CHILDREN IN GLASS HOUSES:
TOWARD A HYGIENIC, EUGENIC ARCHITECTURE FOR CHILDREN
DURING THE THIRD REPUBLIC IN FRANCE (1870-1940)

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Abstract

This dissertation examines the war against infant and child mortality in France between 1870 and 1940—the duration of the Third Republic—and the ways in which architecture was deployed as a vital technology of defense. Central to this phenomenon was the ongoing collaboration among architects, hygienists, and physicians in the design of architectural spaces which, it was hoped, would reverse trends of demographic decline and degeneration. These new types of hygienic, medicalized, and architecturally modern spaces were believed to have curative, prophylactic, and regenerative powers. In constructing such spaces, physicians, hygienists, and architects sought not only to improve the health of individual French children, but, also to reinvigorate the hereditary health of the French “race” itself.

Chapter One analyzes the emergence of the infant incubator in fin-de-siècle Paris, arguing that it represented an ideal hygienic architectural space. Chapter Two focuses on the emergence of a French science of infant rearing and how it became entangled with both the emerging eugenics movement in France and the architecture of establishments devoted to infant care. Chapter Three reveals the impact that an increasing emphasis on medical examination and hygienic training in the French nursery schools had on their architectural development. Chapter Four examines the French écoles de plein air, where it was supposed that access to fresh air and sunlight would rehabilitate fragile French children. Finally, chapter Five examines a eugenic impulse in French urbanism by surveying a garden city planned as a eugenic and pro-natalist experiment.

Ultimately, through an examination of architecture developed to reverse the consequences of depopulation and low birthrate in France, this dissertation traces the emergence of a hygienic dimension of architectural discourse, an architectural dimension of hygienic discourse, and the outlines of a eugenics project for which architecture proved instrumental.
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Prologue: A Factory of Babies

On March 31, 1897, French statistician and demographer Jacques Bertillon, founding member of the pro-natalist organization Alliance nationale pour l’accroissement de la population française, presented a lecture at a meeting of the Société de médecine publique et d’hygiène professionnelle. Bertillon’s talk, entitled “La Puériculture à Bon Marché,” promised to describe an inexpensive method for applying puériculture—a “science” of prenatal and infant care that had been recently developed by famed obstetrician Adolphe Pinard. ¹ Far from being a topic of marginal interest to an audience comprised primarily of male physicians, hygienists, architects, and politicians, it is likely that the Société’s curiosity was instantly piqued.

Improved methods for bringing the technologies of science to bear on the project of raising babies would have held considerable appeal for these men. Both the stagnant birth rate and the high infant and child mortality rates in France had been causes of anxiety and an ongoing topic of public debate in prominent circles since at least the 1860s.² While little could be done about the birth rate other than trying to persuade parents to reproduce, positive scientific action could be taken to combat infant and child mortality. In the war they proposed to wage against these social scourges, government officials, philanthropists, physicians, and all manner of professionals took an almost preternatural interest in the question of how to care for the fragile French infant. The loss of such children had a potential impact on the nation’s economic and political future that was all too clear.

¹Jacques Bertillon, “La puériculture à bon marché,” Revue d’hygiène et de police sanitaire 19 (1897): 311-320. Puériculture was a term that had first been coined by physician Alfred Caron in the 1860s. See Alfred Caron, La puériculture, ou la science d’élever hygiéniquement et physiologiquement les enfants. 2nd ed. (Rouen: E. Orville, 1866). Physician Adolphe Pinard revived the term in 1895 in a talk entitled “La puériculture intrauterine” delivered at the Paris Academy of Medicine.

²For more on the debates surrounding infant and child mortality, see Catherine Rollet-Echalier, La politique à l’égard de la petite enfance sous la IIIe République. (Paris: Institut national d’études démographiques, 1990).
In his promise of a novel method of applying Pinard’s science of infant care, then, Bertillon spoke directly to these concerns. He began by decrying the fact that each year, “18,000 petits Parisiens,” were, in accordance with the dominant practices of the era, sent out to “mercenary” wet nurses in the countryside where they often perished due to neglect. To dispense with the necessity of putting infants in the hands of potentially dangerous peasant caretakers, yet still relieve urban working mothers of the burden of childcare, Bertillon devised a solution that would bring the benefits of modern science to infants while drawing upon the model of efficiency provided by American industry.

The first turn his proposal took was, interestingly, an architectural one. Bertillon argued that a model nursery designed to house up to 100 nurslings in a completely hygienic milieu could be erected right in the heart of Paris. Since bringing together that many infants in a single space could lead to outbreaks of contagious disease, the project was built around strict adherence to three key principals—*isolation*, *antisepsis*, and *economy of man-power*—and the architecture would play a central role in their enforcement. An architectural plan that was later published along with Bertillon’s text in the *Revue d’hygiène et de police sanitaire*, described a rigorously hygienic progression through space for infants, caregivers, and materials [Fig. 1].

The first project of the nursery was “*antisepsie*,” or antisepsis. After entry into the building, all objects were to pass through disinfection stoves. Each nurse-attendant was to bathe and don sterilized clothes. The infants themselves, as potential incubators of contagious disease, would access the inner sanctum of the nursery only after being quarantined in glass-walled

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3 While Bertillon’s proposal would, he hoped, reduce infant mortality it should be noted that, in a footnote of the published version of his talk, Bertillon denied that his project would solve the larger demographic problem. He felt that only a dramatic increase in the birthrate could change France’s demographic destiny. Bertillon, “La puériculture à bon marché,” 320.

isolation chambers. Through careful spatial management, the building itself would function as an apparatus for disinfection of persons, places, and things.

Figure 1. Architectural plan from Bertillon’s “La Puériculture à bon marché.”

Bertillon’s architectural plan depended equally upon *isolement*, or isolation. Once gaining access to the inner sanctum of the nursery, the nurslings would reside there, securely cut off from the hygienic perils of the external environment. Resident nurses would provide all essential care. Artificial bottle feeding would replace breastfeeding. Parents would be discouraged from entering the nursery, but would be allowed to view their infants through the glass walls of an observation gallery. A complex heating and ventilation system would ensure that the sterile
space of the infant nursery would be constantly maintained at the proper temperature and receive a steady supply of purified air, and a garden accessible only from the interior would provide occasional access to fresh air.

All in all, the project was to be, Bertillon asserted, a veritable “factory of babies,” providing “a milieu [that is] perfectly purified.” Under these ideal conditions, in a building in which modern sterilizing equipment, rational functionalist planning of space, Taylorist management of work practices, and strict adherence to disinfection and isolation protocols comparable to that of a surgical ward were combined, Bertillon imagined that a large agglomeration of infants could be cared for well and inexpensively.

Although Bertillon’s model nursery was never realized, such an architectural approach to the management of infant health is striking and invites an array of questions. Why did a non-architect promote an architectural plan as a scientific solution to the social problem of high infant mortality? How did the proposal reflect shifting ideas about the relationship between health, hygiene, and architecture? How did the emphasis on certain architectural features—glass walls, isolation chambers, sterilizable surfaces—correspond with emerging trends in architecture at the fin-de-siècle?

Perhaps Bertillon’s architectural response to the infant mortality problem evolved, in part, out of a desire to spatially accommodate all of the technologies needed to maintain an aseptic milieu. Much of the equipment that seems basic now was rather revolutionary in 1897. With the emerging science of bacteriology, the étuve de désinfection, or disinfection stove, was developed—allowing for the wholesale sterilization of large quantities of objects and clothing. Bodily disinfection was rendered easier as a result of modern indoor baths and showers, as was the ability to control the internal climate through mechanized heating and ventilation systems.

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5 Bertillon, “La puériculture à bon marché,” 319.
Finally, while glass was not a new technology, its instrumentality for managing potentially dangerous physical and social interactions was newly appreciated. Nurses could observe their charges in the isolated glass boxes, or *lazarets*, during the “incubation” period. Parents could visit their children through a glass-walled observation gallery. Visual access was privileged over physical because it was safer. Glass proved instrumental for managing a complex web of strategies for surveillance, protection, accessibility, and enclosure.

At the time, Bertillon’s proposal was criticized by some of the leading experts in the field of infant care and pediatrics, including Pinard—the founder of *puériculture*—primarily over Bertillon’s preference for bottle feeding over maternal breastfeeding. Decades of wrestling with high infant mortality—often linked to artificial feeding methods—had led medical experts to a relatively simple conclusion: that maternal breastfeeding should be promoted, as it was linked to a drastically lower rate of infant mortality.

Yet what upset Pinard in the details may have eclipsed the possibility that the two saw eye to eye in the broad strokes of the project—particularly as it pertained to creating a perfectly hygienic milieu. With the continued anxieties about the modern industrial city—the slums, factories, and urban congestion and their imagined contribution to the drop in birthrate, or *dénatalité*, as well as infant mortality, premature birth, and the promiscuity of fatal disease—the environment, and its architecture, mattered. As such, the fantasy of a rational, scientific,

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6 The French term “*lazarett*” broadly refers to isolation wards within hospitals designed to contain outbreaks of contagious disease. During this period in France, it was largely used to describe individual isolation “boxes” or rooms.


8 As such, physicians and charitable organizations such as the *Société de Charité Maternelle* promoted maternal breastfeeding, figuring it as a natural duty of all mother. See Christine Adams, *Poverty, Charity, and Motherhood: Maternal Societies In Nineteenth-Century France* (Urbana: University of Illinois Press, 2010).
medicalized environment for protecting children’s health from infancy and beyond was pursued over the next few decades by numerous physicians and architects in France.

The physicians, architects, and pronatalists who pursued this project were, like Bertillon, concerned about the societal injustices that “manifested around the cradle.” And the answer was, figuratively, to reimagine the cradle itself and, further, to reposition it as a site for the biological and moral transformation of society. An architecture—both administrative and physical—could be developed to provide a second womb for the French child superior to anything that could be offered in the private home.

While Bertillon’s factory of babies was never built, what were built were crèches for babies within factories [Fig. 2]. Along with these, there eventually developed, throughout the cities and suburbs of France, networks of infant hygiene centers, maternity hospitals and pre-delivery asylums, infant milk depots, and a whole host of spaces that brought the birth, care, and surveillance of mothers, infants, and young children into the public sphere under the auspices of science, progress, and modernity. On the social level, these projects attempted to alleviate the familial disorder that industrialization had wrought by offering asylum and care for the children of working mothers. On the medical and even eugenic level, however, they also brought the “biological capital” of the nation into the public domain where physicians and hygienists could weigh, measure, and generally assess the condition of the “race.”

During an era when the problems of society were so often spatialized—mapped onto the bodies of the degenerating working class—and architecturalized in the diseased urban cores and the interiors of “child-eating” slums—the reconfiguration of the built environment could be its salvation.


10 The phrase “capital biologique” is suggestive, although not widely used. It derives from Dr. Burlureaux, professeur-aggréé du Val-de-Grace, who discussed it extensively in Burlureaux, La lutte pour la santé: essai de pathologie générale (Paris: Perrin, 1906).
Figure 2. Munitions workers with their nurslings, *La Nature*, Oct. 27, 1917.
Introduction

This dissertation examines the war against infant and child mortality in France between 1870 and 1940, the duration of the Third Republic, and demonstrates the ways in which architecture was deployed as a vital offensive and defensive technology. By studying architecture developed to reverse the consequences of depopulation and *dénatalité*, a term referring to the low birth rate in France, which, as politician Jules Simon famously claimed, robbed France of a battalion of future soldiers each year, we can trace the emergence of a hygienic dimension of architectural discourse, an architectural dimension of hygienic discourse, and the outlines of a eugenic project for which architecture proved instrumental.\(^{11}\)

During a period of ongoing demographic decline, when fears of French degeneration were widespread, architects, hygienists, and physicians collaborated to improve the health of infants and children by constructing new types of hygienic, medicalized, and architecturally modern spaces which were believed to have prophylactic, curative, and regenerative powers. In constructing such spaces, they sought not only to improve the health of individual French children, but also to reinvigorate the French “race” itself.

Incubators, for example, nurtured fragile, “weakling” infants in self-regulating, heated, transparent glass boxes which gave the appearance of being hermetically sealed. Public nursery schools (*écoles maternelles*) housed in ceramic-tiled buildings with rooftop sun terraces provided extensive facilities for the hygienic training and medical supervision of working-class children. Open-air schools (*écoles de plein air*) in glass-walled structures with removable walls fostered the unhindered access to the fresh air and sunlight that, it was hoped, would rehabilitate scores of

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sickly, “pre-tubercular” children. Whether through a visual rhetoric of containment or total permeability, through strategies of technological or natural regulation, each modern structure represented the imagined ability of architecture to bolster children’s health.

Architecture was believed to improve health in a variety of overlapping ways. First, large plate-glass windows, roof terraces, ceramic surfaces, and cubic forms—all features associated with early twentieth-century architectural modernism in its most generic form—were envisioned as instrumental in protecting the body. Second, architecture provided a critical bridge between the private and public spheres—bringing private acts such as childbirth and childrearing into the public domain, and allowing for strategic trespass by the state and medical authorities onto the tender terrain of maternal care and the traditional primacy of the familial unit. Finally, architecture was, at times, rhetorically figured as a technology of war—in the metaphorical war against microbes, disease, dénatalité, and degeneration. War was not only the chosen metaphor of social hygienists but also actual outbreaks of war—the Franco-Prussian War and the two World Wars—informing the anxieties which fueled the social hygiene movement at punctuated intervals.

While an increased investment in children’s health can be understood, in part, as a reaction against depopulation statistics, somewhat less clear is how reconfiguring the built environment came to be accepted by so many experts—in the fields of medicine, architecture, politics, and public health—as an effective way to improve children’s health.

The claim that architecture can rehabilitate the body has been naturalized to a certain extent but is actually the product of a complicated set of associations. Partly rooted in Enlightenment theories of the power of nurture over nature, and the attendant humanist dream of reforming the modern subject entirely through external influence, the projection of such ideals
onto architectural environments in France was far from inevitable. Although attempts to improve
the health of the sick and dying through architectural design can be found in the development of
pavilion hospitals in the late 1700s and early 1800s, it was in the late nineteenth century that
there was an explosion of interest in the project of improving individual health through design in
non-clinical environments, as well as a new interest in widely applying such strategies to realize
larger eugenic goals.

I. Science, Milieu, and Heredity

The popularization during this period of scientific beliefs which explicitly linked
environment and health provided the critical link between architectural design and physical well-
being. Bruno Latour, for example, has described how the development of microbiology in the
1870s, although initially controversial, provided new information about the etiology and
epidemiology of disease and pointed specific attention to the microbe as a malevolent actor.12
Armed with new prescriptions for the design of public buildings, hygienists eventually promoted
the use of smooth, unornamented, easily sanitized surfaces, and large glass windows to harness
the microbicidal rays of the sun.

The evolution of the concept of milieu, or environment, in both scientific and popular
culture, also contributed to the phenomena described in this dissertation.13 In the 1860s,
physiologist Claude Bernard’s work in the laboratory informed his claims about the importance
of the “milieu intérieur” on the cellular development of the organism. He asserted that “[t]he
constancy of the internal environment is the condition for a free and independent life.” Although

13 For a history of the concept of milieu in scientific thought see Georges Canguilhem, “The Living and Its Milieu,”
this referred specifically to the scientific notion of cellular homeostasis, and thus was not strictly applicable to broader biological phenomena, such claims about milieu were reinterpreted by non-scientists. Specifically, Bernard’s ideas were popularized by French novelist Émile Zola, who reinterpreted Bernard’s work to mean that the immediate physical environment had a profound influence on the physical and psychological development of human “organisms.”

In *The Experimental Novel*, Zola outlined his scientific approach to writing fiction which he called “naturalism,” here best understood in the same sense in which science is a “natural” philosophy, and placed special emphasis on the centrality of milieu as a determinative force in human lives.

> [M]an cannot be separated from his environment, he is completed by his garments, his house, his city, his province, and therefore one cannot denote a single phenomenon of his brain or his heart, without looking for the causes or consequences in the milieu.

Indeed, in his epic twenty-volume Rougon-Macquart series, subtitled *The Natural and Social History of a Family under the Second Empire*, Zola “scientifically” described the moral and physical deterioration of his characters, which resulted from a complex interplay between hereditary antecedents and environmental factors. In his 1877 novel *L’Assommoir*, for example, the insalubrious environment of the urban slum, with its vitiated air and “leprous” walls, appears to incubate and then trigger the hereditary predisposition for alcoholism and moral degeneration that lay latent in a character such as the heroine Gervaise.

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14 Bernard wrote, “*La fixité du milieu intérieur est la condition d’une vie libre et indépendante*” (“The constancy of the internal environment is the condition for a free and independent life”) in Claude Bernard, *Leçons sur les Phénomènes de la vie communs aux animaux et aux végétaux* (Paris: Baillière, 1878). Such work impacted writers such as Zola, who based his entire Rougon-Macquart series on the notion that the interactions of heredity and milieu could determine the course of his characters’ narratives. See Émile Zola, *Le Roman Experimental*, 3rd ed. (Paris: G. Charpentier, 1880).

15 Zola, *Le Roman Expérimental*, 228. “Nous estimons que l’homme ne peut être séparé de son milieu, qu’il est complété par son vêtement, par sa maison, par sa ville, par sa province; et, dès lors, nous ne noterons pas un seul phénomène de son cerveau ou de son cœur, sans en chercher les causes ou le contre-coup dans le milieu.”
Milieu also played a prominent role in the arena of evolutionary theories of biological inheritance. The French biologist Jean-Baptiste Lamarck’s (1744-1829) work on “transformism” provided the model of evolutionary adaptation in France most widely accepted well into the 1930s. In spite of the popularization of Charles Darwin’s work on natural selection in the 1850s, and the delayed publication of Gregor Mendel’s laws of genetic inheritance in the early twentieth century, French scientists, physicians, and other social elites by and large accepted Lamarck’s primary claims that environment influences development and that physical traits acquired during one’s lifetime could be genetically passed on to future generations. While Lamarck’s ideas were the accepted explanatory mechanism for adaptation and heredity for most of the nineteenth-century, they were contested by other European scientists, including, of course, Darwin, in the late nineteenth-century. Nonetheless, in France, allegiance to Lamarckism persisted through the early twentieth century and, as Robert Nye has shown, was broadly shared across the political spectrum.

Indeed, there was no need to choose Darwinian theory over Lamarckian, as the French Nobel Prize-winning physiologist and noted eugenicist Charles Richet wrote in his 1919 book, *La Sélection Humaine*. “Why,” he declared, “[should one] oppose the influence of milieu to that of heredity? Why not make them work together synergistically?” In a subsequent article in *Eugénique*, the official journal of the French Eugenics Society, he elaborated upon this

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16 For the persistence of neo-Lamarckian theories of heredity in France see Schneider, *Quality and Quantity*.


synergistic relationship, declaring that, “The transformative influence of the milieu is Lamarckism, the hereditary transmission of the effected transformations is Darwinism.” Such a flexible interpretation of the mechanisms of evolution and of hereditary transformation secured space for the environment as a significantly influential factor.

These theories of evolution, heredity, and the influence of milieu were utilized in numerous ways in the late nineteenth century, explaining negative phenomena while simultaneously offering clues for positive action. As far as the negative phenomena were concerned, such theories provided a scientific explanation of the biological “degeneration” that seemed to be haunting many modern societies such as France and that seemed manifest in high rates of tuberculosis, syphilis, and alcoholism—social plagues that were believed to be both caused by environment and hereditary in nature. Second, it provided some sense of logical causality. In the changing environment of the industrial city, with its rampant pollution, congestion, overpopulation, and chaos, it was not hard to discern a milieu that had a potentially pathological influence—one which could cause atavism—the return to a more primitive evolutionary phase of development—and general physical and moral enfeeblement. Thus in the thinking of the era, the environment caused degeneracy, and, adding insult to injury, the

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environmentally triggered enfeeblement would be passed on hereditarily to future generations. As Robert Nye has written, the theory of degeneration, “was so culturally useful that it could explain persuasively all the pathologies from which the nation suffered.”

Yet these theories of evolution, heredity, and environment also invited positive action. If milieu—an amalgamation of the built and the natural environments—could effect the deterioration of a people, could it not also do the opposite? If improving the environment could ameliorate physical development, and these developments could be transmitted hereditarily, then modernization of the built environment, and perhaps specifically those environments intended for children, could yield not only healthier citizens today but also biologically fitter future generations. Thus the dogma of antimicrobial hygiene applied to architectural design—whether developed by physicians, hygienists, or architects—constituted an important component of the particular form of “positive eugenics” which evolved in France during this period.

II. “Positive Eugenics”

Our general understanding of eugenics has been largely informed, in the post-WWII era, by the horrors of the Nazi regime. Eugenics is often supposed to be a monolithic project—inextricably rooted in biologized ideas of race and class and embracing mostly negative measures such as sterilization and euthanasia to limit the reproductive capacities of the “unfit.” The reality of an examination of eugenics in various countries in the early twentieth century, however, reflects a constellation of beliefs and practices, some prophylactic and focused on improving health and some eliminative and focused on excising undesirable elements capable of

23 Robert Nye, Masculinity and Male Codes of Honour in Modern France (New York: Oxford University Press, 1993) 77. Nye has argued the fin-de-siècle was characterized in part by the prevalence of a medical concept of national decline. Decline—in economic, political, moral, and demographic spheres—was frequently described in biological and scientific terms.
contaminating the nation’s biological resources.\textsuperscript{24} As historian Marius Turda has recently written, eugenics can be more broadly understood to encompass a diverse set of practices and scientific beliefs that cohered around a common goal—the biological improvement of the body. He notes that, “eugenics was equally a social and cultural philosophy of identity predicated upon modern concepts of purification and rejuvenation of both the human body and the larger national community.”\textsuperscript{25} Although almost universally inspired by Francis Galton’s work in England in the 1880s, and the aforementioned Darwinian and Lamarckian biological theories of inheritance and genetics that dominated scientific discourse in the late nineteenth and early twentieth centuries, there was great diversity in how different nations defined, applied, and even named their eugenic projects. What was called racial hygiene in Germany, for example, would have fallen under the category of \textit{puériculture} in France—a term which encompassed everything from well-baby care to pre-conceptional “hygiene.”\textsuperscript{26}

Perhaps even more interesting is Turda’s claim that eugenics was an inherently modernist project. He describes a widespread “modernist engagement with eugenic theories of human improvement and eugenic visions of national perfection.”\textsuperscript{27} These entailed, according to Turda, not only the “pursuit of a healthy national body” but also “a yearning for a new beginning”— desires born in the aftermath of the destruction wrought by late-nineteenth-century capitalism.\textsuperscript{28} Both the modernist project generally and eugenics specifically sought to create a society with

\textsuperscript{24} For a comparative overview see Mark Adams, ed., \textit{The Wellborn Science: Eugenics in Germany, France, Brazil, and Russia}.

\textsuperscript{25} Maurius Turda, \textit{Modernism and Eugenics} (Houndmills, Basingstoke, Hampshire [England]: Palgrave Macmillan, 2010), 1.

\textsuperscript{26} For more on \textit{puériculture} see Schneider, \textit{Quality and Quantity}, 55-83.

\textsuperscript{27} Turda, \textit{Modernism and Eugenics}, 1.

\textsuperscript{28} Ibid., 4, 2.
“new foundations.” How better to do this than to focus on children, the perennial source of new beginnings? As modernist architecture was also often engaged in a quest for a “new beginning,” the fact that the two projects often worked in tandem represented an ideal and fertile marriage based on shared motivations.

The eugenics community in France represented a relatively small group of elites—predominately physicians, statisticians, and public health officials, but also politicians and intellectuals. They did not formally organize into a French Eugenics Society until 1912. These individuals were, however, connected, to a much broader community due to the common interests eugenicists shared with those in the more mainstream social hygiene movements of the era, which were dedicated to fighting various social scourges such as infant mortality and disease. Bertillon and Richet, for example, were co-founders of the pro-natalist Alliance nationale pour l’accroissement de la population française. While Bertillon continued to be a fervent pronatalist and was not part of the formal eugenics movement in France, Richet eventually became a leader of the French Eugenics Society and, in his writings, promoted harsh negative measures such as euthanasia and forced sterilization for the “unfit.” Thus, as historian

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29 Ibid., 10.
31 The list of members in the French Consultative Committee can be found in the program for the 1912 Eugenics Conference in England. They include Senators Paul Doumer and Paul Strauss, Edmond Perrier, economist Charles Gide, Lucien March (Director of General Statistics in France), Dr. Variot (Director of the Institute of Puériculture), Adolphe Pinard, and many other notables. *Problems in Eugenics: Papers Communicated to the First International Eugenics Conference held at the University of London, July 24th to 30th, 1912* (London: The Eugenics Education Society, 1912), xii-xiii.
Elizabeth Ezra has commented, those promoting increases in the population often worked alongside those wishing to regulate it.\textsuperscript{33}

However, this story extends beyond the activities organized by the official French Eugenics Society. General interest in biological improvement was widespread. In France, there was not a single eugenic discourse but, rather, a constellation, often connected to various social hygiene projects.\textsuperscript{34} The primary focus of many social hygienists was improving the human specimen through the application of the science of hygiene—through campaigns against alcoholism, tuberculosis, and venereal disease as well as promotion of the physical condition of children. What made such social hygiene movements inherently eugenic in nature is that, as we shall see, their representatives so often invoked the condition of the race and vaunted the generational dividends that such interventions would produce in the form of biologically fitter future Frenchmen.

The concept of race that recurs in the language of many of the actors in this dissertation, it should be noted, was neither fixed nor well-defined. In spite of the possible influence of such works as Gobineau’s \textit{Essai sur l’inégalité des races humaines} (1853), or physician Paul Broca’s 1859 founding of the Société d’Anthropologie, the use of the term “race” by the individuals I shall cite was largely separate from the anthropological and ethnological projects of the era, devoted as they were to delineating the different “races” of mankind.\textsuperscript{35} Race, as invoked by the

\begin{footnotesize}
\begin{enumerate}
\item\textsuperscript{34} For more on the social hygiene movements in France see Schneider, \textit{Quality and Quantity}, 46-54.
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individuals cited in this dissertation, more often referred to vague ideas about the French citizenry forming a national “body” whose general health and qualities needed to be preserved.

To summarize, and to return specifically to the utility of architecture in eugenic projects, the aforementioned combination of scientific, evolutionary, and eugenic theories directly contributed to the convergence of professional opinion—and the normalization of such opinions—regarding the hygienic, health-promoting, and regenerative powers of certain types of architecturally modern structures. The diverse set of actors involved in designing the incubator, the crèches, the écoles maternelles, the écoles de plein air, and the cités-jardins were directly connected to a scientific community in France interested in such ideas.

The designer of the infant incubator, for example, was physician Stéphane Tarnier. In the era before germ theory was widely accepted, he had long struggled with issues of contagion in his work as chief of obstetrics at the main Parisian maternity hospital and doubtless brought such concerns to bear in the design of the incubator. While Tarnier himself did not engage in discussions of heredity, the excitement surrounding this novel technology generated subsequent discourses about the viability of the “weakling” infants the incubator was designed to rehabilitate. These discourses directly led to the development of puériculture and eugenics in France.

In other areas, physicians and architects collaborated to produce plans for rational, hygienic nursery schools and the more unusual “open-air schools,” which were designed to prevent the expression of tuberculosis in sickly children. They promoted them at conferences on public health and in the journals of school hygiene associations such as L’Hygiène par l’exemple, an organization connected to the Pasteur Institute. One architect framed these projects in clearly eugenic and nationalist terms. He declared that the application of modern, hygienic principals to
the nation’s school buildings would have a salutary effect on the health of the race, ensuring healthy, vigorous generations of children imbued with “the joy of living, the strength to work and, later, to fight.”

By analyzing primary documents, including medical and scientific journals, Ministry of Education decrees, hygiene conference proceedings, and architectural journals, I will demonstrate how political, scientific, medical, and social policies and ideologies combined to inform design choices in French architecture for children. These design choices reveal 1) the imagined instrumentality of certain architectural features in combating disease and improving the physical condition of the people, 2) the imagined necessity of the state’s intrusion into family functions, particularly the traditional role of the mother, and its adoption of an ideology of health and hygiene of the race as a rationale for this intrusion, and 3) the eugenic utility of such interventions to produce biologically fitter citizens.

This is terrain that has yet to be covered by architectural historians. While historians have demonstrated that the design strategies employed in tuberculosis sanatoria had a significant influence on early twentieth-century modernist architecture in Europe, entirely unexamined is the development that this dissertation describes—the critical deployment of architecture to rehabilitate not the sick but the “enfeebled,” to promote fertility, and to bolster the health of those who were already healthy. Furthermore, none have examined one of the central beliefs behind these projects: that modern, scientifically designed, functionalist structures could not only protect the health of living children but positively impact the future of the French race. Such a contribution is significant, allowing us to trace the emergence of a eugenic impulse in the work of early modernist architects in France.

III. Historical Context: Republican France and the “Value” of Children

Although there is evidence to suggest that the evolution of modern architecture into a eugenic technology in the early twentieth century was neither a phenomenon limited to France, nor the rather circumscribed domain of children’s health, France nonetheless served as a critical incubator for these developments and thus serves as the primary focus of this dissertation.\(^{37}\)

While eugenics and social hygiene movements that sought to improve health by reforming the built environment existed, in one form or another, in other countries such as England and Germany, the focus on France can be easily justified. The unparalleled urgency of France’s demographic crisis provided France with a considerable, ongoing motivation for instigating building programs for new types of spaces, such as infant hygiene centers, for codifying new legal protections for infants and children, and for widespread theorizing, in a variety of fields, about ways to reverse the excessive mortality of French infants and children.\(^{38}\) This urgency, deriving from real and troubling statistical information about the French population’s health, well-being, and reproductive capacity, is simply incomparable to the situations in other countries during the period under examination.

More than any other European nation in the nineteenth century, France had a keen awareness of national decline in terms of population growth. While the country had enjoyed


\(^{38}\) Politicians formulated laws, such as the Roussel law of 1874 to increase oversight of infants and children sent out to “mercenary” wet-nurses—since the French custom of sending children to paid nurses in the countryside for the first five years of life was commonly blamed for the mortality problem. For more on the wet-nursing business, see George Sussman, *The Wet-Nursing Business in Nineteenth-Century France*, *French Historical Studies*, Vol. 9, No. 2 (Autumn, 1975): 304-328. For more on laws protecting infants, see Catherine Rollet-Echalier, *La politique à l’égard de la petite enfance*. 

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robust population growth up until the late eighteenth century, statistics from the mid-nineteenth century forward revealed a dramatic reversal of fortune.\(^{39}\) France had the lowest birth rate of any industrialized nation in Europe. While it is now understood that drops in population growth rates are a common feature of increasingly industrialized societies, France seemed to suffer more from the phenomenon than its neighbors. Population growth in France had been stagnating since the mid-1800s while the populations of England, France, and Germany continued to grow during this period.\(^{40}\) Sketching in a much broader time frame, historian Joshua Cole notes that “in all, from 1790-1914, fertility in France declined 57 percent, translating to an average annual decrease of 6 percent.”\(^{41}\) In the period between 1890-1892 and again in 1895, the annual number of deaths exceeded live births.\(^{42}\)

This trend had significant implications both for France’s political stature and its economic future as the declining birthrate represented a loss of future manpower to fuel industry, colonization, and military conflict. It also affected France’s self-perception; fueling the fear that dénatalité might be a reflection of a more disturbing trend of racial “degeneration.”\(^{43}\) Various phenomena—including a mid-century report on undersized and unhealthy army recruits across France being rejected at rates as high of 60-75\% and a drop in the ratio of male to female live


\(^{40}\) Cole, *The Power of Large Numbers*, 181.

\(^{41}\) Ibid.


births—seemed to attest to this degeneration.\textsuperscript{44} Prominent figures feared the possibility that international perception of France as a \textit{“nation mourante,”} or dying nation, was growing.\textsuperscript{45}

These fears of population decline and physical degeneration reached a crisis point after France’s defeat in the Franco-Prussian War (1870-1871). This defeat and the extensive loss of life that accompanied it led many to claim that not only had the feebleness of French recruits been a factor, but also the general inferiority of French scientific endeavors in comparison with Germany.\textsuperscript{46} As the Third Republic took shape out of the wreckage of the war, and the turmoil of the ill-fated Paris Commune, French politicians, demographers, and statisticians such as Bertillon, devoted themselves with renewed vigor to taking scientific measure of the \textit{bodies} of the body politic. The types of statistical data collected went beyond birth and death rates, expanding to include rates of contagious disease and other types of illnesses in the general population. Altogether the data revealed a dire situation as concerned the health of the population. There were widespread problems with tuberculosis, venereal disease, and alcoholism, which contributed to a high overall death rate. As far as children were concerned, not only was the birthrate still low in the 1870s but France had an astonishingly high infant and child mortality rate.\textsuperscript{47}


\textsuperscript{45} Jaques Bertillon, \textit{L'alcoolisme et les moyens de la combattre jugés par l'expérience} (Paris: LeCoffre, 1904), 2.


\textsuperscript{47} Historian Catherine Rollet-Echalier traces this era directly preceding this historical moment—in the late 1860s—as the one when children became of interest to policy makers in France. She argues that rural physicians drew attention to the devastating loss of life occurring among children sent to nurse in the countryside while urban doctors began to promote maternal breastfeeding as the way to rehabilitate the family. Rollet-Echalier, \textit{La politique}, 22.
The problem of low birthrate was difficult to address. The decline, after all, was attributed to a variety of unquantifiable social factors. The neo-Malthusian reticence of the bourgeoisie to devote resources to large families, the imagined lack of a “will to reproduce” among French men, and the weak or perverted maternal instincts among French women all received their fair share of imputed blame for the situation. Altogether, the low birthrate was a situation that fundamentally resisted scientific intervention. It spurred instead much political debate, and, eventually, in the early twentieth century, contributed to the rise of pro-natalist policies such as bonuses for large families, laws forbidding propaganda related to birth control, and increased resources for needy pregnant women and single mothers.

The project of keeping healthy those infants who were born, however, presented itself as a concrete area for potential intervention and excited much debate. As one physician declared in 1895, echoing a common sentiment, “since the number of children who are born continues to diminish more and more, we must try at least to save them and raise them for the homeland.” During the Third Republic, a new determination in France to take scientific action in the domain of children’s health emerged—involving interventions from infancy through pre-adolescence. This reflected not only a new valuation of children in France on the part of both state and

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50 Dr. E. Vallin, *Revue d’hygiène et de police sanitaire* Volume 17 (1895): 1118“Puisque le nombre des enfants qui naissent diminue de plus en plus, essayons au moins de les sauver tous et de les élever pour la Patrie,”
municipal authorities, but also a new positivist approach. It also reveals an increasing willingness of authorities to intervene in the traditionally family-based, maternal tasks of infant care and child rearing through the institution of crèches, nursery schools, and a host of other measures.

During the Third Republic, women, in their capacity as potential and actual mothers, became the targets of a number of private and governmental initiatives designed to reduce infant mortality. The era saw increased efforts to support mothers, as well as attempts to reform what was imagined to be negligent mothering. Not only was the practice of sending babies out to wet nurses widely decried—a practice common among all classes of women—but mothers who kept their young children at home were imagined to be woefully ignorant about basic childcare, relying more on superstitious traditions than on science. Since gastrointestinal illness resulting from artificial feeding methods appeared to be a major cause of death in infants, doctors promoted maternal breast-feeding. Manuals on infant care written by physicians increasingly addressed the hygiene of dress, feeding, and bathing among other things. The influential obstetrician Adolphe Pinard developed a science of pre-natal and infant care, called puériculture, in the 1890s and widely promoted it in publications and conferences for physicians and hygienists—with the hopes that they might instruct women—as well as in primary school educational reforms which targeted young girls.

This intense interest in child rearing was a decidedly new development. Indeed, it is not difficult to demonstrate that, for most of the nineteenth century, the French had, at best, an indifferent attitude towards the health and well-being of the nation’s children—particularly those

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51 Accampo, Fuchs, and Stewart, *Gender and the Politics of Social Reform*.

of the country’s working-class and peasant population. Infant abandonment among the poor was widespread. Historian Rachel Fuchs has noted that at one point, in 1816, as many as 20 percent of infants in the Department of the Seine were abandoned at the state-run foundling hospital, L’Hôpital des Enfants-Trouvées. Whether intended or not, relinquishing infants into the care of state-subsidized foundling hospitals was itself tantamount to infanticide, as the care received in such hospitals often contributed to the death of an enormous percentage of infants and children. The overcrowded and unsanitary conditions of the nursery ward at the Paris foundling hospital allowed contagious disease to spread rapidly—a state of affairs that led one physician to characterize it as less an asylum for the living than a “nécropole infantile.” Infants and children sent by the foundling hospital to wet nurses and foster parents in the countryside, ostensibly to save them from the perils of the institutional environment, fared little better, as the often poor, uneducated, and overburdened women received multiple charges and often cared for the infants in a manner which contributed to their eventual deaths.

Thus one may conclude that during the Third Republic, the ubiquity of interest in the health of infants and young children exhibited by lawmakers, philanthropists, and physicians was evidence of a new phenomenon. Perhaps due to the democratizing principals of liberté, égalité, and fraternité, upon which the fragile Republic was based, the government was determined to

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54 Fuchs, *Abandoned Children*, 99. For example, and at the foundling hospital, L’Hôpital des Enfants-Trouvées, a rotating cabinet-apparatus (le Tour) built into the side of the edifice facilitated this process by maintaining absolute anonymity of parents wishing to abandon their children.


56 For more on these issues see Fuchs, *Abandoned Children: Foundlings and Child Welfare In Nineteenth-Century France*. (Albany: State University of New York Press, 1984.)
improve the lot of children of all classes.\textsuperscript{57} The project allowed different fractious elements—radicals, socialists, liberals, conservatives, republicans, and monarchists—to cohere around a relatively uncontroversial goal: improving children’s health and, through such efforts, the health of the nation. Providing medical supervision to working-class children was a way to deal with “the social question” and preemptively soothe social unrest among the working classes, and promoting hygiene, generally, was a way to mitigate fears of contagious disease.\textsuperscript{58} Underscoring all of this was the ongoing need for soldiers and colonizers to maintain France’s international position, a related goal around which the different political elements in the government could cohere.

In a relatively contentious internal political climate, these were attractive and relatively uncontroversial areas for state intervention. The cause of increasing the birthrate and improving children’s health actually provided opportunities for building bridges across the political divide. Organizations such as the Alliance Nationale, for example, brought Catholics opposed to birth control and conservative nationalists interested in building the French army together in a common cause, increasing the birthrate.\textsuperscript{59} While republican reformers, in general, focused on preventing infant mortality, and conservative, Catholic, and nationalist reformers concentrated on increasing the birthrate through propaganda and legislative incentives, their efforts, Accampo notes, frequently overlapped.\textsuperscript{60} The work of an individual such as Adolphe Pinard provides a

\textsuperscript{57} The fragility of the Republic, with its many opposing currents of political thought, and its emergence out of a century of revolution and instability is part of this story. The project of saving children, I would argue, may have represented the one project that everyone could agree on—perhaps because the health and well-being of children served different purposes for different sectors of the population.


\textsuperscript{59} Schneider, “Eugenics in France,” 71.

\textsuperscript{60} Accampo, Fuchs, and Stewart, \textit{Gender and the Politics of Social Reform.}, 2.
singular example. His fight against infant mortality and his work in the Baudelocque clinic studying the effects of alcoholism and tuberculosis on pregnancy was attractive to both natalists and social hygienists.  

The level of political consensus that was achieved on issues relating to children’s health and infant mortality enabled the government to successfully institute a number of laws over the course of the Third Republic protecting mothers and children and promoting their health.  

There was also a great deal of new building during this period as the national school system was developed and as private philanthropists and municipalities collaborated to build crèches, centers for puériculture, milk depots, and other services now seen as crucial works of public utility. Since architecture requires resources on a grand scale, the investment of the government was absolutely critical for these developments.

The development and popularization of a scientific model of infant and child hygiene was contingent in part upon the expansion of establishments where the gap between the private family and the public realm could be bridged. To produce a body of knowledge, facilities had to be established where children could be observed and studied by physicians so that a pathology of childhood could be developed, and scientific lessons in infant and child hygiene could be imparted to the masses. These projects were carried out both in existing institutions, such as maternity hospitals, infant crèches, and nursery schools, as well as in newly established ones, such as the consultations de nourrissons (well-baby consults), centres d’hygiène infantile (rehabilitation centers for sickly children), and gouttes de lait (sterilized milk distribution

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61 Schneider, “Eugenics in France,” 72.

centers). Subsidized by municipalities, philanthropists, and the resources of the state, the Third Republic saw a proliferation of such places where scientific action taken towards improving children’s health took center stage, all in the name of “social hygiene.”

IV. Architects, Physicians, and Hygiene: Diagnosing and “Curing” Pathological Spaces

As this dissertation will demonstrate, the architecture of childrearing in late nineteenth- and early twentieth-century France employed a different symbolic and aesthetic language than prior eras had witnessed. In the 1700s and early 1800s, protection of children had traditionally been the domain of the Catholic Church, and this was reflected in architectural design. Massive structures such as the L’Hôpital des Enfants-Trouvées were adorned with ecclesiastical motifs, implying the protection of God. Nursery schools, called salles d’asile, were often housed in stone structures resembling small chapels. During the Third Republic, with its eventual separation of church and state, new establishments, often occupying buildings erected for the purpose or new spaces within existing buildings, rejected such references to religion, preferring instead a “scientifically designed,” rational, functional architecture.

The rational design, in turn, was not generated spontaneously out of self-evident principals of perfect hygiene and functionality. Rather, it derived from a two-part process, of diagnosis and cure. Physicians and hygienists first diagnosed the pathologies of certain places—maternity wards, public schools, working-class lodgings—and then prescribed their architectural cure. Physicians such as E. Vallin, for example, literally diagnosed a “disease of the wall” in the form of saltpeter, which he believed made working-class dwellings unhealthy and promoted a “cure”—a recipe of disinfectants sealed in with high-lacquer paints.63 This is particularly

63 “‘Wall diseases’ Treated by Inoculation,” The Philadelphia Medical Journal (May 14, 1898): 864. The journal notes that “at the ninth international congress of hygiene and demography, recently held in Madrid, Dr. E. Vallin, of
interesting since the problem of the low birthrate was often blamed on the housing conditions of the working class. Saltpeter had once been believed to cause impotence.

On a much larger scale, urban slum housing and the urban condition generally were both blamed for contributing to the low birthrate and high mortality rate. In 1893, the Parisian Bureau de l’assainissement de l’habitation was charged with compiling the *casiers sanitaires*, sanitary files, on each dwelling in Paris, which meticulously tracked incidents of death and disease, mapping them onto the architecture of the city. Slum houses were described as if they were diseased bodies. The lodgings of the poor were described as “infected,” “incurable” and “*taré*”—defective—a word that connotated a defect that was hereditary in nature. The *taudis*, or hovels, were “hideouts for microbes.” From the slum, the architecturalization of disease extended outward to encompass whole cities. George Risler, Member of the Council for the Society of Public Medicine and Sanitary Engineering described industrial cities as “eaters of men.”

Since the late 1800s, social hygienists, physicians, and politicians had argued that slum housing caused tuberculosis from overcrowding and unhygienic conditions. They argued that slum housing caused alcoholism, by driving men out of the home and into the cabaret. They argued that slum housing drove men into the arms of prostitutes, and through this chain of events the French Academy of Medicine, read a very interesting and original paper on the presence of saltpeter in the walls of inhabited houses. This he described as a disease of the walls due to the presence of microorganisms.”

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eventually allowed syphilis to infiltrate the home. In this troubling milieu, numerous social reformers declared, there was a clear eugenic threat. Not only would these “nests of microbes” claim the lives of children, but nurslings would be born defective because of the inherited curses of their alcoholic, syphilitic, tubercular, and depraved parents and die, poorly cared for, because of neglect and ignorance of basic rules of hygiene. The home, in short, mattered. It was the locus of almost all of the ills imagined to be affecting French society and politicians, physicians, social hygienists, educators and architects, all took this as the most basic of truths. The domestic milieu, in the minds of social reformers, represented the blighted womb of French society.

The widespread application of the science of hygiene was to provide a remedy. This was not necessarily a new approach, as public health reformers from the earliest decades of the nineteenth century had promoted “hygienism,” defined by historian Ann LaBerge as, “a belief that all areas of life should be medicalized and moralized to prevent disease and promote public health.” Responding to the prevailing understandings of what caused disease at the time—environmental factors such as “miasmas,” or unhealthful airs, dampness, noxious smells, and social causes, such as lax moral behavior—hygienists of the pre-germ-theory era did their best to promote health by insinuating themselves into public health discourses in France.

In the 1870s and 1880s, however, the credibility of hygienists wishing to influence society was bolstered considerably as a result of certain key scientific developments. Scientific investigators lifted the veil on the etiology and modes of transmission for various diseases, radically altering traditional understandings of contagion, and slowly displacing dated notions about the danger of miasmas. Louis Pasteur’s discovery in the 1870s, for example, that invisible microbes caused disease, is credited by many as having initiated the “bacteriological revolution,”

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along with discoveries of other physicians such as Robert Koch, who identified the tubercle bacillus. The discovery of the microbe suggested new, effective remedies to basic problems that had long plagued physicians and hygienists. Armed with new tools, such as pasteurization of cow’s milk and bottle sterilization techniques, hygienists gained new credibility and power during this period and contributed to the development of a virtual cult of hygiene. If the microbe was the newly identified villain, hygiene—a broad and multivalent term—became the ultimate weapon of personal and national defense.

There were social implications, moreover, that were part of the new culture of hygienism. As Latour has demonstrated, the discovery of the microbe as an agent of disease led to its conceptualization as an invisible social actor, since it could, through the intermediary of a contaminated surface, link individuals across class or social lines. Hygienists raised awareness about this troubling interconnectedness and inserted themselves into the fray as benevolent protectors. While in the past the illness of the poor, abandoned child might have aroused compassion but no impulse towards intervention, science had demonstrated implicitly, if not explicitly, that because of the microbe, ignoring the health and hygiene of the poor urban child could have devastating health consequences for the greater population. Science thus was perceived as intimately entwined with social issues. “Social hygiene” was that division of the science of hygiene which attacked social problems including disease, alcoholism, and infant mortality. The positivist spirit of the era, along with high physician and scientist representation in

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69 Latour, *The Pasteurization of France*. 

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the Republican government, reinforced the notion that medical knowledge could eliminate social problems.\footnote{See Jack D. Ellis, \textit{The Physician-Legislators of France: Medicine and Politics In the Early Third Republic, 1870-1914} (Cambridge: Cambridge University Press, 1990). Ellis demonstrates that physician representation in the Republican legislature consistently remained at around 10-12 percent between 1870 and 1914.}

Much has been written about the obsession with hygiene and the rise of hygienists in France during this period.\footnote{Lion Murard and Patrick Zylberman, \textit{L’hygiène dans la République: La santé publique en France ou l’utopie contrariée 1870-1918} (Paris: Fayard, 1996). Perhaps most recent is Fabienne Chevallier, \textit{Le Paris moderne: Histoire des politiques d’hygiène, 1855-1898} (Rennes: Presses universitaires de Rennes, 2010). Also see Ellis, \textit{The Physician-Legislators of France}; William A. Cohen, and Ryan Johnson, \textit{Filth: Dirt, Disgust, and Modern Life} (Minneapolis: University of Minnesota Press, 2005); and, Andrew Robert Aisenberg, \textit{Contagion: Disease, Government, and the Social Question in Nineteenth-Century France} (Stanford, Calif.: Stanford University Press, 1999.)} Significantly less, however, has been written that charts the emergence of an architectural dimension to this discourse. It is a significant omission because the hygienist’s tripartite gospel, in the post-Pasteurian era—surveillance, isolation, and disinfection—was one that architectural strategies were well positioned to realize. French physicians and architects sought, by the late nineteenth century, to apply to the built environment all of the hygienic precepts available—whether deriving from miasma or germ theory. Large windows enabled aeration \textit{and} the dispersal of miasmas. Sunlight entering the buildings through walls of glass would kill microbes \textit{and} supposedly cure tuberculosis. Non-porous surfaces and the careful choreography of the movement of individuals and objects through these spaces would ensure absolutely antiseptic conditions.

Many architects embraced the project of hygienism, as will be demonstrated throughout this dissertation. Seeking to ameliorate social problems of the day by bringing the science of hygiene to the built environment, they collaborated directly with physicians in the design of spaces—housing, schools, public baths, and so forth—that were believed to directly impact public health. In spite of some institutional reluctance to make hygiene a central concern in the
École des Beaux-Arts, architects acting on their own initiative joined organizations such as L’Alliance d’hygiène sociale; L’Association générale des ingénieurs, architectes, et hygiénistes municipaux; and the Société de médecine publique et d’hygiène professionnelle, which brought them into regular contact with statisticians, politicians, physicians, and hygienists.

There were attempts to bring the teaching of hygiene and its relationship to architecture into a milieu that extended beyond strictly architectural circles. In 1880, for example, Dr. A. J. Martin, an officer of the Société de médecine publique et d’hygiène professionnelle, read a report before the group in which he advocated for the establishment of an école superieure de l’hygiène publique which would have, among other offices, a “Chair of Sanitary Engineering, applying the science of the engineer and the architect to hygiene.”

The Musée Social, an influential late-nineteenth-century social policy “think tank,” also played a large role in bringing architectural expertise into a public health context. The Urban and Rural Hygiene Section of the Musée Social attracted architects who, historian Janet Horne writes, in departure from the beaux-arts tradition of focusing on architectural aesthetics, form, and composition, were concerned with “the social function of architecture,” and it brought them into regular contact with educators, physicians, and engineers. Architects such as Alfred Agache, Augustin Rey, Raoul de Clermount, Henri Prost, and Louis Bonnier wanted both to

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establish new professional terrain for themselves and to become active in addressing social problems—among them the problem of the endangered French child.

Thus, late nineteenth- and early twentieth-century France provides a compelling moment during which demographic, political, scientific, and professional discourses all converged to address the problems of infant and child health. The solutions that were advocated would involve increased medical observation, widespread propagandizing about hygienic practices, and the creation of new types of environments for children where therapy, surveillance, and prophylaxis could be offered. In contrast to the dank, contaminated private dwellings of the poor—which defied visibility and access, yet loomed large in the public imagination as threats to individual and community health—incubators, crèches, écoles maternelles, écoles de plein air, and cité-jardins, were rational, modern, architectural structures which offered a secure, transparent, and rehabilitative milieu for children. Yet these were inherently vexing objects. The incubator was never as sealed or as safe as it visually appeared to be. The glass walls and open classrooms of the école de plein air’s articulated a fantasy of freedom and liberation which masked a much more controlling reality.

Taken altogether, these spaces and the new policies which were developed alongside them—such as the expansion of medical surveillance in schools, the removal of children from unsafe homes, eugenically inspired laws requiring examination before marriage—were as optimistic and life-promoting as they were controlling and reductive. The humanitarian goal of protecting the health of children of the lower classes was never far removed from the political interests of various factions within the Republic. Children’s health and disease were uniting concerns for socialists, conservatives, and radicals alike insofar as they were reflections of the health of the nation. This notion of health was, furthermore, understood in hereditary terms—
further displacing the individual child as the locus of concern. The hereditary health of the “race” was invoked openly and frequently in all of these circles.

This dissertation is concerned with the way that this oft overlooked narrative of biological decline and potential regeneration fostered the creation of an architecture deemed instrumental to staving off the dégénérescence that, from the 1870s onward, was already perceived to be in progress.

V. Theoretical Underpinnings

This dissertation is situated at the intersection of a number of discrete theoretical discourses in the histories of medical culture, childhood, gender, and architecture in France. Of the many historians and theorists of nineteenth- and early twentieth-century France, the work of Michel Foucault seems most relevant. His theorization of such phenomena as “bio-power,” which he defined as “an explosion of numerous and diverse techniques for achieving the subjugations of bodies and the control of populations,” explains such new phenomena as the increasing “medicalization” of society, represented by the intrusion of physicians and administrators into the realms of private and political life, as well as a preoccupation with public health, birthrate, and so forth.75 Foucault describes a broad historical process by which, in conjunction with the growth of capitalism, “power is situated and exercised at the level of life, the species, the race, and the large-scale phenomena of the population.”76 It is a useful


76 Foucault, The History of Sexuality Vol. 1, 137.
framework within which to position the larger theoretical implications of this dissertation project.

But in spite of the general utility of Foucault’s theory of bio-power, this dissertation seeks to cover more specific terrain. Few historians and theorists have examined, for example, the phenomena that Foucault describes specifically as they relate to the marked preoccupation with children’s health or to the preoccupation with regenerating the race through the reformation of the built environment.77 Historian Jacques Donzelot, in *The Policing of Families*, has done important work in addressing the changing relationship between the family and the state. He theorizes that during this period in France, physicians and Republican officials constituted a “tutelary apparatus” which sought to intrude into familial matters by building an alliance with mothers, thereby bridging the gap between private and public life and providing new terrain for the exercise of state power. Yet even in this seminal work scant attention is paid to the disturbing context of demographic decline which I believe was the primary motivation for these intrusions. While historians such as Catherine Rollet-Echalier, Rachel Fuchs, and Alisa Klaus have examined this demographic context and shed light upon the Republic’s preoccupation with children’s physical health, entirely unexamined in their work has been the concurrent development of a series of novel architectural spaces for children that these concerns engendered. 78 What little attention this area has received, most notably in the work of Anne-Marie Chatelet, has focused exclusively on such architectural projects as open-air schools in

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Europe, characterizing them as relatively marginal projects situated at the fringe of histories of modern architecture and of modern education.  

One might look for linkages between medicalization, children, and the built environment in the domain of architectural history, yet such work has yet to be done. Historians have tended to focus on aesthetic, formal, and structural innovations, the influence of industrialization and the rise of mass production, progressive social policy and revolutionary ideals, among other themes, in their explanation of the emergence of modern architecture in the early twentieth-century. Of the numerous histories of modern architecture written in the twentieth-century, Siegfried Giedion’s *Mechanization Takes Command*, which examines the impact of the development of various scientific and mechanical techniques on organic, everyday processes shares a spiritual affinity with this dissertation. As in Giedion’s work, this dissertation attempts to offer a new lens through which to understand the factors that drove early modernist design, not through a study of canonical works but, rather, through an examination of the apparently quotidian and the unremarkable.

As far as the connections between early twentieth-century modern architecture and cultural preoccupations with physical health and hygiene are concerned, historian Beatriz Colomina has made a crucial intervention by examining the influence of tuberculosis treatment

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protocols on early modern architectural design and the unproblematic acceptance of modern architecture during the 1920s and 1930s as a kind of medical instrument. More recently, art historian Paul Overy published a comprehensive study on the connection between health and modern architecture during the inter-war period, arguing for the centrality of hygiene in the thinking of modernist architects. While notable work has been done in recent years on the relationship between modern architecture and physical health, particularly as concerned the construction of tuberculosis sanatoria, or hygienic workers’ housing, the special issue of healthful buildings for children has been left almost entirely unexamined.\(^\text{82}\)

**VI. Project Significance**

The omission of these themes in the diverse literatures underscores the significance of this dissertation’s contribution. I expand upon this previous work by examining how narratives of biological degeneration and regeneration were collapsed into Third Republican discourses of health and hygiene, and what impact this had on design decisions. The issue of designing for public health became strangely complicated by larger questions of “racial” well-being when it was a matter of building structures for children—the “germ” of the future. Our reading of modernist architecture’s encounter with the diseased, weakly, or infertile body, then, takes on a slightly different valence when we consider that not just the health of individuals but the hereditary health of future generations was believed to be at stake in such moments.

The aforementioned cultural projects of “modernization” and “medicalization” took on a distinctly utopian aspect when applied to children. This utopian strain derived in part from the preoccupation with “racial” improvement that one finds in so many of the period’s discussions of children’s health and well-being. Such aspirations were apparent in contemporary discussions of the objects and the architecture. Incubators, écoles maternelles, and écoles de plein air were not only spaces for medical observation, and they were not only sites, to use Foucauldian language, in which children were produced by power as objects of knowledge—although both claims can be legitimately asserted. Ultimately, they were architectural spaces designed to realize a much more ambitious, utopian project: direct, therapeutic rehabilitation of the body and a potential rehabilitation of the physical and moral health of the French “race.” This dissertation shows that ultimately the “clinical” project of modernism which historian Beatriz Colomina has so interestingly pointed out will eventually reveal itself to be a eugenic project as well.

My goal is two-fold. First, I wish to bring an analysis of architectural design to a broader historical discussion of children’s health and welfare programs. From this perspective, architectural forms such as incubators and hybrid sanatoria-schools can be seen as developing in correspondence with new state social policies and priorities. Because of the medical role of these structures, they also belong to a lineage of “child-saving” devices, objects, and spaces in the late nineteenth and early twentieth centuries such as x-rays, iron lungs, and lazarets.

Second, and more importantly, I wish to bring these child-saving spaces into discussions of early twentieth-century modern architecture. This intervention offers a significant revision of traditional histories of architectural modernism. The belief in the rehabilitative effects of environment, as evidenced in French discussions of children’s architecture, had a profound but little-examined effect upon the modern movement in architecture. On a practical level, this
project of building to improve children’s health provided opportunities for architects not only in France but throughout Western Europe and the United States to experiment with a new “hygienic style”—to use the words of Dutch architect Jan Duiker. On a more abstract level, one could argue that children provided the ideal modern subject for architects of the early twentieth century to design for. As historian Roy Kozlovsky has noted, “one of the central tenets of modernity has been the belief in the critical role of childhood to the formation of the individual self and the destiny of nations.” The opportunity to design spaces for the modern child who would lead the way to the future may have represented an irresistible project for many modern architects.

VII. Project Organization

This dissertation is organized as a series of case studies which represent conceptual moments in the movement toward a hygienic architecture for children. They also reflect distinct phases in children’s development: gestation, infancy, early childhood, and early adolescence. Each chapter coheres around a set of compelling objects and architectural spaces which attest to a new desire to use architecture to create a protective “skin” and healthy, regenerative milieu around the vulnerable French child’s body.

Chapter One, “Incubators: Toward a Perfectly Purified Milieu,” posits that the glass-walled infant incubator, developed by physicians in Paris in the 1880s, represented a prototype of an architectural space that could offer isolation from a pathological milieu, provide conditions of perfect hygiene, and actually accelerate and improve upon the natural physiological development of infants.

83 Outside of France see for example the work of such architects as Jan Duiker (Openluchtschool, Amsterdam, 1930), Walter Gropius (Impington School, Great Britain, 1939), and Hermann Baur (Bruderholz School, Basel (1938-1939) and Richard Neutra’s schools in Los Angeles.

Chapter Two, “Puériculture, Eugenics, and the Crèche of Glass,” describes how puériculture, a science of infant rearing and the “amelioration and improvement of the species,” grew out of a growing desire to prevent rather than cure infant prematurity and debility. This science of human improvement led directly to the establishment of the French Eugenics Society in 1912. I examine architecture as a kind of hygienic apparatus developed by physicians and architects to serve puériculture’s many practical projects: crèches, infant hygiene centers, milk depots, and other structures, which politician Paul Strauss described as “the surest work of national defense.”

Chapter Three, “Écoles Maternelles: Hygiene, Surveillance, and Medicalization,” focuses on the evolution of French nursery schools and how projects of medical surveillance and hygienic training eventually became dominant concerns—all in the name of “saving the race” according to hygienists and educators. The architecture of these schools evolved to serve this program with the inclusion of all of the rehabilitative technologies—extensive use of glass, sun terraces, modern plumbing—that were needed to combat degeneracy.

Chapter Four, “Écoles de Plein Air: Nature, Architecture, and National Regeneration,” describes attempts to save “pre-tubercular” working-class children specifically, and stave off “race degeneration” generally, through architectural design. Architects such as Germain Debré, Eugéne Beaudoin, and Marcel Lods were recruited to develop innovative, fragile, glass-and-steel écoles de plein air in the interwar period. The project was invested with utopian aspirations by a broad spectrum of politicians, physicians, and hygienists, and envisioned as a way to remake society. Yet architects had the task of realizing an inherently paradoxical project: designing structures that would increase, rather than hinder children’s access to healing sunlight and air.

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Chapter Five, “Eugenic Domesticity: The Garden City as Reproductive Utopia,” represents a departure, as the eugenic project, and its architecture, took a turn towards origins: how to improve the birthrate. The chapter focuses on the Jardins Ungemach, a “eugenic” garden city in Strasbourg, and contrasts its approach to solving problems of natality and eugenic quality to other urban planning projects born of the inter-war period in France—Henri Sellier’s Garden City in Suresnes and Le Corbusier’s modernist unit of urbanism, the Unité. The chapter examines how urbanism became entangled in questions of demography and eugenics in France as well as how architects such as Le Corbusier came to frame such projects as necessary for the healthful “breeding of the species.”

Ultimately, this dissertation proposes to make a critical contribution to histories of both modern architecture and public health by delineating the origins and iterations of a “eugenic impulse” in French architecture. I do so, throughout, by demonstrating the ways in which architects and urban designers, in constant collaboration with physicians and public hygienists, strove to preserve and improve the “biological capital” of the nation through modifications of the built environment.

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Figure 1.1. Incubator at Paris Maternité, ca 1900, from Archives de l’Assistance Publique—Hôpitaux de Paris
In 1900, the Paris Exposition Universelle offered a celebration of the accomplishments of the prior century and an optimistic glimpse of the future from the vantage point of the Belle Époque. A curious exhibit occupied one corner of the Champs de Mars, the Oeuvre maternelle des couveuses d’enfants, a charity devoted to rescuing premature infants from almost certain death through the use of incubators. While tickets for the exhibit de-emphasized the technological aspect of the Oeuvre Maternelle, playing instead upon the humorous notion of a mother hen incubating a human “chick” [Fig. 1.2], what doubtless attracted many of the fair’s estimated 50 million visitors was the remarkable sight of an installation featuring rows of live babies being “mothered” by machines.

Figure 1.2. Ticket to couveuse exhibit, Exposition Universelle, 1900.
This chapter examines the invention of the incubator for premature infants in fin-de-siècle France, when physicians developed the life-saving device variously described in the popular press as an “artificial mother,” a “mechanical nurse,” and a “child hatchery.” An incubator was capable of, one article declared, “replac[ing] the womb of the mother.”87 Although little examined in the literature on late nineteenth-century France, the incubator provides a potentially rich object of study for historians of medicine, maternity, architecture, and social history. Rather than accept the incubator as an unproblematic result of technological progress, this chapter analyzes the incubator as an object that is as revealing of the architectural, scientific, and social milieu in which it developed as it is prophetic of developments to come.

On the social and scientific level it represented physicians’ recognition of, and interest in, an entirely new patient population: the premature, or “congenitally weak” infant.88 Seen in the broader context of the ongoing demographic crisis which France faced, moreover, it can also be understood as evidence of a new male preoccupation with maternity and maternal space. The incubator then belongs to a lineage of scientific, spatial, and political interventions that sought to reinvigorate an ailing French body which, I would argue, was symbolically represented by the frail or “weakling” infant.89

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88 *Faiblesse congénitale* is a phrase that recurs in the obstetric and pediatric literature during this period to refer to premature infants. The term “weakling” or *déliques*, was also used for premature and underweight infants in France for most of the nineteenth century. See Jeffrey Baker, *The Machine in the Nursery: Incubator Technology and the Origins of Newborn Intensive Care* (Baltimore, Md.: The Johns Hopkins University Press), 1996.

89 Fin-de-siècle France witnessed a variety of such interventions. The topic of the hygiene of the newborn, for example, became a regular feature of the biannual International Congress on Hygiene and Demography after the third meeting, which was held in Paris in 1878. There are also numerous French articles and books related to the infant health and management beginning in the 1870s. The first Congrès International de la Protection de l’Enfance was held in Paris in 1883. To see such an interest in historical perspective, see Rollet-Echalier, *La politique.*
On the architectural level, the incubator is equally suggestive for in creating an artificial womb to continue the gestation of the fragile newborn, physicians introduced architecture into the problem of healing the body of the infant. If the womb is the body’s first shelter, the incubator represented its first artificial, architectural enclosure. Like the womb itself, the incubator was designed to have a self-regulating temperature and provide an impermeable milieu protected from external influences. Like architecture, the incubator harnessed materials and technologies to achieve these goals.

Ultimately, through formal analysis of the objects as well as an examination of the historical context, I make two primary, related claims. On the one hand I argue that the incubator represented the emergence of a new model of therapeutic space—one designed to emphasize transparency, hygiene, and isolation in response to shifting understanding of contagion—which was credited with ameliorating the physical condition of the premature and the “congenitally weak.” Although anxieties about the device persisted, due to concerns about the safety of the air both within and without it, the incubator nonetheless communicated a model of hygienic, rehabilitative space that can subsequently be discerned in a variety of hospitals and therapeutic environments from the fin-de-siècle onward.

On the other hand, and just as significant, are the social implications of the invention. By creating this protected, transparent, and isolating milieu around one particular patient population—infants—the incubator symbolically heralded and, in its formal design, articulated, an ideal new model for relations between women, their children, and physicians representing the interests of the state.⁹⁰ This model, in contrast to rhetoric which promoted maternal breastfeeding

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⁹⁰ Physicians were heavily involved in government during the Third Republic. See Ellis, *The Physician-Legislators of France.*
and attachment, actually emphasized separation of mother and child and interposed the physician as a mediator necessary for ensuring the child’s well-being.

The two phenomena are not unrelated. One of the primary claims of this dissertation is that the war on infant and child mortality led to public appropriation of the project of infant and child care. This necessarily entailed a trespass onto the traditional terrain of maternal care. The displacement of the maternal role—*la tendresse couveuse*—onto institutions, and the institutions of architecture, occurred during the period covered in this dissertation. This phenomenon is at root in the incubator: the first architectural object that proposed to displace, and improve upon, the maternal role. According to its most passionate promoters, the incubator promised not only to complete the unfinished biological work of the womb by incubating the child until it was viable, but was useful, as will be demonstrated in this chapter, as a pedagogical tool, providing—in the very syntax of its structure—important object lessons for mothers in scientific methods of infant care.

A brief account of two early prototypes of the incubator provides an instructive starting point. In the early 1880s, physicians developed two novel devices to improve survival rates for premature infants. Since loss of body heat had historically been the main cause of death in pre-term infants, each represented a unique strategy for “penetrating [the infant] thoroughly with heat,” in the words of one French article.  

German obstetrician Franz Winckel developed a warming device called the Permanent Bath which preserved an infant’s body temperature by submerging it in a closed wooden tub within which warm water circulated.  

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91 M. Gueniot quoted in P. Marcillac, “Couveuse électrique pour enfants,” 266.

the lid, making eating, drinking and sleeping possible for several days in succession while the body floated below in a warm liquid environment reminiscent of the compressed, amniotic fluid-filled space of the womb [Fig.1.3, Fig.1.4].

At around the same time, French obstetrician Stéphane Tarnier designed a very different warming device, called the couveuse (based on the word for a bird hatchery). Rather than
submerge the infant’s body in a pool of warm liquid, Tarnier chose to place the child in a dry, sealed wooden box with a small-windowed lid. Beneath the platform upon which the infant rested, earthenware bottles filled with hot water heated incoming air entering through a small duct, and the warmed air then circulated into the infant’s chamber through convection. While originally constructed with wooden walls on every side, he eventually replaced these with five transparent panes of glass [Fig. 1.5].

![Figure 1.5. Tarnier-Auvard couveuse. Image reproduced in Pierre Budin, The Nursling, 1907.](image)

That the medical community ultimately embraced Tarnier’s transparent “glass box” model is clear: one need look no further than modern-day configurations of the incubator to see the correspondence. This success, however, was not necessarily because its clinical efficacy
exceeded that of other methods, such as Winckel’s bath. Rather, Tarnier’s incubator may have succeeded for reasons that had to do more with symbolism than science.

First, it symbolically rendered visible a process—mainly the “incubation” of the infant in the maternal womb—that had previously been dark, occluded, and beyond the domain of masculine scientific intervention. Although one could argue that this then places the incubator in a lineage of devices designed to see inside the body—such as speculums, x-rays, and sonograms—it functioned differently, in that it proposed to reproduce an actual bodily space: the womb. In so doing, it inverted all of the tropes of an actual womb, and recreated it as a hard-surfaced, dry, and transparent milieu.

A second reason for the success of Tarnier’s model may have had to do with the way it responded to a broader cultural desire, new in the late nineteenth century, for a kind of visual legibility of hygiene, sterility, and containment. During the same period in the 1880s, when the medical establishment widely heralded Pasteur’s work on microbes and disease, major shifts in the understanding of contagion were occurring. In this changed context, the visual expression of hygiene, sterility, and containment became the desired ideal of hospital environments, and this ideal was perfectly symbolized and realized by the incubator.

What follows in this chapter falls into three parts. First to be examined is the spatial context within which the incubator was first developed—a Parisian maternity hospital—which

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93 Clinical studies for Winckel’s permanent bath and other methods were much more limited in scope. This will be discussed in more detail at a later point in this chapter.


95 For more on late nineteenth-century hospital architecture see Michel Foucault, *Les Machines*, and Jeremy Taylor, *Hospital and Asylum Architecture in England, 1840-1914* (New York: Mansell, 1991). During this period, one sees a marked increase in the number of isolation wards within hospitals, isolation boxes, isolation pavilions, etc.
played an important role in the story as a figuration of all that was pathological about nineteenth-century hospital space. Second, competing prototypes, with widely varying aesthetic designs, revealed the anxieties about the incubator that persisted, and which often revolved around its placement in the “unhealthful air” of the hospital milieu. Finally, the chapter examines how, by the fin-de-siècle, the ideologically freighted infant incubator slipped out of the bounds of clinical science and metamorphosed into a spectacle at incubator exhibits and expositions in France and abroad. In this changed context, the implications of the device for women became more apparent. Exaggerated beliefs in the popular press about this man-made technology’s imagined potential for creating healthier infants comingled with strident critiques of female bodies and maternal care.

I. The Maternité: In the Womb of Pathological Space

In 1865, a full 35 years before the incubators were put on display at the Paris Exposition Universelle, the French novelists Edmond and Jules Goncourt published Germinie Lacerteux, a novel recounting the misery, seduction, and pregnancy of a young lower-class woman in Paris. Determined to give the most authentic, unsentimental account of her experiences, in the spirit of the new style of writing called Naturalism, the brothers traced their heroine’s pregnancy through to the dramatic moment of her delivery in the Parisian maternity hospital, la Maternité du Port Royal. “There was at the Maternité, at that time, one of those terrible epidemics of…fever which blows death on human fecundity, a poisoning of the air which empties, row by row, the beds of the delivering women.” While the heroine of the novel survives her ordeal, the message—that
the Maternité was a poisoned milieu where “a black plague rises out of the cradle”—reflected 
both the prevailing attitude about, and reality of, the Parisian maternity hospital.\(^96\)

The story of the development of the incubator, which was invented by physicians of the 
Maternité, necessarily involves taking measure of the pathological environment of the 
nineteenth-century maternity hospital. Theorists such as Foucault have written about the role of 
the early modern hospitals in providing spaces where the pathology of the object—the patient—
could be studied to produce medical knowledge. But the clinic exists as well as a physical site 
which provides a comparably edifying object of study. It was the particular nature of the 
pathologies of disease and mortality which seemed to permeate the linens, beds, and very walls 
of the maternity hospital, which influenced the incubator’s emergence as a radically re-imagined 
type of hospital space.

The nineteenth-century saw the act of childbirth increasingly pulled into the hospital 
milieu as physicians usurped the role traditionally performed by midwives at home. Along with 
this development, surprisingly, was a disturbing concomitant rise in maternal mortality. An 1866 
study of maternity hospitals in continental Europe, *Des Maternités*, found that the death rate for 
women delivering in such hospitals in France was *17 times higher* than for women who delivered 
at home or in the subsidized establishments known as *maisons d’accouchement*, or “lying-in 
houses,” where midwives attended women.\(^97\) The high death rate was counterintuitive, as the 
hospital provided women with the most modern medical care available; thus physicians debated 
the causes of this tremendous mortality differential for most of the century.

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In France, the locus of the debate was the Maternité du Port Royal—the first dedicated maternity hospital in France. Established in 1814 in existing buildings of the ancient Abbaye de Port-Royal, the Maternité remained the largest maternity hospital in Europe for most of the nineteenth century. While most women continued to deliver their infants at home with the assistance of midwives and female relatives, the Maternité, and similar Parisian clinics, offered charitable asylum for those who were homeless, or whose homes were too small or derelict to accommodate a midwife.

A hospital as a site to give birth, however, was an option of last resort—even for women living in the direst of circumstances—and remained an object of revulsion and fear for most of the nineteenth century. Working under the auspices of the Church, in the service of an impoverished patient population, the hospital had traditionally been more often figured as a place to die—not a place to heal, and certainly not a place for life to begin.

Indeed, this was more than mere fancy. The Maternité, from its inception, was plagued by outbreaks of deadly disease. Although the conditions faced there were not unlike those at other maternity hospitals in Europe, the mortality problem was writ large at the Maternité due to the scale of the establishment, which by the 1860s, admitted more than 2,000 Parisian women per

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98 There were also two other large maternity clinics in Paris—La Clinique and Cochin—established in 1834 and 1866, respectively. For more information on French maternity hospitals in the nineteenth century see Le Fort, Des Maternités. Also see Scarlett Beauvalet-Boutouyrie, Naître à l’hôpital au XIXe siècle (Paris: Editions Belin, 1999), and Rachel Fuchs and Paul E. Knepper, “Women in the Paris Maternity Hospital: Public Policy in the Nineteenth Century,” Social Science History 13:2 (Summer 1989): 187-209, as well as Fuchs, Poor and Pregnant.

99 It is also likely that certain employed women, such as domestic servants, may have been fired once they revealed signs of their pregnancy, and thus did not even have a home in which to give birth. For a more thorough analysis of patient populations at the Maternité, see Fuchs, Poor and Pregnant, 26-29.
year.\textsuperscript{100} Rates of morbidity and mortality at the hospital, therefore, drew international attention.\textsuperscript{101}

Specifically it was outbreaks of the “plague” that the Goncourt’s described in their novel—puerperal fever—which caused death among newly delivered women. It was the primary cause of death in most European maternity hospitals.\textsuperscript{102} When the fever presented itself, entire wards full of women quickly succumbed. A mid-nineteenth-century study of the Maternité, by Stéphane Tarnier, the physician who would later become its chief of obstetrics, found that parturient women were 13 times more likely to die of puerperal fever in the Maternité than if they delivered elsewhere in the city.\textsuperscript{103}

Many theories were promulgated to explain the phenomenon including, but not limited to: the fluctuations in seasonal weather, the overcrowded conditions, and the poverty and immorality of the often indigent mothers. The dominant theory circulating among physicians, however, posited that noxious airs produced spontaneously occurring fevers and illness.

Yet if miasmas caused the deadly outbreaks, it would seem to suggest that destitute women would succumb at an equal rate in their homes. As one physician described in lurid detail, recounting his experience of being called to assist in a delivery, living conditions for

\textsuperscript{100} See Le Fort, Des Maternités, 1-17, 25-31.

\textsuperscript{101} Conditions are discussed, for example, in Florence Nightingale, Introductory Notes on Lying-In Institutions (London: Longman, Greens, and Co., 1871), 34-28.

\textsuperscript{102} Conditions were similar at other maternity hospitals throughout Europe and England. See Irvine Loudon, Death in Childbirth: An International Study of Maternal Care and Maternal Mortality 1800-1950 (New York: Clarendon Press of Oxford University Press, 1992). Other believed causes of the high rate of maternal mortality in maternity hospitals included the weakened moral and physical state of the mostly single, impoverished patients, aggressive medical interventions such as the use of forceps and the performance of cesarean sections. Additionally, as in many other types of hospitals, contagious diseases such as cholera regularly swept through the wards. See Fuchs, Poor and Pregnant, 56-62.

\textsuperscript{103} Stéphane Tarnier, Recherches sur l’état puerpéral et sur les maladies des femmes en couches (Paris: Rignoux, 1857).
many of their patients were ones of “abject misery.” Deliveries took place in “a small room, often swarming with other children, whose walls let damp seep in,” stifling hot as “in these households, the single room also serves as kitchen.” “Sometimes,” he continued, “it’s not possible to open the single miserable window, the floor is dirty, damp, often covered with garbage, the mother’s bed is defiled, giving off an infected odor, a general atmosphere prevails such that we will ask ourselves, how can any human being find enough air…”104 That women regularly survived delivery in the fetid air of private homes such as these, in other words, substantiated the notion that something beyond miasmas, but specific to maternity hospitals, was causing the spread of disease. “[I]t’s not exterior influences alone which must be blamed for these sudden explosions of epidemics,” the physician wrote about maternity hospitals in 1866, “but rather it’s in the interior itself that we must seek for the cause.”105

Indeed, at the Maternité, the very façade revealed a certain level of haunting decrepitude [Fig.1.6]. Heavy masonry walls spoke of spaces entirely cut off from fresh, healthful airs. Buildings were in disrepair and poorly ventilated. In the congested patient wards, women were crowded into beds, often three or four at a time, which were surrounded by soiled curtains.106 The sick and dying shared the same wards, and often the same beds, as the healthy. Linens were rarely laundered, and a general stench prevailed in the wards, according to contemporary observers.107


106 Le Fort, Des Maternités, 120-130.

107 Ibid.
In such conditions, it was easy for medical experts to conclude that the building itself was poisoned. Indeed, in Dr. Le Fort’s description, no distinction is made between the capacity of the bedding or the very structure itself to be impregnated with puerperal fever because, “[t]he contagious miasmas permeate walls, ceilings, appliances, beds, mattresses, [and] linens.” Yet, again undermining the miasma theory was the fact that physicians, midwives, and newborn infants never contracted the fatal infection.

Figure 1.6: La Maternité du Port-Royal, ca. 1900-1910, Archives of Assistance Publique.

In the 1870s Tarnier, now chief of obstetrics at the Maternité, developed an architectural solution to combat the problem, in part inspired by Le Fort’s suggestions for prophylaxis through isolation. Convinced, like many, that puerperal fever was somehow contagious, and that physicians and midwives played some role in its spread, Tarnier erected an isolation pavilion in

108 Ibid., 120. Le Fort writes of “Une affection capable de se transmettre par l’intermédiaire de l’accoucheur doit se propager mieux encore par l’habitation dans des salles communes où sont mortes et où sont encore en traitement des femmes atteintes de fièvre puerpérale. Les miasmes contagieux imprègnent les murs, les plafonds, les appareils, les lits, les matelas, les linges, et c’est dans ce mode de contagion que nous trouverons surtout la raison de l’endémicité de la maladie dans presque tous les établissements hospitaliers, et de la différence considérable qui existe entre la mortalité des femmes accouchées en ville et la mortalité de celles qui sont reçues dans les Maternités.”
1876 for women with the fever.\textsuperscript{109} From its opening onward, any woman showing signs of the infection was transferred to the new building where a special staff attended to her.\textsuperscript{110}

Almost immediately the mortality rates for these women lowered. Was it the new building itself which, untainted by the miasmas which impregnated the walls of the old maternity ward, rendered the structure safer? Was it the improved ventilation within the new building? Or was it the particular model of isolation which the architecture enabled and enforced? Each patient had an isolated room only accessible via an exterior veranda. The office and other facilities inside the core of the building were similarly isolated and patients were observed by caregivers through interior glazed partitions. It was a perfect model of “\textit{emprisonnement cellulaire}” as one physician described it.\textsuperscript{111}

Ultimately, however, a different culprit revealed itself to be at the center of the puerperal fever outbreaks. For most of the century, doctors had been unwittingly infecting patients with the lethal bacteria by conducting autopsies and examining sick women directly before delivering healthy patients—and doing so without washing either hands or instruments. Although the hypothesis that physicians were spreading the disease had circulated as early as the 1850s, by physicians such as Ignaz Semelweiss, by 1879, this controversial claim was now accepted as fact. The work of Pasteur confirmed that these practices permitted the transmission of deadly

\textsuperscript{109} Loudon, \textit{Death in Childbirth}, 435.

\textsuperscript{110} The move towards greater spatial isolation was celebrated, but many lamented that the application of special pavilions to all maternity hospitals might be an unrealistic expectation due to the expense of such measures. See the discussion in the proceedings from the \textit{Comptes Rendus du Congrès International d’Hygiène}, (Paris: Imprimerie Nationale) 1878: 655-702.

microbes when he established that *Streptococcus* bacteria was present in the blood of women suffering from puerperal fever.\(^{112}\)

In response, Tarnier then implemented a stringent new set of antiseptic practices at the Maternité, reinforcing the earlier strategies of spatial isolation. Physicians and midwives began sanitizing their hands and instruments with chloride of lime or carbolic soap. In all wards, vestiges of the old unsanitary environment—such as the dark, soiled curtains that surrounded each bed—were stripped away.\(^{113}\) As a result of these combined practices of antisepsis and isolation, the incidence of puerperal fever dropped off dramatically. The mortality rate from the fever, which had been approximately 93 out of 1,000 deliveries in 1870, dropped until, at the turn of the nineteenth century, 1,000 pregnant women were delivered consecutively at the Maternité without succumbing.\(^{114}\) In spite of the new confidence in antisepsis, however, Tarnier still approached the question of air in the wards with apprehension, believing that “contagion took place above all through the air.”\(^{115}\)

II. The Incubator Emerges

\(^{112}\) Loudon, *Death in Childbirth*, 78.

\(^{113}\) Fuchs and Knepper, “Women in the Paris Maternity Hospital,” 199.


\(^{115}\) Pierre Budin, “Le Professeur Tarnier,” *Le Progress Medical* (May 7, 1898): 289-293. He wrote “for [Tarnier], contagion took place above all through the air,” noting that Tarnier believed the lungs played a key role as the site of absorption of poisons.

\(^{116}\) As a result, physicians at hospitals such as the Maternité inspired new public confidence and were able to parlay this into an aura of expertise applicable to other social problems of the day. Yet in doing so, their authoritative stance failed to acknowledge their initial, unwitting role in causing the spread of disease at the Maternité.
It was directly on the heels of this victory that physicians such as Tarnier were able to turn their focus toward another patient population suffering from elevated mortality rates: “weakling” infants. Now, a new repertoire of hygienic precepts could be brought to the project. By the late 1870s, stagnating population rates in France had metamorphosed into a national crisis, and the problem of how to nurture the infant expelled too early from the womb excited new and sustained attention. With neighboring countries such as England and Germany steadily growing their populations, many feared that France would fall behind as an international power.

Thus larger political fears became entangled with the issue of cultivating the newborn child—a project to which greater levels of scientific and statistical inquiry were applied. In 1878 at the International Congress on Hygiene and Demography held in Paris, for example, an entire day of the four-day session was devoted to the question of “The Hygiene of the Newborn.” In a panel devoted to the issue of infant mortality, Bertillon, noted that approximately 188 out of 1,000 French infants were likely to die in the year after birth, with many perishing in the critical first week after birth.\textsuperscript{117} Statisticians such as Bertillon shed light on such disturbing phenomena, and physicians and hygienists interposed themselves as authorities who could provide practical correctives to the existing state of affairs—publishing treatises on infant hygiene and care and, when in political positions, lobbying for new policies to promote infant and child well-being.\textsuperscript{118}

This larger social context, therefore, doubtless contributed to physicians taking note of the specific problem of the “weakling” infant, yet the story of the incubator’s invention, often repeated in fin-de-siècle medical literature, makes no mention of this troubled context. Stéphane


\textsuperscript{118} See for example publications of the era such as André Theodore Brochard, \textit{De la mortalité des nourrissons} (Paris: Baillière et fils, 1866), and legislation such as the Roussel law developed by physician Théophile Roussel regulating the wet-nursing industry in 1874.
Tarnier was, by the late 1870s, chair of obstetrics at the Maternité, and hailed as a national hero for his role in reducing maternal mortality. At around this same time, after observing the incubator, or *couveuse*, used to hatch the eggs of exotic birds at the Paris Zoo, Tarnier contacted a manufacturer of the devices and ordered one sent to the Maternité. ¹¹⁹ Collaborating with a medical instrument maker, Tarnier then transformed the device into one that could be used to keep newborns warm, and introduced the hybrid *couveuse* into regular use in the wards of the Maternité in 1881.

In its earliest manifestations, the *couveuse* was a bulky, boxlike structure. The thick, double wooden walls had sawdust packed into the interstices to create an entirely insulated space. Inside, walls were often lined with wool or felting, and a small basket held up to four babies at a time [Fig. 1.7]. While the exterior of the initial model was little changed from the bird incubators that inspired it, modifications were made inside the device to create two separate compartments: the lower for housing the heating mechanism and the upper for housing the infants.

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Tarnier’s incubator maintained infants in an environment between 30 and 37 degrees centigrade for a period of anywhere from a few days to six weeks, with children being removed every few hours to be fed and changed.\textsuperscript{120} The therapy was tailored to the individual needs of the infant, but the usual protocol required keeping them in the device until sufficient weight had been gained. The results were dramatic. An 1883 clinical study of premature infants placed in the new incubators revealed that the survival rate for this class of infants could be almost doubled.\textsuperscript{121} Although other types of infant warming devices were being utilized in Europe—such as the double-jacketed zinc cradle, which indirectly warmed the infant by permitting warmed water to circulate in the space between a large exterior tub and a smaller inner tub, or Winckel’s Permanent Bath—medical professionals deemed them impractical for various reasons.\textsuperscript{122}

Just as important as their impracticality, however, may have been the fact that few alternative methods had been subjected to the same level of clinical testing as Tarnier’s design.\textsuperscript{123} In fact, because sufficiently rigorous experimental analysis had not been applied to even more primitive methods of keeping infants warm, such as midwives’ practice of lining

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\textsuperscript{120} Stéphane Tarnier, “Des soins à donner aux enfants nés avant terme,” \textit{Archives de Tocologie: maladies des femmes et des enfants nouveau-nés} 48 (September 1885): 819-825.

\textsuperscript{121} A. Auvard, “De la couveuse pour enfants.”

\textsuperscript{122} The double-jacketed tub was first developed by Denucé in 1857, and decades later a similar device was put into use by German obstetrician Carl Credé. The two devices are discussed in Stéphane Tarnier, Gustave Chantreuil, and Pierre Budin, \textit{Allaitement et hygiène des enfants nouveau-nés}, 2nd ed. (Paris: G. Steinheil, 1888), 251, 263-264.

\textsuperscript{123} Winckel, for example, only conducted 10 clinical tests. See Baker, \textit{Machine in the Nursery}, 71. Credé published his results with the device called the \textit{warmwänne}, which were also more limited in scope than Tarnier’s, in 1884. See Carl Credé, “Über Erwärmungsgeräthe für frühgeborne und schwächliche kleine Kinder” \textit{Archiv für Gynaekologie} 24 (1884): 128-147
\end{flushleft}
cradles with hot water bottles, it is not clear if Tarnier’s incubator was any more effective than any other strategy for warming infants.124

III. A Contest of Designs

Tarnier’s impressive results, nonetheless were widely heralded in the international medical press. Perhaps inspired by the renown he attracted, or by a real desire to improve upon perceived limitations of the original, other French physicians collaborated with instrument makers to make improvements upon the device. In the 1880s and 1890s, these new interpretations of the couveuse were promoted by their inventors in journals devoted to obstetrics and gynecology.

Whether seeking to improve the heating mechanisms, the ventilation, or simply the general appearance of the device, it is clear from the widely varying design solutions that much was at stake in the incubator’s arrangement. Concerns about the visual appearance of the device and its psychological effect upon parents were sometimes invoked when new designs were proffered. The incubator was useless, after all, if parents, repulsed by its appearance, resisted allowing their newborns to be placed in one.

Most revealing, however, is how persistent fears of contagion influenced the competing designers. How to create a therapeutic enclosure for the infants that could be guaranteed to remain microbe-free was a question of primary concern. After the initial excitement over the incubator’s invention dissipated somewhat, it did not go unnoticed among medical professionals that the same humidity and elevated temperatures that fostered infant life inside these wooden

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124 Debates about the couveuse were extensive in the French medical journals of the period. For example, in a meeting on July 21, 1885, at the Academy of Medicine, some physicians protested that the device could be replaced by something much simpler and less expensive. See Tarnier, “Des soins.”
boxes might also foster the rapid growth of microbes if antiseptic procedures were not rigorously followed. Not only was it a concern for many doctors that the incubator itself might prove a miniature breeding ground for germs, but there was a tremendous amount of anxiety about the milieu in which the couveuse was placed. As Dr. Victor Hutinel, physician at the Hospice des Enfants-Assistés, declared, “tant vaut le milieu, tant vaut la couveuse”—if the hospital milieu was infected, then the couveuse could be infected as well.” This eventually led to the creation of a separate “weakling pavilion” to hold incubators at the Maternité—a strategy that brought the traditional miasma-combating principals of hospital pavilion architecture to the aid of the new technology. It also inspired a rash of new designs.

Dr. Pierre Budin, who later succeeded Tarnier as chief of obstetrics at the Maternité, was one of the first to innovate in the area of incubator design. Working in collaboration with Tarnier, Budin developed a prototype in 1883 that resembled the original, but was heated by gas and included a regulator to monitor the temperature within. An alarm alerted medical staff to extreme changes in temperature inside the couveuse, thus reducing the need for stringent observation of the infants in the hospital ward. In 1889, another physician from the Maternité, Pierre-Victor-Adolph Auvard, published plans for a variation on the device in the Archives de Tocologie et Gynecologie. This one, designed in collaboration with surgical instrument maker


126 Ibid., 883.

127 Pierre Budin went on to become a major figure in obstetrics. He developed the well-baby consults, known as the “consultations des nourrissons” and published numerous treatises on infant care including Le Nourrisson (Paris: Doin, 1900).


129 A. Auvard, ”Nouvelle couveuse pour enfants.”
M. Galante, improved upon former designs by further simplifying the incubator’s heating mechanism [Fig.1.8].

Figure 1.8. Couveuse Auvard, 1889.  Figure 1.9. Couveuse, Auvard, 1890.

Yet even this revised version proved problematic. Less than one year later, in October 1890, Auvard published plans for an improvement on his design which responded to a completely different set of concerns [Fig.1.9]. 130 Critics had pointed out that multiple crevices and soft wooden surfaces in his earlier design made it impossible to maintain a microbe-free environment. 131 Yet another more subjective concern that Auvard responded to had to do with the general appearance of the device. “[M]ost parents we have offered this new device to [for use in the hospital],” Auvard wrote, “have criticized it for looking too much like a small coffin.” 132 In his revised design, Auvard offered a single solution to both problems: a predominately glass enclosure for the infant’s chamber that was both easier to clean and “removed the funereal aspect” from the device. 133

130 A. Auvard, ”Nouveau modèle de couveuse pour enfants,” Archives de Tocologie (October 1890): 709-711.
131 L. Diffre, “Nouveau système de couveuse pour les nouveau-nés,” Archives de Tocologie (April 1890): 228-238.
133 Ibid, 710.
The concern with aesthetics continued when physician Léon Diffre promoted an almost whimsical version in the pages of *La Nature* in 1899 [Fig. 1.10]. This time it more closely resembled a traditional *berceau*, or cradle, but entirely of metal, with a glass lid, and raised above the ground by ornate art nouveau-inspired legs. The heating mechanism was discreetly hidden underneath the bassinet. “The idea of a cradle applied to an incubator,” the author of the article noted, “is…a pleasing one.” “[I]t removes the idea of a machine from the minds of young mothers,” he explained, “and does not crush their self-esteem if they then accept a treatment process that has, alas, been too often denied on the pretext that incubators were grim-looking and resembled coffins or showcases in an anatomical museum.”

![Figure 1.10. Diffre’s *couveuse*, 1899.](image)

In spite of the many creative solutions developed by physicians, a single simple design ultimately triumphed—a slight modification of the basic wood-box incubator that Tarnier had first introduced in the Maternité [Fig. 1.11]. An artist’s rendering of this model demonstrates that

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any attempt to make the incubator look like an ordinary cradle had been abandoned. More
significantly, all indications of machinery or sources of ventilation were suppressed. The
emphasis lay squarely on the glass enclosure. Originally, what had made Tarnier’s first *couveuse*
distinctive was that, unlike earlier infant-warming devices, it was the first that was entirely
*enclosed*. In the end, what ultimately distinguished Tarnier’s modified design from competing
models in the 1880s, was that this enclosure was entirely of transparent glass.

![Image](image_url)

**Figure 1.11. Sabbatier, “La Salle de Couveuses pour enfants nouveau-nés, *L'Illustration*, n.d.*
Archives de l’Assistance Publique. Note that the artist’s rendering has completely eliminated any source of
ventilation and any indication of machinery. The emphasis lies squarely on the glass enclosure.

While the combined qualities of enclosure and transparency might have been defensible
on the premise that containing the infant in a hermetically sealed, surveillable space prevented
loss of heat, I would argue, rather, that it begins to reveal the complex and contradictory notions
of contagion that persisted in the 1880s. This was an era in which hygiene—and therefore the
safety—of both surfaces and environments, needed to be instantly perceivable. The French medical establishment was shifting away from a miasmatic theory of contagion, which posited the unhealthful effect of atmospheres, to a recognition of imperfectly sterilized surfaces as sources of infection.\(^{135}\) This lesson had just been learned, after all, at the Maternité itself. Yet in spite of this shift in explaining the etiology of contagion, considerable anxiety about the healthfulness of air persisted—as evidenced by the extensive debates about air quality both within and around the incubator which preoccupied physicians for years after its invention.\(^{136}\)

In a medical community coming to terms with the realization that contact with the physician’s touch and the hospital’s soiled surfaces had allowed invisible microbes to pass from physician to patient, one can hardly be surprised that the ultimate form that the infant incubator took—as embodied in Tarnier’s glass model—would represent such a radically different model of hospital space. Its transparency and containment, which protected the infant not only from a threatening environment but also from a potentially threatening touch, symbolically and materially reflected the antithesis of the dark, crowded, contaminated space of the Maternité. It presented itself as a veritable spectacle of hygienic space. Not only was the infant isolated from the unhealthful atmosphere of the hospital, but the incubator’s enclosure of transparent glass, making the child, and the space around it, visible at all times and at all angles, seems to suggest the notion that the malevolent microbes themselves could be rendered visible.

\(^{135}\) For more on this shift, see Latour, *The Pasteurization of France*.

\(^{136}\) Much of the debate about the incubator among medical professionals in the late nineteenth-century was preoccupied with the temperature, quality, and safety of the air inside in the device. Many were concerned that the incubator, in the unhealthy environment of the hospital, might actually draw in and “incubate” the fetid, germ-filled air of the ward. Disinfection of hospital air in one model was accomplished through the use of a filter soaked with a solution of mercuric chloride. See Dunn, “Stéphane Tarnier,” 138. For information on the Lion Incubator, which drew air from outside of the building, see E. Vallin. “La Maternité Lion de Nice,” *Revue d’hygiène et de médecine préventive* 17 (1895): 1117-1118.
Although germ theory would not necessarily have automatically displaced the miasma theory that had prevailed for most of the nineteenth century, it seems clear that the “cradle of glass” which the incubator ultimately evolved into would have been reassuring. It made a visually legible spectacle of hygienic space and hygienic surfaces, in a way that the older dark wooden box incubators could not have.

IV. Incubator as Symbol and Spectacle

This final section examines briefly the ways in which, with all of the ideological freight the incubator was expected to bear, and with its structural emphasis on transparency and surveillance, it ended up circulating beyond the bounds of the hospital milieu. By the turn of the century, the infant incubator had become a spectacle, both in sensationalizing articles and in actual incubator exhibitions throughout Europe and America. The entry of the incubator into these other domains had significant implications for women, and illuminates some of the ways in which the medical community sought to position itself in relation to women in the contested domain of infant care. The story of the incubator’s travels beyond the domain of the French hospital, moreover, also tells us about the exportation and popularization of a particular model of hygienic, safe, and rehabilitative space.

A powerful and effective new weapon in France’s struggle to reduce infant mortality, the incubator functioned not just as a therapeutic technology, but also as an international symbol of

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138 For more on the overall trend of the spectacularization of various aspects of modern life see Vanessa Schwartz, Spectacular Realities: Early Mass Culture in Fin-de-siècle Paris (Berkeley: University of California Press, 1988). The incubator, although not discussed in Schwartz’s book, would seem to fit in with the other types of spectacular exhibits she discusses: the morgue, the panoramas, and the Musée Grevin, where news stories were brought to life with waxen figures.
French male scientific progress, and, as such, medical authorities promoted the invention widely. During the last decades of the nineteenth century, coverage of the incubator’s development could be found not only in medical literature, but also in international sources as varied as *La Nature*, the *Journal Universal d’Electricité*, *The New York Times*, *The Manufacturer and Builders*, and *The Illustrated London News*.139

Yet in the course of the widespread dissemination of information about the incubator, descriptions in the popular press often slipped well out of the bounds of the purely scientific, and revealed confused notions of maternity, reproduction, and the role a man-made machine could play in influencing either. Perhaps reflecting some uncertainty about what the machine was supposed to *do* exactly that couldn’t be accomplished by keeping an infant in a very warm room, accounts of the incubator’s proficiency were widely exaggerated. They frequently included some combination of a critique of negligent mothers, the inadequacy of maternal bodies, and misguided assertions that these man-made machines were not just therapeutic, but effected an accelerated maturation of the infant.

One observer of the incubator in 1904 applauded its efficacy in saving the lives of “thousands of little ones who would surely have died under the well-meaning but inefficient care of inexperienced mothers.”140 The author speculated that one day, “perhaps…incubation will be found superior to a mother’s care.”

An 1882 *New York Times* article about the incubator nursery at the Maternité, entitled “Artificial Incubation,” claimed that a normal six-month-old had been placed in Tarnier’s

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incubator for several weeks and had emerged “so strong and healthy that it resembled a child three years old.”141 “It could actually walk,” the author noted, “when holding on to a convenient piece of furniture.” The incubator, in this fantastic description, mysteriously accelerated the child’s rate of growth, doing as much in six weeks as “three years of ordinary life would have done.”142 Clearly such comments would never have had the support of a medical authority, yet what they do reveal is the strong attraction of the fantasy that applied science and mechanical innovation—both products of men and modernity—could accomplish far more than nature alone.

Perhaps the strangest evidence of such fantasies can be found in the image that accompanied one 1888 article [Fig. 1.12]. The caption describes the contraption as a “Still Birth Warming Apparatus” suggesting that the incubator could, perhaps, literally revivify.143

Figure 1.12. “Still Birth Warming Apparatus” from “Artificial Mother for Infants,” Scientific American Supplement, April 28, 1888.


142 The same misinformation, for example, was repeated verbatim in “Artificial Child Incubation,” The Manufacturer and Builder, 20.

143 Ibid.
In an article in an 1888 *Scientific American Supplement* entitled, “The Artificial Mother for Infants,” the writer asserted that the self-regulating machine took over where the deficient mother left off.

There are some that are so puny and frail among the many brought into the world by the *anaemic and jaded women of the present generation* that, in the first days of their existence, their blood, incapable of warming them, threatens at every instant to congeal in their veins…. [Even] the most loving and attentive mother, in this case, would certainly prove more prejudicial than useful to her nursling. So, for this difficult task that she cannot perform, there is advantageously substituted for her what is known as an artificial mother.¹⁴⁴

With the incubator the baby was not only, the author asserted, sheltered from cold and “pernicious microbes” but was also “protected against clumsy handling.” The threat that mothers seemed to pose to the authors of many of these articles suggests that the incubator was valuable not just for keeping the baby in, but also, perhaps, for keeping the mother out. For in spite of the persistent call at the turn of the nineteenth century on the part of many French physicians for increased maternal breastfeeding and increased maternal care of infants, a strain of anxiety about the role ignorant but well-meaning mothers might play in the infant mortality crisis persisted well into the early twentieth century.¹⁴⁵

The fascination with the infant incubators led physicians such as Alexandre Lion, an inventor of a widely used model, to bring them more directly into the public sphere through exhibitions. Beginning in 1891, Lion began setting up permanent incubator “shows” in Paris, Lyon, Nice, Marseilles, and Bordeaux, where paying spectators could observe the growing

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¹⁴⁵ Maternal ignorance as to proper scientific methods of artificial feeding, personal hygiene, and care was a recurring theme in many of the articles and conferences that promoted infant and child welfare. See Rollet-Echalier, “La politque,” 363-372.
infants [Fig. 1.13]. Although under regular medical supervision and cared for by female attendants, what was ostensibly a hospital space had been transformed by Lion into a spectatorial space, with as many as a dozen infants on display. In 1900, Lion even secured exhibition space at the Paris Exposition Universelle [Fig. 1.14].

Figure 1.13. Interior of Lion’s Baby Incubator Charity at 26, Boulevard Poissonnière, featured in “Baby Incubators” by James Walter Smith, *The Strand Magazine*, 1896.

Figure 1.14. Card advertising Lion’s incubator show at the Paris Exposition of 1900.

But the permanent Lion incubator exhibits in France were not the only examples of incubators and, more significantly *infants* on display. All over the world, as the interest in

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lowering infant mortality became a prominent part of public health discussions, expositions, and world fairs at the fin-de-siècle featured incubator exhibits. The Berlin Exposition of 1896, for example, featured a “Baby Incubator Pavilion” [Fig. 1.15]. To promote the use of incubators, Pierre Budin, then of the Parisian Maternité Baudelocque had donated six incubators for use in the show. In July 1897, an incubator exhibit was part of the Victorian Era Exhibition at Earl’s Court in London. Subsequent exhibits were featured at the Pan-American Exhibition in 1901, the 1904 Louisiana Purchase Exhibition in St. Louis and the 1915 Panama-Pacific International Exposition in San Francisco.

Figure 1.15. Der Kinder-Brutanstalt (Child Hatchery) at the Berlin Industrial Show Treptower Park, 1896, from The Illustrated London News.

An article describing the Berlin incubator exhibition noted that, “in two months over 100,000 people have visited it,” and, the author continued, “more than 6,000 women [have] seen it in three days.” The singling out of the number of female visitors suggests that program

147 “The Victorian Era Exhibition at Earl’s Court,” The Lancet 2 (July 17, 1897): 161-162.

organizers built some kind of pedagogical agenda into the program of these exhibits—one geared specifically towards women. Indeed, an article about a later incubator exhibit at the Pan-American Exhibition which appeared in the journal Pediatrics described it as “eminently instructive…and well-calculated to provide many hints to mothers and to females generally in the successful rearing of weakly infants.”149 Presumably the author refers here to the usefulness of the incubator exhibit in transmitting to mothers new, hygiene-oriented, scientific methods of infant care.

Yet what other lessons might be gleaned by visitors, kept at a safe distance by the balustrades? Was it the infants themselves who were to teach women, by reminding them of their biological duty to bear children? Was it the machines, which proved the way that technology had successfully rescued society’s most precious cargo? Perhaps it was an object lesson in distance, isolation, and detachment. The incubator exhibits presented a vision of an infant separated from its mother, closeted off by the machine even from the professional caretakers themselves, and viewed at a safe, anonymous distance.

Finally, not only is the inclusion of frail, seemingly anonymous, premature infants in each of these incubator exhibitions striking—“with living babies” as Lion’s incubator show signage in Paris declared—but also striking is the total absence of mothers [Fig. 1.16]. Few commentators of the period questioned either the source of the infants or their mother’s whereabouts.150 The exhibits themselves, however much their designers may have sought to instruct women, seemed to imply rather that maternal care was entirely irrelevant.


150 After surveying a number of articles covering the incubator shows at the turn of the century, I found almost no reference to mothers or parents. The scant information that does appear in these articles seems to suggest that the children’s mothers were likely indigent or in poor health themselves, and thus consigned their premature infants over to the temporary care of physicians who then placed them in the exhibits. See for example John Zahorsky, “The Baby Incubators on the Pike, Part I,” St. Louis Courier of Medicine 31(6) (December 1904): 345-358.
The self-regulating machines—the “steel cocoons”—held the sleeping babies as if science had entirely replaced the womb, and the problematic mother attached to it, altogether.\textsuperscript{151} All that was needed was the supervision of a medical staff and wet nurses who could supply milk. But even their responsibilities were often subsumed within the larger scientific project, as they were required to weigh, measure, and chart the infants at regular intervals.\textsuperscript{152} Physicians gathered statistics to prove to both the medical community and the society at large that the machines were effective, but most important to this validation of the incubator’s technological prowess was the presence, in the machines, of the living infants’ bodies themselves.

Conclusions

\textsuperscript{151} The phrase “steel cocoon” is borrowed from the article by Scott Webel, “Kinderbrutanstalt: Leisure Space and the Coney Island Baby Incubators,” \textit{Text, Practice, Performance} 5 (2003): 1-21.
\textsuperscript{152} It is not to be assumed however, that all doctors were complicit in this. Some protested vocally as in the editorial “The Danger of Making a Public Show of Incubators for Babies,” \textit{The Lancet} (Feb. 5, 1898): 390-391.
The incubator set the stage for much that was to come in terms of the hygienic, medical, and architectural communities’ approach to the issue of infant and child mortality. In its very structure it articulated a plan: removal from a pathological milieu to a small-scale antiseptic, transparent, isolated space. It’s “curtain walls” of glass, permitted surveillance from the outside while the infant was securely sequestered inside. By reducing the death rate of premature and “congenitally weak” infants, the technology of the incubator—a re-imagined cradle—had already done significant work in combating some of the inequalities that, as Bertillon had stated, “manifest around the berceau.”

The model that this type of architectural intervention offered was so promising for warding off the various perils threatening all of the nation’s infants, whether “congenitally feeble” or not, that from the incubator, in a sense, sprang an armory of additional structures that strategically brought private matters of reproduction and child rearing into the public sphere in the name of social hygiene and prophylaxis. A complex network of philanthropic initiatives subsidized by municipalities, communes, and the French government led to the establishment of asylums for pregnant women, publicly funded maternity hospitals, well baby consults, centers for infant hygiene, and milk-distribution centers. It all signaled an effort a desire on the part of all of these entities to intervene in—or regulate—relations of that most basic social unit—mother and child—with physicians as a benevolent, expert, and interested supervisor.
Chapter Two: *Puériculture*, Eugenics, and the Crèche of Glass

Figure 2.1. Centre d’hygiène infantile-Fondation Paul Parquet, from *L’Architecte*, 1924.
As the previous chapter demonstrated, the incubator set the stage for architectural projects that exploited the healing potentialities of a temperature-regulated environment, surveillance-enabling glass, antisepsis, and isolation from a pathological milieu. Equally significant, however, is the incubator’s role as the starting point for a new conceptual project in the domain of child and infant hygiene that also had architectural implications: prevention.

Out of the anxieties engendered by the medical community’s contemplation of the “weakling,” premature, and “congenitally feeble” infant—formulations with entirely different medical and hereditary implications, but which physicians often used interchangeably—came the impetus to prevent the problems altogether.153 “La défense de l’enfant est à l’ordre du jour,” one physician declared in 1901, but, he continued, it is necessary to begin with “la défense du foetus.”154 Thus, in the post-incubator era, medical and architectural technologies were to be applied to the project of “defending the fetus” with the aim of preventing the birth of enfeebled offspring. This multi-branched program of defense operated under the umbrella of a new science of infant hygiene called puériculture. This chapter examines the recruitment of architecture into the project of puériculture and the connections between puériculture and the larger utopian eugenic project of “conserving and improving the species.”155

153 Baker, The Machine in the Nursery, 6-24, discusses the lack of distinction between the terms “premature” and “weakling” in nineteenth-century French and American medical literature. Congenital feebleness (faiblesse congenitale) is a term that appears in many French obstetrical texts. See, for example, numerous examples of the use of this term in Stéphane Tarnier and Pierre Budin, Traité de l’art des accouchements, Vol. 2 (Paris: Steinheil, 1886).


155 Adolphe Pinard’s characterization of puériculture as a project of the “conservation et amélioration de l’espèce” runs throughout his writings on the topic. It is also the title of a talk delivered at the Clinique Baudeloque that was subsequently published: Adolphe Pinard, “De la conservation et de l’amélioration de l’espèce,” Revue Scientifique No. 6, 4ᵉ ser. (Fev. 1899): 167-174.
In 1902, Ernest Tarbouriech, a law professor at the Collège de sciences sociales, published *La Cité future*—a description of a scientific, collectivist utopia where “the rites of this new religion, hygiene” were strenuously followed.\(^{156}\) Tarbouriech created a utopian city in which the scourges of prematurity, debility, and degeneration which plagued modern-day France would be eradicated, as all processes of human reproduction would occur under the watchful eye of medical authorities.

In a section dedicated to “The breeding of children” ("l’élevage des enfants") Tarbouriech declared that, “if one wants to ensure that children are bred in such a way that ensures healthy future generations, the protection which is their due must commence with their uterine life.”\(^{157}\) With such early intervention, he claimed, there would be a significant reduction in the birth of “degenerates”—premature children or children born with “hereditary defects” such as criminality, cancer, alcoholism, and syphilis.\(^{158}\) Men and women deemed unfit to reproduce, in Tabouriech’s utopian scheme, would face sterilization. Women who were permitted to conceive, however, were required to immediately report pregnancies to the state’s medical board, “under pain of penalty,” and delivery had to occur in the hospital, since “one can only realize perfect conditions of antisepsis in buildings and with materials specially designed for the purpose.”\(^{159}\) After a period of mandatory maternal breastfeeding, all infants would be removed from their homes and enrolled in crèches, infant day nurseries, where the “superior control of the medical authority can be exercised much more easily than if he had to run from house to

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\(^{157}\) Tarbouriech, *La Cité future*, 307. He writes “Si l’on veut assurer aux enfants l’élevage qui seul peut constituer des générations saines, la protection qui leur est due doit remonter à la vie utérine.”

\(^{158}\) Ibid., 303-304.

\(^{159}\) Ibid., 308.
All in all, without ever invoking the term “eugenics”—what Tabouriech describes in his book is a perfectly medicalized, eugenic utopia which, he imagined, would to ensure future generations of “well-born” children.

While Tabouriech’s *La Cité future* reads, today, like an apocalyptic example of medical science fiction, the reality is that the futuristic science of “l’élevage des enfants” that he described bore a striking resemblance to, and was likely informed by, the real project of puériculture. Puériculture was, as I have said, a science of infant and prenatal care that was developed and popularized by Adolphe Pinard, a French obstetrician, in the late 1890s. Like the medical authorities in Tabouriech’s utopia, proponents of puériculture sought to exert their expert influence on the development of the infant, influencing conditions not only during birth and early infancy, but, critically, during gestation and even conception. Thus, what rendered Tabouriech’s rather controlling proscriptions for “l’élevage des enfants” radical was not the nature of their basic content but, rather, his utopian government’s ability to enforce such puériculture-inspired projects such as premarital examinations, medical supervision of pregnancy, mandatory hospital delivery, maternal breastfeeding, doctor-supervised child rearing, and, perhaps, even sterilization.\(^{161}\)

While Tabouriech’s text focused on legal and technocratic processes, and architecture itself received scant attention, it is worth noting his caveat that in his puéricultural utopia, such processes as prenatal supervision, childbirth, and childcare were to occur exclusively “in buildings and with materials specially designed for the purpose,” since only then could one

\(^{160}\) Ibid., 312.

\(^{161}\) While sterilization of the “‘unfit’” was not a project of proponents of puériculture per se, the intense preoccupation of many physicians in France with influencing conception—in the name of protecting the race from the proliferation of hereditary defects—suggests that it may have been attractive to some. More salient, however, is the fact that the French Eugenics Society, which included at least one member who promoted such measures, Charles Richet, developed out of the puériculture movement started by Pinard.
Leaving the specifics of the Cité future behind, this chapter will offer a brief examination of architecture’s recruitment into the project of puériculture.

Puériculture is significant for the story that this dissertation seeks to describe for a few reasons. First, puériculture, in its eventual emphasis on preventing heredity defects in the “race,” directly fueled the eugenics movement in France. Under the well-meaning auspices of “well-baby” care, it brought eugenic concepts into the mainstream of French culture and medical thought; it also, simultaneously, brought neo-Lamarckian optimism regarding the possibility of improving the species through environmental changes to the nascent eugenics movement in France. This intellectual cross-pollination was initiated by puériculture’s founder, Adolphe Pinard, a renowned obstetrician who went on to help establish the French Eugenics Society in 1912 and eventually serve as its president.\(^{163}\)

Second, puériculture provides the conceptual hinge for a shift away from emphasis on clinical cure of the ill and toward a clinical model of prevention and protection of the well which characterizes many of the architectural projects that this dissertation examines in subsequent chapters. Architecture’s relationship to puériculture is simply this: architecture constituted part of puériculture’s essential equipment. As such, it proved to be a contested domain. The constitution of architecture as puéricultural equipment required that a new type of expertise be developed that was the exclusive domain of neither physician-hygienists nor of architects. It inspired, I argue, a sometimes collaborative and sometimes competitive attempt by physicians and architects to

\(^{162}\) Tarbouriech, La Cité future, 308.

develop a modern hygienic architecture of prevention and protection surpassing traditional ambitions—in the realm of hospital design at least—to perfect an architecture of cure.\footnote{164}

This chapter begins by examining the evolution of Pinard’s science of puériculture. Next, I examine how a variety of new and extant public hygiene initiatives developed to protect infants and mothers were pulled into the domain of “social puériculture” and operated under that umbrella from the mid-1890s forward.\footnote{165} Finally, I examine architecture as an extension of the equipment of puériculture and demonstrate architects’ and physicians’ attempts to establish the qualities of these protective and health-promoting facilities for infant care.

\section*{I. From Puériculture to Eugenics}

The initial impetus for the expansion of Adolphe Pinard’s puériculture from a relatively uncontroversial “science of infant rearing” into a more ambitious eugenic project of the “amelioration of the species” was the result of a series of accidents. In the 1890s, in light of new social concerns for abandoned and impoverished women—a change that was itself informed by anxieties surrounding the low birthrate—some of the first secular asylums for needy pregnant women were opened in Paris.\footnote{166} One was the Asile Michelet, financed by the municipality, which opened its dormitories in 1893 to 100 destitute pregnant women under the initiative of

\footnote{164} For example, the characterization of a hospital as a curing machine (“machine à guérir”) was first put forward by Jacques Tenon in the eighteenth century, and then revived by Michel Foucault in Les machines à guérir: aux origines de l’hôpital moderne (Paris: Institut de l’environnement, 1976).

\footnote{165} Bouquet, Henri. La Puériculture sociale (Paris: Bloud et Cie., 1911).

\footnote{166} For changing attitudes toward impoverished single mothers, see Fuchs, Poor and Pregnant, 1-76.
social activist-politician Paul Strauss. The other was the Refuge-ouvroit, which opened in 1892 on the initiative of philanthropist Madame Bequet, leader of the maternal aid organization, Oeuvre pour l’allaitement maternel. In these residences, pregnant women were given room and board in clean, medically supervised surroundings, and were discouraged from leaving the premises until they delivered. Light handwork projects allowed expectant mothers to accumulate the items necessary for their baby’s layette or amass a stock of goods that could be sold to support themselves as they transitioned back to life in the outside world after delivery.

Through his position as professor and chair of the Parisian obstetrical hospital Clinique Baudelocque, as well as his connections in philanthropic and political circles of Paris, Pinard had been recruited to offer his expertise to the architects of both of these asylums as to the needs of pregnant women. His involvement with the pregnant women continued, as many of them eventually delivered at the nearby Baudelocque maternity clinic.

167 For more on Paul Strauss, see Rachel Fuchs, “The right to life: Paul Strauss and the politics of motherhood,” in Elinor Accampo, Rachel Ginnis Fuchs, and Mary Lynn Stewart, eds. Gender and the Politics of Social Reform in France.

168 More on these maternal asylums for working-class women can be found in Fuchs, Poor and Pregnant, 107-112.

169 Ibid.

170 See Paul Strauss, “‘L’Assistance maternel,” Revue Encyclopédique (Feb. 6, 1897):101-106. Strauss, unfortunately, does not describe what, exactly, Pinard’s counsels to the architects were.
In his experience delivering the infants of women who had spent time in the refuges, Pinard soon noticed an anomaly that merited clinical investigation. It appeared that women from the maternal refuges delivered, on average, infants with significantly higher birth weights than did women who came to the hospital directly from home or work after the onset of labor. This finding would have seemed counterintuitive at first glance, since women admitted to the refuge were strictly those with the direst personal circumstance—poverty, abandonment, poor

nutrition, and probable exposure to poor hygiene and disease. This would have suggested that their infants would be especially prone to being undersized or born prematurely. Theorizing that the primary difference was that the women in the maternal refuges had had a significant period of enforced rest before delivery, rather than working at a factory up until the onset of labor, Pinard determined that, with proper rest, certain causes of prematurity could be largely avoided.

In 1895, he presented his findings to his colleagues at the Paris Academy of Medicine in a talk on puériculture.\(^{172}\) Puériculture was an awkward term, translating roughly to “the cultivation of the child”—in the same sense that agriculture refers to the cultivation of the land. Pinard had borrowed it from an earlier French physician, Alfred Caron, who coined the term in an 1858 treatise which examined the science of child rearing “from the point of view of improving the species.”\(^{173}\) While Caron’s work was largely dismissed at the time—the issue of maternal mortality was too pressing to allow time for any serious examination of the “science of infant hygiene”—Pinard’s revival of the term almost forty years later occurred at just the right historical moment, given the tremendous recent success in reducing rates of maternal mortality.\(^{174}\) In his talk, which he later repeated before his colleagues at the Société de la medicine publique et l’hygiène professionelle, Pinard declared that:

> ...if the infants are larger among the well-rested rather than the overworked, it’s simply because their intrauterine life was untroubled and their incubation perfectly complete. Among the others, overwork is the wind that knocks the unripened fruit from the tree.\(^{175}\)

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\(^{172}\) Schneider, *Quality and Quantity*, 68.


\(^{174}\) Schneider, *Quality and Quantity*, 63-64.

\(^{175}\) Pinard, “Pour servir à l’histoire de la puériculture,” 1075-1076.
He concluded his presentation by emphasizing his desire to focus on preventing prematurity, asserting that if one wanted to see the population grow “vigorous and healthy” it was important to go beyond applauding efforts to save “the weak and sickly” and to recognize, rather, efforts that point out ways to help women bear “strong children.” While Pinard’s inaugural talk on puériculture left unexamined the greater hereditary questions of “soil and seed” in the development of the fetus, Pinard closed by promising to address them in future work.

While, as historian William Schneider has pointed out, it may seem almost banal, from a modern-day vantage point, to promote rest before childbirth, Pinard’s findings that overwork could have a negative impact on the unborn child were considered revolutionary at the time. Pinard’s use of statistical evidence—doubtless reinforcing the merit of his claims—made them interesting for everyone from eugenicists, to natalists, to socially conscious political activists. As one of his protégés passionately summed up,

> From the point of view of humanity, from the point of view of the growth of the population, from the point of view of the evolution of the French race, it is necessary and urgent that the public powers intervene to protect the pregnant woman during the last three months of her pregnancy and the fetus during the last three months of its intrauterine life.

Although it was a long time before any governmental policies of protection were enacted, Pinard had nonetheless provided meaningful ammunition for those lobbying for government-funded

176 Ibid., 1076.
177 Ibid.
178 Schneider, *Quality and Quantity*, 68.
pre-and post-natal work leaves for women, laws requiring that women take such leaves, and the
establishment of more asylums for needy pregnant women.  

From this initial foray, Pinard’s project unfolded in an increasingly complex, almost
tentacular, fashion. What had begun simply as a call to provide needy women with shelter during
pregnancy quickly developed into three distinct branches of a comprehensive science which, as
Pinard declared in a 1908 talk on puériculture, “has for its end the research of knowledge
relevant to the reproduction, conservation, and improvement of the human species.”

Intrauterine puériculture focused on measures to improve the strength and vigor of the fetus
during gestation. Extra-uterine puériculture focused on the promotion of maternal breastfeeding
and hygienic methods of infant rearing. Puériculture before procreation was intimately concerned
with questions of “soil and seed”—focusing not only on the health of parents whose syphilis,
tuberculosis, and alcoholism, for example, were believed to both result from and cause hereditary
defects—but also on their mental and physical condition at the exact moment of conception.

Altogether, the technology of puériculture—the set of practices it entailed and the spaces
of its ideal execution—arose out of the mire of depopulation and dénatalité as a reassuring,
science-based cure-all for the nation’s demographic difficulties. It was uncontroversial enough,
since its project—healthier babies—would be universally attractive. It was, however, applied
primarily in two different contexts. One of these was explicitly eugenic in nature; the other
context was the broader, but related, movement of social hygiene.

180 Schneider, Quality and Quantity, 103. For laws eventually passed in France during the inter-war period, see the
section on “La Mère” in Mary Louise Roberts, Civilization without Sexes, 89-147.
182 Pinard believed not only that both procreators needed to have perfect hereditary health, but also that the mental
and physical state of each “generator” at the exact moment of conception played a determinative role in fetal
First, because of the emphasis on the hereditary health that was implicated in all branches of puériculture (extra-uterine, intrauterine, and before procreation), there was a natural connection to the nascent eugenics movement in France. The tendency of promoters of puériculture to understand the value of the individual body as the foundation for the biological health of the national body made this a perfect alliance. The language and rhetoric used by puériculture’s promoters increasingly stressed that the focus of their efforts was not the infirm or the “social waste product” but, rather that of preserving the valuable and healthy biological capital of the nation.¹⁸³ As Professor V. Wallich, of the Paris Faculty of Medicine, declared in an opening address to medical students in 1905,

JPuériculture directs neither its concern nor effort towards the weak, the premature, the feeble being, who…can only escape death to suffer, be useless, a cripple, [and] a burden to himself and to others. It reserves all its efforts for protecting, leading, and nurturing the child conceived at the opportune time, born at full-term, and adequately breastfed, who will thus become a healthy, vigorous and happy being.¹⁸⁴

Given this rhetoric, then, with its avowed disinterest in “the useless”—it is little surprise that puériculture became incorporated into, as historian William Schneider has described, the developing eugenics movement in France.

Pinard’s work in puériculture increasingly turned away from issues of infant rearing to explore larger questions relating to the hereditary improvement of the human species. This change of focus was perhaps due, as Schneider points out, to Pinard’s increasing exposure to the


¹⁸⁴ V. Wallich, “À Propos de l’histoire de la puériculture,” Annales de Gynécologie et d’Obstétrique 2e série (Jan. 1906): 19-23. On page 23, Wallich declared, “Cette puériculture ne dirige ni sa sollicitude ni son effort vers le débile, le prématuré, vers l’être faible, qui meurt dans des proportions considérables et ne peut échapper à la mort que pour souffrir, pour être un inutile, un infirme, à charge à lui-même et aux autres. Elle réserve toute son action pour protéger, conduire et cultiver l’enfant conçu à propos, né à terme et convenablement allaité, qui pourra ainsi devenir un être sain, vigoureux et heureux.” Emphasis mine.
hereditary theories of Darwin via friend and colleague, physiologist Charles Richet, of whom more will be said shortly.\textsuperscript{185} Pinard became particularly preoccupied with the hygiene of “generators” and the imagined hereditary complications caused by syphilitic, alcoholic, or tubercular parents.\textsuperscript{186} He concluded an 1899 talk entitled, “De la conservation et de l’amélioration de l’espèce,” by declaring that “puériculture before procreation, that is to say prevention, reduces the number of social waste products, cripples, idiots, [and] degenerates.”\textsuperscript{187} “It is by intervening and persevering in this way,” he continued, “that we can react against the degeneration of the race and, later, atavism, [and] transmit to future generations the elements of selection and not the elements of decay.” “The future of the race,” he concluded, “is largely dependent on puériculture before reproduction.\textsuperscript{188}

It is a testimony to the influence of puériculture, with its origin in the clinical environment and its neo-Lamarckian optimism, that, in addition to Pinard, many of the French Eugenic Society’s founding members were physicians.\textsuperscript{189} Physicians represented more than half of the initial membership, eclipsing all other professional categories and in stark contrast to the United States and England where scientists and educators exceeded physicians in their

\textsuperscript{185} Schneider, \textit{Quality and Quantity}, 81-82.

\textsuperscript{186} Pinard, “De la conservation et l’amélioration de l’espèce,” 173-174. While it is certainly true that syphilis can be transmitted to a fetus and result in various birth disorders, it is now called congenital syphilis, so the word “hereditary” in this context was a misnomer. Alcoholism of the mother, but not the father, during gestation affects the fetus. Tuberculosis is not transmissible in utero. However, it is likely that a child residing with a tubercular parent would become tubercular due to the ongoing exposure to \textit{tubercule bacillus} within the home.

\textsuperscript{187} Ibid., 174.

\textsuperscript{188} Ibid.

\textsuperscript{189} Schneider, \textit{Quality and Quantity}, 92-95. Physicians represented 51\% of the membership in France. Countries such as Germany and Japan also had high physician membership, while early twentieth-century eugenics societies in England and the United States had the lowest rates of physician representation.
membership representation.\textsuperscript{190} Pinard’s participation, however, should not be interpreted to reflect an endorsement of the more radical propositions of some of his colleagues in the French Eugenics Society, such as physiologist Charles Richet, who argued in his influential 1919 book \textit{La Sélection humaine} for the forced sterilization of a broad spectrum of people he deemed undesirable.\textsuperscript{191} Rather, Pinard’s leadership in the French Eugenics Society reflects the diversity of opinions within the organized eugenics movement in France.\textsuperscript{192}


A multitude of projects in France eventually operated under the term “puériculture” at the turn of the century, which took the “amelioration, protection, and conservation of the nursling” as their primary goals.\textsuperscript{193} Aside from intrauterine puériculture, which led to the development of prenatal examinations for pregnant women in many maternity clinics, and the project of puériculture before procreation, which took the form of lectures, pamphlets, and other forms of propaganda on sexual hygiene, puériculture devoted to nurslings necessitated the development of a series of new or newly remodeled architectural spaces.\textsuperscript{194}

Infant puériculture operated in a number of venues. \textit{Consultations de nourrissons} were well-baby consultation, often in a maternity hospital, where women in the surrounding

\textsuperscript{190} Ibid.

\textsuperscript{191} See Charles Richet, \textit{La Sélection humaine}. Also see Anne Carol, \textit{Histoire de L’Eugenisme en France}, 147. Carol provides a thorough list of the many categories of individuals whom Richet described as defective in Richet’s 1922 article, “‘La sélection humaine.’”

\textsuperscript{192} For more on the different ideological positions of members in the French Eugenics Society, see Schneider, \textit{Quality and Quantity}, 84-115.

\textsuperscript{193} Wallich, “À propos de l’histoire de la puériculture,” 21.

\textsuperscript{194} Puériculture before procreation also led to the eventual establishment of the premarital medical exam law in France. After almost twenty years of discussion, it was put into law in 1942 by the Vichy government and retained by subsequent post-war French governments. Schneider, \textit{Quality and Quantity}, 154-155.
community were encouraged to bring their infants for regularly weighing and examination by 
physicians. *Gouttes de lait* (literally, drops of milk) were depots offering sterilized milk. 
Crèches, infant day-nurseries for working mothers, and pouponnières, co-operative residential 
nurseries, proliferated in urban areas. And, finally, a unique Centre d’hygiène infantile provided 
a halfway station between the hospital and the working-class home—both of which were still 
perceived as hygienically fraught milieus.\(^{195}\) In every one of these establishments, physicians 
oversaw general conditions and operations, and used their access to infants as an opportunity to 
impart principals of scientific child rearing to mothers. With the exception of the Centre 
d’hygiène infantile, most of these services predated the development of puériculture, by a few 
years or even decades.\(^{196}\) Crèches, for example, developed in urban areas in France in the 1840s, 
and were originally envisioned as part of a larger philanthropic project of moralization of the 
working classes.\(^{197}\) By the turn of the nineteenth century, however, social hygienists and activists 
increasingly envisioned them as useful for the promotion of puériculture.

In 1901, in a tome devoted to such projects, entitled *Dépopulation et puériculture*, 
politician Paul Strauss defined the project in quasi-militaristic terms declaring, provocatively, 
that “[p]uériculture constitutes, in the state of armed peace and economic stability of a people, 
the strongest and surest work of national defense.”\(^{198}\) While social hygienists often utilised to the 
language of warfare, describing wars against social scourges such as tuberculosis, venereal

\(^{195}\) The Centre d’hygiène infantile—Fondation Paul Parquet is discussed in, for example, Jacqueline Albert-Lambert, “La Maison des tous petits,” *L’Illustration* (March 1930): 311-313.

\(^{196}\) The first *consultations de nourrissons* were developed by obstetrician Pierre Budin in 1892 at La Clinique, the hospital located adjacent to the Paris medical school. Fuchs, *Poor and Pregnant*, 146.


disease, and alcoholism, Strauss’s formulation is different in that the link between infant well-being and militarism may have been more literal than metaphorical. The tradition of directly envisioning nurseries full of infants as future soldiers was long-standing in French rhetoric of the Republican era as typified by politician Jules Simon’s 1891 declaration that infant mortality robbed France of a battalion of soldiers every year.\(^{199}\)

Puériculture and war, however, were connected even more explicitly in Gaston Variot’s 1918 book, *La Puériculture et la guerre*. Variot, a physician, was founder of a *goutte de lait* in the Parisian neighborhood of Belleville and was chief of service of the Paris Institute of Puériculture.\(^{200}\) Again drawing upon the context of France’s relationship with its military enemy Germany, he starkly described the infant mortality problem by noting that in 1910 alone, France had had 30,000 more coffins than cradles, while Germany had had 800,000 more cradles than coffins.\(^{201}\) “It is clear,” he wrote, “that teaching puériculture and popularizing infant hygiene will be even more necessary after the war than before. We must replace the multitudes of brave and gloriously fallen soldiers.”\(^{202}\)

While throughout the text Variot advocated maternal breastfeeding as the surest way to preserve infant life, he echoed the common refrain that maternal ignorance continued to be a critical factor in causing infant mortality. He asserted that it was a folly to give a fragile newborn to a woman who knows nothing of the art of raising children since, “it’s the ignorance of mothers

\(^{199}\) Jules Simon, “De l’Initiative privée,” cited in Fuchs, *Poor and Pregnant*, 60, note 17. The examples of the language of soldiery are almost too numerous to cite. See, for example, Mary-Louise Roberts, *Civilization Without Sexes*, for excellent examples of how the language of soldiery was deployed by pro-natalists both to describe the national role of children and to encourage women to become mothers and replace the ranks of fallen soldiers.

\(^{200}\) Fuchs, *Poor and Pregnant*, 146.


\(^{202}\) Ibid., 6-7.
and hired nurses [éleveuses] that kills the greatest numbers of newborns.” Unwilling to leave childcare entirely in the hands of nursing mothers, he called for improvements in public establishments of puériculture, where infants could be properly supervised by medical authorities. However, since some puéricultural establishments, such as pouponnières (residential nurseries) had experienced mortality rates as high as 24% during the war, due to breaches in hygiene and the spread of contagious disease, Variot was compelled to caution that the “élevage collective” of nurslings was inherently dangerous unless “exceptionally hygienic physical conditions” were achieved.

While “exceptionally hygienic conditions” were the only ones, according to Variot, that allowed the collective rearing of nurslings to be safely undertaken, historian Ann La Berge has demonstrated that public nurseries had long had high rates of infant mortality. Poor hygiene and outbreaks of contagious disease within crèches persisted throughout the nineteenth and early twentieth centuries in spite of attempts by government regulatory powers to establish best practices and provide oversight. Although crèches were popular with bourgeois philanthropists and government officials, the frequency of disease there provoked working class women, not surprisingly, to shun them in large numbers, favoring instead private caretakers in their own working-class neighborhoods. And it was exactly this, the specter of the untrained gardeuse,

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203 Ibid., 20-21.

204 Ibid. “Élevage” is a term that derives from the language of animal husbandry and most often translates as “breeding.” It appears that, at times, it was used to signify “rearing,” and it is largely the context and rhetorical tone of the author that makes this distinction possible to perceive. See, for example, Paulette Ziller, Les Centres d’élevage des nourrissons, (Angers, France: Siraudeau, 1941).


206 Ibid., 75-77.

207 Ibid., 78.
watching over children in her dank, windowless, and unhygienic garret, that terrified those elites invested in preserving the nation’s biological capital.

III. An Antiquated Architecture

A series of late nineteenth-century images from the journal *L’Illustration* and similar sources sheds light upon the conditions inside some of the establishments, such as privately run *garderies*, or nurseries, which the new establishments of puériculture were destined to replace. An image accompanying an 1874 article on depopulation and infant mortality in *L’Illustration* [Fig. 2.4], for example, revealed the conditions of such milieus, illustrating the problem in a photo essay on the “Mortality of Young Children.”[^208] It shows the home of a *gardeuse* in the Beauce, a rural region southwest of Paris, revealing an interior in extreme disarray, with children of various ages lying about. Animals crawl on the straw-covered floor in a single dark room without apparent windows or doorways. Perhaps most shocking of all, however, is the absence of the caretaker—presumably at work for the day in the fields.

In an 1881 illustration [Fig. 2.5] which also presumably served as a kind of “cautionary tale,” we see a situation that is only a slight improvement upon that shown in Fig. 2.4. An elderly woman watches more than a dozen children in a room characterized by chaos, disorder, and the violation of numerous hygienic rules. An infant sitting to the left drinks from a biberon—an artificial method of infant feeding that was associated with infant gastrointestinal illness and death because of the tendency for germs to multiply in the narrow, unwashed rubber tubes coming out of the bottles.\textsuperscript{209} The room appears dark due to the absence of windows, and a single doorway provides a source of light and air.

\textsuperscript{209} For a discussion of the controversy over the biberon, see Rollet-Echalier, \textit{La Politique}, 568-574.
The modern, hygienic crèche that developed in the late nineteenth century would, physicians and hygienists hoped, replace these dingy and dangerous private establishments. New establishments such as the gouttes de lait, or milk depots—the first of which was founded by physician Leon Dufour in Fécamp in 1894—provided sources for sterilized milk for women who were unable to breastfeed their babies.\textsuperscript{210}

The issue of milk distribution was a critical one, as gastrointestinal illness resulting from unsanitary artificial feeding methods was a major cause of mortality. In 1882, and again in 1887, \textit{L’Illustration} published images of a predecessor of the milk depot in the form of “model nurseries” in the Paris Hôpital des Enfants-Assistées and the Hospice des Enfants Malades,

\footnote{George McCleary, \textit{Infantile Mortality and Infants Milk Depôts} (London: P.S. King and Son, 1905), 60. He lists more than 90 French towns in which Gouttes de lait were either actually established or projected as of 1905.}
where newborn infants were brought into a stable on the hospital’s grounds to nurse directly from donkeys [Fig. 2.6].

Figure 2.6. From *L’Illustration*, September 1882.

I show these images, in part, to demonstrate the state of the arena that the architecture of puériculture entered into in the 1890s and how rapidly the ideology of a scientific approach to child rearing would change its look, shape, and feel. In 1894, for example, the first *goutte de lait* had been established in Fécamp, and more than ninety others would follow throughout France in the next ten years.\(^{211}\) The milk was taken from cows, “humanized” by the physicians—who modified it to render it closer to human milk by adding water, lactose, and sodium chloride—and sterilized in the establishment’s bottling room.\(^ {212}\) Mothers, who often brought their infants to


\(^{212}\) Ibid., 361. Rollet-Echalier notes that “humanise” and “maternise” were the terms used by Dufour.
consultations de nourrissons in the same establishment, could obtain milk for free or buy it at a heavily subsidized rate.\textsuperscript{213}

Not only had notions changed regarding what milk was appropriate for infant consumption and how it should be prepared, but the spaces were changing as well. A glimpse of the interior of a model goutte de lait circa 1905 [Fig. 2.7] reveals simple, streamlined interiors, tiled floors, and large windows—all features of an ideal clinical environment—as well as modern sterilizing equipment.\textsuperscript{214} The images provide a glimpse of how at least one environment devoted to infant care had become radically changed less than a decade after the celebration of the model nurseries-\textit{qua}-stables in the pages of \textit{L’Illustration}. What and who drove such changes forms the subject of the following section.

\textbf{Figure 2.7.} Goutte de lait, Fécamp. From McCleary, \textit{Infantile Mortality and Infants Milk Dépots}.

\textsuperscript{213} Ibid., 360-369.

\textsuperscript{214} McCleary, \textit{Infantile Mortality and Infants Milk Dépots}, 57-67.
IV. Physicians, Architects, and the Equipment of Puériculture

Providing exceptionally hygienic conditions in puéricultural establishments such as crèches, gouttes de lait, and consultations de nourrissons—and the reinterpretation of what such conditions would entail—was a goal of many physicians and social hygienists in the late nineteenth and early twentieth centuries. It was necessary to render safe the bringing together of large numbers of children. As historian Ann La Berge has shown in the case of crèches, safety was necessary to actually convince working-class women to utilize resources, since the high rate of transmission of infectious disease in such public establishments was a major deterrent. But providing exceptionally hygienic conditions was a feat that required not only strict adherence to hygienic protocols but also the use of hygienic equipment. Architecture was a critical element of this essential equipment. Accordingly, physicians and architects vied for, and collaborated in, the design of such spaces.

The role of physicians in design is particularly interesting and again sets the stage for much that follows in this dissertation. Just as physicians elaborated upon procedures and protocols of isolation and antisepsis within establishments of puériculture, they also elaborated upon ideal architectural arrangements. This took the form both of judging the faults and merits of architect’s designs, as well as frequently proposing their own. Crèches provide a singular example, since by the early twentieth century they existed throughout France and were the

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215 See, for example, Bertillon’s discussion of the perils of bringing infants together in Bertillon, “La Puériculture à bon marché,” 311-320.

216 See La Berge, “Medicalization and Moralization,” 65-87. She notes that it is hard to assess whether or not the rates of infectious disease were any lower in the homes of gardeuses, but the facts regarding high mortality in the crèches are indisputable.
puériculture establishments where infants were most often out of their mothers’ arms and firmly in the public sphere. By 1902, there were 408 crèches throughout France.

At the turn of the nineteenth century, architects concerned with the social questions of the day were remiss neither in proposing their designs for crèches specifically, nor in participating in discourses about hygienic construction more generally. The design of a crèche, for example, was one of three major projects that students wishing to attain the certificate of architecte-salubriste were expected to complete at the École spéciale d’architecture. Indeed, the very existence of the school, formed in 1865 by engineer Émile Trélat, is significant. Unlike at the more traditionally academic École des beaux-arts, hygiene was embraced there as a central educational concern, eventually leading to the establishment of a certificate program for architecte-hygieniste in 1893.

That hygiene was eventually accepted as a necessary component of modern architectural design, however, is also evidenced at the École des beaux-arts. In 1903, Julien Guadet, the École des beaux-arts professor who had published the seminal text Éléments et théories de l’architecture in 1894, declared—surprisingly, given his allegiance to academicism in architecture—that, “...if the architecture of an epoch corresponds necessarily to the social state, I am completely ready to affirm that since hygiene rules and governs our century, the hygienic character [of architecture] will necessarily be the originality of said century.”

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217 In 1911, there were almost 450 crèches in France, including 67 in Paris alone. See Henri Bouquet, *La puériculture sociale*, 19.


220 “Variétès,” *Revue d’hygiène et de police sanitaire*, Vol 15, 1893, 286-287. For a history of L’École spéciale d’architecture and its relationship to the traditional École des beaux-arts, see Frédéric Seitz, *L’École spéciale d’architecture, 1865-1930* (Paris: Picard, 1995). It is unclear what the distinction was between architecte-salubriste and architecte-hygieniste, but I have found references to both during this time period.
quote appeared in a letter reproduced in the appendix of a physician’s doctoral thesis, published in 1903, entitled, “Hygiene and Art in Construction,” a title which itself offers further evidence of the investments of both physicians and architects in creating a fruitful marriage between the two fields. As for the role of hygiene at the École des beaux-arts, however, nearly two decades later, Guadet’s own son, Paul, was still defending the school’s program against the perception amongst physicians of institutional apathy. In an open letter to the *Revue d’hygiène et de police sanitaire*, Guadet fils defended the architects of the École des beaux-arts against accusations of indifference made by Dr. Marchoux, incoming president of the Société de médecine publique et hygiène sanitaire. Guadet—writing in his capacities as both a professor at the school and a delegate of the Société centrale des architectes and the Société des architectes dipômés par le gouvernement—not only elaborated upon the school’s teaching of hygiene, but also noted that the very presence in the Société de medicine publique of architects such as himself and his colleagues, Louis Bonnier, Augustin Rey, Georges Legros, and Paul Lafollye, “is the very best proof of the interest that architects bring to questions of hygiene.”

Indeed, institutional affiliations that architects developed with medical and public hygiene organizations also provide extensive evidence of this phenomenon. In 1900, the Société des ingénieurs et architectes sanitaires fused with the Société de médecine publique et d’hygiène professionnelle, bringing architects, physicians, and hygienists together in a unified

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forum devoted to public hygiene questions. In 1906, architect Louis Bonnier was elected president of this organization, subsequently renamed the Société de médecine publique et génie sanitaire. The Urban Hygiene Section of the Musée Social, a policy think-tank devoted to the “social question,” attracted socially minded architects and engineers, such as Alfred Agache, Augustin Rey, Raoul de Clermont, and Louis Bonnier, and brought them into in close contact with physicians, politicians, and public hygiene experts. Other architects formed private companies, such as Henri Sauvage’s Société des logements hygiénique à bon marché, to promote the development of hygienic workers’ housing.

As will be demonstrated in subsequent chapters, architects were well represented in the early twentieth-century programs of international congresses on housing, tuberculosis, demography, and school hygiene, contributing their expertise regarding the ways that architecture could be adapted to resolve specific challenges of public hygiene. A few architects even published books on hygiene—usually tracts on hygienic urban design and hygienic worker’s housing, such as those by architect Augustin Rey, but also more broadly in publications such as Swiss architect Henry Baudin’s 1905 book, *Le Rôle social de l’hygiène*.

What is significant here is less the content of these architects’ notions of what constituted hygienic construction than the fact that they were in constant conversation with physicians about

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the centrality of their concerns. The actual physician recommendations for building were constantly evolving, and developed in tandem with changing medical knowledge. Architectural knowledge was also rapidly evolving with, for example, the improvements in the production of structural iron and steel, which would eventually allow architects to dispense with load-bearing walls in favor of broad expanses of glass.229 The practical ideas for rendering buildings more hygienic ranged from the mundane to the innovative. Both architects and physicians could agree upon basic principles such as improved plumbing, ventilation, large windows, and proper building sites (i.e.; neither damp nor contaminated). They also promoted the use of what were beginning to be understood as more hygienic construction materials—ceramic tile, lacquered paints, linoleum flooring. Leaving such particulars behind for the moment, as they will be elaborated upon further in the course of this dissertation, what I wish to draw attention to here are the strenuous attempts by architects, little examined by historians, to straddle two worlds and establish expertise in both domains.

In spite of the efforts of architects to position themselves as experts on hygienic construction, physicians often took the initiative in delineating the components of a hygienic program. Using the example of the veritable front line of puériculture’s war against infant mortality—the crèche—physician Henri Napias, eventual director of Assistance publique, the administrative arm of the Paris hospital system, presented a series of model crèches in 1891 to his colleagues at the Société de médecine publique et d’hygiène professionelle. Dr. Napias had commissioned five architects, including Gaston Trélat, eventual director of the École spéciale d’architecture, to each design a model crèche for 100 infants. He then created a report—replete with architectural plans and his critiques and recommendations for further improvement of each

229 For more on technological innovations in architecture at the turn of the nineteenth-century, see Kenneth Frampton, Modern Architecture, 29-40.
design—and had them published in the organization’s journal, *Revue d’hygiène et de police sanitaire*. Dr. Napias revisited the subject of the hygienic equipment, operation, and construction of crèches at length—and again with the publication of architectural plans [Fig. 2.8]—in an 1895 article in the journal.

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Fig. 2.8. Plan for a crèche in *Revue d’hygiène et de police sanitaire*, No. 17, 1985.

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Dr. Napias was not the only physician to assert expertise regarding the architectural design of crèches. In a chapter in Dr. Henry Bouquet’s 1911 book, *La Puériculture sociale*—which examined the ideal operational practices and provisions for crèches, consultations des nourrissons, and gouttes de lait—the author described in extensive detail the program for the

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ideal crèche, elaborating upon the solar orientation of the buildings, hygienic construction materials, disposition of rooms, heating systems, bathroom facilities, isolation chambers, and minimum required spacing between cradles. He specifically warned against architectural excess in the design of crèches, declaring that simplicity must be the rule. “The sole luxury of an establishment of this type,” he wrote, “should be its perfect, almost surgical, cleanliness, and the materials that permit us to attain it.”

A glimpse of the ideal of surgical cleanliness and simplicity might be offered by a comparison of images of a particular model crèche—the Crèche Hippolyte-Noiret, which was established in the city of Rethel in 1893 by philanthropists to help address the city’s high mortality rate for working-class children between the ages of one and three. The crèche was widely celebrated for its efficacy in reducing these rates. A study conducted by Dr. Drapier, a physician employed by the crèche, revealed, for example, that in 1897 only 7.8% of children enrolled at the crèche died, compared to 55% of children the same age in the city. While this success was largely attributed to the improved methods of infant feeding in the crèche, the architect who designed the crèche, M. Couty, was celebrate by one physician for having created a building that was essentially “hygiènique et salubre.”

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234 See the appendix of the pamphlet Crèche Hippolyte Noiret à Rethel (Ardennes), (Sedan, France: Imprimerie Emile LaRoche, 1900), 13-16. The pamphlet concludes with four pages of quotes from French administrators, architects, and physicians praising the conditions at the crèche.

235 Cited in Crèche Hippolyte Noiret à Rethel (Ardennes), 11. Also see Dr. P. Drapier, La Crèche Hippolyte Noiret (Paris: H. Jouve, 1893).

236 Drouineau, “Crèche Hippolyte-Noiret à Rethel,” 47.
The crèche’s exterior architecture featured large windows, traditional brickwork, and decorative features such as pediments and other non-functional features. An article in the *Revue d’hygiène et de police sanitaire* featured architectural plans of the building which showed the careful arrangement of spaces, the inclusion of rooms for milk sterilization, and a room for washing the soiled linens. Shifts in the aesthetics of the interior, however, provide evidence of changing ideas about achieving perfect hygiene. A 1906 postcard [Fig. 2.10] of the crèche reveals the main dormitory lined with linen-draped cradles for infants along the walls, “twinned” beds in an ornate art nouveau style for older infants to share in the center of the room, and heavy curtains along the windows. A second image of the same room four years later [Fig. 2.11] already shows significant streamlining and a move towards individuation. Iron cradles along the walls are now stripped of excess linen, the central “twinned” beds have been replaced with simplified, individual beds for older children, and the right bank of windows has been stripped of window coverings altogether.
But more was at stake in the hygienic design of crèches than the streamlining of interior spaces. Some physicians concluded that the very structure of such establishments was in need of re-conceptualization and, rather than engaging architects in this quest for a more hygienic
architecture, intimated that the involvement of architects was a potential obstacle in achieving such goals, because of their imagined unwillingness to subordinate aesthetic impulses.\footnote{See a discussion of crèche designs in “Rapport pour le prix Fauré, Seance du 15 Juillet 1898,” Mémoires et Bulletins de la Société de Médecine et de Chirurgie de Bordeaux (1898): 295-303}

The Société de médecine et de chirurgie de Bordeaux, for example, completely sidestepped architects when in 1898 it initiated a competition among its physician membership for the design of a crèche. Wishing to avoid the usual tendency for the architects of the Assistance publique to focus on aesthetics (“lignes architecturales”), the chair of the competition jury declared that “[I]t’s time to finish with these elegant buildings [proposed by architects] which too often give lie to the heavy faults of their interior installations, through grave breaches against the laws of hygiene.”\footnote{“Rapport pour le prix Fauré,” 296.} Without elaborating upon what those hygienic faults might have been, this competition challenged doctors in Bordeaux “to indicate the best dispositions to give to a crèche, present the plans, describe the furniture and the interior and medical organization.”\footnote{Ibid.}

One physician who entered the competition—described by the jury as “a man of new ideas”—proposed building a “crèche of glass.”\footnote{Ibid., 297.} He based his proposal not on architectural precedents, but on the presentation of a physician at the 1898 International Medical Congress in Moscow, who discussed at length the salutary effects of exposure to sunlight.\footnote{Ibid., 298.} His architectural proposal for a crèche reflected his central concern—access to sunlight—and utilized glass as one of the major structural elements. Walls, he proposed, would be built with “very light and semi-
transparent bricks of blown glass…windowpanes of perforated glass…and room dividers of glass.”242 While the project was rejected on the grounds that certain services—such as the lavatories—were too close, from a hygienic perspective, to areas devoted to children’s rest and play, the idea of a crèche of glass was nonetheless celebrated by the jurors.243

While serious proposals for constructions entirely of glass were a long way off—perhaps due to physicians’ lack of knowledge about structural engineering and the possibilities, eventually explored by modern architects, of dispensing with load-bearing walls in favor of free façades and vast expanses of glass—the idea of the glass house as the ideal protective and preventative milieu for young children persisted. It seemed not only to promise the material support to the hygienic project of establishments such as the crèche but also to symbolize the potentialities of an architecture of prevention and protection.

242 Ibid.

243 Ibid., 298-300.
V. A “House of Glass” for Fragile Children

To close this brief look into the architecture of puériculture, it is helpful to examine a project, Le Centre d’hygiène infantile—Fondation Paul Parquet, that was erected in the suburbs outside Paris in the early 1920s. It provides an instructive window into the ways certain kinds of architectural features were broadly interpreted as protective and rehabilitative. Le Centre d’hygiène infantile, designed by architect François Le Coeur and funded through philanthropic grants by the Fondation Paul Parquet and by Assistance Publique, was a kind of halfway house between the hospital and the private home, designed for children who were too fragile to thrive in either environment. According to an article in the *Revue médico-sociale de l’enfance*, Le Coeur conceived everything with rules of hygiene and the comfort of infants in mind. It is a “house of glass,” the author wrote, “bathed in air and sunlight.”

When one considers a view of the exterior, however, the characterization of the building as a “maison de verre” seems puzzling. An imposing brick façade [Fig. 2.12] suggests instead a sober, airless, and dark interior. The exterior view from the rear courtyard [Fig. 2.13], however, with its multiple windows and broad terraces, begins to speak of the unfettered access to light and air to which the author refers. Still more compelling, however, are views of the interior [Fig. 2.14]. Nurseries and dormitories are there revealed with such a multiplication of windows, transparent enclosures, glass surfaces, and glass dividers, that the characterization of the building as a “house of glass” becomes slightly more tenable.

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Figure 2.12. Fondation Paul Parquet, from *Revue médico-sociale de l’enfance*, 1934.

Figure 2.13. Fondation Paul Parquet, from *Revue médico-sociale de l’enfance*, 1934.
The *Revue médico-sociale de l’enfance* article, and a handful of others, described in detail the layout of the facility, the work of its physicians, and described more generally the function of the Centre d’hygiène infantile which, in addition to housing up to 120 children at a time, offered outpatient well-baby and prenatal consultations.\(^{246}\)

\(^{246}\) These details derive from Maillet, “Le centre d’hygiène infantile,” 437-446, but are mentioned in other articles, including Jacqueline Albert-Lambert, “La Maison des tous petits,” and Pierre LeReboullet, “Le Centre d’hygiène
In a 1930 article in *L'Illustration*, author Jacqueline Albert-Lambert explained the center’s ambiguous mission. She described it as more of a rehabilitation facility than a hospital, one that functioned as a kind of hygienic asylum that safeguarded very young children, from 2 weeks to 3 years of age, “whom disease, or bad home conditions and hygiene have put in a state of inferiority.” Whether “convalescent or weakened,” she noted, all were provided with the “diligent care of an elite clinical personnel.”

The architecture was part of this diligent care, on both a practical and symbolic level. Declaring that this “house of little children” was a “house of light” as well, she described how,

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248 Ibid.

249 Ibid.
Broad bays, clear corridors and rooms, separated from each other by glazed partitions, make this residence an immense birdcage. *Symbol? Perhaps, but a necessary one.* If the infant center...on the outskirts of the city of Paris is a house of glass, it is for better fighting against the germs and microbes which are the enemies of little children.\(^{250}\)

![Figure 2.16. *La toilette des bébés*, from *L'Illustration*, 1930.](image)

With its extensive use of glass and terraces, permitting the young charges unfettered access to healing sunlight and air—the Centre d’hygiène infantile was described as being essentially an enormous, transparent greenhouse for bolstering the health of French children. Although the article in *L’Illustration* was ostensibly about the medical care the children would receive, there was no actual discussion of medical treatments. The focus of the article and its images was on the children, the architecture, and the modern fixtures for washing [Fig. 2.16]—suggesting perhaps that children could be saved simply by putting them into this scientifically conceived environment devoted to infant hygiene.

**Conclusions**

This chapter has provided a brief overview of the manner in which puériculture evolved in primarily two ways. As a eugenic project—through Pinard’s contributions to the emerging eugenics movement in France—puériculture became the starting point for an examination of the

\(^{250}\) Ibid. Emphasis mine.
hereditary implications of gestational and sexual hygiene in determining the hereditary health of
the child. As a project of infant care and hygiene—the presumed inability of working-class
mothers to follow the rules of “scientific” childcare—engendered the creation of a variety of new
structures designed to receive and protect infants. As such, the project of puériculture became, in
part, an architectural one, with physicians and architects laboring to develop a series of public
spaces—crèches, residential nurseries, centers for infant hygiene, well-baby consultations—
where perfect conditions of hygiene, both in practice and in structure, would mitigate the
inherent dangers of bringing together an agglomeration of infants.

The success of the project is hard to assess. Establishments such as the Centre d’hygiène
infantile—Fondation Paul Parquet were not representative of the average crèche, but may have
represented an ideal, exemplifying a space whose architecture promised to prevent the dangers
inherent in bringing children together, while, at the same time, offering to bolster the child by
seeming to offer unhindered access to regenerative light and air.

Perhaps most interesting is the emphasis on visibility within the Centre d’hygiène as
articulated through the proliferation of glass in the interior, a visual characteristic captured in, for
example a 1924 article in *L’Architecte* [Fig. 2.17], featuring the image with which this chapter
opens.²⁵¹ On the one hand, this emphasis on transparency reflected simple needs of surveillance
in such establishments—surveillance that enabled doctors and nurses to ensure that all hygienic
protocols were being observed at all times. On a more symbolic level, the emphasis on visibility
may represent the desire of physicians to extend their sphere of influence so that it encompassed
new areas of infant- and childcare.

Puériculture involved access to new areas—the private life of mother and infant chief
among them—and, since physicians could not control what they could not see, visibility was a

necessary precursor for their ability to intervene in this domain and, indeed, control it. Such highly visible quasi-medical public spaces, then, where science and hygiene prevailed, provided a corrective to the disturbing invisibility of the private realm, such as the slum dwellings, where poor hygiene, maternal ignorance, and rampant disease were thought to be contributing to the low birthrate and the high death rates of young children. If the slums were invisible—windowless, dank, dark places—the crèches and other spaces of puériculture could be based on the model of extreme visibility.

Figure 2.17. Centre d’hygiène infantile—Fondation Paul Parquet, from *L’Architecte*, 1924.
Chapter Three: Écoles Maternelles: Hygiene, Surveillance, and Medicalization

Fig. 3.1. Baths with showers at the école maternelle, Vanves, from Hawtrey, *French Nursery Schools*, 1935.
In his 1879 novel, *Les Cinq cents millions de la Bégum*, novelist Jules Verne described a fictional city called France-Ville, in which, among other things, ideals of modern hygiene would be scrupulously promoted by the government. In France-Ville, he noted,

…children are required, from the age of four, to…be brought up with such a rigorous sense of cleanliness that they consider a spot on their simple clothes as a dishonor…. This question of cleanliness is, moreover, the major preoccupation of the founders of France-Ville. To clean, clean ceaselessly, to destroy as soon as they are formed those miasmas which constantly emanate from a human collective, such is the primary job of the central government.\(^{252}\)

That children so young were to be initiated into the hygienic project of Verne’s France-Ville should not surprise. Such projects extended, this chapter will show, far beyond the realm of novelistic fantasy, and were the domain of a new social hygiene project called “hygiène scolaire.”

In a preface to a 1905 manual on the topic of school hygiene, Dr. A. Mathieu, chief medical inspector of schools in Paris, declared that this area of expertise “has taken a place of increasingly considerable importance in the lives of civilized nations.” “It has been said,” he continued, “…that the degree of a nation’s civilization is measured far better by the perfection of their hygienic organization than by the intensity of their industrial production or of their commercial economy.”\(^{253}\) Part of achieving the heights of hygienic organization involved inculcating the masses in modern standards of hygiene, providing modern facilities for bodily care, and, finally, convincing them to believe in the presence of the invisible—the microbe—as a potentially malevolent actor in their lives. Such were some of the pedagogical projects of the French education system in the late nineteenth century, which provided a supplement to


intellectual training and the consolidation of republican identity. The projects began at the nursery schools.

This chapter examines the increasing importance of hygienic training, medical inspection, and hygienic architecture at French nursery schools, called *écoles maternelles*, between their establishment in 1881 and the late 1930s, roughly corresponding with the duration of the Third Republic. This chapter will examine how hygiene—as a philosophy of prevention, a practice of inspection, a pedagogic and an architectural goal—became a dominant concern of those directing the program of the *écoles maternelles*, and how it was informed by eugenic anxieties about industrialization’s effects on working-class children and accompanying fears of racial degeneration.

How did hygiene—a multivalent term that encompassed everything from the cleanliness of spaces and bodies to prophylactic practices, such as sun baths—become so prominent at the *écoles maternelles* of Third Republic France? While educators and Republican administrators had initially charged these schools with the mission of providing young children, in the maternalist rhetoric of the day, the care that “an intelligent and devoted mother” would provide, along with a secular moral education and pre-literacy skills, they became increasingly distracted by the poor physical condition of their predominantly working-class charges. High mortality rates and incidence of disease reinforced fears of *dégénérescence*. As such, heightened preoccupation with hygiene at the *écoles maternelles* had, by the early 1900s, led to the introduction of a new range of practices focused on the body. These encompassed not only bathing children and training them in habits of personal hygiene, but medical inspection as well. A great deal was envisioned to be at stake in such interventions. As one *directrice* of an *école*
maternelle declared at the 1907 International Congress on School Hygiene, such medical inspection of nursery-school-aged children constituted “a social service.” “It has as its end,” she declared, “first to improve the race, [and] second to conserve the child population.”

Changes in the architectural design of these schools, moreover, accompanied these ideological transformations. While the earliest French nursery schools of the nineteenth century were typically housed in traditional masonry buildings adorned with historical and religious motifs, by the 1920s and 1930s, glass-walled and ceramic-tiled modernist spaces were the ideal. Far from reflecting mere shifts in taste, I argue that these changes reflected an evolution in what many hygienists believed constituted a healthful environment. Whereas inadequate heating, poor ventilation, and miasmas had been preoccupations of earlier hygienists, by the early twentieth century, physicians stressed the need to alter the plan to incorporate bathing facilities, vast expanses of glass to let in sunlight, linoleum and ceramic surfaces, and rooms for medical inspection and isolation. Such design features not only visually communicated the hygienic, medical, and rehabilitative program of the écoles maternelles, but also were believed to be instrumental: causing physical, psychological, and moral improvements in children, which would filter back to the working-class home.

Thus, at the écoles maternelles, under the pretext of providing “motherly care” to children ages two to five, a paternalistic project of medical surveillance and evaluation was being promoted under the banner of “school hygiene.”


256 School hygiene can be understood as one branch of a larger social hygiene movement which sought to address biological factors affecting the health of the population. Social hygiene was ill-defined and multivalent, encompassing everything from a variant of “social hygiene”—an all-encompassing project of late nineteenth- and
trace the evolution of this project, which conceptually linked medical intervention and architectural design in the context of an overarching eugenic project of evaluating and ameliorating the body of the French child and its pathologies, hereditary and otherwise.

An examination of a 1935 report published by British educator Freda Hawtrey provides a telling window into the symbiotic relationship between modern practices and modernist spaces at the *écoles maternelles*. As the author delineated the innovative practices of the French nursery schools, she noted that the innovation was not evidenced by any new approach to intellectual training. This had remained relatively unchanged over the prior fifty years. Rather, their movement toward modernization and what distinguished the French *écoles maternelles* from equivalent schools in England was that “the physical welfare of the children [was] taken into account as part of their school life.”

“There is,” she wrote, “a general inspection with regard to cleanliness on arrival” and facilities for washing “are provided liberally in the newer schools…with baths and showers…” This was supplemented by routine medical examinations by doctors and in-school nurses, and visits to the homes of absent students to check on domestic conditions and signs of contagious disease within the family. Tellingly, the extensively illustrated text of the report was accompanied not by images of children or their teachers, in the classroom or at play, but rather with numerous photographs of modernist school buildings and the pristine glass-walled infirmaries and rows of porcelain sinks which filled their interiors [Fig. 3.1, Fig. 3.2].

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Footnotes:


The author explained that, after World War I, “it was not only necessary to rebuild the devastated areas, it had become a sacred duty to safeguard the race itself.” Looking to the standard of hygiene set by America in the first part of the twentieth century, the French in the post-WWI period interpreted hygiene “to mean a new way of life.” The manifesto of L’Hygiene par l’exemple, a society founded in 1921 by members of the Pasteur Institute to promote hygienic practices in French schools, declared that, “Trained in the practice of hygiene, the future generations will become healthy not only in their physique, but in their moral outlook. Men and women thus educated will bring a new stability into the world order....” “[T]he écoles maternelles,” the British educator concluded, “were to play an important part in the initiation of this movement.” Thus, pristine architectural spaces, regular cleaning, and medical

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260 Ibid.

261 Ibid. Emphasis mine.

262 Ibid.
surveillance of the nation’s children were tied with a utopian vision of regenerating the entire French race.\footnote{For an example of the ways an abstract and nation-based notion of “race” seeped into discourses surrounding child and infant health and birth rates, see Schneider, \textit{Quantity and Quality}.}

This chapter’s content is divided into four parts, and is told primarily through an examination of a series of non-architectural writers—educators, physicians, public hygiene experts—who nonetheless had a significant, lasting impact on the physical design of these educative spaces. First, the origins of the \textit{écoles maternelles} are considered from their earliest incarnation as charitable Christian shelters—often occupying chapel-like spaces—provided for poor, urban children. The second section traces the shifts that occurred after 1881, when, in the hands of Republican administrators, the project of providing “motherly care”—while simultaneously inculcating children with middle-class standards of hygiene—was openly avowed, and an architecture reminiscent of bourgeois domestic space began to be used. The third section demonstrates the ways in which a powerful body of male physicians and hygienists advocated for expanding their role in schools, and particularly in the \textit{écoles maternelles}, through the elaboration of the practices of “school hygiene.” Their project included not only carrying out medical inspection of children but also diagnosing, and offering remedies for, the pathologies of the school building’s architecture. Finally, in the fourth section, I will examine how, after the devastation of World War I, the medico-social mission of the \textit{écoles maternelles} was completely modernized and institutionalized as represented by their in-school practices, the organization of interior and exterior spaces, and their use of certain tropes of modernist architecture.

\textbf{I. Salles d’Asile: From Moral Protection to Physical Conservation}

The \textit{écoles maternelles} of the Third Republic had their roots in the early nineteenth-century \textit{salles d’asile}, or rooms of asylum, which took moralizing and protection of young

The women of the Charité developed the \textit{salles d’asile}, in part, as a response to demographic shifts then occurring in Paris. Industrialization and the urban migration of peasants had created new social and living conditions. Poverty was widespread, and with it the attendant evils of overcrowding, criminality, and poor sanitation.\footnote{See Anne-Louise Shapiro, \textit{Housing the Poor of Paris, 1850-1902} (Madison, Wis.: University of Wisconsin Press, 1985).} Accompanying these changes in the urban milieu were changes in family life, with many women from the lower classes forced to work outside of the home. Philanthropists responded by trying to achieve three concurrent goals through the \textit{salles d’asile}: alleviating the childcare burden of working mothers, reforming the working-class family from within by morally edifying their children, and mitigating the threat to public order posed by an unruly, unclean generation of children in the streets.\footnote{Jean-Denys Cochin, \textit{Manuel de fondateurs et de directeurs des premières écoles de l’enfance connue sous le nom de salles d’asile} (Paris: Librairie Hachette, 1834), 41-45.} Municipal governments subsidized these institutions in the cities of Lyon, Paris, and Strasbourg, among others, considering them a kind of “public utility.”\footnote{Cochin, \textit{Manuel}, 11, 12, 58.}
Working-class mothers were doubtless eager to avail themselves of free or low-cost care for their children. Philanthropists and municipalities provided financial support for the establishments, and thus the number of *salles d’asile* in France expanded significantly over the next several decades. This process of expansion was facilitated by the involvement of philanthropist Jean-Denys Cochin, who opened a model *salle d’asile* with his own funds in Paris in 1828 and subsequently published a manual for *salles d’asile* in 1834, which formalized his recommendations for their architectural design, pedagogical methods, and moral teachings. As a result of his lobbying, the Ministry of Education recognized the nursery schools, in a series of decrees between 1836 and 1837, as a legitimate form of primary education.\(^{269}\) While in 1829 there were only four such schools, all located in Paris, by 1880 there were more than 5,000 throughout France. More than 650,000 children—approximately 20% of the target audience in France—were enrolled at *salles d’asile*, predominantly in northern, industrial areas.\(^{270}\)

Architecturally, the requirements for the *salles d’asiles*, as specified in Cochin’s manual and adapted more-or-less universally, were minimal [Fig.3.3]. The base of activity was a single large classroom with banks of seats built along one wall. This said as much about the charitable nature of the schools, which would have entailed a certain level of architectural restraint, as it did about the pedagogical approach, which was likewise minimal and one-size-fits-all in nature. Not only did methods of teaching make no differentiation between the intellectual needs of children at age two versus age six, but they typically required passive rather than active participation.


Rote repetition of liturgical catechisms and songs was the norm. Under these conditions, up to 200 children could be accommodated at any given time. Additional spaces included a small antechamber where parents would drop off their children—providing a buffer between the street and the interior—privies, and an enclosed courtyard for play.

![Figure 3.3. Salle d’asile Cochin, 1834, published in *L’Illustration*, June 1844.](image)

The single, unitary interior space, the religious motifs that adorned the walls, and the architectural language of the exterior of the salle d’asiles, bore great similarity to chapels of the period. Indeed, illustrations from the 1870s by Parisian municipal architect Félix Narjoux reveal that plans for salles d’asile were virtually indistinguishable from those for modest chapels or other religious spaces [Figs. 3.4, 3.5, 3.6]. A transept intersecting a large nave was the basic shape, and the exterior structure was often adorned with religious motifs.

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Figure 3.4. Plan of the ground floor at St. Etienne-Limoges, Felix Narjoux, *Architecture Communale*, 1870.
While these simple architectural arrangements may have suited the schools’ religious and moralizing mission, they engendered a new set of difficulties related to health. With so many children accommodated in a single space, contagious diseases could spread rapidly—not only constituting a public health threat, but also undermining the project of moralization and protection which was at the heart of the *salles d’asile*. 
In spite of the very real possibility of outbreaks of contagious diseases, a scant four pages of the more than 300 pages in Cochin’s 1834 manual were devoted to the issue of health and hygiene. Such an omission may have reflected a lack of certainty about how to mitigate such threats. Since the mechanisms of disease transmission remained poorly understood during this pre-Pasteurian era, Cochin’s recommendations were limited. He focused on ventilating the school room, providing filtered water, and conducting visual inspections of the children each morning to prevent entry of the sick. Cochin also recommended that directors of salles d’asile arrange with the municipal authorities to have a physician visit periodically. These recommendations were echoed in an 1838 governmental decree regarding the salles d’asile, which also required that children attending them present proof of smallpox vaccination.

But while attempts at government oversight sought to improve the situation, local conditions reflected only partial adherence to the hygienic requirements. There continued to be a lack of consistent physician visits at many salles d’asile and there were great disparities in the hygienic conditions of the buildings and the practices employed in each school. A décret of March 21, 1855, expanded environmental and structural stipulations and an arrêté which followed on March 22 set forth new requirements for the curriculum and practices at the salles d’asiles that also encouraged instructors to pay more focused attention to the children’s bodily cleanliness.

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272 Cochin, Manuel, 201-204.
273 Ibid. Also see Séverine Parayre, “Médecine, hygiène, et pratiques scolaires de la fin de l’Ancien Régime au début de la Troisième République” (Diss., Université de Paris, 2007), 304-318.
While such developments indicate that physicians and administrators were concerned with health and hygiene at the salles d’asile, no connection was drawn between children’s health and larger concerns with France’s political position or the fitness of the French race. This, however, was to change with the shifting political climate.

In the 1870s, in the aftermath of the Franco-Prussian War, the concern with hygiene at the nursery schools assumed a more fervent tenor, as it became understood increasingly as a project connected to national health and vitality. The country, newly united under a democratic Republic, took measure of the bodies of the body politic. Not only had the war ended in defeat and resulted in a devastating loss of French lives, but a high infant and child mortality rate, coupled with a chronically low birthrate, suggested to many that the French race was in a state of degeneration. From this point forward, ensuring the health of the youngest citizens of the Republic took on a new political urgency. The salles d’asile of France, which gave authorities institutionalized access to very young working-class children on a broad scale, now provided opportunities not just for morally saving the poor but, more importantly, for “saving the race.”

In light of these changes, public hygienists took on the health of schoolchildren and the hygiene of the educational milieu as projects of national significance requiring greater state oversight and intervention. In 1874, for example, Dr. Aimé Riant, professor of hygiene and official doctor of the École Normale of the Department of the Seine, published *Hygiène scolaire: Influence de l’école sur la santé des enfants.* Noting that almost four million French children

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276 As an example, see Laurent Cerise, *Le Medecin de salle d’asile ou manuel d’hygiene et d’education physique de l’enfance* (Paris: Hachette, 1836). Cerise situated the need to cultivate hygiene and health at the salles d’asile in the context of Christian charity and humanitarianism.


278 See Parayre, “Médecine, hygiène, et pratiques scolaires,” for more on the involvement of hygienists in debates about hygiene and schools from the Ancién Regime to the early Republic.
were attending schools and *salles d’asile*, Riant called for the establishment of a government office to be charged with overseeing standards of school hygiene and gathering statistics on the incidence of physical abnormalities and the frequency of epidemic disease.279 “Our country must,” Riant argued, “…attend to these issues, so as not to be surpassed by the other peoples of the world. Today, it’s a matter of the interest of our children, and tomorrow the future of the nation itself.”280 School hygiene had a crucial mission, Riant wrote, “the work of regenerating the country.”281 Thus improving physical health among children was, in the eyes of the school hygienist, linked to larger issues of “national regeneration.”

Like many of the school hygienists to follow in subsequent decades, Riant envisioned the domain of school hygiene to not only be a matter of providing medical attention to sick students but also, more broadly, to constitute a form of prophylaxis, a feature it shared with many other social hygiene campaigns. Far from only addressing student’s bodily needs and pathological disorders, therefore, the doctor advocated that physicians diagnose, and offer remedies for, the pathologies of everything connected to the physical culture of the school. This would include the architecture (its orientation, heating, ventilation, building materials, basic plan), its equipment (furniture, plumbing, educational materials), and the practices and behaviors of its students.

Riant drew his plan in broad, bold strokes, first diagnosing the evils of the current school environment and then offering up a cure. He advocated rationalizing the building program for all schools in the nation as a critical first step.282 Model architectural plans, he suggested, should be developed by hygienists for more healthful school buildings designed to resist the production of

280 Riant, *Hygiène scolaire*, xi.
281 Ibid., xii.
282 Ibid., viii.
epidemic causing miasmas. The hygienist could bring more wisdom than “the caprice of the architect and the fantasy of the constructor,” according to Riant, showing the extent to which hygienists were vying with architects and builders for the right to design school spaces. For Riant, the schools’ physical environments needed to be responsible for “fortifying the race and not enfeebling it.” Everything from, “the arrangement of the classroom furniture…[and] the correctness of its size, the conservation of vision, the morality of the children, appears to us to be of indisputable and urgent importance.” Thus, in the early days of the Republic, at the urging of physicians like Riant, an expansion occurred in the conception of the social purpose of the school: to the larger project of moral and intellectual education was added the project of physical or racial conservation.

Riant’s recommendations were echoed by other physicians and hygienists concerned with children’s health and the salles d’asile particularly attracted their attention. At the Congrès international d’hygiène, de sauvetage, et d’économie sociale held in Brussels in 1876, an international panel of physicians from France and other European countries passed a resolution endorsing a plan to increase the number of salles d’asile in all participating countries, and, in the words of M. Kuborn, member of the Belgian Academy of Medicine, “submit them to a severe and intelligent medical surveillance.” Noting the various threats posed by childhood maladies

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283 Ibid., 8.
284 Ibid., viii.
285 Ibid., 174.
286 Resolution promoted by M. Kuborn during a section on medical hygiene and the problem of infant mortality printed in the proceedings of the Congrès international d’hygiène, de sauvetage, et d’économie social (Bruxelles, 1876), vol. 1 (Paris: Germer Ballière et cie., 1887), 714.
in all of the participating countries, Kuborn declared that it was necessary to bring together all of the tools of science to constitute, “a veritable pathology of childhood.”

By May 1879, a commission of physicians in the Société française d’hygiène, which published the *Journal d’Hygiène*, proposed the pressing question of “l’hygiène des salles d’asile” as the topic of their society’s annual essay competition. Lamenting the poor hygienic conditions and lack of medical supervision at many such schools, they invited physicians, educators, and directors of salles d’asile to submit reports to the society on the statistical occurrence of maladies which afflicted children during this period of life, the hygienic state of their lodgings and school buildings, and the necessity of teaching hygienic habits. As the commissioners noted, the purpose was to bring science to the protection of “children raised at the cost of the state” and “for the honor of our country, which must protect the health and the future of those who, later on, must provide it its strength.”

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287 *Congrès international d’hygiène, de sauvetage, et d’économie Social*, 711.


289 Ibid.
II. Écoles Maternelles: Hygiene, Motherly Care, and Architectural *Embourgeoisement*

The increased urgency brought to the project of raising young children during the *seconde enfance*, as the ages from two to six were described, may have been the catalyst for the French government to exert a greater role in formalizing the educational, architectural, and hygienic programs at the various publicly and privately funded *salles d’asile* in France. Between 1881 and 1882, the Republican government’s Ministry of Education famously implemented a series of sweeping reforms at all educational levels. Decrees established universal free education, mandatory attendance in primary schools, and the elimination of religious teaching from curricula. These changes reflected the government’s desire to form a literate populace with Republican values and the society’s relatively new, vested interest in children.

The *salles d’asile* were included in these reforms, further concretizing the state’s investment in them as legitimate educational institutions. Although advocates had long pushed for universal primary education in France, popular wisdom had long held that children under the age of seven should remain primarily in the care of their mothers who were endowed with *l’instinct maternel*. A mother was, in one writer’s formulation, “the true *institutrice,*” the one “given by nature.”290 The Republican government was, therefore, negotiating a complicated relationship. On the one hand, there was the presumed private duty of mothers to nurture their children. On the other, it occurred to many social commentators that the state had an equally pressing obligation to preserve its youngest citizens however much they appeared to belong, more naturally, in their mother’s care. With a continuing demographic crisis and so many poorer mothers working and unable to care for their children in a manner that medical authorities

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deemed appropriate, the government had to find a way to bridge this divide between private duty and public interest.

The solution was to explicitly reposition the state, through the nursery schools, in relation to the family and, in particular, in relation to the working-class mother. The name change at the salles d’asile alone signified this new agenda. In the same decree that formalized many of the new rules and regulations relating to the establishment and inspection of nursery schools, the name was changed from “rooms of asylum” to écoles maternelles, or maternal schools.291 Although this alternate name for the salles d’asile had circulated in concerned educational and charitable circles for years, the official name change is significant, and suggestive of new priorities in the education ministry. First, while the salles d’asile had formerly been associated with charity and indigence, the new use of the word “école” underscored the nursery school’s educative role. Second, and most importantly, however, was the fact that the government now conceived itself as replacing the working mother with a motherly school.

The first series of decrees related to the nursery schools in 1881 and 1882 made the maternal role explicit. The Ministry of Education declared that the desired pedagogical approach should be to reproduce “as much as possible” the education that “an intelligent and devoted mother” would provide.292 The maternelle would provide young children “the care that their physical, intellectual, and moral development demands.”293 It would form for children the

291 Marie Pape-Carpantier was the first to advocate for the name change in the mid-nineteenth century. See Linda Clark, “French Maternalists and the French State: Two Inspectresses General in the pre-World War I Third Republic,” Journal of Women’s History Vol. 12, no. 1 (Spring): 34. Also see Marie Pape-Carpantier, Enseignement pratique dans les écoles maternelles, 9th ed. (Paris: Librairie Hachette, 1901).


293 J. Grévy, “Décret relatif à l’enseignement, au personnel et à l’inspection des écoles maternelles (2 août 1881),” reproduced in Luc, La petite enfance, 149-157.
“passage from the family to the school,” reproducing the “affectionate and indulgent sweetness of the family” while habituating children to school life.\textsuperscript{294}

Since officials at the Ministry of Education derived primarily from bourgeois and elite classes, it is likely that the standard of motherhood they intended to capture in this language reflected a bourgeois ideal. While at the earliest \textit{salles d’asile}, both men and women had served as instructors, new regulations reaffirmed the requirement that only women could teach at or direct \textit{écoles maternelles}. Thus a cadre of trained \textit{institutrices} would put into practice the government’s vision of maternal care. They would, presumably, infuse the pedagogical and hygienic program designed by the Ministry of Education with the innate feminine instincts that rendered them eligible for the job.\textsuperscript{295} Since the role of \textit{institutrice} or \textit{inspectrice} of an \textit{école maternelle} represented a promising professional opportunity for many educated women with modest means, it is unlikely that they would have sought to challenge any of the goals of the administration.\textsuperscript{296}

In terms of the pedagogical approach, children at the maternelles were henceforth divided into two groups—not by sex, as in primary schools, but by age: the \textit{petites} (2-3) and the \textit{grandes} (4-6). Younger children were taught through object lessons and free play—practices inspired by early childhood education innovators Froebel and Pestalozzi. Older children received beginning instruction in reading and writing, which would prepare them for primary school.


\textsuperscript{295} For more information on the training required of female directors and instructors at the \textit{écoles maternelles}, see Luc, \textit{La petite enfance}. For more information on the female inspectorate of the \textit{écoles maternelles} see Linda Clark, \textit{The Rise of Professional Women in France}.

\textsuperscript{296} Pauline Kergomard, however, a high level \textit{inspectrice générale}, frequently lobbied for greater pay equity for female instructors.
Architectural arrangements were formalized under the Ministry of Education into an ideal plan that accommodated the new division of children and the new pedagogical approaches. Since the new approach stressed a closer relationship between children and teacher, the bleachers which had formerly lined one side of the classroom were removed and replaced by tables and benches that seated children in small groups where they could work together. No longer simply a “room of asylum,” the interior architecture at the maternelles now required the division of children into two teaching rooms—one for older children, one for younger, with a limit of 150 children altogether in any given maternelle. Each building was to have an internal courtyard that functioned as a playground, a kitchen in which meals could be prepared, a vestibule for waiting parents, a privy, and, eventually, rooms for bathing [Fig. 3.7]. Living accommodations for the headmistress were also attached to new structures built after the 1881 decree.
In some sense the interior organization of the écoles maternelles during this period resembled, in the increasing individuation of spaces, something akin to a bourgeois family home.

Indeed, this was matched by shifts in the aesthetics of the exteriors of the buildings, as numerous new schools were built by municipal architects after the public education laws were passed. Since the nursery school was no longer a Christian charitable asylum, religious ornamentation was no longer included. Photographs reveal that the écoles maternelles, which were ideally to occupy their own structures, un-annexed to any larger primary school, resembled middle-class homes more than any other kind of structure by the fin-de-siècle [Figs. 3.8 and 3.9].
The architectural “embourgeoisement” of these buildings was likely more than mere coincidence. Although some described the maternelles as inherently classless institutions, taking
on the admirable work of “fusing the different classes of society together,” most of the students were, in reality, from the working classes.297 This was in part due to the fact that attendance at the écoles maternelles, unlike primary schools, was not compulsory, and thus likely continued to be appealing primarily to those working-class mothers in need of childcare. The école maternelle’s architectural and educative program evolved, then, in a way uniquely designed to adapt to and target the “problem” of the working-class child. Specifically, transforming the impoverished child into a universal idealized petit citoyen now became a pedagogical focus of bourgeois administrators.298

Part of this transformation would be to provide a corrective for the perceived inadequacies of the mothering in working-class homes. Pauline Kergomard, who served as an inspectrice generale des écoles maternelles and was an elected member of the Conseil superieur de l’instruction publique, wrote extensively on the topic, openly avowing this mission. In her 1895 work, L’Éducation maternelle dans l’école, Kergomard expounded upon the function the schools must play in assisting lower-class children. Assuming poverty, neglect, and disorder in their familial lives, Kergomard declared that, “the école maternelle must be a comfortable and sunny refuge for the poor child.”299 She declared the need “to air the children out” and provide nutritious meals, since they were likely “poorly lodged and malnourished.”300

While Kergomard sympathized with the pressures upon working-class mothers, a strong critique of these women was implicit in many of her writings. In an essay entitled “The Duty of

298 Dajez, Les origines de l’école maternelle, 170, makes a similar point. He writes that the schools were to transform the indigent child into the “universal infant…a child constructed on the model of the middle classes.”
299 Kergomard, L’éducation maternelle, 78.
300 Ibid., 95.
the Mother," Kergomard conceded that, in a perfect world, mothers would carry out their duties toward their children, and the école maternelle would be justly be perceived as “a social wound.”

301 “The State,” she continued, from this point of view, “in endowing it with a budget of nearly 5 million francs,” could be seen to be committing, “a criminal folly.” 302 Yet Kergomard declared that the école maternelle had a duty to replace the mother who was sick, too busy, too poor, or “incorrigible.” 303 A child left to the care of the working-class mother “even if she is well intentioned and clever,” Kergomard explained, “would, without exception, be exposed to dangerous imprudences.” 304 Kergomard saw the maternelle’s role as one of rescuing children from all the moral and hygienic negatives associated with their social milieu: not only poor living conditions but also immoral parents and negligent mothers. 305

Hygiene was one of the primary areas where Kergomard advocated for intervention. In addition to providing an ethical secular education, Kergomard emphasized teaching the children habits of cleanliness and, in so doing, effecting their moral and physical regeneration. She encouraged teachers to scrub their charges’ hands, faces, and even feet, if necessary, when they arrived each morning. Their hair was to be combed, their clothing inspected, and, if the facilities allowed, baths were to be regularly administered. The children were to be trained in “habits of cleanliness” and, through this training, develop middle-class notions of “dignity…self-respect…and respect for others.” 306

302 Kergomard, Les écoles maternelles, 56.
304 Ibid., 95.
305 Ibid., 38-68.
306 Ibid., 17-20.
The process of *embourgeoisement*-through-hygiene that Kergomard advocated seems aptly represented in a painting presented at the Salon of 1898 by the painter Geoffroy. The image shows clean and well dressed children, several of whom are gathered around a large circular sink fixture—something that would have been considered very modern at the time. The spotless floor has a visible gloss. The windows are large, giving the room a feeling of lightness and airiness.  

![Figure 3.10. École Maternelle, Henry Jean Jules Geoffroy, 1898.](image)

Kergomard continued to write extensively on the topic of cleanliness and maternal care in the *école maternelles* throughout the 1880s and 1890s. Her pleas were echoed by hygienists and educators who lobbied for the installation of modern sinks, showers, and bathtubs in schools built in the 1880s and 1890s. The education section of the *Rapport du Jury* from the Paris Exposition Universelle of 1900 provides an interesting glimpse into the progress made in this

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307 This painting was exhibited in the *école maternelle* rooms at the 1900 exposition as well, according to the exposition report.
The section devoted to showcasing the écoles maternelles began with an image [Fig. 3.11] and description of a new type of sink installed in certain schools, describing it as modern and “coquettish.” Far from this plumbing fixture representing merely a new accessory at the schools, the author asserted, this sink embodied “in reality, the principal of the école maternelle.”

Image after image in the report documented the installation of modern sinks and showers as the major new development at écoles maternelles. Photographs showed the children not only at play and at study, but also, significantly, making use of the modern facilities for washing [Figs. 3.12 and 3.13].

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309 Anonymous, Exposition universelle internationale de 1900 à Paris, 27.
Kergomard left issues of health and medical care largely unaddressed in her many writings. Inculcating young children in habits of moral and physical hygiene, she believed,
would suffice to improve their health. A Although accepting the necessity of occasional physicians’ visits, it was not a primary function of the school. When she did address the issue of contagion and disease, she emphasized the importance of preserving the school as a hygienic refuge for working-class children in infected urban centers.

While Kergomard seems, at first, to have ignored the cries of hygienists in the 1870s to take on greater management of children’s health and development in the infant schools, she was, in fact, carrying out a similar project through her devotion to bodily cleanliness and hygiene. During this period, the recent work of Pasteur and other scientists had revealed to the scientific community the existence of the microbe, its function as a mechanism of contagion, and its relationship to personal hygiene. Thus, Kergomard may have conflated bourgeois notions of personal cleanliness with the relatively new scientific understanding that the unclean body constituted an actual physical threat.

Above all, she left her imprint on the pedagogy and the architecture of the école maternelle through her emphasis on personal cleanliness. An architectural monograph of “Modern Buildings” dating from around 1900 and printed by city of Rouen architect M. L. Trintzius reflects this influence. The monograph featured an école maternelle recently constructed in Rouen (now called the École Maternelle Pauline Kergomard). “The school,” the sole text accompanying the drawings and plans declared, “can shelter up to 100 children who are monitored with great concern.” “Thanks to the intelligent and convenient installations” within

310 Kergomard, L’éducation maternelle, 98-100.
311 Kergomard, L’éducation maternelle (1895), 143.
312 Ibid. (1895), 98.
313 As historian Bruno Latour has argued, the discovery of the microbe not only rendered clearer the mechanisms of contagion, but also represented the discovery of an invisible “social actor” who threatened both the individual and the collective. See Latour, The Pasteurization of France.
the building, the text continued, the school was able to “inculcate [the children] in habits of cleanliness and order.”

III. “A Fertile and Virgin Terrain of Observation”: Children as Pathological Bodies

314 “C’est dans un quartier ouvrier qu’a été placé cet intéressant édifice. Avant de partir au travail, les parents peuvent y conduire leurs jeunes enfants, sans avoir trop de chemin à parcourir. L’école peut abriter une centaine d’élèves qui y sont surveillés avec une grande sollicitude et auxquels, grâce à des installations intelligemment et confortablement aménagées, on s’efforce d’inculquer des habitudes d’ordre et de propreté.”
While Kergomard and other educators working with écoles maternelles clearly envisioned training children in hygiene as an important part of their daily responsibilities, by the end of nineteenth century, physicians were increasingly turning their thoughts towards expanding their role in schools. They were interested not only in overseeing the hygiene of school buildings, meals, and practices but, most importantly, in instituting more thorough medical inspection and evaluation of schoolchildren. The groundwork for this increased medical surveillance had been laid during the earlier period’s emphasis on personal hygiene. As one physician had written in an 1884 report on hygiene at the maternelles, “[o]ne of the advantages of administering baths in the [écoles maternelles] is that it facilitates a kind of inquest into the physical state of the children.”

This section demonstrates how, at the turn of the century, French primary schools generally, and école maternelles specifically, became regular sites for medical inspection and evaluation. While it had long been understood that physicians must occasionally visit the écoles maternelles to check for and tend to outbreaks of contagious disease, what changed at the fin-de-siècle was the imagined purpose of these medical examinations—understood now in the context of a larger task of social preservation. As such significant sites of social hygiene, one cannot dismiss the evolution of the architectural design and the way it enabled the elaboration of medical and hygienic practices. While never expressly described by their proponents as “eugenic


316 Luther Halsey Gulick and Leonard Porter Ayres, Medical Inspection of Schools (New York: Russel Sage Foundation, 1917), 7-8. The authors point to the critical year of 1879 when the Department of the Seine reorganized school medical services and made arrangements for payments for physicians. The exams were made obligatory in all private and public French schools in 1887.

317 The initial decree of 1881 had recommended that a physician named by the mayor should visit the public écoles maternelles once per week, yet this was not instituted in every school. See Grévy, “Décret relatif à l’enseignement, au personnel et à l’inspection des écoles maternelles (2 août 1881),” reproduced in Luc, La petite enfance, 154.
initiatives,” proponents of these medical examinations nonetheless framed their rationale in terms of discourses of biological degeneration.

Against a still-potent background of fears about depopulation and dégénérescence, the health of schoolchildren became an object of national concern, and physicians began to play a larger role in diagnosing the sources of the problem. Critical to this shift was the growing political power of physicians and physician-legislators who, operating under umbrella organizations such as the Ligue des médecins et des familles pour l’hygiène scolaire and L’Hygiène par l’exemple, promoted a distinctly medicalized vision of childhood education.\(^3\)

By the early 1900s, delegates from these organizations were meeting hygienists from other countries at international conferences on school hygiene in Nuremberg in 1904 and in London in 1907.\(^4\)

Just as with earlier school hygienists, the physicians of the early 1900s framed their project in terms that suggested the biological well-being of the nation was at stake. The overriding concern with national decline had not changed over the course of the thirty years since Riant had written his first book on school hygiene. In fact, if anything, the notion that the French people were enfeebled and continuing to biologically deteriorate seemed even more convincing by the turn of the nineteenth century. Between 1877 and 1886, for example, the infant mortality in France stood at approximately 226 deaths for every 1,000 births.\(^5\)

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\(^3\) For more on the power of physician-legislators in general see Ellis, *The Physician-Legislators of France*.

\(^4\) Proceeds from the School Hygiene Conference were published in English, French, and German until international tensions undermined the spirit of collaboration.

This would have suggested, if nothing else, that the lives of those children who did survive early infancy would have to be carefully conserved.

While the demographic anxieties persisted unchanged, what had changed, as far as addressing the issue at the school level was concerned, were hygienists’ notions about the sources of the problem and how to fix it. In the 1870s, hygienists had lobbied for improving the milieu of the school building, which, if not properly lighted, heated, and aerated, they declared, would cultivate miasmas and deform and enfeeble the child. Other physicians had lobbied for increased medical supervision in the schools to curb outbreaks of contagious diseases. By the turn of the century, however, many physicians, in an interesting echo of Kergomard’s plea for bodily cleanliness, became newly concerned with children as potential carriers of microbes and constant sources of hygienic compromise to the collective.

Most significantly, by the early 1900s, physicians were using their access to children in schools to study the child as a physiological specimen. Gathering information about the physical condition of young children’s bodies—their rate of growth, their hereditary susceptibilities, and any pathology in the development of their physical and mental capacities—became a new preoccupation. Information thus gathered went into both individual health records and the statistical records in municipal bureaux d’hygiène.322

In the literature on school hygiene from this period, the school was imagined by doctors less as a pedagogical space than as one that conveniently brought the nation’s youth together to be medically examined and diagnosed. Écoles maternelles, because of the opportunity for early

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intervention, proved particularly useful for these purposes. As one French physician, Dr. Courgey, declared in a paper submitted to the 1908 International Conference on School Hygiene, “The école maternelle is a virgin and fertile terrain of observation.” “We are of the opinion,” he continued, “of [Senator] Paul Strauss who wrote on January 20, 1907 that ‘it’s at the école maternelle and the primary schools, since their earliest manifestations, that the physical and mental anomalies of degenerate or infirm children appear and must be reported.’” Inspected, diagnosed, and reported in the école maternelle, the child showing signs of abnormality could be pulled into a larger network of medical care. The child could, if ill, be sent to a dispensaire scolaire (school clinic). If showing signs of pre-tuberculosis, he could be sent to a colonie scolaire (vacation colony for students) in the countryside. If other signs of mental or physical abnormality presented in the child, he could be assigned to a special school called a classe de perfectionnement (classes for backward children). Thus a great deal was at stake—both for the lives of individual students and the French state—in the realm of school hygiene during this period. The école maternelle proved critical for providing access, as Dr. Courgey pointed out, since “the number of abnormals is greater at the école maternelle than in all other school populations.”

An important window into the transformation of school hygiene into a program of medical evaluation is provided by a 1909 text by Dr. Louis Dufestel, Hygiène Scolaire.  

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325 Courgey stated that, “On peut dire, a priori, que le nombre des anormaux et plus grande a l’école maternelle que dans toute autre population scolaire et que la sont les origines du problème” in “Recherche et classement des anormaux,” 405.

326 Dufestel, Hygiène scolaire, 6.
Dufestel was then, like Riant many decades earlier, medical inspector for the Paris schools, and he was a founding member of the Ligue d’hygiène scolaire. According to Dufestel, the great problem faced by French society, which could best be ameliorated by intervention in the school system, was that France was at risk of producing a physically and mentally “degenerated race.”

Noting that the “the child is not born perfect as Rousseau had claimed,” he observed that the child,

isn’t a healthy being by definition according to the ancient conception. He is an organism subject to numerous afflictions which can impede his growth and physical development. The period [during which] the child is in school is eminently favorable for the exclusion of certain troubles which…discerned at the beginning, can be cured or at least attenuated and which, neglected, become serious in adulthood and put the man…into a state of inferiority.

“Many of the maladies that trouble man” Dufestel continued, “are in germ in the child: arthritis, neuroses and even tuberculosis.” In Dufestel’s formulation the child was a fundamentally pathological, but fortunately perfectible, being.

There were, according to Dufestel, two pathogenic forces that plagued France’s school-age population: heredity and microbes. Dufestel declared that the “morbid heredity of parents weighs heavily on the child” as well as “[their] social conditions…[as reflected in] the cleanliness of their lodgings, nutrition, clothing.” In a later text, specifically addressing hygiene at the écoles maternelles, Dufestel pointed to the condition of overcrowded slum lodgings as a particularly negative force. “The child who vegetates in a slum home and who passes his night in a room where all the family sleeps, and where the oxygen is scarce,

327 Ibid., 180.
328 Ibid., 199, 362.
329 Ibid., 362.
330 Ibid., 161.
experiences a delay in his development.”

He urged educators and school physicians to familiarize themselves with each child’s situation so that it could be ameliorated. “Education in a democratic state like ours,” Dufestel wrote, “must supplement social or hereditary inequalities as much as possible to give to the child the summit of health that it is possible to acquire.”

But beyond improving the individual child’s health alone, Dufestel felt obliged to protect the collective. While he heralded the discovery of “pathogenic germs as agents producing contagious illnesses,” it pointed to the ways in which unclean children were potential carriers of microbes. Thus Dufestel sounded the familiar advice that young children should be bathed by their teachers. While Kergomard had linked washing children with improving their sense of self-worth, now it was critical to do so since “the micro-organisms which live on [children’s] bodies are very numerous” and “it suffices for only one morbid germ to be present for an epidemic to begin.”

Dufestel warned not only of microbes that schoolchildren carried in from the streets, but also those emanating from the “paternal foyer.”

Dufestel recommended modifications to the school buildings such as the installation of washrooms with modern sinks, showers, and toilets, and the text is illustrated with numerous images of these [Figs. 3.15 and 3.16]. He also offered the kind of proscriptions one would expect in a post-Pasteurian world when invisible microbes had been definitively linked to disease transmission: designing interiors with washable surfaces, such as linoleum, ceramic, and


332 Ibid., 161.

333 Dufestel, Hygiène scolaire, 286-287.

334 Ibid., 146, 149, 130.

335 Ibid., 280.
varnished wood. He declared that the school “must be inundated with light,” since under the action of sun’s rays, “the most tenacious pathogenic agents are eventually destroyed.”

Figure 3.15. and Figure 3.16. Toilets and sinks for an école maternelle in Dufestel, *Hygiène Scolaire*, 1909.

The main change, however, that happened under the advice of Dufestel and other school hygienists in the early 1900s, was the new recognition of the school as an opportune site for regular medical surveillance and inspection. To this end, he advocated equipping both nursery schools and primary schools with medical examination rooms containing appropriate equipment, as well as isolation chambers for students showing signs of contagious disease. He emphasized the importance of creating a *dossier sanitaire* to record both the health condition of each student and an evaluation of him or her as a physiological specimen. “From the first entrance into the school,” Dufestel wrote, “[T]he child must be examined by the school doctor who notes with care all that which is interesting in the physical, physiological and pathological state of the student.”

The examination Dufestel recommended was comprised of three parts: an anthropometric examination to assess the appropriateness of the child’s development, a physiological and pathological examination of the organs, and a medico-psychic examination.

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337 Dufestel, *Hygiène scolaire*, 32.

338 Ibid., 205.
Various apparatuses, such as the *thoracographe* [Fig. 3.17] which measured the size and shape of the thorax, and forms [Fig. 3.18] which charted children’s weight or height on a continuum ranging from the normal to the pathological were the tools used to turn abstract information gleaned from children’s real bodies into statistical information.\(^{339}\)

![Figure 3.17. Thoracographe, from Hygiene scolaire.](image1)

![Figure 3.18. Growth measurement chart.](image2)

The information gathered through direct examination would be combined with information about the child’s hereditary problems or “pathological antecedents” collected in

\(^{339}\) Ibid., 207. Although there is no explicit connection between these practices and that of noted criminal anthropometrist Alphonse Bertillon, such projects of measuring and assessing the physique of each child—children largely of the lower classes—are at the very least worth interrogating.

\(^{340}\) From the bulletin of the Paris Ligue française pour l’hygiène scolaire (Paris: Masson et cie., 1907), 123.
conversation with the parents, or through contacting the family’s doctor. All of which information, Dufestel continued, must be inscribed in the child’s *carnet de santé*, or health card, and kept locked at all times in an armoire in the examination room.

Thus, in the early 1900s, in the eyes of physician-legislators such as Dufestel, schools were newly understood as diagnostic spaces, in which all of the physiological quirks of the student might be measured and recorded. Clearly there was a potential value in such medical interventions, in terms of protecting the health of the individual child and the collective, and gathering statistical information for government purposes. This explains the support of these measures by, for example, socialist parties in France.

While the writings of Dufestel have been the focus of this section, it is important to note that the principles on which he based medical inspection were widely accepted. It is clear that most instructors, legislators, and hygienists were entirely in agreement with the notion that teaching of hygiene, medical inspection, and the aseptic conditions of the school all converged in the service of a valuable social project that went beyond the health of individual schoolchildren. “The school must be a *milieu hygiènique*—[even] at the humble école maternelle,” Blanche Chauveau, a Parisian *institutrice*, declared at a 1907 conference on school hygiene. “It’s at the *école,*” she continued, “that the child must be nourished with hygiene…impressed by instruction that is reprised each year.” At the same conference, Mme. Ch. Gest, *directrice* of an école

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342 Ibid., 206.


maternelle in Le Havre, described the medical inspection as a necessary function that would both “improve the race” and “conserve the child population.”

But how did women such as Gest understand this medical function in relation to the larger institutionalized project of “mothering”? In her conference presentation, she described the hygienic and medical project of nursery schools as a necessary corrective to the working-class family’s ignorance of basic hygienic practices. The critique towards mothers was abundantly clear. “What kills the most children,” Gest declared, “is the ignorance that neglects essential care and perpetuates stupid traditions.” She continued by asserting that,

“to remedy this distressing state of things, we must instruct mothers and …demonstrate to them that their task isn’t finished in bringing these frail creatures into the world…. [T]hey have a sacred mission, a natural obligation to fulfill from which they do not have the right to escape.”

She heralded the regular hygiene-information sessions conducted for families at the école maternelle at Caudebec-en-Caux, where parents were educated about cleanliness, hygienic habits, and social plagues such as tuberculosis, venereal disease, and alcoholism. Thus the école maternelle became a site for the larger project of social hygiene.

In such a formulation, echoed in other quarters, the école maternelle was also, in effect, an école de mères. In Dr. Dufestel’s 1912 training manual for aspiring nursery school institutrices, L’Hygiène à l’école maternelle, he declared that “it’s at the école maternelle that

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347 See Schneider, Quality and Quantity, for more on the social hygiene movements in France in the early twentieth century. The term was rather ill-defined but applicable to everything from puériculture, to combating alcoholism and preventing tuberculosis.
one must educate mothers."\textsuperscript{348} Disabusing mothers of their ill-conceived assumptions about proper childcare was thus envisioned as a part of the broader hygienic program at the schools, as well as a way to attack social problems of poor hygiene, disease, and depopulation that plagued French society.\textsuperscript{349} Neither the social situation of women nor the poverty of many working-class families bore as much blame for the ills that the nation faced as the presumed ignorance of mothers.

Thus under the rubric of increased medicalization, a shift in notions of proper maternal care can be perceived: it was imagined to be something pathologically misunderstood by many women. By the early 1900s, the “motherly school” had become a place to train mothers in a more scientific approach to childcare, all under the watchful eyes of the medical establishment.

IV: Modernist Foundations: Hygiene, Regeneration, and the Inter-war École Maternelle

The hygienic training and medical inspection of working-class children at the écoles maternelles, as well as the re-education of their mothers, were projects that crystallized in the inter-war period when, as this final section will show, the architecture began to both facilitate and express the medico-hygienic project of the schools.

The onset of the Great War in 1914 had disrupted but not destroyed the ambitions of those concerned with pre-elementary education. If anything, the desire to protect fragile children in a perfectly hygienic milieu, train them in modern hygienic practices, and keep even healthy children under regular medical surveillance was amplified after the war, when the demographic crisis again seemed of catastrophic proportions. A 1921 decree from the Ministry of Education

\textsuperscript{348} Louis Dufestel, \textit{L’Hygiène à l’école maternelle}, 42.

\textsuperscript{349} The re-education of mothers was an ongoing project in the late nineteenth century. For more on these themes, see Rollet-Echalier, \textit{“La politique,”} 363-372.
reiterated the necessity of physicians’ visits at the nursery schools, and also added a requirement for the physical training of children in respiratory and basic gymnastic activities. While training for institutrices would remain the same, preference in hiring would be given to those who had acquired a certificate in puériculture.

When new schools were built, an even greater fervor for hygiene and physical regeneration was brought to the project. A 1927 ministerial decree required that those charged with constructing nursery schools ensure the provision of medical examination rooms, isolation rooms for sick children, and extensive facilities for showers, sinks, and toilets. The organization l’Hygiène par l’exemple began publishing a journal on school hygiene in 1921 that sponsored the installation of modern sinks, showers, and furnishings in more than 500 French schools over the next 14 years. In 1934, the journal devoted an entire special issue to the construction of écoles maternelles in France in which modern design strategies, such as utilizing vast expanses of glass to separate spaces, installation of modern plumbing, and use of hygienic building materials such as linoleum were celebrated [Fig 3.19].

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350 “Rapport et décret modifiant les articles 1 à 8 du décret du 18 Janvier 1887 relatifs a l’organisation des écoles maternelles et des classes enfantines (15 juillet 1921),” reproduced in Luc, La petite enfance, 235-240.

351 Freda Hawtrey, French Nursery Schools, 9.

352 “Instruction concernant la construction, le mobilier, et le matériel d’enseignement des écoles maternelles publiques et des classes enfantines (15 janvier 1927),” reproduced in Luc, La petite enfance, 246-255.

While architectural designs for new schools had tended along traditional lines in the pre-WWI period [Fig. 3.20], after the devastation of the war, they were increasingly modernist in style [Fig.21] suggesting the extent to which the architecture was expected to bear the weight of the new medicalizing ideology. Not only was there the aforementioned programmatic requirement to include certain new spaces such as medical examination rooms and isolation chambers, but certain visual tropes of modernism in its most generic form—large plate-glass windows, sun terraces, white-tile surfaces, and *pilotis*, or stilts—perfectly reinforced the image of the transformed, but now widely accepted, role of the école maternelle as a hygienic, medicalized space.
Classrooms were outfitted with enormous expanses of glass, suggesting total “healthful” permeability between interior and exterior spaces [Fig. 3.22]. Long gone were banks of seats or heavy, oversized wooden desks. Furnishings were of lightweight, curved, easily disinfected metal, scaled to the size of the young child [Fig 3.23].
Figure 3.22. École maternelle, Vanves, from Poulain, *Écoles II*, 1931.

Figure 3.23. École maternelle Paul Doumer, Cachan, from Poulain, *Écoles II*, 1931.
Such developments cannot be read as merely reflecting trends generated in elite architectural circles during the inter-war period, where structural innovations or aesthetic choices may have been the dominant concern. There is ample evidence of the role hygienism played in shaping such shifts.

In 1907, for example, Mlle. Brès, an inspectrice générale des écoles maternelles had published a book in collaboration with architect R. Lecoeur, *Construction et aménagement des écoles maternelles*, in which she promoted many things that would seem presciently modern twenty years later.\(^{354}\) Roof terraces, linoleum-covered floors, interior surfaces of enameled tile or lacquered paint, floor-to-ceiling windows, rooms for resting separated from classrooms by interior glass dividing walls, radiant heating, the “measured” use of painted decoration—all these details which we might associate with a modernist architectural aesthetic were here promoted by Brès in 1907 for their utility in promoting surveillance, hygiene, and general antisepsis in the nursery school environment.

Brès based her suggestions on those of hygienists, noting that “according to the calculations of …hygienists” nothing would do, as far as the windows were concerned, but, “reducing the points of support to the strictest necessity for the solidity of the building and thereby create the grand surfaces of glass more or less similar to those of shop windows today. In brief, modern hygiene would gladly dictate that the child must “live in a house of glass.”\(^{355}\)

She also proposed that, from the hygienic point of view, it would be best to reject large school buildings and instead construct isolated pavilions separated by courtyards and connected by


\(^{355}\) Ibid., 11. emphasis in original.
covered passageways, “as in the modern hospices,” thus making explicit the conceptual connection between clinical space and the general promotion of health.356

By the inter-war period, such features were increasingly the norm in newly constructed primary and nursery schools in France. Scientists’ and physicians’ calls for expansive, removable windows and interior partitions of glass reflected—just as much as their proscription of sun cures and other practices in schools—the belief that heliotherapy and fresh air were effective therapies for a variety of debilitating diseases and chronic conditions.357 Much was at stake in the hygiene of school architecture. As one physician had declared in an article during the war in which he promoted respiratory exercises, nutritious meals, the “cure de soleil” and other health-promoting practices in schools, that the building itself played a critical role in improving health. “The modern school,” he declared, “represents a milieu hygiénique, it contributes by itself to the fight against tuberculosis by extracting the child, for several hours a day, from often unclean environments and placing him in good conditions.”358

The École Karl Marx in Villejuif provides a representative example of the new ideal. In 1933, the journal Regards published a photo essay [figure 3.24] celebrating a newly constructed school, built by a communist municipality, that was described as, “the school where the child is king.”359 Designed by avante garde architect André Lurçat, one of the founding members of the Congrès international d’architecture moderne, the school was hailed for its exceptionally

356 Ibid., 4.

357 See for example Auguste Rollier, La cure du soleil (Paris: Ballière et Fils, 1914). Also, this was an ongoing topic of discussion in the journal L’Hygiène par l’exemple.


hygienic design. The building was, the article declared, “all light and air.” Lurçat had succeeded in “reconciling the demands of pedagogy, hygiene, and modern architecture.”

The enormous reinforced concrete structure housed two primary schools, one for boys and one for girls, as well as a mixed-sex école maternelle [Fig. 3.25]. Raised on pilotis, it featured enormous expanses of glass in the classrooms and corridors, rooftop sun terraces featured solariums for the “sun cure,” a large gymnasium, and extensive bathroom facilities with

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360 Ibid.
showers, sinks, and toilets, all wrapped in a high modernist architectural idiom that was expressed on both the macro and micro levels.

![Figure 3.25. École Karl Marx, 1932, source: http://lanternslide.wikispaces.com/France.](image)

The school was celebrated not only in communist journals such as Regards, but also in the architectural and medical press, both of which applauded the structure for its modernity, its beauty, and its deft adherence to principals of hygiene. A physician made the school one of the subjects of her 1934 doctoral thesis in medicine, entitled, “Architecture et hygiène des nouveaux groupes scolaires.”

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Yet one must concede that neither Lurçat’s project, nor these developments in general in school architecture, were entirely unique to France. In the international architectural community, the marriage between high modernist architecture and high modernist principals of hygiene was becoming de rigueur, and its application specifically in a school environment was a topic of numerous articles, special monographs, and journals. In France, Roger Poulain’s architectural monograph series, *Bibliothèque de l’architecture moderne*, published editions devoted to écoles maternelles in 1923 and again in 1931, replete with plans and photographs of modernist school buildings throughout Europe, often focusing, in images, on capturing the “hygienic” features of such schools. The journal *L’Architecture d’aujourd’hui* published extensively on the topic, with special issues devoted to modern schools in France and abroad in January and February 1933, May 1934, May 1936, June 1937, and August 1938. In 1933, a book was published in Switzerland entitled *Das Kind und Sein Schulhaus* in which a physician-hygienist, a pedagogue, and an architect described the ideal features of the modern school building. In Germany, architect and urban planner Ernst May devoted an issue of his journal, *Das Neue Frankfurt*, to

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364 In addition to the frequent references to sun, light, air, there are also mentions about the social role of the school which was also an important part of the purpose they served. They were to cultivate the individual. They were a reaction against stultifying models of nineteenth-century education and so were particularly appealing to architects who imagined themselves to be progressive, artistic, etc. Also the connection between the slum home and the school was often elaborated upon. In Pierre Vago, “Nouvelles Constructions Scolaires” *Architecture d’aujourd’hui* no.5 (May 1936): 4, the author describes how the architect has a unique opportunity through the architecture to “inculcate the sense of order, of precision, of cleanliness, of clarity.” One article described how floor-to-ceiling glass panels “liberate the child…from the constraints of the opaque wall.” Also “Groupe Scolaire du Centre à Vanves: Paul et Marcel Marme, architectes,” *Architecture d’aujourd’hui*, no. 5 (May 1936): 17

365 W. Gonzenbach, W. Moser, and W. Schohaus, *Das Kind und sein Schulhaus: Ein Beitrag zur Reform des Schulhausbaues: (Zurich: Schweizer-Spiegel-Verlag, 1933).*
schools. In *Die Neue Schule*, he discussed the ways in which the design of new school architecture might be a strategy for reshaping society along more egalitarian lines.\(^{366}\)

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![Figure 3.27. *Das Kind und Sein Schulhaus*, 1932.](image1)

![Figure 3.28. *Das Kind und Sein Schulhaus*, 1932.](image2)

Studying these architectural developments in the context of French nursery schools is illuminating primarily because of the extreme urgency of the demographic situation. Such urgency rendered it a domain in which a great deal was at stake for a wide range of actors. Studying the evolution of hygienic architecture in this context allows one to trace its evolution outside of traditional architectural discourse, demonstrating an alternative lineage deriving from the pleas of hygienists, physicians, educators, and governmental administrators keen to physically regenerate the child.

In France, architecture was clearly, and early on, recruited into this project and, in the process of recruitment, was adapted and reconfigured so that it might function as a kind of tool to effect this regeneration. While Lurçat’s school at Villejuif, and the other examples of modernist schools deriving from this era, represented the ideal more than the norm in nursery school environments during the inter-war period, they provided clear evidence of the recruitment of architecture into the broader project of the physical regeneration of French children and of the eugenic project of “racial conservation,” which had been strenuously promoted by hygienists and educators from the moment of the schools’ inception in the early 1880s.

One final point is that the cultivation of a “hygienic aesthetic” in the architecture of nursery schools was a crucial part of the early inculcation of children into the “religion” of hygiene. Enamed surfaces, rows of porcelain sinks, enormous windows flooded with sunlight, and vast expanses of white sterile surfaces were not just part of an instrumental “cure” for perceived bodily degeneration, nor were they exclusively acting as protection from microbes and similar perceived threats. They were, I argue, an essential part of the proof that invisible microbes existed—a lesson perhaps difficult to communicate to a very young child—and of the notion that their eradication must take a central role in modern life [figure 3.29].
One could argue that the very existence of a sophisticated modernist architecture, designed on every level around the central principal of eradicating the microbe, gave important proof of the urgency of the task at hand and provided a compelling “object lesson” in modern hygiene in and of itself.
Figure 4.1. Anti-TB propaganda poster featuring an open-air school, ca. 1941. Comité national de la defense contre la tuberculose, Archives Nationale.
If the *écoles maternelles* discussed in the previous chapter evolved as both facilities for hygienic training of young children and as a “virgin and fertile” terrain for medical examination and the project of assessing the health and well-being of the nation’s youngest citizens, the question that might naturally arise is what happened to children whose health was deemed problematic. Although there were many possibilities—ranging from medical treatment offered in hospitals to summer vacation colonies for “weakling” children—one place evolved as a unique architectural type within the existing school system, which promised to offer therapy, prevention, and education all at once. This was the *école de plein air*, or open-air school.367

This chapter examines the history of French *écoles de plein air* as they developed in the early twentieth century, paying particular attention to the inter-war years of 1918-1939, the period of their greatest architectural innovation. A curious hybrid of school and sanatorium, open-air schools provided children deemed “pre-tubercular” with the same fresh-air and heliotherapy cure offered in tuberculosis sanatoria, along with improved nutrition, medical supervision, and training in modern hygienic practices. *Écoles de plein air* were promoted during this period with an unabashedly utopian zeal by French politicians, hygienists, educators, and architects, who believed such schools could help reverse negative demographic trends in France and ensure healthy, vigorous generations of children imbued with “the joy of living, the strength to work and, later, to fight.”368

A window into the enthusiasm for these schools is provided by a 1912 lecture given at an international conference on demography and hygiene. There, Parisian architect Augustin Rey, a member of the Musée social, a powerful network of hygienists, architects, and statisticians in

367 A recent study of these has been published by historian Anne-Marie Châtelet, *Le souffle du plein air: Histoire d’un projet pédagogique et architectural novateur (1904-1952)* (Geneva: Metis Presses, 2011).

France, delivered a talk on “L’école de l’avenir,” or the school of the future.\textsuperscript{369} Beginning with a reference to Pasteur’s observation that, “in order to save a race that is threatened by an infectious disease, the best plan is to save the cocoon,” Rey drew a parallel to the terrible scourge of tuberculosis and the need to protect the children of France. Because of the contamination of working-class hovels and dark, overcrowded schools, Rey asserted that questions of “school hygiene” were the most pressing of the day.

The solution, he declared, was to abandon old prototypes for schools, which fostered deterioration among French children, and create new buildings that would bolster children’s health by immersing students “in a continuous bath of light and air.” The school building, he asserted, “…exerts a profound influence on the overall development of the race. [It] should, therefore, be like a nursery where the young plant develops and strengthens and not where it atrophies.”\textsuperscript{370} The perfect model for this “greenhouse” of the French race, he declared, was the école de plein air, or open-air school, because it provided greatest access to the “microbicidal rays of the sun.” In light of ongoing concerns about the enfeeblement and depopulation of the French people, the image of such a school had a seductive appeal.

This chapter will seek to explain why such utopian eugenic aspirations, deriving from experts in a variety of fields, were brought to what was essentially a dubious and ill-defined project, and how architecture took on the role of giving concrete form to these aspirations. It was ill-defined in terms of the lack of consensus about what physical form these schools should take. Open-air schools initially occupied a wide variety of makeshift spaces: abandoned alpine chalets, rooftops in cities, tents in public parks. Indeed, the makeshift nature of the project was part of its

\textsuperscript{369} Ibid. More about Augustin Rey’s link to the hygiene network can be found in Janet Horne, \textit{A Social Laboratory for Modern France}.

\textsuperscript{370} Rey, “L’école de l’avenir,” 105,
appeal. Open-air schools as a health-promoting project were dubious because, as many physicians suspected even during the interwar period, heliotherapy was neither an effective therapy nor a form of prevention for tuberculosis. After the 1943 discovery of streptomycin as an effective cure for TB, the schools rapidly fell out of fashion.

Nonetheless, during the inter-war period in France, in the face of high expectations, conflicting medical theories, and widespread trauma in the wake of the Great War, architects were increasingly enlisted to define the type through architectural design. Their goal: to design schools that facilitated, rather than hindered, this peculiar goal of “bathing children in a continuous bath of air and light.”

While similar schools developed in other Western European countries during this period, the history of the école de plein air in France presents a unique object of study for several reasons. First, in addition to the ongoing crises of low birthrate and high infant mortality, France had the highest tuberculosis infection rate of any Western European country and a high mortality rate from tuberculosis. In response to these trends, a complex of state and philanthropic initiatives aimed at preventing the spread of tuberculosis developed in the late nineteenth and early twentieth centuries, of which the open-air school was one. The open-air school, with its focus on the category of healthy but vulnerable children—rather than the already diseased—allowed it to mesh perfectly with the many other French “child-saving” initiatives of the era.

Second, the development of the écoles de plein air in France provides a window into the increasingly medicalizing mission of the national educational system. As discussed in the previous chapter, the network of free public schools established in the 1880s by the Republican


372 See David Barnes, The Making of a Social Disease.
government provided, among other things, sites in which children could be subjected to routine medical inspections and hygienic surveillance. The écoles de plein air represented the ultimate realization of the school as a medicalized, therapeutic space. It was designed as a place of preemptive medical care, thwarting the expression of disease in children whose “weakling” constitutions had been revealed during medical examinations in normal schools.

Thirdly, and most significantly, an examination of écoles de plein air in France provides a window into the eugenicist intentions of many of the movement’s advocates, who were interested in the more ambitious goal of improving the quality of the French “race.” There was an explicit rhetoric of racial improvement and social control in the program of the écoles de plein air. The French League for Open-Air Education, for example, declared that the goal of the organization was “to contribute...to the restoration of the French race and to the fight against tuberculosis, alcoholism and the other causes of degeneracy.” Furthermore the League avowed a desire to “raise strong and vigorous generations. Train well developed, active, determined young men and young women; men who love their country, are ready to serve and defend it...; women...who are attached to their home and prepared for their social role.” The founder of one school was even more direct, speaking of such strategies of tuberculosis prevention as a way

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373 See, for example, groups such as the La Ligue des médecins et des familles pour l’hygiène scolaire and L’Hygiène par l’exemple, an organization that promoted a distinctly medicalized vision of health in the schools.

374 See modernism’s relationship to medical therapy in Beatriz Colomina, “The Medical Body in Modern Architecture.”


376 Ibid.
to improve “the quality of the families of tomorrow rather than encouraging misfits and malingers to procreate.”

This chapter begins by establishing the context of the tuberculosis crisis in Europe and the new emphasis brought, at the beginning of the twentieth century, to diagnosis and prevention in children. A series of preventative programs based on climate therapy, of which the école de plein air was one, were utilized to compensate for the hygienic dangers of the working-class home. The second section examines the development of the French open-air school in the immediate aftermath of the Great War. Devastated by widespread loss of life, the French turned to the open-air school with increasing fervor and organization. By the early 1920s, school hygiene organizations, including one founded by members of the Pasteur Institute, were challenging architects to dream up innovative designs for a model open-air school. The third and final section examines the design and reception of what many hailed as the most innovative open-air school to date: the école de plein air of Suresnes. Built in the years before the outbreak of World War II, it appeared to finally give concrete form to the utopian dream of a spectacular, hygienic, sun- and light-filled school. This hybrid “sanatorium-school” resembled neither newly built modernist sanatoria nor traditional school buildings. With its eight individual pavilion classrooms, each with three retractable glass walls, it was hailed as a therapeutic “greenhouse” for the French race and a model for the “school of the future.” But was it a miracle school or merely a propagandistic symbol in a tense international climate? In these transparent glass schools, France’s children—the living, growing proof that the nation was vital and “regenerating”—were, quite literally, on display [Fig. 4.2].

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I. Therapy for “Pre-Tubercular” Children: The Road to the Open-Air School

Since the écoles de plein air were developed for an entirely new category of patients—“pre-tubercular”—children, an examination of the schools requires a broader look at the history of tuberculosis in Europe. This section will begin with a brief history of the threat of tuberculosis in Europe and illustrate how scientific advances led to the creation of a new, but vague, diagnostic category: “pre-tubercular.” With no new therapeutic options, those so categorized—often poor, working-class children—were sent to places where they could receive climate therapy for purposes of TB prevention. The open-air school was one of these prophylactic programs that, because of its simplicity and potential applicability to all school-aged children in France, physicians and educators alike embraced.
For most of the nineteenth century, tuberculosis was the primary cause of death in France and other European countries. Its causes and modes of transmission, however, were poorly understood, rendering the fight against the “white plague” difficult. Discoveries by scientists in the late nineteenth century radically altered understandings of contagion, and ultimately led to the development of the germ theory of disease, which attributed contagion to malevolent microbes rather than unhealthful airs or miasmas. In 1882, German scientist Robert Koch succeeded in isolating the tubercle bacillus, thus providing specific new information about TB’s etiology.

In spite of these scientific breakthroughs, no new therapies were developed that could effectively cure the disease. At the turn of the nineteenth century, the treatment protocol remained essentially unchanged: fresh air, exercise, hygienic habits, and a rich and varied diet were the main weapons in the war against tuberculosis. Throughout Europe during this period, sanatoria were established that isolated the sick, often in alpine locations, and provided climate therapy under the care of physicians. While originally most establishments were for adults, sanatoria devoted to the cure of children were eventually established in several countries including France, and their treatment protocol was much the same.

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378 See David Barnes, *The Making of a Social Disease*.


382 For a historical document dealing with TB sanatoria in France, see Frederick Walters, *Sanatoria for consumptives in various parts of the world (France, Germany, Norway, Russia, Switzerland, the United States and the British Possessions): a critical and detailed description together with an exposition of the open-air or hygienic treatment of phthisis* (London: Swan Sonnenschein, 1899), 139-145.
In the early 1900s, however, as a result of several scientific breakthroughs in diagnosis, the ideological emphasis in the international “war on tuberculosis” gradually shifted from curing tuberculosis in adults—an uncertain science at best—to prevention in children. In 1903, German scientist Emil von Behring published work attempting to demonstrate that adult tuberculosis was caused by the reactivation of the *tubercle bacillus* acquired in childhood.\(^\text{383}\) Subsequent work by physicians conducting autopsies on children who had died from other causes, revealed that many children carried some latent, unexpressed form of the disease.\(^\text{384}\) In 1908, another German scientist, Clemens von Pirquet, found that tuberculin, a derivative of the *tubercle bacillus* culture, could be used to detect infection in individuals who were not yet showing symptoms.\(^\text{385}\)

Although the tuberculin test could demonstrate the presence of the bacillus, there was no clinical proof that this would eventually cause a child to develop tuberculosis. Thus the vague diagnostic category of “pre-tubercular” was applied to many children. They didn’t have tuberculosis, but they might develop it if their general health deteriorated, and physicians such as Dr. A. Marfan declared that these children were at the greatest danger between birth and age 16.\(^\text{386}\)

Since more poor children than wealthy children tested positively, a class dimension to contagion was confirmed in the minds of many physicians. This not only suggested a hereditary component to TB—easy to imagine in what was perceived to be an enfeebled working class—but it also underscored the hygienic threat posed by the grim, dark, airless dwellings of the

\(^{383}\) Connolly, “Pale, poor, and ‘pretubercular,’” 139.

\(^{384}\) Ibid.

\(^{385}\) Ibid.

poor.\textsuperscript{387} As one physician declared in an 1897 article in \textit{La France Médicale}, few could “have any idea of the disorder and repulsive filth that reigns in these dim recesses of our cities.” “This,” he continued,

…is where our patients cough,…where they waste away, and where they die…. The consumptive is left alone all day: he coughs, he spits on the ground; it is easy then to understand the danger faced by the children coming home from school…. This is the time when they pretend to clean the room. They sweep, and from dried sputum, the microbe is lifted up and suspended in the air.\textsuperscript{388}

At the turn of the century, many physicians and philanthropists viewed the working-class home as a hygienic “heart of darkness.” While it is true that young children residing in homes where someone had TB were at risk of breathing in infected dust particles, and that such risks might be heightened in homes that were overcrowded, as slums often were, there was also a transparent disgust at both the living conditions in slum housing and the inhabitants themselves that is revealed in such descriptions and which complicates our understanding of the nature of hygienists’ reformist agenda.\textsuperscript{389} Was this a benevolent project of protecting the health of the young, or disciplining an impoverished, unhygienic class of people?

Regardless of such ambiguities, removing vulnerable children from the urban, working-class home—whether for years, weeks, or even mere hours each day—became the major focus of TB prevention programs. In the words of one promoter of such programs, “the best way to fight against tuberculosis was to \textit{snatch away its prey}.”\textsuperscript{390} Armed with new diagnostic criteria, a sense

\textsuperscript{387} Marfan, ”Préservation de l’enfant,” 255.

\textsuperscript{388} Quoted in Barnes, \textit{The Making of a Social Disease}, 115.

\textsuperscript{389} See, for example, the comments in Louis A. Ferrand, \textit{Habitation à Bon Marché} (Paris: A. Rousseau, 1906), 54 “Les mœurs brutales et dégoûtantes de cette population ont grandement contribué à la dégradation de ces immeubles,” and 57, ”Les habitants de ces maisons n’ont du reste aucun souci de la propreté et des moindres nécessités de l’hygiène.”

\textsuperscript{390} Connolly, “Pale, poor and ‘retubercular,’”141.
of urgency as regarded early intervention, and access to poor children via in-school medical examinations, at-risk children thus “snatched” were sent to a variety of open-air and country placement programs, from which the écoles de plein air emerged.

One of these programs, L’Oeuvre de la préservation de l’enfant contre la ruberculose, was established in 1903 by Dr. Jacques Grancher, a specialist in TB. The Oeuvre Grancher, as it was often called, removed “delicate children” between 3 and 10 years of age from tubercular homes in some of the poorest quarters in Paris, and placed them with families of “healthy peasant stock” in the countryside for a period of up to ten years.\(^{391}\) There, they would receive medical supervision from a local physician and enjoy the health-promoting benefits of exposure to sun, fresh air, and nourishing food. Although, undoubtedly, intentions were good, and health improved for many, the program was intrusive in its removal of children from their families, and restrictive in terms of visitation policies.\(^{392}\) Parents were limited to four visits per year, and even then, they could only visit for two days at a time. Children would stay with their foster families until the age of thirteen, and, as Grancher himself declared, would hopefully remain in the countryside to start their own peasant families as adults.\(^{393}\) Thus, in additional to a project of health protection, there was a concurrent social engineering project: by sending urban, working-class children to the country, they would eventually adopt a more “natural” way of life.

As to the question of whether or not the program was voluntary, the record is unclear.\(^{394}\) Laws of 1889 and 1898 had rendered it legal to terminate the rights of parents who were found


\(^{392}\) Ibid.

\(^{393}\) Grancher as quoted in Kingsley, “Open-Air Schools in France,” 150.

\(^{394}\) Many of my sources dating from the period do not specify whether the program was voluntary or not.
negligent, unfit or abusive.\footnote{Colin Heywood, Growing Up in France: From the Ancien Régime to the Third Republic (Cambridge; New York: Cambridge University Press, 2007), 143-145. Legislation in the 1880s and 1890s had permitted the removal of children from unfit parents.} Although we must assume that the Grancher program was voluntary, awareness of these laws, and the pressure exerted upon parents to send their children away, must have been extraordinary.

A less intrusive program that offered a similar break from urban life for underweight, malnourished, or “pre-tubercular” children were the colonies de vacances, or colonies scolaires: low-cost or free country retreats sponsored by various philanthropic societies.\footnote{For a detailed study of the colonies des vacances, see Laura Lee Downs, Childhood in the Promised Land: Working-Class Movements and the Colonies de Vacances in France, 1880-1960 (Durham: Duke University Press, 2002).} Children identified by the school doctor were sent to board for three weeks or more in the summer, where they received improved nutrition and physical exercise. Since the colonies de vacances had no special architectural requirements, they simply utilized available buildings and land in the countryside. Their success in bolstering the health of children in poor health was widely touted. “[T]he good results of this cure in the country translates,” one physician wrote in 1909, “… into the beautiful exterior appearance of the children, their color improves [and] their weight and size augment…In the country, these children made in one month more than half of their annual growth.”\footnote{L. Dufestel, Hygiène scolaire. He quotes Drs. Zuber and Delille.} However exaggerated these claims might appear, it is doubtless that the focus on physical nutrition and exercise at these retreats improved children’s health.

The third program that developed to rehabilitate “pre-tubercular” children was the école de plein air, an institution that provided the fresh-air cure without disrupting educational or family life. In this case, France looked beyond its borders for inspiration. In 1904, in the town of Charlottenburg, then a suburb of Berlin, a Waldschule, or forest school, pioneered by Dr. Adolf
Baginsky, was established to serve anemic children drawn from overcrowded districts in Berlin [figure 4.3]. 398 “The hygienic aim,” in the words of one medical reporter describing the Waldschule, “was the strengthening and recovery of chronically unhealthy children by simple hygienic and medicinal means—residence in the forest and copious sunlight, strengthening diet and suitable bathing.” 399 “The pedagogic aim of the school,” he continued, “was to bring the children forward with their education as quickly as their bodily and mental condition allowed,” so that they could ultimately return to a normal school environment. Successful in its efforts to simultaneously provide education and rehabilitate sickly children, the results of the Waldschule were widely reported in the literature on school hygiene and at international conferences on school health in 1904 in Nuremberg, in 1907 in London, and 1910 in Paris.


The idea of saving children, particularly those deemed delicate or “pre-tubercular,” by establishing open-air schools spread rapidly in an international community increasingly focused on issues of children’s health. Part of the appeal was doubtless its simplicity. Since the main idea behind the open-air school was harnessing the positive effects of exposure to fresh air and sunlight, all that was required to establish one was outdoor space, lightweight, portable furniture, warm clothing, and crude shelters. Following the establishment of the German Waldschule, variations on the type developed over the next decade in England, Spain, the United States, Switzerland, France, and the Netherlands.\footnote{Châtelet, “The International Movement for Open-Air Schools,” in Châtelet, Lerch, and Luc, L’École de plein air, 31-35.}
In France, the idea spread rapidly through a network of individuals already concerned with the health of French schoolchildren. After learning about the Waldschule, for example, Grancher, the founder of the aforementioned child-removal program Oeuvre Grancher, delivered a paper on the topic at the French Academy of Medicine in 1906. Drawing on research suggesting that as many as 15% of Parisian school children were pre-tubercular, Grancher urged the establishment of these new types of schools throughout France. Believing that TB was curable in children if confronted early, he called for the establishment of “sanatorium-school[s]” where children would continue their studies under the close supervision of a doctor. “They might,” he declared, “be called ‘écoles de plein air.’”

Inspired by this call, Edouard Herriot, the progressive mayor of Lyon, established the first official open-air school in France in 1907. It was opened as a boarding school on a country property owned by the municipality for about 35 children chosen by a physician from the local bureau d’hygiène. No new buildings were erected, as it had formerly housed the summer residence of the mayor, and classes were held outside. It was, according to the

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401 Grancher was likely directly inspired by the German Waldschule after having attended the Second International Tuberculosis Congress in 1905 where it was discussed.

402 Grancher told his audience that, after having conducted studies that revealed that 15% of 4,226 children screened in Paris schools that year showed signs of the disease, the need to create a new kind of educational establishment was pressing. “Tuberculosis among school children,” Le Bulletin Medical (7 November, 1906), summarized in Boston Medical and Surgical Journal Volume 155, Issue 2, 696.


404 Vigne, “École municipale lyonnaise,” 298-299. Herriot also had hired Tony Garnier to build many municipal buildings in Lyon.

405 Ibid., 301-302.
supervising physician, already supplied with those most basic elements needed for an open-air school, conditions of “perfect aeration” and “distribution of light.”

At around this same time, in 1906, Gaston Lemonier, an educator who had already been experimenting with keeping classroom windows open continuously, regardless of weather conditions, at a school in Saint-Ouen, established the Ligue pour l’éducation en Plein Air. This organization, hereafter referred to as the French League for Open-Air Education, whose founding members also included influential physicians such as Louis Dufestel and Albert Mathieu, began to lobby for the widespread establishment of écoles de plein air in France. The description of the schools, however, still reflected an ambiguous mélange of sanatorium, home, and vacation colony. They were, in Lemonier’s words,

sanitary establishments for prevention and recovery which provide a simplified primary education…. [C]hildren aged seven to fourteen, anemic, feeble, deficient, convalescent, rickety, [or] glandular… practice, under medical surveillance, a complete hygiene, corrective respiratory and physical exercise, a rational diet, promoted by exposure to the sun, showers, siestas, rest cure and silence.”

Although Lemonier described a type of school to be reserved for “feeble, deficient” children, promoters believed many of the nation’s children would benefit from attending them. This was both because of the general health-promoting benefits they provided as much as it was a reflection of the perceived sickness of the present generation.

406 Ibid., 300, 299.


Data routinely collected by municipal hygiene bureaus on the physical condition of the working classes were deeply disturbing to those concerned with the future of the French state. Persistently low birthrate, high mortality and widespread alcoholism and venereal disease all indicated to many that the entire French people were physically deteriorating. In this climate, the reality of the poor children’s health and demographic statistics commingled with less than rational ideas simultaneously incubating in the popular imagination that not just the quantity, but the quality of the French populace was in an active state of deterioration.

In spite of this gloomy prognosis, however, a widespread positivistic faith in science and improvement through environment allowed utopian ideas of regeneration to be projected onto the écoles de plein air. They were doubtless seductive as a simple, rational solution to a much larger problem plaguing society. Because of the persistence of neo-Lamarckian thought, which attributed a) a strongly influential role to milieu in forming the physical body, and b) promoted the theory of the heritability of acquired physical traits, the French had tremendous faith that improving the health of children would pay off tremendously. Those children, grown stronger and fitter, would naturally bring fitter, stronger, and healthier children into the world. Exposure to fresh air and nature, and removal from the morally corrupt urban milieu, moreover, would improve their mental outlook, which many believed could also be passed on hereditarily. At a time when fears that social unrest, poverty, and worker agitation were mounting, focusing benevolent attention on working-class children was an uncontroversial choice for those who wished to morally and physically regenerate the poorer classes.

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Ultimately, projects such as the *colonies des vacances* and Grancher’s project of removing children from “tubercular” homes, could only be enacted on a limited scale. The open-air schools, however, could be extended, hypothetically, to the entire school-age population, and thus they were promoted with a great deal of enthusiasm by educators and physicians.

Still, in the era leading up to the Great War, the open-air school was not, as yet, seen as a particularly architectural problem, and the involvement of architects in their design and establishment was minimal. All of this would change, however, in the aftermath of the destruction wrought by the Great War, when even greater energy was expended to add the open-air school to the nation’s “sanitary armament.”

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II. Open-Air Schools: Mobilizing in the Great War

Figure 4.4. Poster of the Rockefeller Foundation’s Commission américaine de préservation contre la tuberculose en France. ca 1917, Archives of the National Library of Medicine (United States).
During the war, the movement for open-air schools, like the children in the occupied territories themselves, essentially went underground. Although there were a few new attempts, most notably a rather grim-looking open-air school created early in the war, in 1914, for war orphans in Paris [figure 4.5], there was generally little activity. The positivistic and optimistic spirit of the Belle Époque had dissipated, and the war left a victorious, but physically and financially devastated France. Still, the war was peculiarly useful in resurrecting the open-air movement and providing the foundation for the extensive architectural experimentation and innovation that was to come.

Figure 4.5. Open-air school for orphans of the war, established 1914 in Paris, from Mnemosyne (Digital Archives of the Musée national de l’Education).

As a result of the destruction of infrastructure, the loss of more than one and a half million French citizens during the course of the war, and the scores of orphaned children, numerous philanthropic societies sprang up, both in France and abroad, to provide assistance to
French children and families. When the immediate trauma of war had passed, these organizations would end up directly influencing the resumption of the école de plein air project.\textsuperscript{412}

Revival of interest in the open-air schools, however, was nowhere in sight in the immediate aftermath of the war. Until the German indemnity was paid, funds for rebuilding were limited and few new schools were built. Many schools in occupied territories were makeshift, such as the barracks in Lagny which served as a school once the German occupation had ended [figure 4.6].

![Figure 4.6: Postcard of Lagny in 1918 after the German occupation. Barracks constructed for the school and the mayor's office, from (Mnemosyne) Digital Archives of the Musée national de l'Éducation.](image)

Still, the devastated French school buildings were an emotionally troubling reminder of war and its impact on the young. One philanthropic organization L’École pour l’école, founded in 1919, and which eventually became part of the open-air school movement, tried to use the crisis to drive the building of new schools. The organization sold postcard images of France’s

\textsuperscript{412}Wojciechowski, “L’hygiène à l’école,” 1-50. There is a comprehensive list of philanthropic organizations in this manuscript.
destroyed schools as a way to raise funds for rebuilding [figure 4.7] as well as to draw state and popular attention to the crisis.\footnote{Wojciechowski, “Hygiène à l’école,” 1-10.}

Yet the trauma of seeing school buildings destroyed by the war could not have equaled the trauma of seeing the physical toll the war had taken on French children apparent in reports of widespread malnutrition and disease. While nothing could be done to reverse the grim statistics on wartime casualties, many hoped that children could be saved. Thus the continually plummeting birthrate in France and the deterioration in children’s health brought on by wartime deprivation solicited extreme concern in France. In 1919, noted French obstetrician Adolphe Pinard, who had been recently elected to the chamber of deputies, declared that, “France is dying. She is not dead, but it is necessary to repopulate the country. At the present rate of natality, France will soon be only an immense desert. Children! France must have children!”\footnote{James Edwin, “Says France Must Have More Births,” \textit{New York Times}, Nov. 28, 1919, 15.}
The concern with French children’s health and well-being was echoed in international circles. A New York Times article from the twenties, for example, declared that “80 percent of the children,” in the formerly occupied territories of France were “physically or mentally defective.” 415 Still another New York Times article, entitled “Empty Schools Alarm in France,” described how “empty and depleted schoolhouses in many towns and communes have drawn public attention to…a shortage of children.” 416 Another editorial, promoting American involvement in rebuilding French schools, painted poignant wartime images of suffering French children. During the war, the author wrote,

thousands of children in France were huddled in homes and schools…in barracks even—away from the open air because of the daily menace in the skies. Many lived in cellars or caves and many attended schools in subterranean places. Some had even to carry gas masks to protect them from poisons in the air on their way to school.

These children, the author noted, were in need of rescue now from a much more insidious enemy, “the white plague of tuberculosis.” 417

While tuberculosis was an enormous problem for children, it was also so for the population at large. In 1919, the Honnorat Law, named for its sponsor André Honnorat, called for the widespread establishment of sanatoria in France and state-subsidized treatment. 418 Funded in part by state, municipal, and departmental resources, sanatorium building exploded in this period, and over the next twenty years became an area of extreme architectural innovation. 419 But


418 See David Barnes, The Making of a Social Disease, 247-248.

in terms of prophylactic measures directed towards “pre-tubercular” children, estimated in the post-war era to number as high as 60%, spending was still limited.\textsuperscript{420}

The year 1922, however, ended up playing a critical role in the resurrection of the long dormant project of establishing \textit{écoles de plein air}. And because of the particular confluence of increased organization, increased funding, and increased propaganda during this year, the involvement of architects became significantly more pronounced. Three things happened. The first international congress for open-air schools was held, a powerful new organization took the promotion of open-air schools in France as their particular project, and the Ministry of Education issued its first formal comment on the practices in, and architectural programs of, such schools.

In June 1922, the French League for Open-Air Education, originally established by a small group of enthusiasts in 1906, arranged the first international open-air schools conference in Paris. By this time, almost two decades after the establishment of the first German \textit{Waldschule}, the movement had taken on a life of its own, and such schools were established in countries across the Western world. The conference brought together more than 200 French and foreign promoters of open-air education, and provided a forum for the exchange of practical ideas and information.\textsuperscript{421} Conference attendees also attempted to arrive at a more comprehensive and accurate definition of the establishments. According to conference proceedings, the open-air school was defined as an “out-of-town educational establishment in good conditions of exposure and, for the present, reserved for children who are non-tubercular but who need special conditions of schooling and hygiene under medical supervision. It can be residential or non-


\textsuperscript{421} Châtelet, “The International Movement for Open-Air Schools,” Châtelet, Lerch, and Luc, \textit{Open-Air Schools}, 34.
residential.” Furthermore, the conference attendees agreed that, “it is desirable that these types of educational establishments be extended to the entire child population.”

Part of the reason that the French League for Open-Air Education was able to host this international conference, held at the prestigious Paris Academy of Medicine, was that it now enjoyed the backing of several powerful organizations in France. These included the Society of Public Medicine and Health Engineering, the Social Hygiene Alliance, and the Society of City of Paris School Medical Inspectors. The involvement of these organizations, and their representatives, powerful figures such as Georges Risler, Léon Bourgeois, and Henri Sellier, is significant, as it brought the open-air movement into the fold of existing networks of the social hygiene movement.

Furthermore it signaled the beginning of increased involvement of architects in the open-air movement, although in 1922, it may have been more through association than practical hands-on activity. The Social Hygiene Alliance, for example, one of the important backers of the open-air school conference, was part of the Musée social—the first government-funded public policy “think tank” devoted to solving the social problems in France. More than 20 architects, including Alfred Agache, Henri Prost, Robert de Souza, and Léon Jaussely, were members of the urban and rural hygiene section of the Musée social’s Social Hygiene Alliance, and, through this connection, may have become involved with, or at the very least, been aware of the work of the French League for Open-Air Education. Architects Louis Bonnier and Augustin Rey, prominent in both architectural and social hygiene circles, along with the presidents of the Société centrale des architectes français and the Societe des architectes diplomés par le

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422 Rapports du Premier Congrès International des Écoles de Plein Air, 43-44.

421 Ibid., 3.

424 See Horne, A Social Laboratory for Modern France, 136-137.
gouvernement, served on the Open-Air School Congress’s committee of honor, alongside governmental representatives from the Ministries of Education, Hygiene, and War.\footnote{Rapports du Premier Congrès International des Écoles de Plein Air, 1-6.}

In addition to the Conference on Open-Air Schools, another event in 1922 that fueled the revival of interest was the French Ministry of Public Education’s issuance of a circular recommending the establishment of open-air schools in centers of population concentration and soliciting feedback from educators all over the country about any such establishments in their regions.\footnote{Circulaire du Ministre de l’éducation publique et des Beaux-Arts, au sujet de l’éducation des enfants en plein air, 8 Septembre 1922.} Its content reflected many of the same suggestions and recommendations for establishing the schools that had been discussed at the congress on open-air schools, and it was sent to all school administrators in France as well as to the École des beaux-arts, and was reprinted in journals devoted to the school hygiene movement.

It is interesting to note that, in spite of the fervor with which the écoles de plein air were greeted by hygienists, educators, physicians, and politicians, there was almost no initiative taken in the realm of architectural education. The écoles de plein air remained absent at this time from subjects given at the two primary schools of architecture in France, the École des beaux-arts and the École spéciale d’architecture. As architectural historian Michel Denés has demonstrated, the subject was not even broached at the more hygiene-minded École spéciale until 1929, and even then, the basic contours of the program—the need for spaces for medical examination, facilities for bathing, etc.—were entirely overlooked.\footnote{For more on the schools of architecture and their tentative forays, during the inter-war period, into the territory of the écoles de plein air, see Michel Denés, “Deux écoles d’architecture face aux écoles de plein air (1907-1939), in Châtelet, Lerch, and Luc, L’école de plein air, 325-332.}

Ultimately, the event of 1922 that may have fueled the most architectural innovation in the open-air school movement in France was generated not by the architectural community, but
rather the appearance of the inaugural publication of a bimonthly journal by the newly established organization, L’Hygiène par l’exemple. Founded in 1921 by scientists from the Pasteur Institute, the organization was devoted entirely to the cause of improving the attention to hygiene and health-promoting practices in French schools. The organization represented a powerful collaboration between scientists, politicians, educators, and philanthropic groups. Among politicians, Léon Bourgeois, former Prime Minister of the French Republican Government and current president of the Senate, served as honorary president of L’Hygiène par l’exemple. Philanthropic groups included representatives of the influential and well-funded Rockefeller Foundation, an organization also known as the Commission de préservation de la tuberculose en France. The organization received financial backing from several governmental and philanthropic organizations as well as French banks including the Banque de France and Crédit Commercial de France.

Although L’Hygiène par l’exemple was interested in the promotion of school hygiene generally, it took on the promotion of écoles de plein air in France as one of its primary goals. While other prominent organizations, such as the Alliance d’hygiène sociale, were also serious devotees to the écoles de plein air, discussing them again and again at conferences and in the pages of their journals, L’Hygiène par l’exemple stands out first for the singularity of its mission.

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429 Ibid., 3.

430 Ibid., 500. The organization also outfitted more than 500 nursery and primary schools with modern showers, toilets and sinks in between 1920 and 1934.
in focusing not on hygiene generally but on hygiene in the schools, and second, for its explicit interest in architectural designs.\footnote{For example, the published congressional reports of the Alliance d’hygiène sociale show that the topic was discussed at more than a fifteen of their annual conferences between 1907 and 1935.}

To that end, the organization played a critical role in bringing architects into the project of designing open-air schools. In April 1921, for example, the organization commissioned the architects Charles Duval and Emmanuel Gonse to design an open-air school for 500 children.\footnote{Châtelet, Lerch, and Luc, \textit{L’École de plein air}, 186. I have been unable to locate a copy of these plans in the HPE archives.} Although the plans were not published in the journal, the design may well have inspired an article by the secretary general of l’Hygiène par l’exemple, physician Emile Marchoux, which ran in the inaugural issue of their bimonthly journal.

In Marchoux’s article, entitled, “L’Air à l’école,” he painstakingly described an ideal plan for an open-air school of the future. It is a remarkable article as it represents, in its 20 pages, the articulation by a physician of a complex architectural program. Marchoux, despite his lack of architectural expertise, elaborated upon every detail, from its placement atop a hill outside an urban area, to the extensive medical facilities it would contain, to its individual pavilion classrooms, walled with glass on the south side and arranged along a covered gallery.\footnote{Marchoux, “L’Air à l’école,” \textit{L’Hygiène par l’exemple} #2, (1922): 1-21.}

Three more articles about open-air schools followed in the inaugural year of the journal, including one by a Parisian educator about a “\textit{classe aerée},” or aired classroom, in the rue des Épinettes, which relied merely upon maintaining open windows in all weather [figure 4.8], and another by the departmental medical inspector of the Côtes-du-Nord that examined the various
types of open-air schools in his region. In December 1922, the journal reproduced the official Ministry of Education circular on open-air schools which had been issued earlier in the year. Over the next 12 years, more than 30 articles related to the health benefits of écoles de plein air in France were published, as the editors continued to grapple with the proper practices of hygiene in these schools, as well as possibilities for future designs.

Figure 4.8. Classe aérée, rue des Épinettes, Paris, 1923, Archives of CEDIAS/Musée Social.

A window into the range of architectural plans, grounds, and hygienic facilities of these schools can be gleaned from a survey of issues between 1922 and 1935. It reveals that, in spite of the extensive organization and consolidation of information that had occurred in 1922, the open-air schools remained essentially unchanged from the pre-war era for almost a decade. In some urban settings, without extensive access to open tracts of land for classrooms, educators merely

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kept windows open at all times to provide the fresh-air cure.\textsuperscript{435} Other schools were improvised in parks within the city limits [figure 4.9].

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{open-air-school-tenet-merignac-bordeaux.jpg}
\caption{Open-air school, Tenet-Merignac, outside of Bordeaux, n.d. in Châtelet, Lerch, and Luc, \textit{L'école de plein air}}
\end{figure}

In these cases, having portable furniture was important, and this was an area of innovation during the twenties and periodically discussed in the journal.\textsuperscript{436} The development of easily-dismantled wooden sheds and of lightweight, portable furniture seemed to be the major areas of structural innovation [figures 4.10 and 4.11].\textsuperscript{437}

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Figure 4.10. Lightweight, portable furniture for an open-air school, ca. 1925 (Mnemosyne) Digital Archives of the Musée national de l’Education.

Figure 4.11. An open-air school that could be easily disassembled, *L’Hygiène par l’exemple*, April 1927.
These limited developments emphasize the itinerant quality of the open-air school project, which seemed less about constructing a building than getting out of a building. And therein lay the inherently paradoxical nature of open-air schools. Instead of being an attempt to construct an enclosure or an interior, it was an attempt to construct an exterior—a particular experience or sensation of being outside. This phenomena is hinted at by an image in a Rockefeller Foundation pamphlet from the 1920s, where buildings are not apparent, only pedagogical or recreational “spaces” constructed in relation to the outside [figure 4.12]. The notable lack of innovative architectural design and the lack of interest in the project exhibited by the two major French architectural schools raises the question: was the open-air school truly an architectural problem at all?

![Image](image.png)

**Figure. 4.12.** *Principes d’hygiène, fondation Rockefeller, commission américaine de préservation de la Tuberculose en France, Paris, 1920.*

A notable exception to the lack of architectural innovation occurred with a building constructed in 1926 by the architect Henri Provost for a “preventorium” at Lunéville. Although preventoriums differed from traditional open-air schools—in that there was more emphasis on
providing children with medical care and slightly less on their education—the design may have had some influence on école de plein air architecture.\textsuperscript{438} Provost designed a spare permanent structure: a large unheated and unglazed pavilion to provide aerated classroom space for children at the preventorium [Fig. 4.13].\textsuperscript{439}

![Figure 4.13. Lunéville preventorium, 1926 from Châtelet, Lerch, Luc, L’École de plein air.](image)

Although Provost’s preventorium classroom achieved the radical goal of offering a fully ventilated but permanent structural space, it was, unfortunately, merely a single classroom. Connected by a path to a more traditional building in which were housed all of the supplemental facilities—spaces for medical examination and personal hygiene—it was far from realizing the dream of an open-air space that would provided every facility needed in one single, connected,

\textsuperscript{438} To understand the nuances, see the article by M. O. Auriac, “Les méthodes et les maîtres de l’école de plein air,” L’Hygiène par l’exemple, école de plein air externat issue #5 (Sept.-Oct. 1934): 179-189.

\textsuperscript{439} Châtelet, “From Ideas to Buildings,” Châtelet, Lerch, and Luc, L’École de plein air, 186.
comprehensive structure. Thus, the greater project of promoters of school health—creating therapeutic schools with total permeation of light and air, and providing the requisite medical and hygienic facilities deemed necessary, had not yet been accomplished.

Figure 4.14. École Désiré Verhaeghe, 1925, Archives of CEDIA/Musée Social.

Another partially innovative design solution was offered at the École Désiré Verhaeghe in Lille [figure 4.14], where architect René Delannoy created a traditional building in a regional style, but outfitted it with broad expanses of large-paned glass windows to provide the sun and air cure.

In spite of the limited strides forward in terms of architectural design, L’Hygiène par l’exemple continued to push in the pages of its journal for increased construction of open-air schools and increased architectural innovation. Funding may have continued to be an issue in the post-war years, however, until 1928 when state funding for school reconstruction was
increased. However, 1931 turned out to be a pivotal year for architectural innovation. Not only was the subject of open-air schools broached with increasing frequency—there were nine articles published during the course of that single year, whereas the previous five years had only covered the topic a handful of times—but the articles included examples of truly sophisticated architectural design.

In the January-February 1931 issue, for example, the first article of the journal was devoted to the innovative work of Dutch architect Jan Duiker, member of the De Stijl group, and his Openluchtschool, or open-air school, established in Amsterdam in 1930 [figures 4.15 and 4.16]. Reproducing an article published by the Dutch journal Periodique Zonnenstraal on September 13, 1930, entitled “Open-Air School for Healthy Children,” L’Hygiène par l’exemple devoted eight pages to photographs and plans of the celebrated building.

Figure 4.15. Figure from the article “École de plein air pour enfants bien portants.”  
L’Hygiène par l’exemple, 1931.

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440 This is according to a 27 August 1928 circular from the Ministry of Education. See “Documents Administratifs. La nouvelle législation sur les constructions scolaires,” L’Hygiène par l’exemple # 6 (Sept.-Oct. 1928): 281-287.
The school introduced an entirely new conception of the open-air school as one that could use the structure to actually supplement the “nature cure”—even in an urban, indoor space—by in a sense rationalizing and harnessing nature more productively. In another article, Duiker decried the current open-air schools in Amsterdam—often in parks where children in fur suits sat freezing in winter as the ice collected on their desktops [figure 4.17].

Figure 4.17. Typical “Eskimo suit” used at open-air Schools published in Ayres, *Open Air Schools*. 

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Duiker’s design suggested that an open-air school did not require a natural parklike setting but, rather, could be built in the heart of the congested urban milieu. The structure, Duiker claimed, harnessed natural sunlight more productively. Duiker advocated for the widespread use of modern building practices that allowed for the “‘dematerialization’ of construction.” Spaces, he added, could be heated while simultaneously providing full access to fresh air and sunlight. Such a structure, Duiker noted, while extending the argument to the creation of private homes for tubercular families, “in its basic construction, execution, and interior arrangement, is ‘sanitary.’” “It is a strong hygienic power that is influencing our life,” Duiker declared, “one which will develop into a style, a hygienic style!” \(^{442}\) Without elaborating on specific construction methods or materials, the extensive use of glass on this multistory building, with very lightweight and almost visually “dematerialized” structural elements seemed to define this new hygienic style.

Interestingly, the school appeared in *L’Hygiène par l’exemple* a full year before it was featured in a full page of the avant-garde architecture journal, *L’Architecture d’aujourd’hui* [figure 4.18]. \(^{443}\) The architectural journal, in this case, offered illustrations and plans, but absolutely no mention of the unusual purpose of the school or its radical methods of construction.

\(^{442}\) Ibid.

\(^{443}\) *L’Architecture d’aujourd’hui* n°02, (1932): 32.
A few months after the HPE feature on the Openluchtschool, an article was published that included photographs and plans for the first purpose-built école de plein air in France, the École de plein air Geneviève Coulon, built by the French architect Germain Debré for the city of Saint-Quentin [figures 4.19 and 4.20]. Because the school’s construction began in 1924, well before Jan Duiker’s openluchtschool, it is impossible to claim any direct influence from the

Duiker project. The editors at *L’Hygiène par l’exemple* greeted Debré’s building as a revelation, declaring that it was the realization of the same ideal plan sketched out by Dr. Marchoux in the journal’s inaugural issue, back in 1922.

Indeed the architect, according to the editors, apparently avowed taking the physician’s article “L’Air à l’école” as his inspiration. He had, the editors declared, “eliminate[d] from construction everything that was not necessary.” In the accompanying pages, Debré described how the south-facing side of each classroom “was completely covered in glass and opened to the exterior, and the north side equally so. The only form of partition is between the walls of individual classrooms.” Again, as in the Duiker school, the extensive use of glass, along with extensive modern, hygienic facilities, appeared to be the critical factors in giving form to this ill-defined type: the open-air school.

![Image of École de Plein Air Geneviève Coulon, Saint-Quentin, 1931, Fonds Debré, Centre d’archives d’architecture du xxe siècle., 1931.](image)

*Figure 4.19. École de Plein Air Geneviève Coulon, Saint-Quentin, 1931, Fonds Debré, Centre d’archives d’architecture du xxe siècle., 1931.*

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445 Ibid.

As if to reinforce the point that everything that was necessary to know about this type of school could be revealed purely by a contemplation of its expanses of glass and its modern facilities, the Geneviève Coulon School was revisited in a 1933 issue of *L’Hygiène par l’exemple*, this time with only photographs and no text whatsoever. Furthermore, the school—officially opened at this point—served as a reassuring backdrop for legions of disciplined and sanitized young bodies [figures 4.21 and 4.22]. It was a journalistic strategy of representation that would be echoed in other features on open-air schools [figure 4.23]
Figure 4.21. Ecole de Plein Air Geneviève Coulon, 1933, published in *L'Hygiène par l'exemple*.

Figure 4.22 Boys showering in the École de Plein Air Geneviève Coulon, 1933, in *L'Hygiène par l'exemple*.
Although the open-air school movement had little chance to revive in the immediate aftermath of the war, it still captured the interest and imagination of physicians, educators, and architects. After the first international congress on open-air schools in France and the establishment of *L’Hygiène par l’exemple*, which published images of novel buildings and solicited new designs, innovative buildings began to be constructed. This led to the emergence of a new architectural type of the hybrid sanatorium-school: one that relied on glass-walled classrooms and visually light structural elements.

Their aesthetics of fragility and transparency bore resemblance neither to the massive, imposing architecture of newly built sanatoria, such as the children’s sanatorium of 1929 at Roc de Fiz, France [Fig. 4.24], nor to traditional French school buildings. Thus, out of the ruins of the Great War, an entirely new architectural form had crystallized.
III. “Diseases of Darkness”: Architecture as Therapy and Propaganda, 1934-1939

In September 1934, the editors of *L’Hygiène par l’exemple* devoted an entire special issue to “Open-Air Day Schools in France” [Fig. 4.25], compiling the more than thirty articles on open-air schools which had been published in the journal over the previous 12 years. All of this was a prelude, it would seem, to the real object under examination in the special issue: the open-air school of Suresnes. Three articles were devoted to a contemplation of the school, still under construction, but which the editors hoped would provide an encouraging “glimpse of the future.” Celebrating its retractable glass walls and apparently weightless steel frame, the author of one article dreamed of the day when such a school, although costly, would be made available not just to the frailest and weakest children of France, but to all.447

![Image](image.png)

**Figure 4.25. Special issue of *L’Hygiène par l’exemple*, Sept.-Oct. 1934.**

In this final section, I will examine what can be seen as the penultimate example of the purpose-built école de plein air in France, the open-air school built in Suresnes, an industrial suburb of Paris, between 1934 and 1935 by architects Eugéne Beaudoin and Marcel Lods. Rather than situate this glass and steel structure where it has traditionally been discussed, in the context of European modernism, where the utilization of new building materials, prefabricated elements, and technical aspects of construction have been the focus, however, I wish to examine it in the broader context of French society’s ongoing anxieties about depopulation. As part of one of the many French “child-saving” initiatives, we can see how the école de plein air at Suresnes through its structure and aesthetics functioned as a therapeutic, propagandistic, and symbolically regenerative space.

The Suresnes open-air school was built at the behest of the commune’s socialist mayor, Henri Sellier, who was active in city planning, workers’ housing, and various health initiatives for the working-class inhabitants of the town. He sought out the high-profile architects, who had collaborated on a Congrès internationaux d'architecture moderne -inspired workers’ housing project in France—the Cité de la Muette at Drancy—in part because of the notoriety and interest their fame might bring to the project. The result was a masterful realization of an earlier dream of an architecture of air and light.

The centerpieces of the structure were the eight individual glass pavilions [Figs. 4.26 and 4.27] that served as classrooms. Their glazed walls were entirely retractable on three sides, and the complex ventilation system allowed a curtain of warm air to protect the children from cold at all times. The pavilions were supported by a network of glass buildings that provided

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comprehensive facilities including areas for bathing, showering, medical visits, and gymnastics [figure 4.28] The grounds, a former park in the city, were extensive, and when weather permitted, classes were taught under the tress outside, using portable aluminum furniture designed by Jean Prouvé. Physical education classes were held outdoors, and children rested and napped in the garden or the solariums [figure 4.29]. They were provided with rich, nourishing meals in open, airy rooms or on the lawns outdoors.

Figure 4.26. École de plein air, Suresnes, Fonds Beaudoin et Lods, Centre d'archives d’architecture du xxe siècle.
Figure 4.27. An individual classroom at Suresnes, Fonds Beaudoin et Lods, Centre d’archives d’architecture du xxe siècle.

Figure 4.28. Outdoor gymnastics at the open-air school in Suresnes, ca. 1935 Fonds Beaudoin et Lods, Centre d’archives d’architecture du xxe siècle.
While the open-air school at Suresnes was celebrated widely as the ultimate “rational” structure with “everything designed scientifically,” according to one architectural critic, it was in fact precipitated on beliefs that would prove to be less than medically sound.450 A 1935 article in the journal *Urbanisme* featured a photo essay and article about the school, and revealed the extent—and the persistence—of the faith invested in the healing powers of *écoles de plein air.*

“The fight against the ‘diseases of darkness,’” the author declared, listing debility, “physiological misery,” tuberculosis, anemia, and dystrophies among them,

“is possible only in the *école de plein air*, if you want to both save the child from disease and ensure normal intellectual development. The *école de plein air* renders the debilitated improved…[whereas] the ordinary school would have led to the sanatorium or hospital.”451

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It was a complicated kind of logic, to declare that attending an open-air school was the best way to avoid the hospital—when the school itself seemed to be a kind of hospital space. How are we to understand the difference between the author’s conception of school-as-therapy and real medical establishments such as the clinic, the hospital, or the sanatorium? Perhaps the school, particularly the modernist school, had itself, to paraphrase historian Beatriz Colomina, morphed into a kind of therapeutic equipment. Indeed the 1934 article on the school in *L’Architecture d’aujourd’hui* described the school as an “instrument” for improving delicate children’s health. The almost excessive number of technical drawings which accompanied the article seem to attest to this instrument-like quality [Fig. 4.30].

![Figure 4.30. Technical drawings in an article on the Suresnes school in *L’Architecture d’aujourd’hui*, 1934.](image)

452 As historian Beatriz Colomina has noted in relation to the early twentieth century modernist movement, “Modern architecture was unproblematically understood as a kind of medical equipment, a mechanism for protecting and enhancing the body.” Colomina, “The Medical Body in Modern Architecture,” 230.

Still more interesting was the assumption, apparent in articles describing the school, that it would function not just as a rehabilitative, but as a regenerative space. The Suresnes school, in this sense, represented the crystallization of Augustin Rey’s vision, articulated decades earlier, of the “school of the future.” The ideal school, he had declared, would serve as a “nursery for the human plant” which needed “above all, sun and air…[t]o grow and strengthen.” Furthermore, it would undo the harm inflicted by the dark, insalubrious private dwelling. “If we want to [understand] the root causes of our low birthrate” he declared, we must look at the “harmful habit of city residents to live almost buried in the dark folds of their houses, far from the salutary rays of the sun.”

The notion that sunlight, harnessed at the open-air school, would compensate for this dreadful darkness and inspire regeneration was echoed, more than two decades after Rey’s talk, in a description of the Suresnes school featured in the popular journal, *L’Illustration*. In the 1934 article, the author mused that, “One could be tempted to believe, at first glance, that the school is a vast greenhouse. It is indeed a greenhouse in effect, but instead of helping orchids and giant chrysanthemums to grow, there is grown there a plant equally precious: the child.” This, of course, was a plant that withered and deteriorated in the dark and private recesses of the city.

If darkness was associated with disease, decrepitude, and contagion, how much was this architecture of glass and light—apparent at Suresnes, at the École de Plein Air Geneviève Coulon, and even at Duiker’s *Openluchtschool*—in part a response to a fear of darkness operating at multiple levels: not only the dark, contaminated interior of the home, but the dark and contaminated interior of the human body itself? Did architects of glass buildings such as

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Suresnes engage in a visual rhetoric of transparency, to counter the horrible opacity of the human body—now made visible, yet still mysterious, through new technologies [Fig. 4.31]?

![Figure 4.31. X-ray of a tubercular lung.](image)

What a building such as Suresnes provided to counter such mysteries was a structure that promised transparency and employed a reassuring rhetoric of cleanliness, safety, and purified air. It provided a spectacle of hygienic space that not only promised health but regeneration. It was, in this sense, not unlike the all-glass incubator for premature infants, a scientific “technology,” which promised not only safety, but a potential regeneration for a weakened French “race.” And, also like the incubator, the open-air school as a unique building type simply promised to do something that had perhaps been just as effectively accomplished with simpler means.

Although the Suresnes school included modern hygienic facilities and sophisticated temperature controls, perhaps its most important accomplishment was that it concretized what had seemed a utopian scheme. Since architecture speaks not only of style but of financial resources and power, the school, which was widely written about in the international architectural press, may have functioned as symbol of power to improve what up until then
France had been powerless to improve: the death rate from tuberculosis, the low birthrate, the high infant mortality rate, and the irretrievable losses from the Great War.

Thus we can see how images of transparent glass school buildings filled with healthy children, such as those from Suresnes, also functioned propagandistically, by answering a desire in France to see children “liberated from the constraints of the opaque wall.” It offered a fantasized vision of liberation, when the reality of the open-air schools was a constant physical discipline and surveillance [figure 4.32]. It provided a heroization of nature and relaxation, but always against the “rational” background of the municipal and state-subsidized architecture that framed every view with its reassuringly encoded language of hygiene, modernity, and progress.

Figure 4.32. Gardening class at Suresnes open-air school, ca. 1935, Fonds Beaudoin et Lods, Centre d’archives d’architecture du xxe siècle.

Conclusions

Although it was a marginal phenomenon in the history of French education, its intersection with broader cultural and political trends makes the French écoles de plein air a rich object of study. Like most nations of Western Europe in the early twentieth-century, France walked a fine line between democratically expanding health care for working-class children and paternalistically imposing intrusive intervention and surveillance on these same children. Authorities vacillated between fostering individual autonomy and subsuming individual rights to the greater political need of growing a soldiery. Eugenicist rhetoric embedded in the discourse of raising healthier, “improved” generations in open-air schools also suggests the universal desire to improve the French “race.”

As the French nation tried to grapple with the problem of depopulation and high tuberculosis death rates, amidst a backdrop of international tensions, it increasingly turned to architectural “cures” such as écoles de plein air. While actual sanatoria may have been a somewhat depressing reminder of the toll of tuberculosis, the open-air school, with its promise to prevent and preserve, spoke of optimistic possibilities for future generations. With so much at stake, particularly after the First World War, the écoles de plein air began to appear to educators, hygienists, and politicians as the space in which the utopian project of “regenerating” the French race could be carried out. Thus enthusiasm continued, unabated, until the end of WWII when, with the discovery of streptomycin as a cure for tuberculosis, enthusiasm for the open-air schools dissipated.

I have said that the later examples of open-air schools in France, through their aesthetics, functioned symbolically, therapeutically, and propagandistically. Symbolically, the extensive use of glass, terraces, and removable walls implied a constant, unhindered connection to nature, in
contrast to the nightmare of urban contamination, walled opacity, and decrepitude, and reassured an alarmed population that its children were being saved. The payback for the government would be, ideally, a healthier generation of children, trained in discipline and hygiene, and ready to serve as productive and loyal citizens of the nation-state. The League for Open-Air Education in France, was, for example, not only “honoured by the high patronage of the Ministry of Public Instruction” but also, significantly, “approved by the Ministry of War.”\(^{457}\) The promoter of a school in Nantes argued that bolstering children’s health would, “usefully…serve the fatherland, whose prosperity depends on the physical and moral value of its children.”\(^{458}\)

Therapeutically, écoles de plein air represented the total realization of the school as a kind of rehabilitative instrument, revealing an absolute faith in the healing power of an architectural structure that placed children in “a continuous bathof air and light.” Propagandistically, the schools provided reassuring images of the physical and moral regeneration of an enfeebled and degenerating “race” in a tense and complicated international climate. These three functions: symbolism, therapy, and propaganda, however, are almost impossible to separate out in an examination of the schools. The “medico-scientific” therapy relied on a kind of symbolism, the symbolism was a kind of propaganda, and, through the lens of the glass and steel architecture of the later écoles de plein air, these three functions were intertwined and on display on multiple levels and at all times.


Figure 5.1. Jardins Ungemach, from *L'Illustration*, March 30, 1929.
This chapter examines the recruitment of architecture into a final substantive aspect of the eugenic project: the actual production of eugenically fitter children. For if the previous chapters on the incubator, the crèche, the école maternelle, and the école de plein air examine strategies to protect, cure, or rehabilitate the French child through architectural design—​with the eugenic goal of improving the race—​this chapter looks at the utility of architecture and urbanism to promote the very production of large quantities of high-quality children. I propose to proceed not by focusing primarily on grand modernist architectural schemes but, rather, on a little known, arguably anti-modern and revanchist scheme, which nonetheless in its anti-modernity, sought to accomplish a radically modern project. This chapter examines the first garden city “planned definitely as a eugenic experiment” that happened to be built in the inter-war period in France: the Jardins Ungemach [Fig. 5.1].  

It thus concludes this dissertation by attending to strains of a eugenic impulse in French urbanism.  

![Image of Jardins Ungemach from Urbanisme, 1932](image)

**Figure 5.2. Image of Jardins Ungemach from Urbanisme, 1932**

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460 I refer here to urbanism specifically in the French metropolitan context. An examination of the influence of eugenics on urban planning in Latin America, and the participation of prominent French architects in such projects, is offered in Lopez-Duran’s “Eugenics in the Garden.”
In 1923, on the outskirts of the northeastern French city of Strasbourg, ground was broken for a new housing development. The site was a verdant stretch of land along the river Aar, which had been donated by the municipality. The settlement that resulted was more a village than a garden city, comprised as it was not of homes mixed with businesses or municipal services, but rather of 150 almost identical single-family homes.

Figure 5.3: Jardins Ungemach, from L’Architecte, 1927.

The cottages, with high gabled roofs, and window shutters reminiscent of traditional nineteenth-century Alsatian homes, were surrounded by hedges and gardens and shaded by
mature trees. The streets that ran through the village were named after the local flora, with names such as place des Acacias, rue des Romarins, and rue des Narcisses conjuring up an aura of fruitfulness and fecundity. Photo essays in the journals *Urbanisme* and *L’Architecte* [Figs. 5.2 and 5.3], revealed the gracious nature of the settlement’s layout, with broad streets and cottages spaced at a generous distance from one another.461

The interiors of the homes were equally gracious [Fig. 5.4]. Not only did each home feature at least four generously proportioned rooms, but bedrooms were equipped with sinks and hot running water. Gas and electricity were provided, as well as heating throughout. Each cottage featured an unusually large combined kitchen and washroom which was outfitted with modern appliances. The provision of such amenities in a private home represented the height of luxury and modernity.

![Figure 5.4. Interiors of a home at Jardins Ungemach, from *L’Architecte*, 1927](image)

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The intended residents for the homes, however, were not to derive from the upper classes. Rather, they were meant to come from another select group. The articles in *Urbanisme* and *L’Architecte*, in addition to describing the site plan, the layout of the cottages, and their architectural features, mentioned their special designation as housing created for “familles nombreuses”—a term denoting families with three or more children. Other journalistic sources, however, provide a more complete picture of the kinds of residents desired.

In 1931, for example, a popular American journal featured the village in an article devoted to the eugenic question, entitled “Wanted: Better Babies. How Shall We Get Them?” A single photograph and the text beneath captured its essence. “Children Welcome!” the caption declared. The image revealed a circle of robust French children holding hands in a tree-filled park, while large cottages framed the background. These were, the text explained, “youthful residents of a model village built by the Ungemach Bonbon factory from its war profits to ‘combat race suicide.’” “Only couples of limited means,” the text continued, “and in perfect health are eligible to rent houses.”

The theme was picked up and expanded upon in another photo essay from 1931, again in the American media, whose imagination the village seems to have captured. The photo essay in the *New York Times Mid-Week Pictorial* described it as “The Garden Village Built for Children” and the captions explained that the garden city represented a “Eugenic Experiment” that was designed to house “young married couples [who have] pledged to have large families.” The images show charming views of the village, as well as photographs of the children at play. In a

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small image in the lower right corner of the collage, young children are shown receiving medical examinations [Fig. 5.5].

Figure 5.5. Image from *New York Times Mid-Week Pictorial*, 1931.
These deceptively simple photo essays begin to hint at the many ways in which tradition and modernity were entangled in the Jardins Ungemach. The village planners intentionally cultivated an Old World aura. Although not far removed from the dense urban center of Strasbourg, it lacked the crowds, streetcars, and commerce associated with urban environments. Cars were nonexistent in the many pictorial representations that circulated, as if the village and its resident families had travelled back in time to a simpler, pre-industrial era [Fig.5.6]. The settlement cultivated, as well, an idealized vision of traditional family life. The village was represented as filled with children: clean, healthy, and running freely about. The mothers, another article of the era tells us, “were always at home” tending to their houses and children, and were, presumably, often pregnant, as producing a child at least every two and a half years was a requirement of the foundation administering the housing project.464

Figure 5.6. Jardins Ungemach, from *L’Illustration*, 1929.

Yet, as much as the garden village, through a combination of aesthetics and regulation, strove to evoke images of tradition and domestic conservatism, it was built upon inherently modernist foundations. The most obvious of these was its attempt to apply a science of biological improvement to an urbanistic scheme through the selection of only “eugenically fit” couples as residents. But also interesting are the ways in which women’s domestic labor received critical support from modern technologies in the home; the fact that the entire project operated under the paternalistic surveillance of the founders; and the way in which medical surveillance functioned to provide critical evidence of the community’s efficacy at producing fitter children.

On the surface, the Jardins Ungemach stands out as an unusual project within the context of this dissertation. First, it involves a dramatic shift in scale. From the tiny glass-box incubator that spoke of a single regenerative, surveillable space, we have enlarged our domain to an entire enclave built upon the principles of hygienic housing and a hygienic lifestyle the convergence of which, it was hoped, would lead to the breeding of better babies. Second, the Jardins Ungemach represents one of the few objects of study in this dissertation whose design was not physician-driven, although physicians played an important role in the community itself, both in evaluating the health and fitness of potential residents, as well as in gathering statistical data about the physical development of children residing there.

Third, and perhaps most importantly, the architectural language of the settlement speaks less of the kind of early twentieth-century hygienic modernity—the vast expanses of glass, *pilotis*, sun terraces, and ceramic tile that have characterized many of the buildings discussed in this dissertation—than of a stubborn return to tradition. When the developers of the Jardins Ungemach cast their eyes upon the decrepit slum dwellings of the industrial city center—the
same ones, we shall see, that architectural thinkers such as Le Corbusier had decried—they
turned away, toward the past, dreaming of gabled cottages, not houses of glass.

In spite of such apparent deviations from the objects in previous chapters, however, a
study of the Jardins Ungemach is entirely relevant to the work of this dissertation. It expands our
conception of what a modern aesthetics of hygiene encompassed, representing a mélange of both
traditional and modern elements, functional and symbolic strategies. For the movement toward a
hygienic, eugenic architecture for children in France was not a monolithic, unidirectional
process. It involved, rather, numerous areas of individual enterprise, experimentation, and
organic mutation. Moreover, the Jardins’ conservative traditionalism represents the flip side of
modernity: a yearning for an idealized past that has gotten lost in the rush of progress.

What seems cloaked here in tradition—the traditional familial unit, the traditional
architecture of the single family home, and the traditional environment of the garden city—was
actually much more complicated. The very formula “eugenic garden city” begins to hint at these
complexities. Not only is it a marriage of two seeming oppositional and unrelated things, with
“eugenic” invoking scientific racial improvement and “garden” evoking a return to nature, but
embedded within each word are further layers of complication. Eugenics was both a modern
science and a reactionary, anti-modern project, seeking to restore and preserve destabilized social
hierarchies. Garden cities were similarly complicated, as they were at once a reaction against the
conditions of modern industrial life and a product of said conditions. Indeed, the reactionary
aesthetics of the project point to a backward-looking nostalgia for a strong, sanitary pre-
modernity of the race, before French blood had faltered in the ways we have seen it was thought
to have done.
The Jardins Ungemach was, in this regard, decidedly unique. No other urban schemes born of the era brought together this peculiar combination of architectural nostalgia and reactionary eugenic policy, and its singularity was further underscored by the unique political history of the contested Alsace-Lorraine region. Yet in its specificity, it represents a pure distillation of an ideal set of political relations—not only between public authorities and the private family, but also between women and the state, remaking the modern woman as the femme au foyer, the traditional term for a housewife with many children, and harnessing her reproductive capacity for purposes of national repopulation. Even if such political dynamics were never fully realized, they were nonetheless pervasive in the fantasies and aspirations of many of those inter-war activists and politicians in France concerned with the drop in birthrate.

An article published a few years after the inauguration of the Jardins Ungemach, entitled “Une Petite cité modèle,” provides a glimpse into the kind of thinking that drove such a project. After long having considered how best to attack the “delicate problems of natality and the future of the race,” one of the founders concluded that “these problems seemed to gather, for a large part, around the problem of the habitation.” Thus the habitation, in the Ungemach scheme, was envisioned as the front line for attacking the broader eugenic and natalist crises of the era.

Ultimately, this chapter will go beyond the specific example of the Jardins Ungemach to reveal a broader set of modern beliefs about the utility of recruiting architecture—specifically urban planning and the domestic architecture of the working and middle classes—into the fight against dénatalité and eugenic deterioration in France. For while I began this dissertation by

465 For more on the complicated political history of the region, and the identity politics that grew out of this complexity, see David Harvey, Constructing Class and Nationality In Alsace, 1830-1945 (DeKalb, Ill.: Northern Illinois University Press, 2001).

noting that the problem at the root of the French population crisis—the stubbornly low birthrate—was one that vexed pro-natalists in its seeming resistance to intervention, domestic architecture presented itself as an avenue for action. Couples could not be forced to have children, but they could be encouraged—and transforming the private home into a morally and physically hygienic milieu would constitute an important part of this encouragement.


In 1918, a front page editorial in the newspaper *L’Ouest Éclair* entitled “Pour la race”—published while the country was still embroiled in the Great War—opened with the cry, “Des Canons! Des Munitions! Des Enfants!” The author described this cry as the leitmotif of those concerned with the France of today as well as the France of tomorrow.467 Echoing the call for cannons and munitions that had been popularized in 1915 by senator Charles Humbert, those activists concerned with repopulation, the author explained, rallyed for the continued fabrication of munitions on a grand scale along with the “fabrication” of more children.468 One finds the same cry in the pages of another source from the era, a book, *L’Immense effort*, which argued for the renewed energy that must be brought to postwar projects of social hygiene. “[A]ll encouragement, all propaganda, all dissemination should be given,” the author declared, “to encourage birth and puériculture. One can see, we have a world to build, [to replace] the large cemeteries of war. After ‘Guns, Ammunition!’…the rallying cry of modern France is: ‘Children! Children!’”469

468 Ibid.
To the historian of architecture, however, the rallying cry for cannons and munitions conjures up different associations. In 1938, Swiss-born architect Le Corbusier and his cousin Pierre Jeanneret published a book in France, famously entitled *Des Canons, des munitions? Merci! Des Logis...S.V.P.*, in which they criticized rearmament and pressed for increased governmental spending on housing [Fig. 5.7]. While on the surface, Le Corbusier’s *Des Canons, des munitions?*, published on the eve of World War II, appears to be responding to a different set of concerns than the post-World War I repopulationists’ cries for more children, in many senses by speaking of housing he was speaking to the issue of producing more children.

The private home, as the site of the reproductive activity of France, was highly politicized. Echoing the cries of so many others, Le Corbusier had frequently decried the insalubrious condition of housing in the urban centers and its supposed contribution to low birthrate, sterility, and degenerative illness in France. In *Des Canons, des munitions?* he declared that his ideas for housing reform would help, he declared, “créer une race solide, belle, et saine.” It was a longstanding truism among French authorities, he declared in a subsequent tract, that “the future of our race depends on how it is housed.”

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The deleterious effects of insalubrious and decrepit homes on the development of families were assumed to be direct. According to Georges Risler, president of the Musée social and initiator of numerous public hygiene and social welfare initiatives, the equation was troublingly simple: “without healthy homes, no healthy families; without healthy families, no healthy nation.” And without the children such healthily housed families would produce, according to the longstanding arguments of organizations such as the Alliance nationale pour l’accroissement de la population française (ANAPF), national defense was impossible. Thus themes of housing, rearmament, and repopulation were intimately intertwined.

On every level, the demographic situation after the Great War was dire, causing both pronatalists and eugenicists to innovate and rethink as they sought new strategies for influencing, inspiring, and regulating reproduction. Not only had one and a half million men been killed in military combat, but, as a result of mass mobilization, the birthrate had dropped precipitously. In

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474 Georges Risler, "L’Hygiène de la Maison,” Musée Social, 32 an., No. 8, 28 August 1925, 226.

475 See, for example, the 1926 propaganda poster from the ANAPF, which appears in this chapter [Fig. 5.8].

476 The first organized conference held by the French Eugenics Society after the war was on, “The Eugenic Effects of the War,” mentioned in Schneider, The Eugenics Movement in France, 77.
1916, for example, there were 9.5 live births for every 1,000 citizens, which represented almost half of the prewar level of 18.2 births per 1,000. In the year after the war’s end, 1919, the rate had rebounded only slightly, to 12.6 births per 1,000.477

The wartime devastation also inspired a rash of new anxieties related to population “quality.” Disease was widespread, as living conditions in the occupied territories had deteriorated, and the war had seriously disabled the network of existing social hygiene initiatives developed to combat such problems. Social hygienists such as Georges Cahen revived metaphors of war to inspire rebuilding the infrastructure of social hygiene. In his 1920 tract *L’Autre guerre*, he issued an urgent call for a “mobilization” of forces in a renewed “sanitary crusade” to improve “the health of the race.”478

Gendered ideas of masculine and feminine fitness likewise contributed to eugenic anxieties. War had necessitated the mobilization of more than 92% of the nation’s youngest and healthiest men, in other words, 7.9 million of the 8.5 million men in France between the ages of 18 and 46.479 This led to the perception that only the old and infirm—the least eugenically desirable—were left behind to father children. The men who did return from war, furthermore, were often wounded, mutilated, or psychologically traumatized—all factors which were believed to affect the hereditary quality of future offspring.480

477 Schneider, *Quality and Quantity*, 119.


480 The general tone of the French Eugenics Society in the post-WWI era was a renewed interest in social hygiene. However, there was a concern with “dysgenic” results of the war. Concerns about the effects of mutilation and trauma are attributable to the persistence of neo-Lamarckian beliefs regarding the transmissibility of acquired characteristics. For more on concerns with increases in dysgenic members of the population, see Schneider, *Quality and Quantity*, 130. Also see a discussion of the supposed effects of paternal amputation on the physical formation of future offspring in Eugène Apert, *L’hérédité morbide* (Paris: Flammarion, 1919), 177-178.
As far as women were concerned, eugenic and natalist concerns were focused on perceived shifts in attitudes towards maternity, that crucial mechanism of national fecundity. The fantasy of the femme au foyer, happily ensconced in her home and surrounded by numerous children, was displaced by that of the factory-working munitionette. The war had indeed driven French women into the workplace in greater numbers than ever before. While this had been a necessity of wartime production, it also inspired anxieties about the possibility of masculinized women rejecting their “natural” role as mothers. During the inter-war period, women represented between 36 and 39 percent of the work force in France, and rendered the phenomenon of the working woman highly visible.

Pro-natalists railed against the specter of women who did not want to be mothers and did not want to return to traditional roles in the home. In tracts such as the 1923 pamphlet, Des Bébés, s’il vous plaît, women were implored to reject their perceived selfish ways and produce babies so that the nation’s birthrate would improve.


482 For a general discussion of this phenomenon, see Roberts, Civilization without Sexes, and Sian Reynolds, France Between the Wars: Gender and Politics (London: Routledge, 1996).


484 For more see Roberts, Civilization Without Sexes, 89-148. That women did not want to have children was a frequently cited cause of the low French birthrate.

485 Gaston Cattier, Des Bébés, s’il vous plaît!: essai sur le problème de la dénatalité (Paris: Plon, 1923). Ironically, historian Mary-Louise Roberts notes that between 1920 and 1925, the birthrate had actually rebounded to a healthy 19.7 per 1,000 habitants. This improvement did not discourage propaganda of the period, however, which often connected maternity to soldiery, as women were pressured to do their part for France by bearing children just as men had served by fighting in the war. Roberts, Civilization Without Sexes, 123.
The first Chamber elected after the war, in 1919, had a strong natalist bent, and in the new postwar climate set to work enacting previously controversial legislation to combat depopulation. The most famous of these acts was the 1920 law which banned abortion and criminalized the advertising and sale of contraceptives. But other legislation was positive, enabling, for example, broader access to prenatal and maternity hospital care. In 1920, Mother’s Day was celebrated for the first time in France, offering moral redemption for the figure of the working-class mother, formerly an object of some suspicion and disdain, but now heroized.

But even if women did choose to have children, or, at least, were prevented from preventing births, an additional problem arose: they did not want to have enough babies to please natalists. Natalists promoted the much vaunted familles nombreuses as the only way to adequately repopulate the country and protect the peace in France. In a 1919 speech to the Senate, Georges Clemenceau declared that the treaty ending the war, does not specify that France should commit herself to bearing many children, but that is the first thing that should have been written there. This is because if France renounces la famille nombreuse…you can take away all the armaments in Germany, you can do whatever you want, France will be lost because there won’t be any more French people.

A propaganda poster from 1926 created by the ANAPF painted the need for large families in dire political terms declaring that, “Large families guarantee peace. Small families invite war” [Fig. 5.8].

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486 Schneider, *Quality and Quantity*, 120.


488 Clemenceau is quoted in Roberts, *Civilization Without Sexes*, 90.
Figure 5.8. Poster from the Alliance Nationale, 1926.

The celebration of *familles nombreuses* was not in itself new, but in the inter-war period the rhetoric heated up. Although the state could do nothing to mandate the number of births, conservatives promoted legislation such as the family vote, which would allow extra votes to men based on the number of children in their families, and other incentives. While proposals such as the family vote failed to gain support, monetary allocations for large families were

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489 Ibid. 101.
established by law during this era.\textsuperscript{490} A handful of private philanthropic initiatives promoted the development of large families with cash prizes.\textsuperscript{491}

Yet even if large families developed, still another problematic question loomed: \textit{how to house them}? Construction of new housing for middle- and working-class families was limited during the inter-war period. The extant housing stock for working-class denizens of France’s urban cores and surrounding suburbs had long been in a state of decay and decrepitude. As I have noted, slum housing was widely perceived as a major causal factor in tuberculosis, infant mortality, alcoholism, and immorality.\textsuperscript{492} According to historian Helmut Gruber, in Paris alone the housing crisis was of “nearly catastrophic” proportions and considerably worse than in comparable European centers during the inter-war era.\textsuperscript{493} The history of the war against insalubrious workers’ housing and the various initiatives architects, planners, and hygienists promoted to remedy the situation is extensive and does not bear repeating here. The thing that is key, however, is that the condition of housing was linked not only to the nation’s health crises; it was also almost always linked to the diminishing birthrate. Thus, improving housing was seen as one more positive step in a larger eugenic project of increasing the quantity and the quality of French children.

That such scarcity and decrepitude discouraged middle- and working-class families—and specifically working-class women—from having many children had long been considered an

\textsuperscript{490} Ibid. 101.

\textsuperscript{491} Schneider, \textit{Quality and Quantity}, 123. Also in an effort to encourage women to fulfill the much vaunted role of \textit{mères de familles nombreuses} the French government began awarding medals in 1920 to mothers of large families and a “National Day of Honor for Mothers of Large Families” was instituted.


\textsuperscript{493} Gruber, “French Women,” 297.
obvious truth. In architect Augustin Rey’s 1912 polemic against the substandard housing in France, *Le Cri de France: Des logements!*, he asserted that “the woman of the people who has never [in the past] feared having lots of children nonetheless finds herself today facing this most formidable problem: *where to find a home in which to cram her brood.*”⁴⁹⁴ Even if a large family could find adequate lodgings, they were often discriminated against by concierges and landlords. “To hide their number,” Rey continued, “the children are often smuggled in [concealed] in sacks, like mere rags.”⁴⁹⁵ Between lack of housing generally, and the miserable, unhygienic conditions of what was available, the large family was in a bind. As Senator Paul Strauss had declared even before the war, “the martyrdom of large families” in this regard, “has assumed the proportions of a scandal, of a crime against humanity.”⁴⁹⁶ Such beliefs were widely accepted in the inter-war era. In the words of the president of the First National Congress on Natality, “the ideal is the strong, fairly large family, with a mother who is not obliged to work in a factory, and who can occupy herself with her children.”⁴⁹⁷ “The family, the mother, the foyer,” he continued, “are the three words which summarize the agenda of this congress.... We must place [them] in a favorable milieu, protect them from unhealthy influences…give them a comfortable lodging.”⁴⁹⁸

Thus, the low birthrate, the eugenic quality of procreators, the imagined unwillingness of women to embrace maternity, and the absolute insufficiency of adequate, hygienic housing were all problems in France that became particularly urgent in the interwar period. “Des Canons! Des

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⁴⁹⁵ Ibid.


⁴⁹⁸ Ibid.
Munitions! Des Enfants! Des Logements!” might well be taken together as an apt rallying cry for the era.

II. The Road to Jardins Ungemach

It was into this milieu that a foundation created by an industrialist ventured in establishing the Jardins Ungemach. Through a simple housing scheme, it proposed to attack the problem of dénatalité on each of these troubled fronts. By selecting eugenically desirable couples as residents, requiring their regular production of children, and placing them in “conditions of near hygienic perfection,” it hoped to contribute, in some small measure, to the repopulation of France.499

While the eugenic and natalist goals were ambitious—and unprecedented from an urban-planning perspective—the actual story of the formation of the Jardins is a bit more banal. In the aftermath of the Great War, Léon Ungemach, the politically active owner of the Alsatian candy factory La Société alsacienne des alimentations Ungemach, found himself in possession of a large amount of money gained through war profiteering. In a gesture that was at once benevolent and carefully calculated to avoid any punitive measures from the government, he donated 6.5 million of the francs that he had gained by investing in overseas securities as a hedge against the depreciation of the German mark to found a philanthropic organ designated the Fondation Ungemach.500 The foundation was charged with developing a housing plan based on eugenic


500 Schneider, Quality and Quantity, 124-125.
principles of selection, which would promote the development of large, healthy French families.\textsuperscript{501}

A 1924 illustration of the Ungemach factory reveals an enormous industrial complex that functioned as a centralized production facility for the food items the company produced [Fig. 5.9]. The factory designed to breed better babies, however, followed along more traditional lines: a simple garden city.

That a garden city would be an ideal outlet for such eugenic goals should not surprise us. There is a history of eugenics entangled in the history of garden cities in Europe and America, but it has been little examined in the literature.\textsuperscript{502} Although on the one hand the impetus for the garden city, at least as derived from the works of garden city movement founder Ebenezer Howard, represented, in the words of one historian, a “nostalgic enterprise to recreate the values of pre-

\textsuperscript{501} Ibid.

industrial Britain,” it eventually collided with less-nostalgic, modern goals related to social hygiene and social control.\(^{503}\) Advocates of town planning in England, where the movement originated, for example, were often members of social hygiene groups wishing to, according to one historian, “control reproduction among ‘low quality’ individuals in the slums.”\(^{504}\) In France, the most fervent promoters of the garden city movement were Georges Benoît-Levy, Georges Risler, Charles Gide, and Jules Siegfried. Although not by any means eugenicists, they were all, nonetheless, prominent members of social hygiene organizations that were concerned with demographic decline and biological deterioration in France.\(^{505}\)

In the 1920s, Strasbourg, the capital of the much contested Alsace-Lorraine region which had only just recently in 1918 been re-attached to France, was at the vanguard of the nation’s garden city movement.\(^{506}\) This movement had been considerably slower to get established in France than in neighboring countries, but its florescence in Strasbourg may, according to historian Stéphane Jonas, be partially explained by two facts.\(^{507}\) First, there was the issue of geographical proximity. Strasbourg and the entire Alsace-Lorraine region had been annexed to Germany—a country quite active in establishing a garden city movement—from 1870 through


\(^{504}\) Ibid., 273. Also, Voigt, “The Garden City,” 38. Voigt points out that, “the houses and asylums for certain fringe groups, such as inebriates and epileptics, shown in the rural surroundings of Howard’s garden cities were for exactly those people which eugenicists wished to exclude from society and from further propagation.”


the end of World War I. Second, Strasbourgh was the site, in 1923, of the largest international colloquium on social urbanism, Le Congrès international d’urbanisme et d’hygiène municipal, which was attended not only by Ebenezer Howard but also by such prominent French reformers as former prime minister Léon Bourgeois, Henri Sellier, president of the Société des habitations à bon marché, Georges Risler, co-founder of the Association françaises des cité-jardins, and various members of the Association internationale des cité-jardins. Thus it was natural that a garden city would find a home in Strasbourg, albeit a radically modern one with the goal, according to one American media outlet, of counteracting “race suicide.”

From a political perspective, the project was, as Jonas has noted, the result of a very unusual collaboration between Léon Ungemach, a protestant philanthropic industrialist, and Jacques Peirotes, the social-democrat mayor of Strasbourg and president of the local Société des habitations à bon marché. Through their collaboration the project was set in motion, and it was agreed that Strasbourg would donate land for the garden city site which would eventually revert back to municipal ownership.

When the Fondation Ungemach began its work, it was very clear about how to utilize the garden city to achieve its founder’s goals. The foundation’s statutes indicated that it would exclusively accept residents who were “young married couples in good health, desiring to have children and raise them under favorable conditions of hygiene and morality.” Since the

508 Jonas, “Les Jardins Ungemach,” 66. Stockfeld, for example, built in 1911, was one of the first major garden cities on the continent, built for workers when Strasbourg still was occupied by Germany.

509 Ibid., 69


scheme involved not only superior housing but also rents fixed at twenty-five percent below market rate, the number of applicants was considerable.513

The matter of selection, however, was critical to the scheme’s success, as a result of the unusual conceptual relationship the foundation proposed to have with the garden city’s inhabitants. As summed up in an article in the review Christianisme sociale, the founders were “less interested in sheltering large families than in creating them.”514 Furthermore, they did not wish merely to support large families, but only families who represented, “morally as much as physically, a veritable gain for the country.”515

To fulfill such a mandate, the foundation established a set of criteria useful for evaluating each family. Interestingly, questions of ideal phenotypes or “racial purity”—factors that we might expect to be central in assessments of eugenic quality—were not of interest to the foundation. Rather, the foundation focused on three things: physical health, fecundity, and habits of hygiene.

An elaborate point system evaluated applicants on each of these fronts. Points were awarded for every child in the family, and then divided by the number of years the couple had been married. This meant that the largest families with the youngest parents would be favored. To make sure that financial need was accounted for in the selection process, points were deducted for annual incomes that exceeded a certain level. Additional points accrued based on the numbers of brothers and sisters the young couple had (which would perhaps have been interpreted as hereditary fecundity in a particular family line). An evaluation of the level of

513 Schneider, Quality and Quantity, 124.
515 Ibid.
orderliness and cleanliness in applicants’ existing homes was part of the ranking process.\textsuperscript{516} Finally, medical evaluations rounded out the process, ensuring the health of chosen residents.\textsuperscript{517}

Architecturally, the foundation was equally clear about its desires. A competition was announced on March 10, 1923 throughout the country with programmatic requirements published in French architectural journals such as \textit{La Construction moderne}.\textsuperscript{518} The program demanded a plan for 150 single-story houses, surrounded by gardens, and all with basements and mansarded attics that could be converted into additional rooms as families expanded. The homes were to be of two basic types—one with five rooms and a kitchen, one with four rooms and a kitchen, depending on family size. The kitchen was to be exceptionally large, as were the houses generally as compared to similar homes in the region. Each home was to be supplied with a laundry room, electricity, gas, running water, and stoves—all very modern conveniences for the time. In spite of such luxuries demanded by the program, however, costs were fixed at 52,000 francs for the smaller house and 62,000 francs for the larger.\textsuperscript{519} Entirely absent from the program, as historian Stéphane Jonas has pointed out, was the feature that was one of the identifying elements of garden cities—community equipment in the form of crèches, écoles maternelles, or sports facilities.\textsuperscript{520}

A final stipulation of the program declared that cottages in the regional style of Alsace-Lorraine in the early nineteenth-century were desirable, and it is this choice that represents an interesting departure from the architectural visions of “near hygienic perfection” that we have

\textsuperscript{516} Ibid.
\textsuperscript{517} Ibid.
\textsuperscript{518} \textit{La Construction moderne}, 11 Mars, 1923, 285-286.
\textsuperscript{519} Ibid.
The use of a regional style was common in garden cities, but is of interest here for a few reasons. First, it contrasts with the extreme “modernity” of the interior arrangements of the Ungemach homes: their functionalist design and their incorporation of new appliances and technologies. Second, the regional style itself, as a symbol of tradition, may have itself functioned as a signifier of good health and hygiene.

The competition proceeded and the plans of the architectural team of Paul de Rutte, Joseph Bassompiere, Paul Sirvin, and J. Sorg were chosen. De Rutte, one of the architects that Henri Sellier, president of the Société des habitations à bon marché, had enlisted for other housing projects, was a member of the Groupe des architectes moderne. In spite of his affiliation with an avant-garde architectural group, he was particularly interested in the project of interpreting traditional regional styles and incorporating into them all of the modern conveniences and hygienic equipment available. This approach of updating regional styles was, indeed, characteristic of most new housing in France that was erected after the war.

The resulting garden city featured three different types of Alsatian cottages spread across several acres, near the river Aar. The grounds were filled with mature trees, and ample space was allowed for gardens to be planted adjacent to each home [Fig. 5.10 and Fig. 5.11].

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521 Dachert is quoted describing the conditions in Jardins Ungemach with this phrase in Warren, “Success has come to eugenic village,” E4.

522 As historian Annmarie Adams has noted, in her study of the use of traditional features in early twentieth-century hospitals in North America, “Until the 1940s good health was related to traditional values, through the symbols of home associated with traditional architecture, such as pitched roofs, classical entries, interior molding, masonry construction, and discrete rooms.” Annmarie Adams, Medicine by Design: The Architect and the Modern Hospital, 1893-1943 (Minneapolis: University of Minnesota Press, 2008), xxiii.


524 Bruno Lasker, “Old and New: Plans for the Reconstruction of French Villages,” The Survey Vol. 43 (February 28, 1920). 643Lasker noted that Rutte was a fan of building in a regional style, with such buildings providing a “foundation for modernization and adaptation to present day needs.”

The individual cottages were designed with all of the modern conveniences possible. As stipulated in the original program, each principal bedroom had a sink with running water as well as a heater. Kitchens were equipped with appliances. A washroom adjacent to each kitchen
doubled as a laundry. The arrangement of the cottages, the private, isolated nature of each single-family home, and the provision of the various technologies in the home can be interpreted, however, not merely as luxurious amenities for the families residing within. They were, rather, part of a set of equipment that would enable the realization of certain kind of carefully plotted and circumscribed social situation.

Figure 5.12. Kitchen, floor plan, and exterior view of cottages in Jardins Ungemach, from L'Architecte, 1927.
As the founders themselves intimated in their plans, the homes were laid out with an eye to allowing the mother to expend “as little useless energy as possible.” As domestics—as well as the possibility of working outside the home—were forbidden, women were positioned as central keepers of the hearth, and, in a sense, constituted part of the settlement’s eugenic equipment. The arrangement of the cottages functioned to allow each woman to fulfill her obligations as stipulated by the foundation—to bear as many children as possible and look after them, and her home, by herself.

All the rooms, for example, were on one floor to enable the housewife to take care of her domestic chores while simultaneously watching over her children. Gardens surrounding each cottage served as natural playgrounds for youngsters whose mothers could observe them through the windows without having to leave the house. The placement of the kitchen adjacent to the combined laundry-washroom allowed the housewife to perform multiple domestic tasks at once. An additional support came in the form of regular deliveries of vegetables, meat, and dairy—which ensured proper nutrition for the growing families and allowed mothers to avoid leaving home for trips to the market.

While other forays in domestic redesign, such as the Grete-Lihotzky kitchen in Germany, or the American reforms historian Dolores Hayden has analyzed, may have been driven by a progressive or feminist vision of women, with domestic efficiencies developed as a way to

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527 Warren, “Success has come to eugenic village,” E4. The foundation required, in fact, that couples produce at least two children within a five-year period. The proviso about domestics being forbidden may have been related to the budget constraints of couples living in Ungemach, or it may have been related to the association of domestics with disease and immorality.
528 The area under the mansarded roofs, however, could be expanded to accommodate additional bedrooms if needed by a very large family.
liberate women from the interior, this was not the case at the Jardins Ungemach.\textsuperscript{530} The Ungemach homes reinforced traditional gender roles, in part by isolating women in their domiciles. Even in their homes, they continued to be under constant surveillance due to regular home inspections conducted by the foundation, upon which continued residency depended.\textsuperscript{531}

Alongside this project of feminine domestic isolation was a concomitant class-based project of \textit{embourgeoisement}. Although very few of the actual residents ended up deriving from the working class, and were more often representative of the petite bourgeoisie of office workers and employees, the foundation nonetheless strove at every turn to impose bourgeois standards of order, cleanliness, temperance, and obedience upon the inhabitants.\textsuperscript{532} There were numerous regulations, strictly enforced. Residents had to secure permission to house a parent or a friend, even for a short period of time. They were forbidden to dry laundry in the garden. They were only allowed to cultivate a particular list of plants and herbs, and were forbidden from keeping animals or building any outdoor structures other than the shed provided.\textsuperscript{533}

Thus the project of architectural planning and domestic design was an elaboration upon and structural iteration of an underlying project of social discipline. It was a social discipline, however, that residents willingly signed up for, as one must recall that the colony was entirely voluntary. “The members of our colony,” the foundation’s representative M. Dachert declared,


\textsuperscript{531} Each year, the same commission that graded the applicants homes for order and cleanliness revisited to reassess the condition of the home.

\textsuperscript{532} Dachert describes the composition of the families residing in the Jardins Ungemach as consisting primarily of \textit{petite fonctionaires} and \textit{petite employées} in Dachert, ”La Cité,” 350-351.

are under no compulsion; they are at liberty to quit the colony at any time, and they are at the same time not under obligation to us, for each pays rent in accordance with his means and the accommodations he is afforded. The only inducement is the possibility of living at low cost in surroundings as near to hygienic perfection as we can keep them, and the observance of strict rules of health and hygiene under supervisions of the committee.\textsuperscript{534}

They were, in fact, encouraged to leave if they considered themselves not up to the reproductive task demanded of the broader natalist project. In another publication, Dachert noted that, “[a] home here must always be considered to be like a hospital. It is erected for those needing it, therefore to be used only as long as necessity requires. When families don’t develop, they are replaced by the foundation.”\textsuperscript{535} As of 1931 the director noted that only six families had been expelled for failing to develop during the seven years since the garden city’s establishment.\textsuperscript{536}

An article published in 1929 in \textit{Le Matin} a few years after the garden village’s inauguration, demonstrates how seamlessly the projects of feminine social control and eugenic production fit together. After providing the author of the article a tour of the grounds, with tree-shaded cottages and children running about, Dachert invited him to visit one of the resident’s homes. “If you open the door,” Dachert noted as he led the article’s author inside, “it’s Madame who opens it, because Madame is always at home.” “She may excuse herself,” he continued, “for not having done her \textit{toilette}…but her children and her home speak for her in this regard…. There is, in the smallest amount of space possible, all that one could conceive of to provide convenience for a housewife.”\textsuperscript{537} The homes, however, were not developed with the primary goal of bringing happiness to housewives through domestic design. Rather, Dachert reminded the

\textsuperscript{534} Warren, “Success has come to eugenic village,” E4.

\textsuperscript{535} C. M. Goethe, \textit{War Profits...and Better Babies}. (Sacramento, Calif.: The Keystone Press, 1946), 9.

\textsuperscript{536} Dachert, “La Cité,” 349.

\textsuperscript{537} Anon., “Une Petite Cité Modèle,” 2.
author, “[o]ur goal was to attempt a eugenic experiment. What interests us as far as our inhabitants are concerned is their vitality, resulting from a healthy lineage, which is a gain for society.”

Indeed, as far as the eugenic experiment was concerned, the Jardins Ungemach was able to boast impressive results. Statistics gathered by the foundation between 1927 and 1929, and published in a number of press outlets, reveal a birthrate that was more than double the birthrate of the city of Strasbourg. Mortality rates were also considerably lower than in the general population. As for the quality of offspring raised in “surroundings as near to hygienic perfection” as possible, Dachert turned to statistical data provided by the école maternelle which, along with a consultation de nourrissons, represented the only two community facilities to be eventually established at Ungemach. Thanks to required school medical inspection, the physicians at the école maternelle were able to collect the children’s height and weight measurements, which showed on average greater heights and weights for Ungemach children between 4 and 5 years of age than for children of the same age at the école maternelle in Saint-Jean, located in the old quarter of Strasbourg. However, it was impossible, as Dachert himself conceded, to determine whether these differences came from the good living conditions offered in Ungemach or the initial selection of healthy parents.

538 Ibid.


540 Jonas notes that the foundation eventually decided to include some community equipment, particularly since the garden city was somewhat far from the other parts of the city that would offer this equipment. It converted two standard houses into public facilities—one into a consultation des nourrisson, and one into an école maternelle. Jonas, “Les Jardins d’Ungemach,” 76-77.

541 Dachert, ”La Cité,” 350-351.
In general the “eugenic results” are not particularly surprising given the Jardins’ regular health examinations, willingness of residents to produce many children, and the access to nutritious food and superior domestic conditions. Ultimately, Dachert’s main conclusion was that, under the right conditions of health and hygiene, and presumably with the mother fulfilling her proper role vis-à-vis her position at the hearth, young parents were at the very least “less afraid,” as he put it, to have children than they would be in the urban agglomerations.\textsuperscript{542} Dachert argued that this conclusion was supported by the fact that most of the residents of the Jardins Ungemach belonged to the class of citizens most often reputed to be “the most sterile”: the petite fonctionnaire and the petite employée.\textsuperscript{543}

Although the garden city was covered in the popular and the architectural press, it interestingly, remained entirely beyond the awareness of the official French Eugenics Society. This might be attributable to the lack of interest the Parisian intelligentsia often exhibited towards activities in the suburban regions of France.\textsuperscript{544} Yet, in some sense, the Ungemach project seems to have anticipated, through its insistence upon a medical examination of each couple as a criterion of acceptance, the one piece of eugenic legislation that the French Eugenics Society strenuously lobbied for—the mandatory premarital medical examination—which was eventually made law under the Vichy regime.\textsuperscript{545}

In spite of its disconnectedness from the French Eugenics Society as a kind of testing ground for eugenic ambitions, however, the Jardins Ungemach ended up being, like the infant

\textsuperscript{542} Ibid. Emphasis mine.

\textsuperscript{543} Ibid.

\textsuperscript{544} Schneider, \textit{Quality and Quantity}, 128.

\textsuperscript{545} See Schneider, \textit{Quality and Quantity} for a history of the French Eugenics Society’s advocacy for the premarital examination law, eventually passed by the Vichy government in 1942.
incubator examined in Chapter One, an object of extreme fascination in other contexts, such as the American eugenics community. It was covered repeatedly in the American eugenics press, held up as an admirable application of “practical eugenics,” and was even made the subject of a book, *War Profits...and Better Babies* (1946).

Ultimately, we may take away several significant points from our study of this development. Most notable is the foundation’s skill in transforming women and their homes into part of the equipment of eugenic production. The home functioned as a kind of technology—both in facilitating domestic labor and child-rearing tasks, and in being spatially expandable and adaptable as the family grew. Furthermore, by securing women in their homes and requiring their frequent production of children, women were effectively, and voluntarily, transformed into *usines à bébés*—baby factories—for the eugenic experiment. The traditional vision of the *femme au foyer* had been co-opted into a more biomedical project.

Interestingly, the scientific aspects of eugenics— theories of biology, genetics, neo-Lamarckian mechanisms of inheritance—were absent from the program. Rather, in the Jardins Ungemach, eugenics provided a framework for a nostalgic, inherently conservative project of creating, securing, and policing a certain kind of normative traditional family. The project was less about racial hygiene or the rehabilitation of the working-class family than about the encouragement of a particular group—healthy, middle-class, young, fertile, and French—to reproduce and repopulate a historically contested terrain.

Finally, Ungemach reveals an alternative, but equally modern, vision of hygiene to those we have heretofore seen in the course of this study. The other examples of hygienic architecture

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examined in this dissertation were strenuous iterations of architectural modernity. Such structures were intended to function as a protective, rehabilitative envelope offering safety and cleanliness even in the confines of the contaminated, industrial city.

Ungemach, in contrast, rejected the urban milieu as much as possible, invoking a more traditional and nostalgic metaphorical language of hygiene. It located hygiene not in glass houses and sun terraces, but, rather in early nineteenth-century regional architectural aesthetics—as if the developments of modernity, and along with it forty-plus years of German occupation—had never happened. Hygiene was situated in flower gardens and trees, open spaces and private homes with orderly interior arrangements. In this we see not the progressive modernist desire to invent France’s way out of modernity’s own ills, but rather a reactionary urge, also characteristic of modernity, to return to an idealized pre-modern past. Most significantly, hygiene was situated in the fixing of certain social relations and hierarchies: not only the patriarchal internal structure of each home—which had Father working in the public sphere and Mother firmly rooted in the home—but also in the foundation’s paternalistic and constant surveillance—its inspectors, and physicians—which effectively transformed each home into a house of glass.

IV. Other “Eugenic” Garden Cities

Before concluding this chapter, a glimpse at two other projects born of the era will prove useful. These garden cities illuminate the extent to which quasi-eugenic ambitions became enmeshed in other projects of urban planning in France during the inter-war years, often with the support of a broad range of individual and governmental actors. Instead of securing the femme au foyer and encouraging robust reproduction, the developers of these other projects worked around

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547 See, for example, Herman Lebovics, True France: The Wars Over Cultural Identity, 1900-1945 (Ithaca, N.Y.: Cornell University Press, 1992).
the realities of women in the workforce, attempting, like so many other projects discussed in this
dissertation, to elevate biological quality by bringing functions of maternity and child rearing
under scientific, medical, and technocratic supervision. The developers of these urban schemes
framed the provision of such services as a central function of urbanism.

In the Parisian suburb of Surenses, the socialist mayor, Henri Sellier, who was also
director of the Société des habitations à bon marché du department de la Seine and eventual
Minister of Public Health during the Popular Front, carried out an elaborate project of social
hygiene combined with rational urban planning during his more than 20 years of governance.548
In 1920, shortly after his 1919 election as mayor, he initiated the construction of the Suresnes
garden city, which eventually comprised more than 2,500 apartments and townhouses [Fig.
5.14].549 Alongside the construction of homes, Sellier established a comprehensive infrastructure
of public health services. This included not only hospitals and health dispensaries, but also a
legion of social workers who visited homes to assess conditions of health and hygiene. A
network of crèches, nursery schools, primary schools, and the école de plein air for fragile
children discussed in the previous chapter, was integrated into the urban plan. A full third of
Suresnes’ municipal budget resources were devoted to “ouevres d’enfance,” at a time when
neighboring municipalities allocated between one fifth and one tenth of their budgets to such
work.550 A vast modernist Centre Muncipal de Puériculture, where consultations de nourrissons
were provided, completed the picture by intervening in the earliest stages of pregnancy and
infancy [Fig.5.13]

548 Sellier directed the Sociétés des HBM de la Seine between 1921 and 1939. For more on Sellier, see Henri-Roger
Guerrand and Christine Moissinac, Henri Sellier, Urbaniste Et Réformateur Social (Paris: Découverte, 2005), as
well as Burlen and Barraqué, La Banlieue Oasis.

549 Downs, Childhood in the Promised Land, 123.

550 Ibid., 125.
The goal of Suresnes’ housing and the social hygiene facilities that served its occupants was well in line with the broader socialist project of improving worker health. But it was also well in line with the neo-Lamarckian eugenic thinking that saw in the provision of such amenities the possibility of, as Laura Lee Downs notes, “elevating the sociobiological quality of
citizens through systematic interventions in public health and education.” Sellier was not shy about framing his social hygiene projects in such terms:

Given the large number of men of all ages who are more or less anemic and probably tubercular…given the increased level of urban concentration…, the decline in morality and habits of excess and intemperance…, we must improve the quality of families and reduce the number of sickly and defective individuals.

There was a distinct aspect of social control and surveillance, not unlike at Jardins Ungemach, embedded in this as well. Sellier kept files on the families in his garden city, and had inspectors periodically evaluate the cleanliness of their homes.

Perhaps the most radical aspect of this project that linked urban reform to social hygiene and eugenic improvement was Sellier’s establishment—with the collaboration of prominent gynecologist and birth-control advocate Jean Dalsace—of a prenuptial clinic in 1936. Dalsace applauded Sellier for taking action to stop the “marathon of maternity” that many women were forced to endure, and together they developed the clinic with the intention, in the words of historian Helmut Gruber, “to improve the quality of births, to fight sterility, and to fight the plague of clandestine abortions.” In direct defiance of the anti-contraception legislation of the early 1920s, the clinic provided information about family planning and provided contraceptives. Such a project clearly deviates from the emphasis on fecundity at the Jardins Ungemach, reflecting Sellier’s emphasis on quality over quantity.

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551 Ibid, 129.


553 Newsome, French Urban Planning, 23.


555 For more on this, see Gruber, “French Women,” 307-308. Gruber notes that the clinic was closed in 1939, but, protected by the charismatic Sellier, Dalsace was able to operate the clinic until then, providing information on family planning and free birth control when patients could not afford to pay. To avoid accusations of clandestinity, Dalsace accepted a small fee for his services.
Another eugenic garden city, radically different in many ways from either the Jardins Ungemach or Suresnes, was born in the inter-war era, in the mind of Le Corbusier. His 1935 book, *La Ville radieuse*, contained the germ of his urban-planning visions which, in addition to its unparalleled architectural modernity, included a little-examined eugenic component. The book was the first mature iteration of the urban housing scheme that would become the Unité d’habitation. Although a harsh critic of traditional garden cities, he nonetheless came to describe his design for a massive apartment block as a “cité-jardin verticale” as opposed to a “cité-jardin horizontale.” Of greater significance here, however, is Le Corbusier’s rhetorical construction of the Unité as useful for achieving certain eugenic goals.

The Unité, although conceived in the inter-war period, was not actually built until after World War II, when crises in housing and demography were even more marked than after World War I. In terms of housing, France’s aged and deteriorated stock had become a national crisis. In terms of demography, wartime loss of life again fueled panic about natality. After France capitulated to Germany in 1940, Marechal Pétain had famously declared that France had been defeated because of “too few children.” Five years later when France was liberated, General Charles de Gaulle asserted that France must have “12 million beautiful babies” within the next five years.

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558 Newsome, *French Urban Planning*, 84. Newsome notes that while in 1939, France had a housing stock of more than 2,800,000 homes that were characterized as dilapidated, the number had swollen to over 3,500,000 by 1947.

ten years.\textsuperscript{560} The two phenomena—housing and natality—were again perceived as intimately intertwined. The persistence of such thinking is evident as late as 1953, when a survey conducted by Alfred Sauvy of the Institut national d’études démographiques (INED), a think tank with important earlier connections to eugenic thinkers such as Alexis Carrel, concluded that 83\% of young couples delayed having children because of the housing situation.\textsuperscript{561}

Sauvy’s conclusion that housing directly influenced birthrates in France may have been informed, in part, by his growing familiarity with the theories of Le Corbusier in the aftermath of World War II.\textsuperscript{562} Le Corbusier’s institutional affiliations provided a platform from which he could persuasively present his urban housing schemes to officials, such as Sauvy, as useful for the “demographic revival” of France.\textsuperscript{563} After a few reconstruction schemes in other parts of the country slipped out of his grasp, the Ministry of Reconstruction and Urbanism, under Raoul Dautry, commissioned Le Corbusier to build a Unité d’habitation in Marseilles.\textsuperscript{564} Construction on his seventeen-story Unité, designed to accommodate up to 1,600 residents, began in October 1947.

In the post-World War II French government, keen to reconstruct housing on a massive scale, Le Corbusier had finally found an ideal client for the building of his long dreamed of

\textsuperscript{560} Ibid.


\textsuperscript{563} Nord has shown that Sauvy’s INED was, in many senses, a post-war iteration of the Vichy-era Fondation Carrel. \textit{France’s New Deal}, 178-182. That organization, formally known as the La Fondation française pour l’étude des problèmes humains and founded by Nobel-prize-winning physiologist and noted eugenecist Alexis Carrel during the Vichy regime, took as its primary objectives “L’étude, sous tous ses aspects, des mesures les plus propres à sauvegarder, améliorer et développer la population française dans toutes ses activités.”

\textsuperscript{564} Newsome, \textit{French Urban Planning}, 62.
Unité. And, when faced with such a client, with its longstanding anxiety about the quantity and quality of the nation’s housing stock and the nation’s children, he did not hesitate to present his housing scheme as a solution to both problems.

In a talk on “l’habitation moderne” before the Conseil Économique, shortly after construction began on the Unité, Le Corbusier declared the urgency of creating, “housing that can bring about the breeding [l’élevage]—that’s what I say, breeding—of the species: children and adults.” Such a goal, he explained, would be accomplished by his Unité in two ways. First, through architectural design choices connected to his modernist plan, the bodies of residents would be rendered healthier. The architecture would, according to Le Corbusier, function as a hygienic, regenerative tool—through its harnessing of the solar day, its “respiration exacte” allowing for perfect ventilation, its hygienic pilotis which kept the entire building raised above the humid ground, and its pans de verre (panels of glass) which enabled healing sunlight to penetrate each home [Fig. 5.15].

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566 Although Le Corbusier did not explicitly use the term “regenerative tools” while describing these architectural elements during his talk at the Conseil économique, he implied as much. The physically regenerative effects of these particular architectural features was a theme that Le Corbusier developed repeatedly in his writings. See Le Corbusier, Ville radieuses (1935); Le Corbusier and Jeanneret, Des Canons, Des Munitions? (1938); and Le Corbusier, Manière de penser l’urbanisme (Paris: Editions de L’Architecture d’aujourd’hui, 1946).
Even more important to the eugenic project of the “breeding of the species,” however, would be Le Corbusier’s provision in the Unité of the “extensions of the home”: a full array of
medically supervised crèches, nursery schools, consultations de nourissons, prenatal clinics, health dispensaries, and places for physical recreation and sunbathing [Fig. 5.16].

Such health and child-rearing service were, we have seen, featured in Sellier’s garden-city as well. However, we cannot explain the inclusion of such services in the Unité as articulations of a positive eugenics rooted in socialist political philosophy. Le Corbusier himself was politically changeable and had, furthermore, promoted his urban housing plans to a tremendously varied political audience, often stressing their ability to effect eugenic improvement.

In a 1930 document concerning plans for Moscow, for example, he described crèches and nursery schools connected to his urban plans as “haras d’enfants” or “stud farms” for rearing children. “It’s a matter,” he wrote at the time, of creating a milieu favorable for a veritable selection, for a veritable breeding, two words which appear brutal but which represent in all honesty the functions realized each day and in each family in conditions which are unfortunately negative…and anti-hygienic.

Later during the inter-war period, he addressed the government of France through his writings with city-planning proposals that, he asserted, would “create a solid, beautiful, and healthy race.” In his Vichy-era tome, The Home of Man (1942), a book intended as a kind of architectural corollary of eugenicist Alexis Carrel’s Man, the Unknown (1935), Le Corbusier had

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570 Le Corbusier, Des Canons, des munitions?, 53.
declared that the “future of the race” was dependent upon such “prolongements du logis” (extensions of the home) by which the private lodging would be completed. Thus a eugenic component, not necessarily allied with any particular political philosophy, was clearly embedded in his urbanism schemes.

Conclusions

The Jardins Ungemach of Strasbourg with its complicated Franco-German context, the Cité Jardins at Suresnes with its municipal socialism, and the Unité d’habitation at Marseilles, intended as a model, but ultimately rejected, for French reconstruction-era housing: all embraced a central project of elevating the biological quality of French offspring through urban planning.

The principal operational difference between the Jardins Ungemach and the latter two may have been the lack of an explicit natalist component in the Suresnes and Marseilles schemes. The founders of Ungemach emphasized selection of appropriate inhabitants, required the ongoing production of children, and left matters of child rearing largely in the hands of mothers. The plans of Sellier and Le Corbusier, on the other hand, largely ignored the natalist cry to produce more children, and focused instead on improving quality through puériculture, health “equipment,” and other scientific means of cultivation now familiar to us.


572 Although the provision of the various forms of health services within an urban housing plan was framed by Le Corbusier in 1947 as radical, we have seen that Henri Sellier already had sought to incorporate such services as crèches, consultations de nourrissons, and facilities for preventive healthcare into his urban plan in Suresnes. Indeed the inclusion of at least some of these services became common in new cité-jardins erected during the inter-war period, reflecting the influence of actors such as Sellier.
Yet the rhetorical construction of both Suresnes and the Unité, whether in word or images, occasionally told a different story. A 1935 issue of *Urbanisme* dedicated entirely to Suresnes was filled with photographs of the children of the municipality, frolicking in their cheerful modernist écoles maternelles, and running in the parks [Fig. 5.16]. Such images provide a brief but telling glimpse of a working-class enclave where children, treated with princely devotion as far as their health and education were concerned, grew robust and strong.

![Image of children running](image)

**Figure 5.17.** The caption reads, “L’école prison ? Non, l’école joyeuse, l’école de la joie…” Suresnes, in *Urbanisme*, 1935

In framing his project, Le Corbusier often used the language of fecundity, describing a fertile marriage between his housing and the reproductive function of the family. In *Des Canons, des munitions?*, for example, he had declared that the “flower” in his urbanism plan was the

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lodging, and its “marvelous fruit” the child and the social cell of the family.\textsuperscript{574} The children, in the physician-supervised crèches and centers for puériculture, he declared “will grow there like plants in good soil.”\textsuperscript{575}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{figure5_18.jpg}
\caption{Interior of an apartment, Unité at Marseilles, René Burri, 1959.}
\end{figure}

While it is difficult to read such claims as anything but metaphorical flourishes, images captured by photographer René Burri in 1959, seven years after the building’s completion, seem to attest to the strange fecundity of Le Corbusier’s housing scheme.\textsuperscript{576} Image after image captures not only private scenes of family life inside the Unité but also a modernist milieu literally crawling with children [Fig. 5.18, Fig. 5.19, and Fig. 20].

\textsuperscript{574} Le Corbusier, \textit{Des Canons, des munitions?}, 71.

\textsuperscript{575} Ibid., 75.

\textsuperscript{576} René Burri was a photographer frequently employed by Le Corbusier. He often emphasized, in his photographs, the “life” of the building by focusing on the people using these spaces. For more on Burri and Le Corbusier, see René Burri and Arthur Rüegg, \textit{Le Corbusier: Moments in the Life of a Great Architect} (Basel: Birkhäuser Publishers, 1999).
To conclude, we have seen, in this chapter, three possible ways in which the eugenic project could be clothed in, and promoted by, architecture. At Jardins Ungemach, a studiously traditional architecture spoke of a conservative nostalgia for a fecund past that never was, even
as its old-fashioned exterior enclosed the latest of modern technology. At Suresnes, a banal and unassuming modernism was put in the service of a progressive, socialist dream of health and regeneration for the working classes. And, finally, at the Unité, we see the revolutionary utopian side of both the modernist and eugenic projects. Le Corbusier’s metaphors of breeding, and the architectural modernism meant to promote it, led to a concrete brutalism, strangely flowering with children.
Conclusion

Figure 6.1. “L’Architecture et l’enfance,” cover of L’Architecture d’aujourd’hui, August 1949.
In 1949, four years after the end of World War II, the editors of *L’Architecture d’aujourd’hui* published a special edition of their journal, devoted to “Architecture and Childhood.” While special themed editions of the journal in the 1920s and 1930s had focused on school architecture in Europe and France, the dedication of an issue to the broader project of “childhood” was decidedly unique. The theme of postwar reconstruction was still in the air, as evidenced by the cover collage: a photograph of a boy and a girl carrying lumber is juxtaposed with an illustration of an architectural plan [Fig. 6.1]. The issue, however, rather than explicitly focusing on reconstruction, focused on delineating all that was required architecturally for the successful rearing of children.

An opening section, entitled “L’Enfant dans la cité,” featured an elaborate pull-out grid by architect Paul Nelson. It elaborated upon each of the stages of childhood, from infancy to adolescence, and mapped these developmental stages onto the different types of services—crèches, hospitals, consultations de nourrissons, and so forth—that an urban agglomeration (or “unité” to use his terminology) would ideally provide [Fig 6.2]. Inside the journal, special sections were dedicated to each of the architectural spaces of childrearing—crèches and garderies, nursery schools, playgrounds, hospitals, and centers for the protection of mothers and infants. Each section elaborated upon the special hygienic and structural requirements of such establishments, and was replete with plans, photographs, and functionalist diagrams for each specialized building type. The diagrams that were integrated into each section were not exclusively designed by architects, but often derived from social scientists and physicians. Particularly interesting is the reproduction of a diagram created in 1945 by the Vichy-established Fondation française pour l’étude des problèmes humaines for

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Figure 6.2. L’enfant dans la cité in L’Architecture d’aujourd’hui, August 1949

a “Centre Mère et Enfant” [Fig. 6.3]. The new type of center the foundation proposed, according to the accompanying text, expanded upon the basic idea of the crèche, and transformed such establishments into comprehensive centers for preventative medicine (in the form of prenatal and postnatal care), education and formation (training) of the family, and community outreach.578

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578 Ibid., 10.
Inside the journal, numerous illustrations capture the ideal types of spaces, both in France and abroad, that have been examined within the pages of this dissertation—open-air schools, infant hygiene centers, nursery schools, and so forth. All featured vast expanses of glass, rows of pristine ceramic basins, and conscious attempts to interpenetrate indoor and outdoor space through wall openings, roof terraces, and outdoor classrooms [Fig 6.4]. A nod to the importance of housing in the lives of children was provided at the very end of the issue, where an enormous folded pull-out poster detailed the services to be offered in Le Corbusier’s Unité d’habitation, then under construction in Marseilles.  

579 The poster was a facsimile of one he prepared for the 1949 CIAM conference in Bergamo, Italy.
Figure 6.4. Plans and photographs of the sanitary services incorporated into what was held up as an ideal model of a nursery school in Tottenham, England, from *L'Architecture d'aujourd'hui*, August 1949.

All in all, this document provides a telling glimpse into the post-World War II world of architecture in France and the state of its encounters with childhood. The journal illuminates the extent to which the development of a medically sanctioned and scientifically designed architecture, which placed special emphasis on the hygiene of spaces and the hygienic management of points of connection and access, had crystallized in the fifty years since Jacques Bertillon had first proposed his contagionist-influenced vision of a “factory of babies” in “La Puériculture à bon marché.”

By 1949, the project of a hygienic architecture for children had crystallized to such an extent—and so widely accepted was the notion that architectural features such as solaria, roof terraces, isolation chambers, and floor-to-ceiling expanses of glass were healthful for children—
that the *leitmotiv* “hygiene” barely receives mention in the text. One has the sense in reading the journal, rather, that the terminology that was so dominant in the genesis of such spaces—“hygiene,” “antisepsis,” “race,” and “regeneration”—had been entirely absorbed into the architecture itself. Rather than revive these terms, and the historical discourses that clustered around each, this postwar issue of the journal reads like a neutral, scientific catalogue of all of the useful standardized equipment available for the ideal rearing of children.

Such universal standardization of this architectural equipment is perhaps no less remarkable for having derived from many of the strange and innovative objects with which this dissertation has dealt. We have covered some peculiar terrain. The starting point was a brief glimpse of a pro-natalist’s architectural fantasy from the late nineteenth century: Jacques Bertillon’s rationally planned nursery, in which perfect conditions of antisepsis were achieved, scientific methods of infant cultivation ruled, and all social relations were managed by the strategic use of glass. From there the dissertation traced the development of incubators, or “artificial mothers,” which reflected a new investment in—on the part of the government and its medical authorities—and new strategies for protection of, children who had formerly been dismissed, even by physicians, as “social waste products.” The incubator’s invention, in turn, led to the development of puériculture—the science of infant hygiene—which made prevention of prematurity and debility its primary goals. Yet complicating this development was the fact that puériculture’s leader, Adolphe Pinard, also became a central figure in the eugenic establishment in France, thus bringing proponents for positive neo-Lamarckian efforts to improve hereditary health into contact with those proposing negative measures such as sterilization. Architecture served an important role as part of puériculture’s essential equipment and, as such, physicians contributed to the design of spaces like crèches as much as architects did, and promoted
innovative designs such as the “crèche of glass” with an aim to creating conditions of perfect antisepsis. Although never built, it represents the ideal iteration of the hygienists’ architectural fantasies of the era.

The chapter on écoles maternelles described the gradual expansion of an educative institution into a space for medical inspection and hygienic training of young children. Sun terraces, medical examination rooms, and rows of sinks and showers were all deployed in support of the project of “safeguarding the race” but, curiously, this eugenic and paternalistic project of sanitizing the nation’s working-class children was carried out under the banner of “maternal care.” The chapter on écoles de plein air in France revealed the transformation of school architecture, in the minds of architects and social hygienists, into a regenerative milieu that, it was believed, could actually heal the feeble bodies of fragile, “pre-tubercular” children like an actual medical instrument. A sophisticated glass and steel architecture developed to give form to the cry for open-air education—a project upon which dreams of “racial regeneration” were also projected.

Finally, in a dramatic change of direction and scale, the dissertation concluded by examining what role urban planning might play in achieving the projects of repopulation and race regeneration. Chapter Five examined the Jardins Ungemach, a traditional garden city born in the inter-war period in France with the oddly modern task of having been “planned definitely as a eugenic experiment.” Comparing the Jardins Ungemach with other projects of the era—such as Henri Sellier’s Suresnes garden city and Le Corbusier’s Unité d’habitation in Marseille—revealed an interesting shift in aesthetic strategies connected to both hygiene and eugenics.

The idealized nineteenth-century aesthetics of the Jardins Ungemach reflected the conservative aspect of the eugenic project with its desire to recapture a lost ideal state. Such a
departure from what has been the norm in this study—the use of scientifically designed modernist architecture by mostly progressive, republican actors—provided compelling evidence of the ways in which the eugenic project could exert appeal across the political spectrum. Eugenics could be cast as a deeply conservative, nostalgic movement to restore the French people to a previous state of purity and fecundity from a current state of degeneration. But, eugenics could also, as was the case in Suresnes and Marseilles, take the form of a wildly progressive movement to harness science, technology, and architecture to transform the French people and lift them to previously unknown heights of health and purity, both physical and moral.

Ultimately, this project has been interested in establishing the connection between health, biological regeneration, and modern architecture as such connections first became manifest in discourses as early as the 1870s, surrounding children’s health and architecture in France. To better understand what historians such as Beatriz Colomina and Paul Overy have discussed—that early twentieth-century modernist architects had profound faith in the healthfulness of their designs—it is necessary to examine this earlier connection between hygiene, medical therapy, and children’s architecture in the late nineteenth century. In so doing, the scientific principles and popular beliefs that informed the development of a totally regenerative, hygienic architectural style—as well as the potential contributions of such an architecture to the exercise of state power and the regulation of bodies—are more easily discerned.

The collaboration between physicians and architects in many of these projects, all in the name of achieving a hygienic ideal, had the effect of forever changing the worlds of both medical science and architecture. Physicians made claims about the efficacy of architecture to eugenically improve children, thereby insinuating themselves as expert advisers in a field
previously beyond their domain. But, in so doing, they had a lasting effect on the field they
interposed themselves into, as ultimately such claims became so naturalized that the work of
architects such as Le Corbusier or André Lurçat began to be understood as representing innately
health-promoting and ideal milieus for modern man.
Bibliography

Archival Sources:

Centre d’Archives d’Architecture du XXe siècle
Fonds François Le Cœur
Fonds Germain Debré
Fonds Eugene Beaudouin and Marcel Lods

CEDIAS—Musée Sociale
Dossier with assorted correspondence and documents related to the organization L’Hygiène par l’exemple
Issues of L’Hygiène par l’exemple, organe de la ligue de l’hygiène scolaire. 1921-1941
Fonds Iconographique de L’Hygiène par l’exemple

Archives de l’Assistance Publique—Hôpitaux de Paris
3 Fi 5—Cartes Postales
793 Foss 4—Maternité
793 Foss—Tarnier
793 Foss 27—Enfants Assistée

Mnemosyne
Digital Archives of the Musée national de l’éducation

Bibliographic Sources:


---. “Nouveau modèle de couveuse pour enfants.” *Archives de Tocologie* (October 1890): 709-711.


Diffre, L. “Nouveau système de couveuse pour les nouveau-nés.” *Archives de Tocologie* (April 1890): 228-238.


