaccine reside? One could conditionally entertain as Rigollet does that the creation of a vaccine laboratory in Saint-Louis that “would furnish the lymph to the doctor sent in the interior, fulfilling evidently all the desiderata”. In Senegal, there was even a precedent, Girard’s experiment with a local vaccine in 1888. Rigollet in fact mentions Girard’s results with young calves, even reproducing Girard’s own table of findings for his experimental production of animal vaccines. The times when the Girard animal vaccine failed were due to an aged vaccine, harvesting too late on the sixth or seventh day. The colonial Ur-model to date, Calmette’s experiments in Cochinchina, with the harvest of vaccine from calves on the fifth day, proved the most optimal. Yet, successfully replicating the Cochinchina experiment was not foreordained in 1893. Local conditions in Senegal presented a difficulty for physicians--the animal calf itself. Over 1891 and 1892, two separate rinderpest epidemics swept through Senegal, leading to the ‘dearth’ of animals, as such that it was even difficult to purchase adult
cattle for the urban food supply. “One must not imagine,” observed Rigollet, “for the moment at least to have some young ones for the cultivation of the vaccine.” In addition to the provisioning dilemma, Rigollet also estimated that the population of Senegal was not so great as to require a large cultivation of vaccine; and the costs to operate a vaccine-harvesting institute would not justify the relatively small quantity of vaccine necessary to extend vaccination into the interior.

Rigollet thus argued for the continued use of vaccine produced in France and transported in sealed tubes. This source worked sufficiently well, when freshly used, for his vaccination campaign and one could conceivably import vaccine from Bordeaux or Marseille four or five times per month to maintain sufficient supply. Above all, Rigollet counseled a polyvalent pragmatism for the future. Both animal and human vaccines could be employed in tandem when the need arose to sustain a necessary quantity of available vaccine and the combination of the two sources would work well in areas with large populations. The ability to transfer was paramount to keep vaccination continuous: “choose and watch over some children or even inoculate an animal, either with human vaccine or the conserved pulp.”

The general success of the 1893 Rigollet Mission established a foundation for the promise and practice of future mass vaccination in Senegal and within the French empire as a whole. In terms of the latter ramifications, the mission’s report was published two years later in the leading journal of French tropical medicine, the Archives

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36 Ibid., 43.
Along with Girard’s earlier published article, “Rapport sur une campagne au Sénégal” was one of the first documents on vaccination trials in any of the French colonies and hence gave much prominence to French West Africa as an experimental site for mass vaccination.

Locally in Senegal, the mission’s legacy was perhaps even greater. Later in the decade, when subsequent physicians undertook further vaccine campaigns, they acknowledged the mission’s experimental import implicitly in the manner in which these future ‘experiments’ employed many of Rigollet’s same vaccination protocols and model of scientific observation and recording. Explicitly, doctors most often signaled Rigollet’s shortcomings with attempts to keep the vaccine viable over the course of a vaccination tour. For the immediate future, the overall design of a vaccination mission did not change--rather, the task of subsequent practitioners now became how to perfect the original model and extend through space the rudimentary network of the vaccine coverage created by Rigollet. The next experimental tests with missions came two years later when smallpox violently reappeared in Senegal.

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Smallpox in 1895-96: The Tipping Point for Extended Vaccination

Despite smallpox’s repeated frequency in Senegal during the first half of 1890s, the Four Communes had been spared of the scourge until late 1894. Over the months of November and December, an epidemic appeared anew and progressively spread throughout the colony, including to the Casamance and Baol regions as well as to the Communes. The nature of outbreak and the reactions it launched on the part of medical authorities possess several unique characteristics that radically changed the history of vaccination in Senegal. First, in terms of demography, the epidemic proved to be the most fatal for the decade. Although the published version of the medical report for the epidemic does not provide any numerical accounting of mortality, contemporary medical authorities maintained that the disease produced considerable deaths, especially for young children. Among the surviving victims included a great number of blind persons seen throughout the entire region. Second, in the attempt to curb the epidemic’s extension, colonial medical authorities carried out the most extensive vaccination to date in the Communes and at interior posts (e.g., Dagana, Podor, and Kaédi). Two special missions were also launched in the Baol and Casamance region. Throughout the remainder of the decade no subsequent vaccination approached the more than 17,300 operations carried out between November 1894 and April 1895.

Third, almost all of the vaccine required to affect the large number of operations was successfully manufactured locally, primarily in Saint-Louis. This development laid to rest Rigollet’s earlier assertion that imported vaccine from France alone could sufficiently meet the demands of mass vaccination in late nineteenth-century Senegal. Although a fully operational vaccine harvesting service was ultimately created in 1902, the experiences of 1895 proved that physicians could produce viable lymph in the colony on par with the famed Indochina enterprise. In this sense, to borrow Latour’s phrase concerning the ways in which a plurality of scientific technologies come together and combine to effect stable social relations, the vaccine as ‘immutable mobile’ had finally arrived in Senegal. Fourth, and lastly, the mass vaccination of 1895 brought French physicians for the first time ever into close contact with local African populations. These contacts had a pronounced effect on the development of colonial governmentality (the conduct of conduct), especially in terms of the choices African communities made to defend against smallpox. After 1895, one might well speak here of the first signs for the decline of variolation and Africans’ turn toward vaccination. Each of these developments is treated in detail below with particular attention devoted to vaccination as science in action, replete with problems and potentialities.

During the epidemic, the practice of indigenous variolation emerged as the bête noire of medical officials. In the strongest statement to date on the part of medical administration, the colony’s Chief Medical Officer, Dr. Edouard Sérez, squarely blamed

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the spread of the disease on the use of variolation by Muslim clerics or marabouts.

These local religious leaders, according to Sérez, had been recently active in the
growth of Islam and the conversion of local populations. Along with the preaching
of “les principes du Coran,” the clerics also in turn extended the practice of variolation,
much to the detriment of colonial efforts to control smallpox epidemics:

Ils pratiquent la variolisation et refusent la vaccine comme contraire à leurs
préceptes religieux. Partout où, depuis un an, j’ai pu envoyer les médecins
vaccinateurs, cette pratique dangereuse m’a été signalée comme la seule cause
des nombreuses épidémies qui apparaissent; partout les médecins étaient
combatus par les prédications des marabouts…Sur tous les points qu’ils ont
derm partoris, ils ont essayé de faire comprendre aux populations les dangers de la
pratique à laquelle ils se soumettent et les avantages de la vaccination. Trop
souvent, hélas! ils se sont buttés non pas même à une indifférence, mais bien à
une mauvaise volonté absolue.

Despite the fact that Sérez viewed variolation as the unique cause for the frequent
annual smallpox epidemics, “which decimated the native population in most of the

40 On the history of Islam’s spread in Senegal during this period, see Lucy Colvin, “Islam
and the State of Kajoor: A Case of Successful Resistance to Jihad,” Journal of African
History 15, no. 4 (1974): 587-606; Robinson, Paths of Accommodation: Muslim
Societies and French Colonial Authorities in Senegal and Mauritania, 1880-1920 and
specifically among the Wolof-speaking regions, James Searing, “God Alone is King”:
Islam and Emancipation in Senegal. The Wolof Kingdoms of Kajoor and Bawol, 1859-
1914 (Portsmouth, NH: Heinemann, 2002).

41 [They practice variolation and refuse the vaccine as contrary to their religious
precepts. Since one year, everywhere that I have been able to send vaccinating
doctors, this dangerous practice has been brought to my attention as the sole cause of
the numerous epidemics which appear; everywhere the doctors have been combated
by the preaching of the marabouts…At all the areas that they traversed, they tried to
make the populations understand the dangers of the practice to which they submit
themselves and the advantages of vaccination. Quite often, alas, they have come up
against not only indifference, but also an absolute unwillingness.] Sérez, “Des pratiques
musulmanes de variolisation comme causes des épidémies annuelles de variole au
Sénégal,” 289.
provinces of the colony,” his efforts to have the administration interdict the practice in principal centers and penalize it with stiff fines did not gain any ground.\footnote{Sérez in Senegal was by no means alone in viewing a direct and dangerous link between variolation and frequent smallpox epidemics. In fact, throughout the French empire and in the metropole from the mid-1890s until the first half of the 1900s, the accused relationship became a \textit{pensée unique} among colonial physicians in publications on vaccination and smallpox. Moreover, the dangers of variolation in the colonies became a repeated topic in meetings of the Académie de Médecine in Paris as the head of the Academy’s vaccination service, Édouard Hervieux, raised the ‘menace’ of variolation in debates concerning the need for obligatory vaccination in the colonies. See Hervieux, “Note sur la nécessité de l’obligation vaccinale dans les colonies françaises,” \textit{Bulletin de l’Académie de Médecine} sér. 3, 39, no. 11-14 (1898): 277-288; 325-334; 367-371; 381-391; \textit{ibid.}, “Variolisation et vaccination indigène,” \textit{Bulletin de l’Académie de Médecine} sér. 3, 45 (séance du 5 mars 1901): 276-282; and \textit{ibid.}, \textit{“Variolisation,” Bulletin de l’Académie de Médecine} sér. 3, 47, no. 12 (1902): 401-404. For other testimonies of the dangers, primarily emanating from Algeria, see Adrien Loir, “La vaccination obligatoire dans les pays musulmans,” \textit{Revue scientifique} 4e sér., 8, no. 12 (1897): 367-370; H. Gros, “Les résultats de la variolisation,” \textit{Archives de médecine navale} 75 (1901): 368-377; Borne, \textit{Vaccinations et revaccinations obligatoires en application de la loi sur La Protection de la Santé publique} (Paris: C. Naud, 1902); Alexandre Layet, “Prophylaxie de la variole dans les pays chauds. Vaccination et variolisation,” \textit{Journal de Médecine de Bordeaux} 34, no. 29-30 (1904): 521-523; 542-543; and Louis-Michel Parrot, “De la prophylaxie de la variole aux colonies,” Thèse pour le doctorat en Médecine, Faculté de Médecine de Paris (Paris: Imprimerie de la Faculté de Médecine, 1908).}

Since municipal authorities declared themselves incapable of effecting such measures, the only recourse to stop the epidemic was with the vaccine and medical officials in the Communes tried to respond with mass vaccinations and revaccinations. \footnote{Sérez, “Des pratiques musulmanes de variolisation comme causes des épidémies annuelles de variole au Sénégal,” 290. There may well have been further measures taken such as the establishment of quarantines and the use of isolation.}

A major problem however arose with the very solution. In November, the colony’s medical administration based in Saint-Louis ordered large quantities of lymph from France, yet as of December, many of the imported tubes did not produce results.
The cause of the failure was said to stem from either the poor quality of the manufactured vaccine or its deterioration while in transit. Faced with the extreme gravity of the outbreak and sharp shortage of viable lymph, the alternative option reemerged from its initial success and dormancy: a locally produced vaccine. In fact, to stem the major outbreak of 1895, medical officials in Senegal relied almost entirely on locally produced lymph. In January, Dr. Louis Porquier inoculated calves with the little remaining active triturated lymph from the Bordeaux Military Institute to produce a local vaccine. Over the ensuing trimester (13 January to 12 April), Porquier proceeded to 'seed' twelve different animals and successively harvested adequate quantities of calf vaccine that was then used locally as well as delivered to other centers and posts throughout the colony. Some of the seeded calves were also transported, most likely by rail or ship, to the other Communes where the ‘fresher’ cowpox pulp was collected on site and immediately utilized.

Both the course of the epidemic and the specific nature of vaccination conducted by colonial physicians varied significantly over areas of the colony, taking particularity from local situations. For Dakar and Gorée, medical officials were not able to ascertain in which city the disease first occurred due to unnamed ‘difficulties’ for the colonial health services to carry out a ‘serious study’ to determine in which locality the germ had first arrived. It was nevertheless found that the outbreak initially started in the area before then spreading to the nearby commune of Rufisque. On Gorée Island, the

44 Ibid., 291.

disease killed many, an abrupt change from previous epidemics. Generally, Gorée had been spared in preceding years from smallpox due to public health measures, presumably quarantines and immediate isolation of the first victims. In December 1894, the disease had been imported from villages along the coast and the effects quickly became acute, although Sérez did not report any figures for mortality and morbidity. Of the four Communes, Gorée suffered the most cases and deaths and the epidemic only extinguished itself, according to Sérez, due to a lack of non-immune persons.

Vaccination and revaccination started in November and over the next sixty days 750 individuals were inoculated. The success was low with only a thirty percent rate of positive results. During the first three months of 1895, an additional 284 vaccinations and revaccinations were conducted.\textsuperscript{46}

The outbreak in Dakar seemed to be less violent, but Sérez noted that, on the peninsula, “that is maybe because here it is has been better concealed” with presumably a fewer number of victims reported by the local African population to municipal authorities.\textsuperscript{47} To stem the disease in Dakar, Saint-Louis medical officials sent an inoculated calf rife with pustules, thereby permitting mass vaccinations to ensue in the city. Vaccine from the transported calf also allowed a second calf to be seeded. This further calf, which belonged to the Railway Company, successfully produced more supplies of lymph that were then used to vaccinate all railway employees along the entire train line between Dakar and Saint-Louis. While vaccinations and revaccinations

\textsuperscript{46} \textit{Ibid.}, 295.

\textsuperscript{47} \textit{Ibid.}, 296.
were high in number (about 1,500) between December 1894 and April 1895, the rate of success was quite low averaging between 15 and 20 percent.\(^4\)

In the Rufisque Commune, the epidemic did not cause many deaths due to measures taken by the local civilian doctor, Dr. Morin. The populous nearby villages did not share the same fate. Sérez reports that the practice of variolation had created numerous outbreaks (*foyers*) to produce a considerable number of victims. By mid-April, Morin was only able to vaccinate 500 persons with no reported results.\(^4\) While Sérez provided no further information on the effects of operations during this epidemic, vaccination in the city may have proven an evident success. After 1895, the municipality continued a program of regular annual vaccination. One thousand operations took place each year over the next decade with the result that no further cases of smallpox appeared among children in the city.\(^5\) When a major epidemic struck Dakar in 1903, Rufisque, just some 100 kilometers away, remained unaffected.\(^5\)

Apart from the Communes, two separate vaccination missions in response to the epidemic took place in the interior. The first transpired in the Casamance region where Dr. Georges-Edouard Lairac traveled for two and a half months and encountered much difficulty as local populations had little previous contact with Europeans and did not

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\(^5\) Ribot, “Assainissement de la ville de Rufisque (Sénégal),” *Annales d’hygiène et de médecine coloniales* 10, no. 3 (juil.-sept. 1907): 404.
“wish to go along with the practice”. The inhabitants were said to be encouraged along this line “by the preaching of the marabouts, completely hostile to the vaccinating doctor”.

As a result of such antagonism, Lairac only effectuate 1,460 inoculations, a total considered small in number.

A second mission occurred in the Baol region and marked a further important event for colonial vaccination during the 1895 epidemic. In a new development, a decentralized, albeit small-scale, vaccine harvesting experiment occurred at the principle colonial center in Baol, Thiès, where a serious outbreak was ravaging towns and villages. Two young post doctors, Dr. Cordier and Dr. Roi, directed a large-scale vaccination campaign over the region through a division of labor. Dr. Roi, the principal Thiès doctor, seeded the calves and harvested the lymph. All eight of the calves seeded produced usable lymph and Roi then vaccinated 1,896 persons in surrounding villages. The only site possible to control the results was in a nearby administrative center along the railway, Tivaouane, where half of the inoculations recorded positive. Tubes of lymph from the Thiès experiment were also sent to Rufisque, Dakar and Gorée as well as other centers.

The second physician, Dr. Cordier, carried out a campaign throughout the neighboring Baol region from the start of February to the end of April. Of significance, Cordier used the vaccination campaign to re-trace the route traveled by the epidemic.

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53 Ibid., 292.
itself. He determined the epidemic's origin as having occurred in a rural locale of the Salao province, the first village within the wider Baol region afflicted with disease. Smallpox was said to have originated when a young African man who underwent variolation at Tivaouane to the north in the Cayor region and then traveled to the Baol locale. The man recovered, but five to six other individuals became contaminated and subsequently died. From this village, Cordier is reported to have drawn a map, “très bien faite,” which showed “step by step the march that the epidemic followed”.\footnote{Ibid., 296.} A second point of origin was also later determined and additionally said to have resulted from variolation.

The regions of Baol and Cayor historically represent the heartland of Islam in precolonial Senegal and throughout the colonial period the area saw the expanded development of the religion. In the late 1880s, the legendary marabout Ahmadu Bamba founded the Mouride brotherhood in Cayor after having lived for some time between the two regions. Bamba recruited his first adherents among former warrior-slaves (ceddo) of the Wolof state army.\footnote{For histories of Bamba, see Robinson and Searing, \textit{op. cit.}} One administrative political report on Bamba in the 1890s even mentions that the former slaves were partly drawn to his religious movement due to the fact that Bamba offered them protection against smallpox.\footnote{Personal communication, Beth Ann Buggenhagen, February 2000. It is not known if and to what extent Bamba employed variolation as a means of protection.} Later, at the start of twentieth-century, a lesser known marabout, Malik Sy, moved to Tivaouane to develop
what would later become another major Muslim brotherhood predominant throughout all of West Africa, the Tijanniya.

Over the course of his mission, Cordier vaccinated 5,094 individuals comprising approximately 800 adult men, 1200 adult women, and 3000 children (who never had undergone variolation unlike the adults). It was impossible for Cordier to provide any statistical results, but some time later he revisited the vaccinated Baol villages and concluded that successful results were numerous. However, in the neighboring province of Salao, its Wolof inhabitants refused any attempt at vaccination, as they were, according to Cordier, “musulmans convaincus” under the influence of marabouts whom colonial physicians identified as the propagators of variolation.57

As discussed in the preceding chapter, Dr. Michel-Lucien Judet de la Combe, a newly graduated naval physician assigned to Thiès several months later in 1895, analyzed variolation practiced in the two regions as part of a study comparing the smallpox outbreaks of 1894-95 and 1895-96 in the same area. Observations for the study were collected as the doctor carried out a vaccine campaign in early 1896 to control the second epidemic. He noted that variolation was not uniform among different ethnic populations since it was widely practiced in some areas, but not in others. Local practices were also transforming with the spread of vaccination. In the Salao province, according to Judet de la Combe, Wolof communities dominated by the influence of

marabouts were told to resist vaccination as marabout related fearful accounts that the
vaccinating doctor would pierce their arms with long needles. Fulani villagers of the
same area also ceased the practice and regretted that they had not known of the
vaccine earlier. Lastly, due to minimal contacts with marabouts, the animist Sérère
communities around Thiès readily abandoned variolation in favor of vaccination. Of
significance, Judet de la Combe also found that communities such as in the Lo and
Boyar areas or the Sérère provinces, which had accepted vaccination in the previous
year from Dr. Cordier, entirely escaped from smallpox when it reappeared the next
season. Alternatively, the Salao villages, that earlier had rejected vaccination and still
practiced variolation, now suffered anew. Other Wolof villages in neighboring Ouakame
voluntarily renounced variolation after one marabout, Gouye Karao, reportedly caused
the death of 60 persons in 1894 with the technique. This area’s inhabitants allowed
Judet de la Combe to vaccinate some 280 infants born since 1894.

The experiences of vaccination during the 1895 epidemic demonstrated to
medical officials the renewed possibility of creating a permanent vaccine production
center in Saint-Louis. The envisioned center would be capable of producing vaccine at
little cost and furnish lymph for the entire colony. Vaccinations could take place during
the cooler part of the year, the only time when vaccine could be transported without the
loss of virulence. The center would thus be in full activity between November and the
end of April; during the remaining months, the seeding for the vaccine would function at

58 Ibid., 78-82.

59 Ibid., 80.
a bare minimum to avoid complete disruption and to ready supplies for any urgent need.\footnote{Sérez, “Des pratiques musulmanes de variolisation comme causes des épidémies annuelles de variole au Sénégal,” 292-93.} The local production center would not be necessary for the colony’s European and African troops since vaccine supplies from the Institut Militaire of Bordeaux would meet the army demand. Rather, the center would furnish vaccine for local African populations, whether residing in those areas under colonial administration or within territories recognized by the colonial protectorate, where the number of inhabitants was even greater. Funding for the vaccine center would come from both of these administrative bodies and be located near the military hospital in Saint-Louis where the colony’s Chief Medical Officer would ensure its ongoing operation.

Vaccination during the epidemic also revealed to medical authorities the continued difficulty of verifying results and producing complete statistical knowledge for both the number of operations and their success rate. The Chief Medical Officer, Dr. Sérez, viewed the statistics as only approximate, with reported numbers both below and above the ‘truth’. “If it was difficult to make Africans accept vaccination, it was still more difficult, not to say impossible, to submit them to a control.”\footnote{Ibid., 293.} Only in the schools and military garrisons could one expect to know results. Adults for their part remained little inclined to receive vaccination as they were already either immune from variolation or had previously contracted smallpox.
To be sure, one could retrospectively describe vaccination in Senegal of 1895 as emergent and weakly developed. But this kind of vision ‘blackboxes’ much of what actually happened in the course of the experiments during the epidemic, such as the way in which African communities and the vaccine mutually interacted with one another. Scientists like Sérez, but so too some contemporary sociologists of science as well, fall into this dilemma especially when attempting to measure the efficiency and perfection of a technoscience. To examine more closely Euro-African-vaccine interactions, the last two sections of the chapter treat the history of vaccination during the 1890s in two colonial urban settings, Saint-Louis and Conakry. Part of the aim below is to juxtapose and demonstrate some of the particularities of each locale. Quite obviously, the two cities differed in several respects: history, size, population, epidemiology, presence of variolation, and government, to name but a few. The relative differences begin though to dissipate toward the end of decade of the 1890s in a significant regard. Both sites become progressively folded into a singular universe, that is, a common technoscientific and social network based in and through the vaccine.

*Successive Conversions: Variolation and Vaccination in Saint-Louis*

Between 1889 and 1898, the capital of colonial Senegal witnessed four separate smallpox epidemics, respectively in 1889, 1895, 1897, and 1898, of which the most
severe occurred in 1895. For each outbreak, city medical authorities responded similarly with primary vaccinations and revaccinations in the attempt to control the spread of the disease. Moreover, in regard to the first three epidemics, local physicians successively conducted experiments to produce a local animal vaccine. The discussion below does not attempt to provide an exhaustive history of the epidemics or of the array of late nineteenth-century European and African responses in the urban setting. Rather, it focuses on two interrelated elements—the nature of vaccination and its effects on indigenous response to the epidemics—through the testimony of one particular source, that of a report written by Dr. Charles Carpot which chronicled each individual outbreak as well as the responses on the part of civilian physicians within the municipal health services.

Carpot was uniquely situated in background and medical knowledge to describe the smallpox events at the end of the century. Born in 1857 to one of most politically

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62 During the period from 1888 to 1900, the population of Saint-Louis grew from 18,620 to 20,173. Figures come from *Annuaire du Sénégal et Dépendances* (Saint-Louis: Imprimerie du Gouvernement) (1888): 47; (1900): 54.

63 ANS 1H38, Doc. 21, Dr. Carpot, *Rapport sur la variole et les vaccinations dans la commune de St. Louis, Sénégal* (12 décembre 1898) [hereafter Carpot rapport]. A short excerpt of the report was included in the annual official publication on vaccinations and revaccinations in France and the colonies produced by the Académie de Médecine for the Interior Minister, *Rapport général présenté à M. le Ministre de l’Intérieur par l’Académie de Médecine sur les vaccinations et revaccinations pratiquées en France et aux colonies pendant l’année 1898* (Paris: Masson, 1899), pp. 45-46. The report was also communicated before the Academy and subsequently referenced in the Academy’s debates on proposed measures to ban variolation in the French colonies. See J-F.-E. Hervieux, “Variolisation,” 402.

64 Biographical information for Carpot is taken from obituary tributes at the time of his death in January 1905 published in *Journal officiel du Sénégal* 50, no. 214 (jeudi, 2 fév.
influential creole families in Saint-Louis, he traveled to France to study medicine in the late 1870s at the École de Médecine in Rochefort. Upon the end of formal studies in 1880, Carpot was then promoted to médecin auxiliarie de 3e classe in the Naval Health Services. His first assignment was the post doctor at the port of Benty (located at the outlet of the Mellacorée River on the Guinean coast) and then at M’Pal (a fort in the Cayor region immediately to the south of Saint-Louis) in which he volunteered to serve in the naval military forces during the 1883 conquest of the Cayor. After the military expedition, for which he received decoration, Carpot returned the following year to Saint-Louis and commenced work as a private physician. His demonstrated medical abilities soon led municipal authorities to appoint him as assistant director of the city’s Civilian Hospital in 1886. In his subsequent career at the hospital, apart from witnessing the above cited smallpox epidemics, Carpot also cared for victims of additional disease outbreaks to visit Saint-Louis, such as cholera in 1893 and yellow fever in 1900. He eventually was nominated director of the Civilian Hospital in 1903, two years before his abrupt death from bronchial pneumonia. In addition to the 1898 report on smallpox, Carpot authored several distinguished medical studies, including 1905): 52-54; Becker et al, Santé et population en Sénégalie des origines à 1960, 320; 408; Ngalamulume, “City Growth, Health Problems, and Colonial Government Response: Saint-Louis (Senegal), From Mid-Nineteenth Century to the First World War,” 162; 232-33; and Wesley Johnson, Jr, The Emergence of Black Politics in Senegal: The Struggle for Power in the Four Communes, 1900-1920, 109-122.

During the 1890s and 1900s, the Carpot family represented one of the most politically powerful in the city as the doctor’s two brothers, Théodore and François, held the colony’s highest elected positions (respectively, President of the General Council and Senegal’s representative in the French legislature, the Council of Deputies).
In January 1889, smallpox returned to Saint-Louis and by February developed into a full-scale urban epidemic. To respond, medical authorities organized a campaign to vaccinate children and revaccinate individuals who had earlier received a first or ‘primary’ vaccination. Both military and civilian doctors carried out the campaign mainly from their respective hospitals; as noted below, some vaccinations occurred at residents’ homes. Neither the military hospital nor the civilian counterpart had the adequate space or conditions to isolate the sick, particularly African residents, and several had to be housed in local private quarters. For the afflicted among the military troops, health officials had in the past made use of two military barracks on the northern point of the island, but the poor state of the buildings forced the Chief Health Officer to

66 The first study comprises an unpublished brochure covering a ten-year period (1898-1898) of medical observations at the hospital, which Carpot presented at the 1900 Expedition universelle in Paris. The second work was published as a monograph of the epidemic in 1901.


68 Since the middle of the nineteenth-century, Saint-Louis possessed a civilian and a military hospital, of which the latter was significantly larger. The Hôpital Civil was founded as a hospice, then over time increased in size to become a hospital. The institution was managed by a French Catholic missionary order, the Soeurs de Saint-Joseph de Cluny, until 1904. For the history of the civilian unit, see Ngalamulume, “City Growth, Health Problems, and Colonial Government Response,” 159-165; on the creation of the city’s military hospital, see Sinou, Comptoirs et villes coloniales du Sénégal: Saint-Louis, Gorée, Dakar, 141-149.
appeal to the Governor General to intercede with military heads for space to be allotted in the military’s Central Infirmary.\textsuperscript{69}

During the epidemic, Dr. Carpot petitioned the mayor and the municipal council to start two initiatives: first, a specially delegated service for vaccinations and revaccinations and, second, an animal vaccine-harvesting institute, akin to the one inaugurated by Dr. Henri Girard the previous year. While awaiting legal notification for both programs, Carpot commenced vaccination on February 28 with a reserve of glycerinated vaccine previously sent from France. Between the end of February and March 16, some 76 individuals were vaccinated with the arm-to-arm method “by rigorously observing the principles of asepsis and antisepsis”. Carpot employed this method throughout the epidemic so as to conserve the limited supply of vaccine.\textsuperscript{70} Verification of the procedure for success was difficult, as the majority of those vaccinated did not voluntarily return after the approximate eight-day period for the vaccinal reaction to occur. Only 24 of the 76 vaccinated were verified.\textsuperscript{71}

City officials subsequently granted Carpot permission to produce a local vaccine, yet the initial start stalled as he encountered difficulties in procuring a suitable calf. Once a calf was finally on hand, Carpot inseminated the animal on March 7 with imported vaccine and the inoculations yielded 27 pustules, of which several contained


\textsuperscript{70} Carpot rapport.

\textsuperscript{71} No results are provided in the report.
suitable virulence to harvest vaccinal material. Municipal authorities then posted official notices around the city to announce vaccination sessions starting on March 16. Until the end of the month, Carpot carried out a further 156 vaccinations and revaccinations and often had to alternate between different supply sources to have viable lymph (see Table 11). These vaccinations were “peu brillants” according to Carpot since they consisted of numerous revaccinations. Some inoculations (18) were carried out with the arm-to-arm method and gave excellent results for primary vaccination. For the entire period, civilian doctors practiced a total of 232 vaccinations.

Table 11. Experimental Vaccine Production and Vaccination, Civilian Hospital, Saint-Louis, 1889.

<table>
<thead>
<tr>
<th>Date of Session</th>
<th>Source</th>
<th>Number</th>
<th># Pos</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 Feb.-17 March</td>
<td>Pulp with glycerin from France</td>
<td>76</td>
<td>24</td>
</tr>
<tr>
<td>16-March</td>
<td>Young calf</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>17-March</td>
<td>Young calf</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>17-March</td>
<td>Arm-to-arm w/ pulp from France</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>20-March</td>
<td>Vaccine plaques then calf</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>29-March</td>
<td>Arm-to-arm w/pulp from calf</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>30-March</td>
<td>Arm-to-arm w/pulp from calf</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>232</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: ANS 1H38, Doc. 21, Carpot, Rapport sur la variole et les vaccinations dans la commune de St. Louis, Sénégal (12 décembre 1898).

During the epidemic, naval physicians at the military hospital most likely conducted a far greater number of vaccinations since they were responsible for vaccinating children in all municipal schools and both European and African functionaries and employees were
required to undergo vaccination or revaccination. And, despite the now greater prophylactic coverage, Carpot complained that the Africans living in the city suburbs (Guét-N'dar, N'dar-Toute, and Sor) were “still resistant to vaccination [and] displayed little willingness to accept it”. 

The gravity of this epidemic was probably minor, unlike the preceding 1887-88 outbreak or the major epidemic in 1895. Further research for morbidity and mortality is necessary given the conflicting accounts of the event. Ngalamulume states that the epidemic “swept through the city and killed 199 victims, including one European adult, one European child, and the urban poor”. If such a high causality rate were true, the 1889 epidemic would have been more than double the number of deaths in the 1887-88 outbreak (37 and 59, respectively for Saint-Louis and Sor). Contemporary evidence downplays the scale. Carpot mentions that 1889 mortality was so low that physicians did not deem it necessary to establish a daily recording of victims.

72 I have no data for the number of vaccinations performed by naval physicians at the military hospital or throughout the city during the 1889 epidemic. Further archival research may shed light on the issue as well as ascertain whether a local animal vaccine was produced.

73 Carpot rapport.

74 Ngalamulume writes that the epidemic “swept through the city and killed 199 victims, including 1 European adult, 1 European child, and the urban poor”. See “City Growth, Health Problems, and Colonial Government Response,” 290.

75 Girard, "Variole et vaccine au Sénégal," 266.

76 Carpot rapport.
The fact and degree to which Africans in Saint-Louis practiced variolation in the face of epidemics during the 1880s remains a salient question. For the 1889 epidemic, Carpot makes no reference to the use of variolation by African residents in the city or in its suburbs. Similarly, during the 1888 smallpox outbreak, Girard does not mention the presence of indigenous inoculation in the urban area, even though he inculpates the practice generally employed in Muslim areas of the colony for its egregious effects in spreading the epidemic as well as producing particularly malignant cases. Further research might illuminate the urban prevalence of variolation as well as other means in which African residents responded to the epidemics in 1887-88 and 1889. Isolation though was probably the principle way used by Africans to prevent contagion, given the fact that for later epidemics in the 1890s, Carpot mentions that Africans tended to isolate the sick family members at home.

With the next outbreak in 1895, a new African response, that of variolation, emerged to challenge colonial medical attempts at controlling the disease. The epidemic started in December 1894 and spread rapidly throughout the urban area, where it continued both on the main island and in the suburbs throughout the first seven months of 1895 before subsiding. According to Carpot, this epidemic was the most severe of four outbreaks over the period from 1889 to 1898. While his report does not mention the total number of cases and deaths, between February 21 and April 6, officials recorded 62 fatalities and numerous cases were treated at both the military and

77 Girard, "Variole et vaccine au Sénegal," 209; 222.
Moreover, the epidemic produced a high proportion of mortality for the colony as a whole. In Saint-Louis, many children suffered greatly. Some adults even contracted the disease and several eventually died. Among the city’s three different racial groups—Europeans, Africans, and mulattos—it was the third element, who constituted the majority of the population, that was most affected. The military garrison almost did not have any victims, whose result was attributed to effective vaccination and revaccination. There were also four recorded cases among the African municipal carriage drivers, one of whom died.

As mentioned in the preceding section, the urgent need to control this particularly severe outbreak forced colonial medical officials to react quickly. Dr. Porquier of the city’s Military Hospital manufactured a local animal vaccine, whereby six days after the initial inoculation, useable lymph was harvested from a calf. From January through April, both military and civilian physicians then carried out vaccinations and revaccinations in the city with three to four different sessions per week. In latter half of January alone, Dr. Sérez used the harvested pulp to vaccinate, first tirailleur regiments and their families and, then, African children in the city and suburbs. For this initial round of vaccination, a total of 1,071 individuals underwent the operation. Between February and April, military doctors were able to continue regular sessions of

78 Carpot rapport.


80 Ibid., 294.
vaccination without interruption due to the fact that they had abundant quantities of animal vaccine produced from the twelve successive inseminated calves. Equally important, there existed a steady demand on the part of local African residents who came to the hospital to receive the lancette. Another phase of urban vaccination transpired when Dr. Lairac returned from a vaccine mission in Casamance and was charged to vaccinate all children who attended koranic schools in the city and suburbs. Lairac encountered “la mauvaise volonté” as he only practiced 721 scarifications on the more than 2,000 student talibés. Over the first trimester doctors at the military hospital completed 5400 vaccinations, all of which were deemed as successful.

At the city hospice, Carpot and his one colleague also carried out vaccinations in two different stages during the epidemic. All sessions were announced two days in advance by the town crier “who traversed, while beating a drum (tam-tam), one by one each neighborhood and suburb of the city, engaging the inhabitants to respond to the mayor’s invitation to be vaccinated”. In January, February and March, the doctors completed a first set of 480 vaccinations (200, 200, and 80 for each month respectively), all of which yielded negative results. While many of the operations in this first stage were revaccinations, and hence increased the number of negative reactions, Carpot also blamed the failure on the use of an old batch of vaccine as well as the six tubes of imported lymph sent from Bordeaux on January 5. For the second set of

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81 Ibid.

82 Ibid., 292.

83 Carpot rapport.
inoculations transpiring in April (196) and May (126), Carpot made use of another imported batch of vaccine and obtained complete success for the 322 total scarifications. Most of the vaccinations occurred at the mayor’s office (Hôtel de la Ville), while others took place at Carpot’s residence, the civilian hospital, the Protestant mission (Mission évangélique), or in the town center. By the end of April, Carpot and his colleague performed 802 vaccinations and revaccinations.  

Medical officials in Saint-Louis viewed the close to 6100 total vaccinations and revaccinations conducted over the first four months of 1895 as a mitigated success. Despite the facilities made available, numerous cases still existed at the end of March and military doctors ended vaccination in April due to the fact that no further city residents came to the sessions. Only one third of the population had been willing to accept vaccination. However, according to the colony’s Chief Medical Officer, while the vaccine did not halt the epidemic, the total number of vaccinations did attenuate the “ravages in a large measure”. Of significance here, one might say that Saint-Louis vaccination in 1895 produced for the first time a new urban mapping of therapy, morbidly and death. The map partly emerged in that “the epidemic no longer exists for the great number of points where it had been reported; it continues with more or less


85 Ibid.

86 Ibid., 292.
violence everywhere where populations had only been open to inoculations in small fashion.”

The majority of African inhabitants also contributed to this new map through what medical officials, both military and civilian, described as a novel development in Saint-Louis. For the first time ever recorded, Africans in the city center resorted to variolation _en masse_. When the epidemic initially appeared in the metropolitan area in December, the earliest outbreaks occurred the outer areas of the city, such as on the mainland suburb of Sor where a number of children had undergone variolation. The main island of Saint-Louis had been spared of the disease for several days, according to both Carpot and Sérez, until indigenous inoculation occurred in the city. Soon, the disease was said to have spread in the northern and southern neighborhoods of the city where Africans resided. For Sérez, variolation put the majority _métis_ population in the most danger, since all Europeans were vaccinated, while the mulatto inhabitants generally accepted the lancette, but still lived among the variolating _indigènes_. As mentioned earlier, medical officials unsuccessfully pleaded to municipal authorities to ban variolation. 

In his report, Carpot disdainfully described along biomedical terms how the local mode of operation (e.g., the back of the hand as inoculation site for the transferred pus) was completed without any concern for asepsis and antisepsis or even the physical

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87 Ibid.

88 Ibid., 291.

89 Ibid., 290.
health of the individual person serving as the source of the live pus material.\textsuperscript{90} Furthermore, he sharply critiqued variolation as a “nefarious practice” and “disastrous method” as well as the manner in which it became a quite popular “momentary fashion” spread by “so-called marabouts appealing to some fanatics who believed that, by using this method, they would be shielded from the disease”.\textsuperscript{91} Lastly, Carpot insisted that Africans, particularly in Guet-N’Dar (see area map in Chapter 3), adopted variolation in part because they had misinterpreted the “principes de la vaccine”. Africans’ adoption of variolation spread not only through the influence of the marabouts who propagated the method, but also as a reaction by some Africans to the negative results stemming from his initial trials with inert vaccine between January and March. The confidence was so great, that, much to Carpot’s chagrin, one day “my colleague and I received the visit of some blacks asking us to vaccinate their children and them by means of this method”.\textsuperscript{92}

While the swift adoption of variolation in 1895 by African Muslims of Saint-Louis may have been conjoined with, and even contributed to, trajectories of religious conversion, its presence in indigenous therapy proved to be aleatory.\textsuperscript{93} Two years

\textsuperscript{90} Carpot rapport.

\textsuperscript{91} \textit{Ibid}.

\textsuperscript{92} \textit{Ibid}.

\textsuperscript{93} Since little historical scholarship exists on the growth of Islam in late nineteenth-century Saint-Louis, it remains difficult to verify and analyze further colonial medical accounts for variolation’s link with Muslim conversion during the 1895 epidemic. One contemporary colonial source suggests that the general period was characterized by fervent Muslim activity. In the major colonial study of Islam in Senegal written in 1888-
subsequently, when smallpox returned to the urban area in mid-February 1897, Africans abandoned the practice in large numbers and more readily accepted vaccination. Carpot’s study illustrates this change in African therapeutic practice within his narrative of the outbreak and vaccination at Civilian Hospital, both of which are described below.

The third epidemic of the decade followed the similar pattern of appearing initially in the suburb of Guet-N’Dar before spreading to the city. The outbreak subsequently ebbed after a few weeks, only then to peak again in early May where a further number of victims succumbed. The last cases were reported in July. Carpot attributed the new spike to the “promiscuity of blacks in [their] huts”. While Carpot does not provide any statistics for total cases and deaths, he mentions that, even with the considerable number of sick persons, the number of deaths was far inferior in comparison to the previous outbreak of 1895. As in 1889, the few deaths did not necessitate a daily recording of mortality.

Local African residents cared for the sick at home, a trend that disturbed the métis doctor who officially demanded that the mayor order hospitalization for all smallpox victims. Concerning the blacks, “all isolation at home was impractical,”

89 and published ten years later, the French Islamic scholar, Alfred Le Châtelier, observed that by 1890 Saint-Louis had become a major Muslim center dominated by the Tijaniyya brotherhood. Furthermore, the number of koranic schools doubled in the city over the decade from 1880 to 1890 and Moroccan boutiques, which had previously sold mostly woolen fabrics, fez hats, and fine leather goods, were now transformed in large part into bookstores purveying printed Islamic manuscripts from North Africa and the Middle East. Le Châtelier, L’Islam dans l’Afrique occidentale (Paris: G. Steinheil, 1899), 258-261. Robinson writes that Le Châtelier viewed Tijani expansion as hostile to the French and fanatical in its expression. On Le Châtelier’s place in colonial religious ethnography, see Robinson, Paths of Accommodation: Muslim Societies and French Colonial Authorities in Senegal and Mauritania, 1880-1920, 86-87; 273, ft. 56.
declared Carpot in a correspondence to municipal authorities, “à cause de leur genre de vie.” Required hospitalization for the diseased was mandated, but this legislation only beleaguered Carpot with a further challenge. “The blacks in general and especially those of Guet-N’Dar” he complained, “frightened by the hospital stay, hide their sick, hence the many difficulties to determine the new [smallpox] cases”.95

Over the course of the epidemic, medical officials in Saint-Louis responded once again with vaccinations and revaccinations. And, as in the past, the military hospital almost surely provided the overwhelming majority of these operations. The Hôpital Civil did not attempt to produce its own vaccine, but rather relied on its monthly supply requested from the municipality. The total number of vaccinations by civilian doctors increased significantly by twenty percent from that of 1895. Of particular significance to Carpot was the fact that the overwhelming majority of the 1,025 operations were carried out on young infants and children under the age of fourteen. Except for about thirty adults, revaccinations did not occur. The first attempt to vaccinate in March did not yield any results, whose failure was attributed to the advanced age of the tubes of lymph. A new batch of vaccine was delivered in early May and over a seven-day period 281 completed vaccinations provided satisfactory results. When the epidemic surged once more in mid-May, Carpot held regular sessions to vaccinate another 650 individuals between May 18 and July 6. In his eyes, it was vital to fight the disease and “profit from the driving spirit of the population which has since been more willing to

94 Carpot rappot.

95 Ibid.
accept Jennerian inoculations”. Eighty-five percent of the latter vaccinations were verified and all proved successful.

Table 12. Vaccination at Civilian Hospital, Saint-Louis, 1897.

<table>
<thead>
<tr>
<th>Date</th>
<th>Number</th>
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</thead>
<tbody>
<tr>
<td>March</td>
<td>94</td>
</tr>
<tr>
<td>4-May</td>
<td>100</td>
</tr>
<tr>
<td>5-May</td>
<td>40</td>
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<td>6-May</td>
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<td>64</td>
</tr>
<tr>
<td>11-May</td>
<td>30</td>
</tr>
<tr>
<td>18-May</td>
<td>89</td>
</tr>
<tr>
<td>19-May</td>
<td>8</td>
</tr>
<tr>
<td>25-May</td>
<td>167</td>
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<td>26-May</td>
<td>98</td>
</tr>
<tr>
<td>16-Jun</td>
<td>70</td>
</tr>
<tr>
<td>17-Jun</td>
<td>115</td>
</tr>
<tr>
<td>24-Jun</td>
<td>57</td>
</tr>
<tr>
<td>29-Jun</td>
<td>37</td>
</tr>
<tr>
<td>6-Jul</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1028</strong></td>
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</table>

ANS 1H38, Doc. 21, Carpot, Rapport sur la variole et les vaccinations dans la commune de St. Louis, Sénégal (12 déc. 1898).

In his report, Carpot noted approvingly of the fact that the total number of vaccinations at the civilian hospital had risen since 1895. Which factor(s) might explain the rise? Carpot posited two answers for the increase. First, he believed that the local population began to recognize the salutary effects of past vaccination as now “the natives rush to my sessions to vaccinate their children”. This acknowledgement performed its own

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form of conversion, as more Africans now possessed a driven spirit (entrain) for the vaccine. However, there was a second factor necessarily conjoined to the first. Carpot mentions the 'disastrous consequences of variolation' that arose in the epidemic of 1895, whereby:

Les noirs, plus avisés et surtout plus dociles aux avertissements et aux conseils que ne cessait de leur donner le Maire, ne pratiquèrent plus, ou pratiquement si peu la variolisation qu'on n'en entendit plus parler. Et cela s'explique d'autant mieux quelle expérience de cette méthode, tentée par de prétendus spécialistes en la matière, avait produit un effet très désastreux.98

The following year, the last smallpox outbreak of the decade came to Saint-Louis, but paled in comparison to the three previous epidemics. Unusually, the disease did not appear in January or February as the past pattern held, but was reported in March. The first few cases reported in the Guet-N'Dar area did not produce any deaths and its spread to the city island was minimal with only isolated cases disseminated throughout different quarters of Saint-Louis. During the entire event, the city registry office did not record any deaths. Moreover, the outbreak did not raise any heightened concern with the city’s Health Council even while normal precautions were taken and vaccination sessions took place as in previous years. At the civilian hospital, Carpot only vaccinated 161 individuals.

98 [The blacks, more sensible and especially more docile to the warnings and advice that the Mayor did not cease to give them, practised no longer, or practically quite litte, variolation such that one no longer heard of it spoken. And that explains even better how the experiment with this method, attempted by the presumed specialists in the matter, had produced a very disastrous effect.] Ibid.
The experience of the four smallpox epidemics and respective vaccination response in Saint-Louis from 1889 to 1898 certainly did not eradicate the disease from the area. Two brief examples suffice to illustrate the epidemiological history as well as draw attention to the previous work and effects of the vaccine-social assembling (a type of *mise-en-scène*) accomplished during the previous decade. Four years later in early 1902, when another urban outbreak appeared, it became the event that finally propelled the colonial administration to create a permanent animal vaccine production facility based in Saint-Louis. Now supplied with large quantities of fresh lymph, physicians no longer needed to wait the ten to twelve days for imported shipments and could respond more rapidly in the city as well as in other areas of the colony with expedited tubes of vaccine. During the first few vaccination sessions in Saint-Louis, urban inhabitants displayed a marked zeal to receive the vaccine and 1,072 operations were performed. Once contagion diminished, city residents no longer demanded the lymph.\(^9\) Of course, the ensuing local vaccine production encountered new obstacles—where to procure the necessary calves? whether to automate the harvesting of the vaccine? which choice of tube size and sealing material would adequately protect vaccine shipped to interior posts? These questions describe at one and the same time a future horizon of trials as well as the inscrutable manner in which the colony’s new vaccine institution in effect successfully translocated over space the metropolitan facilities (e.g., of Bordeaux and Lille) or the famous colonial one in Saigon.

The questions also reinforced sharply the past technoscience constitution of social and political imaginaries. By no means coincidental, it now became possible to repeat, enlarge, and even enact one of Dr. Girard’s recommendations for future vaccination proposed after the 1887-88 epidemic. It became imaginable to call for obligatory vaccination not only for those few Africans who worked in the colonial administration like Girard suggested, but for all Africans to go under the lancet. In 1903, writing in the main French military medical periodical, Dr. Jean-Jérôme-Augustin Bussière, a military physician based in Senegal, petitioned to extend to the colonies the 1902 metropolitan law for obligatory vaccination. Smallpox, he argued, still remained endemic in the suburbs of Sor, N’dar-Toute, and Guet-N’Dar and that the doctors at the Civilian Hospital only vaccinated 100 Africans annually. Moreover, the city’s African citizens now “petitioned for the liberty to have smallpox”.\textsuperscript{100} The Governor General for French West Africa Ernest Roume promulgated said measure on 14 April 1904 and thereafter vaccination and revaccination transpired without difficulty in the heart of the colony’s capital, as well as within other urban centers (Dakar, Thiès, and Rufisque).\textsuperscript{101}


\textsuperscript{101} ANS 2G3.19 GGAOF, Inspection des Services Sanitaires Civils, Rapport annuel, Année 1903.
When placed within the broader history of vaccination over the 1890s in Senegal and the broader region, the 1895 trials served as a tipping point. Until the creation of the official Native Health Services program (Assistance Médicale Indigène) in 1905, that notably included a mandate for extended vaccination throughout French West Africa, the next ten years saw several periodic vaccination missions operating throughout Senegal and the Western Sudan (see Table 13 below). While the majority of the campaigns still responded to a reported smallpox epidemic and any sort of measures to vaccinate as a means of smallpox prevention or prophylaxis prior to an epidemic would have to wait until the twentieth-century, the cumulative experiences of experimental vaccination trials produced a result whereby colonial technoscience in Senegal began to effect social and therapeutic conversions. The extent of these transformations was no doubt minor at the time, but seminally important was the fact that the conversions laid foundations for the more far-reaching and extensive mass vaccination occurring in the twentieth-century. To contrast the manner in which vaccination networks developed simultaneously over space within the same time frame of the 1890s, the analysis now turns to the trajectory of smallpox control in a different colonial center, that of Conakry in the colony of French Guinea.
<table>
<thead>
<tr>
<th>Year</th>
<th>Mission</th>
<th>Date(s)</th>
<th>Region/Locale</th>
<th>Total #</th>
<th>% pos.</th>
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<td>Podor</td>
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<tr>
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<td>Dagana, Podor</td>
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<td>January</td>
<td>Baol</td>
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<td>Porquier</td>
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<td>Saldé, Matam</td>
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<td>Baol, Salao</td>
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<td>3038</td>
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<td>Cayor, Louga</td>
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<td></td>
<td>Podor</td>
<td>1100</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Bakel</td>
<td>334</td>
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</table>

Before the arrival of the French in 1885, the future capital of French Guinea was an island of dense tropical forest inhabited by three hundred or so ethnic Susu and Baga residents. At the close of the century fifteen years later, the area had been radically transformed into a modern colonial city with 12 boulevards and 14 avenues extensively laid out and intersecting in grid-like fashion, monumental architecture for its official buildings, that included a hospital, along with running systems of sewage and drainage as well as a primitive rail network to move export commodities to the city’s functioning deep-water port. By 1900, the young city of 10,000 inhabitants also had regular vaccination for smallpox, even though, unlike Saint-Louis, epidemics were rare, if not non-existent. Further, the modular form of the vaccinating mission became implanted in the colony, at least in its rudiments. How such developments with the vaccine transpired in the subject of the section below.

As noted in the previous chapter, the coastal area from present-day Portuguese Guinea in the north to Sierra Leone in the south had a long history of Euro-African trade and commerce extending over several centuries around a bevy of commodities, including palm oil, peanuts, kola, leather hides, some ivory and gold, and increasing amounts of rubber. Over the 1860s, European trading companies, British Anglican and French Catholic missionaries, as well as the French military established commercial posts and fort settlements in three areas--Boffa, Boké, and Benty--each situated along a major river emptying into the sea. Less than two decades later, the growing imperial
fervor among European nations led the French colonial interests to consolidate over the entire coastal region under the rubric of an official administrative dependency of the colony of Senegal. The French presence entered a new phase.

In 1885, the colonial government in Senegal chose the island of Tumbo, a highly verdant, rocky projection situated in direct proximity to the Kaloum peninsula, as the site for the newly created administrative position, the commandant du cercle of Dubréka, a nearby export-processing factory village. The decision to establish a residence in this site reflected imperial France’s growing interests in face of competition with both German and British commercial and political rivalries. French interests developed primarily from the growing strength of the British presence and trade in Freetown that fed into the long-standing trading networks of the Guinea’s interior regions. While the French had already established political control at three riverine areas, the Tumbo Island was chosen for its competitive potential as deep water and protected port (shielded by the three neighboring islands, known as the Îles de Los) and the relatively ‘empty’ political landscape surrounding the immediate area. In due time, the Tumbo

102 Prior to 1890, the Rivières du Sud dependency also included the two administrative cercles (Carabane and Sédhiou) of the Casamance region in southern Senegal

103 The French had established a fort at Boké in 1866 and had smaller military posts at Boffa and Benty. Prior to the nineteenth-century, the Los Islands had been an export site for the Atlantic slave trade. In 1818, Britain gained control of the islands, when the Governor of Sierra Leone colony, Sir Thomas MacCarthy, obtained cessation rights from the local mainland chiefs. Intended as sanitarium for the weary Europeans of Freetown, the islands never became more than the seat of a British customs house for coastal trade. Later, as a result of territorial negotiations with Britain, France secured possession of the islands in 1904. Bruce Mouser, “Iles de Los as Bulking Center in the Slave Trade,” Revue française d’histoire d’outre-mer 83, no. 313 (1996): 77-90; Odile Goerg, “La Guinée” in L’Afrique occidentale au temps des Français: colonisateurs et
location became referred to as Conakry and developed quickly both in political and trading importance. Shortly thereafter, in 1890, Conakry as well as the Boké, Boffa, and Benty subregions of the Rivières du Sud changed in legal status from a dependency of Senegal to become an administratively separate colony. Three years later the territory gained further status at it was named the colony of French Guinea in January 1893, with Conakry designated as the capital.

Perhaps unique for the French colonies of the Second Empire, French Guinea’s early administration was headed by former naval physicians. Over the 1890s, one

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105 The separation resulted from several factors: the growing need to handle the political affairs of conquest more locally and independently from Saint-Louis, especially with the rise of military activity in the Fouta Djallon region; the potential to usurp to much profit the existing commercial relations between British Sierra Leone and the French port of Marseille; and the financial complaint that collected customs taxes from port trade did not benefit the local area due to a lack of political representation in the legislative body of Senegal, the Conseil Général. “Note sur la nécessité de séparer les Rivières du Sud du Gouvernement du Sénégal,” in *Cahiers coloniaux de 1889*, Henri Mager, ed. (Paris: Armand Colin, 1889): 114-117.

106 Its first governor was Dr. Gentian-Antonin-Maire Péréton and his successors included Dr. Jean Bayol and then Dr. Noël-Eugène Ballay. Prior to his posting in French Guinea, Dr. Ballay (1847-1902) served as the Lieutenant-Governor of Gabon. He started his career as a naval physician and accompanied Pierre Savorgnan de Brazza in the French military conquest of Equatorial Africa. On the French colonial archives official website for de Brazza, the young doctor’s service is remembered as “notably treating with devotion populations inflicted by smallpox”
ex-doctor, Eugène Ballay, implemented a massive program of urban planning to transform Conakry’s landscape of thick tropical forest into an urban grid of wide boulevards and avenues, replete with administrative buildings and significant economic infrastructure (international port and terminus of Conakry-Niger railway). The estimated population of Conakry in 1896 was 3594 inhabitants, which included a cosmopolitan mix of a small number (~50) of Europeans, mostly French, as well as communities of Sierra Leonean and Senegalese laborers (esp. masons) imported to work on the city’s massive public works projects of the period. Local ethnic Baga and Susu residents comprised the large majority of the population. In 1910, the population had grown to 10,000 inhabitants as newcomers from the interior, mainly the Fula (Peul) and other Susu, settled the burgeoning segregated African quarters to be join by immigrant Lebanese traders.107

While outbreaks of smallpox did not occur in Conakry over the entire decade, epidemics often visited Dubréka and the commercial river posts during the dry season that fell between the months of October and June. Yearly rains (hivernage) extending from June to October dissipated the disease. Colonial physicians viewed the disease as quite deadly for local populations and a major obstacle to the growing regional

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commerce and trade. But, as of late 1890, there existed no systematic vaccination over the region. Reporting of smallpox epidemics was also meager or absent. For the major outbreak that swept through the region in October 1890, the doctor in Conakry possessed little information, save for the conclusion of the disease's generalized presence: "smallpox has already made its appearance; but nothing is for certain. Otherwise, it is the rule that, after the rainy season, smallpox invades each year this or that region". However, rather than see the fact of limited reporting to explain the absence of the disease, it may have well been the case that smallpox outbreaks did not occur with frequency. The Rapport médicaux for the period only document one epidemic between 1890 and 1898, that of March 1891 in Dubréka, which is discussed below. Local African accounts of the disease reflected this fact. When


111 The monthly medical reports are collected in ANG 1H10, Rapport médicaux and span the period from October 1890 to July 1898. The documents are the first systemic recording of vaccination in French Guinea. Apart from a few entries, no other written sources, official or otherwise, provide monthly statistics for vaccination during the colonial period in French Guinea.
the first head of French Guinea’s vaccination service, Dr. Gustave Martin, conducted a mission over the region in September 1905, local inhabitants related two particularly severe smallpox epidemics, the first in 1890 and the second in 1898.\textsuperscript{112}

The earliest recorded vaccination occurred in March 1891 to quell an especially severe outbreak in Dubréka that already had produced numerous deaths. The colony’s Chief Medical Officer based in Conakry carried out the procedure locally as well as occasionally traveled to three administrative posts (Boké, Boffa, and Benty) of the respective major littoral trading areas (Rio Pongo, Rio Nuñez, and Mellacorée).\textsuperscript{113} But the Conakry physician, Dr. Pourtal, did not have any success due to the dated, inactive vaccine in his supply.\textsuperscript{114} In fact, no regular supply chain of vaccine imported directly

\textsuperscript{112} ANS 1H38. Variole et vaccine en Guinée Française en 1905.

\textsuperscript{113} When the Rivières du Sud was an official dependency of the colony of Senegal, physicians were posted at the larger centers of Benty and Boké. At the start of the 1890s, at the time the Rivières du Sud gained administrative autonomy, the medical posts of Benty and Boké were suppressed. From the listing of nominations published throughout the decade in the \textit{Bulletin officiel administratif de la Guinée Française}, the last physician to serve in Boké was appointed on 24 June 1891, only then to be reassigned five days later to Grand Bassam in the colony of Côte d’Ivoire. As of July 1898, only two French doctors served in the colony, one as the Chief Medical Officer in Conakry and the other assigned to the Residence of Timbo, the administrative center of the recently conquered Fouta Djallon region in Middle Guinea. The latter’s salary was paid out of the AOF general military (Service colonial) budget. Sometime after 1898, colonial officials eliminated the Timbo medical post (\textit{ambulance}). ANG 1H10, Dr. Mondon, Chef du Service de Santé de la GF à M. le Gouverneur de la GF, Konakry, 1 July 1898, Rapport sur les besoins en matériel et en personnel du Service de Santé de la GF; \textit{Bulletin officiel administratif de la Guinée Française, année 1889-1896} (Paris: Firmin-Didot, n.d.), 84.

\textsuperscript{114} ANG 1H10. Rivières du Sud, Service de Santé, Rapport médical du 15 mars au 15 avril 1891.
from France was in place at the time and any tubes of lymph received came from those furnished as part of Senegal’s yearly allotments sent by the metropole. Over the remainder of the year, medical officials several times petitioned the administration to establish the colony’s own direct imports of a viable vaccine, especially from Bordeaux where a vaccine-harvesting institute had recently come into operation.¹¹⁵

Such requests not only stemmed from the need for active lymph. There was also an increased demand as local populations began to abandon a previous disinclination toward the vaccination and came to accept the procedure, especially in the immediate aftermath of the deadly March outbreak in Dubréka.¹¹⁶ While indigenous inoculation or variolation was practiced in the northern post of Boké, no written evidence tells of its practice at Boffa and Benty or, for that matter, in the Conakry-Dubréka corridor.¹¹⁷ Further transformation of African views of vaccination, to the point of further acceptance, seems to have been impeded by the continued negative results stemming from the poor quality of available vaccine. When Dr. Lorieux arrived at the start of May 1891 to take over as head of the Rivières du Sud Health Services, he immediately


¹¹⁷ For its practice at Boké in the mid-1870s, see Corre, La mère et l’enfant dans les races humaines, 201 and ibid., “Les peuples du Rio-Nunez (Côte occidentale d’Afrique),” 47. Its absence in Boffa and Benty is treated in the preceding chapter. Lastly, none of the monthly Conakry medical reports for the 1890s or later twentieth-century annual reports make reference to variolation in the Conakry-Dubréka area; it may have existed, but probably to a limited extent.
vaccinated 75 African children in Conakry, but without success. The vaccine had been imported via Senegal from France in April and accompanied the appointed physician on his voyage from Saint-Louis to the new assignment. During the intervening weeks, the vaccine had become inert.\textsuperscript{118}

The same fate transpired with a delivery of sixty tubes of metropole lymph sent from Senegal later that year. Desiring to immunize a large number of local inhabitants as possible before the onset of the seasonal smallpox cycle, Lorieux traveled to Dubréka and Corrérah after the summer rains ceased in late October. The vaccination mission began on 1 November 1891 at Dubréka and in the adjacent village of Corrérah. African laborers working on the major road connecting Conakry to Timbo in the Fouta Djallon had assembled in Dubréka for their monthly pay, and the doctor took advantage of their presence to inoculate 194 and 86 inhabitants at each respective locale. Like all previous vaccine received from Senegal, the lymph had become 'altered' and yielded no results.\textsuperscript{119} Lorieux actually came to the conclusion by inference. To verify results, physicians needed to inspect the upper arms of those vaccinated at least five days after the initial procedure for signs of the epidermal reaction (i.e., an attenuated and local eruption of cowpox pustules). “Avec l’insouciance des indigènes,” Lorieux mentions that it was impossible to see any of the workers’ arms. He inferred the results based on Conakry children inoculated earlier with the same batch of tubes and for whom no

\textsuperscript{118} ANG 1H10. Rapport médical sur l’état sanitaire des Rivières du Sud du 15 mai au 15 juin 1891.

\textsuperscript{119} ANG1H10. Rapport médical sur l’état sanitaire des Rivières du Sud du 15 septembre au 15 novembre 1891.
reaction occurred. The infructuous vaccine raised several problems that did not exist in Senegal. For one, travel between Conakry and the three riverine areas remained difficult as no easily accessible means of transport existed; “one was obliged to operate in one region at a time”. During his ten-month posting in Conakry, Lorieux makes no reference to an attempt to vaccinate outside of the Conakry-Dubréka region. Moreover, even if imported vaccine in Senegal was inert one out five times, the demand on the part of schools and the administration allowed physicians to repeat the trials in the attempt to achieve success.

The fact of the failed missions, according to Lorieux, also completely ruined any benefits that might accrue for commerce. Yet, “even more regrettable” was that “the natives only allowed themselves to be inoculated with a certain loathing, and, seeing the little success of our medical ways, they have put up a still more greater resistance to allow themselves to have it done (à se laisser faire)”. When some cases of the disease were reported in the Mellacorée area at the end of 1891, the doctor did not even attempt to vaccinate at Benty due to the ongoing and numerous failures with the lymph. The continued fruitless situation with inactive vaccine propelled Lorieux to communicate directly with the Director of the Institut vaccinal de Bordeaux, Alexandre Layet, who subsequently shipped fresh tubes of vaccines that arrived ten days later in

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121 Ibid.

122 Ibid.
Conakry. In a last gesture before his transfer to Senegal, Lorieux tested the new supply in late January 1892 to vaccinate 111 Africans of Conakry, whose results all met with success. Given this resounding accomplishment, it was no longer necessary to request vaccine produced solely from the Paris Health Ministry (Institut de la rue Ballo), which “always met with a certain delay and for which one replied with a shipment of tubes inactive 99 times out of 100”. Over the next ten years, the Bordeaux institute became one of French Guinea’s principle sources for directly imported vaccine. At the close of the 1890s, the colonies of French West Africa would take advantage of a second ‘decentralized’ metropole supply, furnished by the founder of the empire-model vaccine service in Indochina, Dr. Albert Calmette, after his return to France to head the Institut Pasteur of Lille.

The new Bordeaux option was not without its own occasional failures. Lorieux’s replacement as Chief Medical Officer in French Guinea, Dr. Adolphe Drevon, carried out vaccination in Dubréka during early January 1893. The vaccine was shipped the

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125 Ibid.

126 To manufacture vaccine locally on any large and permanent scale was a costly and difficult affair; the latter problem stemmed from the need to secure a suitable supply of calves. As mentioned above, it was only in May 1902, when a vaccine would be prepared for the first time in French West Africa.

127 Prior to posting in West Africa, Drevon served in Indochina during the early 1880s where he completed research for a doctoral thesis in medicine. From February 1892 to
previous month, on 10 December to arrive thirteen days later. Despite the fact that “all the proscribed indications had been observed,” Drevon’s 177 vaccinations (of which 142 children and 35 adults) produced no reactions when verified five days later. While future research may indicate if the kind of vaccine changed during this period, the degree of supply most certainly did and it produced attendant effects. With a greater quantity and regular supply of lymph, further trials were now possible. Two months later, in March 1893, when smallpox cases were reported in the Rio Pongo region, Drevon embarked on a vaccination ‘tournée’, presumably first arriving at Boffa, site of the French Catholic mission and administrative customs post. During the tour, the physician visited the four main regional centers and carried out a total of 430 vaccinations. On the return to Conakry, Drevon completed an additional 300 hundred operations in Dubréka. To continue scarifications in the Boffa region after his return to Conakry, he recruited the aid of Catholic missionaires and some commercial agents, both of whom were given lancettes. Colonial doctors in French Guinea rarely relied upon the use of non-medical personnel to vaccinate Africans during this period, according to available archival reports. However, there do exist some records for the reliance upon Catholic missionaires.

Over the region, at least for the four centers visited, Drevon noted a large willingness (*empressement*) on the part of the population to heed the call to receive vaccination, even though this occasion was the first ever tried to spread the vaccine.\(^{128}\) Drevon does not indicate results for the mission in Boffa or Dubréka. Presumably, many of the inoculations gave positive reactions, though not due to the effect of a viable and transportable vaccine. Before Drevon’s departure, the available lymph had already degraded in Conakry, thus requiring the doctor to travel with a young child who served as a vaccinifer in order to carry out arm-to-arm vaccination.\(^{129}\) Whether and to what extent the missionaries or commercial traders continued vaccination is not known, yet the commissioning of lancets to these non-medical agents attests to the expansion of vaccination networks during the period.\(^{130}\) Further, striking in both meaning and affect is namely the *willingness* of some Rio Pongo inhabitants (ethnic Baga and Soussou populations) to seek out the vaccine. Such experiences with vaccination as well as


\(^{129}\) *Ibid*.

\(^{130}\) Over the first two decades of the twentieth-century, vaccine networks continued to involve non-medical personnel, including missionaries and local district officers, especially given the low numbers of medical personnel in French Guinea. For evidence of later vaccination on the part of Catholic missionaries in the Forest Region, see P. Lacas, “Guinée Française: A la station de Brouadou,” *Annales apostoliques* (juillet 1910): 221.
local popular reaction led Drevon to propose a more regular program of smallpox control, that of periodic vaccination campaigns.\footnote{Drevon, "Contribution à la géographie médicale: le pays des Soussous. Topographie médicale de la Guinée Française, moeurs et coutumes des habitants," 102.}

With Drevon’s departure in July 1893, regular vaccination in Conakry seems to have diminished or became habitual as not to warrant recording in the colony’s monthly medical reports. No data appears for the next twenty months of any new trials with imported lymph. It is important to note that over the same period African demands for colonial health care at the Conakry hospital grew steadily, especially with the opportunity to receive free outpatient treatments (consultations) each morning. Common ailments treated included skin afflictions such as infected open wounds and syphilitic ulcers, bronchitis, arthritic rheumatism, and leprosy.\footnote{ANG 1H10. Rapport médical du mois du Décembre 1893; Rapport sur la situation sanitaire de la colonie pendant le mois de Janvier 1894.} \textit{Pace} Echenberg who argues for Senegal that ‘fragmentary evidence’ suggests urban Africans in the late nineteenth-century generally avoided French colonial medicine or opted for it only as a last resort, the early Conakry records indicate not an entirely different pattern, but nonetheless an important added complexity: increasing outpatient care sought by Africans.\footnote{Myron Echenberg, \textit{Black Death, White Medicine: Bubonic Plague and the Politics of Public Health in Colonial Senegal, 1914-1945} (Portsmouth, NH: Heinemann, 2002), 25. Such evidence complicates the general notion espoused in the historiography of colonial medicine in Africa that Africans only demanded new and dramatic interventions unavailable from indigenous healers, such as surgical operations.
(especially for severe hernia), from European colonial medicine in this early period. How even surgery gained its prominent appeal for Africans is additionally open to question in light of some evidence in Conkary. In March 1898, the Chief Medical Officer of French Guinea noted that elderly men (and perhaps women), when faced with treatment choice of drugs or surgery, opted for foul-tasting drugs and steadfastly refused the latter:

plusieurs vieillards viennent consulter pour des rétrécissements ou pour des fistules urinaires, mais je n’ai pu en décider aucun à subir la moindre opération. Ils consentent bien à avaler les médicaments les plus répugnants au goût, mais refusent énergiquement toute intervention chirurgicale.  

Further research and analysis of early African health visits to and interactions with colonial hospitals and dispensaries, both for outpatient and inpatient care, would be salutary and may provide a more nuanced perspective than the one offered in the current historiography.

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[several elderly come to be examined for rectal strictures or for urinary fistulas, but I could not persuade any of them to submit to the smallest operation. They well agree to swallow the most repugnant tasting medications, but energetically refuse all surgical invertions.] ANG 1H10. Rapport médical du mois de Mars 1898.
In fact, medical care available at the Conakry hospital, at the time located adjacent to the Governor’s office and residence (Hôtel du Gouvernement) on the western part of the Tumbo Island (see above Figure), soon became a floating signifier with multiple and overlapping medical meanings for Africans. Any Western notion of therapy, however narrowly or broadly defined, was soon overwhelmed by the expanded nature of African visits to the locale. In addition to those suffering from the above diseases, the non-biomedically sick appeared as well, complained Drevon’s successor, Chief Medical Officer (CMO) Yves-Marie Martin:

il faut ajouter à cette liste tous les malades que Fodé Bakary envoie tous les jours à la visite. Parmi ceux-ci quelques-uns sont réellement malades, d’autres, et c’est le plus grand nombre, ne présentent aucune trace de maladie.
Quelques-uns viennent à la visite par habitude ou par manie. Je crois avoir bien fait de leur interdire dorénavant l’entrée à l’hôpital.

Whether the great number of non-biomedically sick Africans came to the hospital out of habit or mania, or both, the Conakry institution grew rapidly as a locale for indigenous therapy. Under the direction of Dr. Charles Maclaude, who took over as CMO in March 1895, outpatient visits grew six-fold in a matter of six months to reach 250 in number for each morning. An especially strong demand existed for the drug “that cures all,” potassium iodide, the topical treatment for skin lesions. And any prohibition of Africans falsely seeking treatment most likely came to naught; rather, it is more likely that the increasing number of African males trained as nurses and nurse-aides conducted prescreening of patients. Few records exist for the first African nurses and their probably crucial efforts in provisioning medical care in colonial Guinea during the 1890s; the little information available often makes reference to

135 [one has to add to this list all the sick persons that Fodé Bakary sends every day for the medical examination. Among them, some are really sick persons, others, and that’s the greatest number, do not present any trace of sickness. Some come to the medical exam by habit or by mania. I think I did well to ban them henceforth entry into the hospital.] ANG 1H10. Rapport médical du mois du Novembre 1893. Martin does not indicate who exactly was Fodé Bakary; presumably, he worked as one of the African male nursing aides locally recruited and trained to assist the French physician and male nurses at the hospital.

136 ANG 1H10. Rapport médical sur l’état sanitaire de la GF pendant le mois d’Octobre 1895.

137 ANG 1H10. Rapport sur l’état sanitaire de la Guinée Française pendant le mois de Mai 1895.

138 By May 1895, a small nursing school in Conakry was well functioning to train African male medical personnel and led by the French Sergeant Nurse, Nebout. ANG 1H10, Rapport sur l’état sanitaire de la Guinée Française pendant le mois de Mai 1895.
them by first name, evidence of the likely form of racial paternalism displayed by colonial physicians and administrative authorities at the time. In one case, the African nurse, ‘Henri,’ received a monthly bonus of 10 francs in acknowledgement of his proven effort during March 1895; another infirmier, Fodé, earned a monthly raise from 25 to 30 francs later in the year.\(^{139}\) The paternal reference to first names most likely diminished with the greater use of and need for African nurses. An administrative note for December 1896 reports the nomination of Momodou Koita as nurse to Oussou, site of a new customs and military center southeast of Conakry along the border with Sierra Leone.\(^{140}\) The creation of a professional cadre of African nursing personnel would occur ten years later with the creation of the AOF public health services, the Assistance Médicale Indigène.

In an important shift, MacIaud gave renewed emphasis to vaccination or at least deemed it more worthy of inclusion in the monthly medical reports. Throughout the remainder of 1895 and for the entire next year, numerous Conakry children and adults, some European but mostly African, received the operation.\(^{141}\) Vaccine directly imported from the multiple sources in France (see Table 14 for the imports from Lille) now allowed highly successful results in the city where Africans “voluntarily accepted” the procedure.\(^{142}\)

\(^{139}\) *Bulletin officiel administratif de la Guinée Française, année 1889-1896*, 416; 457.

\(^{140}\) *Ibid.*, 636.

\(^{141}\) cf. ANG1H10, Rapport médicaux.

\(^{142}\) ANG 1H10. *Rapport sur l’état sanitaire de la Guinée Française pendant le mois d’Avril 1895.*
Table 14.

Yearly Exports of Vaccine, Institut Pasteur de Lille to French Colonies, 1896-97.

<table>
<thead>
<tr>
<th>Colony</th>
<th># Tubes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sénégal (Saint-Louis)</td>
<td>288</td>
</tr>
<tr>
<td>Soudan</td>
<td>144</td>
</tr>
<tr>
<td>Guinée Française</td>
<td>36</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>300</td>
</tr>
<tr>
<td>Congo</td>
<td>420</td>
</tr>
<tr>
<td>Diégo-Suarez</td>
<td>48</td>
</tr>
<tr>
<td>Nossi-Bé</td>
<td>24</td>
</tr>
<tr>
<td>Sainte-Marie de Madagascar</td>
<td>24</td>
</tr>
<tr>
<td>Martinique</td>
<td>1200</td>
</tr>
<tr>
<td>Guadeloupe</td>
<td>840</td>
</tr>
<tr>
<td>Mayotte</td>
<td>24</td>
</tr>
<tr>
<td>Nouvelle-Calédonie</td>
<td>325</td>
</tr>
<tr>
<td>Tahiti</td>
<td>48</td>
</tr>
<tr>
<td>Marquises</td>
<td>24</td>
</tr>
<tr>
<td>Saint-Pierre et Miquelon</td>
<td>60</td>
</tr>
</tbody>
</table>


Greater quantities of viable vaccine also permitted the replacement of the arm-to-arm method with the direct use of glycerinated lymph. Maclaud opted for the switch given the former procedure’s proclivity to spread epidermal syphilis that was regionally prevalent.143 Additional missions carried out at Dubréka in September 1895 (284 operations) and then later over the first trimester of 1896 in the Rio Pongo (300 in number) and Rio Nunez (87 in number) also came to fruition.144 Moreover, by August

143 ANG1H10. Rapport sur l’état sanitaire de la Colonie pendant le mois de Mars 1895.
144 ANG 1H10. Rapport médical sur l’état sanitaire de la GF pendant le mois de Septembre 1895; Rapport médical sur l’état sanitaire de la GF pendant le premier trimestre 1896.
1897, vaccination in Conakry had become ordinary and habitual to the extent that weekly sessions were held each Sunday morning; on one date, 64 children and six adults came at the hospital for the lymph. Some obstacles still remained for physicians in Conakry, namely many of those vaccinated often did not return for verification of the results.\textsuperscript{145}

For reasons not elaborated in the monthly reports, vaccination in Conakry and other areas completely ceased between November 1897 and April 1898, if not longer.\textsuperscript{146} One might nonetheless pose a conjecture for its cessation. As mentioned earlier, over the greater part of this period (January 1892--July 1898), not a single smallpox outbreak occurred in Conakry despite the city’s evident growth in population and commercial trade via sea and land. There is also no evidence in the medical reports that a major epidemic visited the other littoral areas either. Such circumstances might have created a situation that led administrative officials not to allocate budget expenses for vaccination. To be sure, by March 1898, the Chief Medical Officer appealed for its weekly resumption every Thursday morning at 9 o’clock, as it would benefit African residents who presumably would bring along their children.\textsuperscript{147}

As related in the last monthly medical report available for the decade, urban vaccination resumed in July when 34 male African soldiers (tirailleurs) and their wives

\textsuperscript{145} ANG1H10. Rapport médical du mois d’Août 1897.

\textsuperscript{146} No monthly reports were included in the \textit{Rapport médicaux} dossier for April, May, and June 1898.

\textsuperscript{147} ANG1H10. \textit{Rapport médical du mois de Mars} 1898.
(14) and children (8) underwent the operation at the same time with the same batch of lymph. All the women and children showed immunal reactions, but only 8 of the men responded positively. The results were enigmatic for the head physican, Dr. Mondon, since, when interviewed, none of the men stated that they had been previously vaccinated. The doctor concluded that the disparity in reactions probably occurred due to the different robustness of imported vaccine, since the pulp from Lille did not require any particular precaution while the Bordeaux vaccine traveled in icebox storage and possibly degraded when exposed to the tropical heat.148 After July 1898, the subsequent course of vaccination in Conakry or interior areas until 1906 is difficult to ascertain, as archival records are mostly silent on the topic.149 The three last annual medical reports for the decade only provide brief mention of severe smallpox outbreaks that appeared ‘within the interior’ in late 1898 and sometime during 1899. For the latter year, it was briefly noted that Africans increasingly accepted the vaccine.150


149 In particular, ANG Série H (Santé publique), 1889-1973 and the Rapport d’ensemble sur la situation générale de la Guinée Française issued from 1898 to 1904.

Conclusion

As mentioned at the start of the chapter, any organized effort for mass smallpox vaccination in French West Africa, especially in Senegal, had become moribund. This state of affairs existed despite the fact that colonial health officials in Saint-Louis had successfully organized a vaccine service during the 1887-88 epidemic. Future research will need to examine the possible causes for the institutional lapse; contemporary accounts by colonial physicians only make brief notes of remorse regarding the fact of vaccination’s cessation. Colonial medical officials in the first decade of the twentieth-century also viewed the period between late 1892 and 1905, the year when large and systemized mass vaccination campaigns began throughout French West Africa, as one of similarly failed initiative due to the small number of vaccinations performed and ongoing problems with inert vaccines. If, however, one discards identifying failure as weakness or absence, one gains different insights and indeed recognition of several significant and related developments that occurred with vaccination in French West Africa over the 1890s.

These developments emerged from an initial transformation, discussed in an earlier chapter: Collomb’s 1892-93 mission in the Bambuk region as an example for the process in which expanded mass vaccination was made possible due to its ability to constitute a moveable network, that is a large chain of numbers, descriptions, actors, objects, and behaviors. Yet the resulting network was quite weak since one crucial facet was missing: the knowledge of whether the vaccinations were successful or not.
Four subsequent specific developments—the 1893 Rigollet mission, mass prophylaxis during the 1895-96 smallpox epidemic in Senegal, urban vaccinal response to succeeding epidemics in Saint-Louis, and the conjoined establishment of colonial government and vaccination in Conakry—combined to serve as an effective means to furnish new networks of vaccination as well as intensifying their scale and strength. The cumulative effect of vaccination over this period furnished the foundation for all later smallpox control in twentieth-century French West Africa.
Conclusion

Middle as Mediation

Figure 3. Smallpox vaccination by an African nurse-aide, Kankan, 1908.


As a coda to the dissertation, this final section offers an interpretive discussion for the above photograph of early twentieth-century smallpox vaccination in French
West Africa. Effectively, in a snapshot, the image visually (re)presents the key analytical themes explored in the dissertation, particularly the historical manner in which the practice of vaccination instantiated two conjoined movements over the last two decades of the nineteenth-century: the process wherein certain norms of biopower informed as well as became constituted by elaboration of technoscientific networks of subjects and objects. In fact, the photograph taken in Kankan evidences the fuller development or mediation of this process in the everyday lives of Africans.

On a descriptive level, the image captures what would become an extremely frequent performance in twentieth-century colonial French West Africa, the act of vaccination to control smallpox. In the middle ground of the photograph, there is a man, perhaps the father, tightly supporting a young child around the waist with one arm. The child in turn clutches onto the adult with the right arm as his left arm horizontally extends and is held from underneath by a second, bearded and bespectacled, man wearing a white pith helmet. The photograph’s caption identifies this figure as an African aide (aide indigène), who, holding a lancet, scores several vertical incisions on the child’s upper arm in order to prepare the limb to receive the vaccine. A third person stands slightly to the side, with an indiscernible object, maybe a small piece of white

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1 In 1908, Kankan was the largest city in colonial French Guinea with an estimated population between 10,000 and 12,000 inhabitants.

2 Apart from the caption, the author Mathis does not provide any additional information concerning the photograph. Most likely, the image was taken by the French colonial physician, Dr. Charles Joyeux, the only doctor stationed in Kankan at the time. Of the thirty-three images included in Mathis’ monograph on Pasteurian medical practice in French West Africa, the Kankan photograph is the only one to document smallpox vaccination.
cloth, in his left hand. In the foreground of the image, another key element of the performance appears on top of the table, the vaccine itself, placed in the ceramic container so as to protect the lymph from the heat and direct sunlight. Within the photographic frame, one also sees that the very action of vaccinating literally draws all the individual bodies in quite close proximity to one another, if not in fact allowing the bodies literally to touch each other. Moreover, each person’s attention, including the viewer’s, has become uniquely focused on the nurse-aide’s lancet making contact with the skin on the child’s upper left arm. Whether the image records vaccination in Kankan as it actually happened or portrays its staged performance, vaccination as represented in photograph nonetheless illustrates the manner in which multiple subjects and objects become defined and attached to one another in circumscribed space and time.

One can also read the photograph contextually for its historical representation of early twentieth-century colonial vaccination, particularly in regard to the image’s only identified individual, the unnamed African aide.\(^3\) To be sure, the African assistant exists as a highly emblematic figure as he vaccinates in Kankan on this day in 1908. Only a year earlier, on January 6, 1907, the AOF Governor General, Ernest Roume, largely expanded the scope and scale of the AMI mission as he simultaneously approved the creation of two new medical programs for the AOF federation: an independent mobile vaccination service (\textit{Service autonome de vaccine}) and a corps of African physician-

\(^3\) With its inclusion in Mathis’ 1946 monograph, the photograph also reveals a further historical context, namely the image that French colonial medicine, and specifically that of the Pasteur Institute, attempted to present of its mission at the start of post-World War II era. I would like to thank Ken Alder for bringing this point to my attention.
aides (*aides-médecins indigènes*). In terms of the latter, selected members would be recruited locally in each colony from several possible pools of candidates: the already existing and loosely organized group of civilian nurses with more than three years of experience at colonial hospitals; former military nurses also with a minimal of three years of experience, and those Africans sixteen years of age or older and enrolled in colonial schools. All candidates for nurse-aide corps training were required to speak and write French fluently.\(^4\)

With such measures, the AOF administration was not only responding to the depopulation threat posed by smallpox (as discussed in Chapter Two), but also sought to address the fact that the early lack of French medical personnel seriously inhibited the AMI’s goal of providing free health care to all Africans. Due to the limited medical staff, AOF medical authorities particularly felt that the few serving French colonial doctors could not attain a more far-reaching aim of the AMI: “to penetrate the intimate life of the natives, to gain their confidence and to exercise on them the influence that we plan to rely on so as to introduce among the black populations the first notions of hygiene”.\(^5\) Hence, the new corps of African aides, according to the AMI Inspector General Henry Gallay, would be trained to assist with the provisioning of health care, but also serve colonial physicians as interpreters and intermediaries among the various local African populations so as to effect initiatives of the *mission civilisatrice*:

\(^4\) ANS 2G6.21, Rapport annuel 1906, AOF, Inspection des services sanitaires civils et Direction des services météorologiques.

[These physician-aides] will take part in the delivery of health care to the natives [and] will be the agents of penetration and precious information. They will help their superiors to fight against the practices of the marabouts or the fetishists, extend their influence, and become propagators of the first degree for the civilizing ideas that we strive to spread in Africa.⁶

For the development of early twentieth-century vaccination in French West Africa, African male nurse-aides quickly became important 'middles,' to borrow the term Nancy Rose Hunt employs in another colonial African medical context to describe those Africans who mediated the numerous cultural encounters between colonial biomedicine and indigenous therapeutic knowledge and practice.⁷ In the above photograph of smallpox vaccination in Kankan, the African aide was probably either Namory Kéïta, a nurse intern (infirmier stagiaire), or O’Connor, the student physician-aide (élève aide-médecin indigène).⁸ Both men surely assisted the single AMI doctor in the massive increase of urban vaccinations completed during 1908, whose total number was 5,635 vaccinations.⁹

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⁸ Throughout 1908, both Kéïta and O’Connor served as assistants to the AMI doctor Charles Joyeux. *Journal officiel de la Guinée française* 1908, 48.

⁹ For 1907, only 738 vaccinations occurred in Kankan. In 1908, vaccination in Kankan center transpired over three successive months: June, July, and August (the respective number of operations for each month is 518, 3630, and 1487). Other vaccinations were also completed in villages along the principle routes to the immediate north and south of
Another example of the vital contribution of Africans as medical ‘middles’ in French West Africa was documented a few years later in Siguiri, an urban center situated on the Niger River immediately to the north of Kankan. The post physician, Dr. Leray, explained that the AMI service was only able to operate regularly during the first six months of 1911 due to devoted work of the African nurse, Famory Kéita. Over the period the Siguiri dispensary did not have to close if the post physician wished to conduct mass vaccination in the region, since the doctor had full confidence that he could either send Kéita on the campaign or go himself and leave Kéita by himself to run the clinic. And, vaccination in the Siguiri cercle during these first six months reached 7,902 operations, the great majority of which occurred outside of the city.

Other evidence for the important role of African medical intermediaries played in the growth of twentieth-century colonial vaccination programs in French West Africa is undoubtedly ample. And one could profitably illustrate this key influence by examining the later history of smallpox and yellow fever vaccination conducted through the endemic sickness treatment programs inaugurated in the late 1930s for sleeping sickness, leprosy, and yaws. Yet, as this dissertation has argued, much of our understanding for the later history of vaccination and the role African ‘middles’ played hinges centrally upon the analytical methodologies employed to address the effects of

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10 ANG 1H30. Extrait de Rapport Médical du Mois de Juin 1911 du Poste Médical de Siguiri [Dr. Leray].

power, scientific practice, subjects and objects as historical agents, and the division
between nature and society. With the heightened emphasis on certain functional
agents and not others, histories of African 'middles,' medical or otherwise, need not
reproduce the same interpretive short circuits of earlier historiographical literatures on
the colonial medicine in Africa. These narratives run the risk of limiting historical
explanation along two related lines in terms of mediation. On the one hand, if they
ignore the productive capacities of biopower, then they cannot address how new
subjects become formed in the operation of power rather than just existing as actors
repositioned socially and politically in some fashion. And on the other, if they too
quickly 'blackbox' the practice of technoscience, these narratives will miss the process
whereby a series of different 'middles' appear contingently at different times and
spaces. In the photograph of Kankan vaccination, hence, it should not be assumed too
readily or literally who or what represents the 'middle.'
Bibliography

A. Guides to Published Material


B. Primary Sources

1. Oral Sources. Interviews

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<td>Dr. Gabriel Sultan</td>
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2. Archival Materials

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1H8. Le Docteur Gustave Martin, Médecin Major de 2e classe des Troupes Coloniales, chargé du la vaccine en Guinée, à Monsieur le Gouverneur de la Guinée Française à Conakry, Conakry, 21 janvier 1906, “Mission de vaccine en Haute Guinée”.

1H10. Rapport médicaux, 1890-1898:

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Rapport médical sur l'état sanitaire de la Guinée Française du 15 Janvier 1892 au 15 Février 1892.

Rapport médical du mois du Mars 1893.

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Rapport sur la situation sanitaire de la colonie pendant le mois de Janvier 1894.

Rapport sur l'état sanitaire de la Guinée Française pendant le mois d'Avril 1895.

Rapport sur l'état sanitaire de la Guinée Française pendant le mois de Mai 1895.

Rapport médical sur l'état sanitaire de la GF pendant le mois de Septembre 1895.

Rapport médical sur l'état sanitaire de la GF pendant le mois d'Octobre 1895.

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Rapport médical du mois de Mars 1898.

Rapport Médical du mois de Juillet 1898.

1H10. Dr. Mondon, Chef du Service de Santé de la GF à M. le Gouverneur de la GF, Konakry, 1 July 1898, Rapport sur les besoins en matériel et en personnel du Service de Santé de la GF.

1H26. Le Docteur Gustave Martin, Médecin Major de 2e classe des Troupes coloniales, chargé du Service de la Vaccine, à Monsieur le Chef du Service de Santé de la Guinée Française à Conakry, [Conakry, le 2 Octobre 1905].

1H37. Doc. 57. Le Médecin en chef de la Marine DOUÉ (PIERRE-ADOLPHIE) à Monsieur le Gouverneur du Sénégal et Dépendances, mars 1889 [no day provided].

1H37. L’administrateur Lesguendieu du Cercle de Rio-Nunez à M. le directeur de l’Intérieur, Poste de Boké, 9 Novembre 1889.

1H37. Soudan Français, Service de Santé, Mission de vaccine, Dr. Collomb, Médecin de 1ere classe.

1H37. Lettre no. 378, Séances de vaccination, Le Dr. Collomb, Médecin de 1er classe des Colonies, chef du Service de santé, à M. le Gouverneur du Soudan Français, a.s. séances de vaccination, le 12 mars 1894.

1H37. Doc. 120 Kayes, le 21 mars 1894, Le Dr. Collomb, Médecin de 1er classe des Colonies, chef du Service de santé du Soudan Français, à M. le Gouverneur du Soudan Français, no. 392, Mesures prescrites aux postes frontières contre la variole.

1H38. Doc. no. 113 C.S., Objet: Mission de vaccine, Le Médecin Principal de 1er classe des troupes coloniales, Directeur du Service de Santé, Inspecteur des Services Sanitaires civils [Dr. Rangé] à Monsieur le Gouverneur Général de l’AOF, 31 juillet 1903.

1H38. Doc. 21, Dr. Carpot, Rapport sur la variole et les vaccinations dans la commune de St. Louis, Sénégal (12 décembre 1898).


2G14.34. AOF, Inspection général des Services sanitaires et médicaux, Rapport médical annuel 1914.

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Santelli, A. *Quelques considérations médicales sur le poste de Dakar (Sénégal).* Thèse de doctorat en médecine, Faculté de Médecine de Montpellier. Montpellier: Imprimerie Centrale du Midi, 1877.


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