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Microbes, Individuals, and Medical Charity: Tuberculosis and the Remaking of Liberal Individualism in Late 19th-Century Philadelphia

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In the face of that I do not know,
I might not have so much control.

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ABSTRACT

For most of Western history, tuberculosis was an incurable disease—its victims, destined to die. However, in late-19th century Philadelphia, changes in science, public health, and medical charity contributed to a remaking of the disease. Through the experiments of the bacteriological laboratory, and the commitment of governmental and private resources to tuberculosis treatment, scientists and physicians would come to tout the disease's curability. By the beginning of the 20th century, the disease was transformed into a curable entity caused, not by an uncontrollable force of nature, but by an ostensibly containable microbe, the tubercle bacillus.

This dissertation argues that this transformation was produced by and productive of a new form of liberal individualism. The emergent subject of tuberculosis was no longer a victim of physiological fate. Rather, the tubercular were increasingly constituted as capable of willing themselves better through participation in hygienic regimens.

By focusing on the physician Lawrence Flick and the Philadelphia anti-tuberculosis movement, this dissertation explores the various spheres and spaces through which this new tubercular subject takes shape. These include discourses and practices of self-care—cultivating immunity and disinfecting personal pathological material; the political-economic evaluation of the sick poor in almshouses; the surveillance and disciplining of the tubercular in sanitaria; and efforts to reform the urban population into tools of tuberculosis prevention.

Where liberal individuals, prior to the 1890s, were constituted in political economic thought and practice as possessing a willpower—and a responsibility—to be productive and independent, this dissertation traces the emergence, in Philadelphia, of a new type of liberal individual: the tubercular emerge as subjects with the purported willpower to cultivate immunity by wittingly changing the quality of their bodies—of their internal tissue. By arguing that the willpower of tubercular individuals is, itself, a product of the erasure of the "willpower" or "vitality" of tuberculosis, this dissertation contributes to a body of scholarship on the relationship between the human and non-human—scholarship that challenges the presumption, central to the humanities and social sciences, that humans are the most important, if not the only relevant historical actors.

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Introduction

"Despite the availability of effective treatment" reports the Voice of America, "in 2010 there were an estimated 8.8 million [worldwide] TB cases and 1.45 million deaths" (America 2012). These staggeringly high numbers locate tuberculosis, "a disease once thought to be under control," amongst the most dangerous infectious diseases in the 21st century (World Health Organization 1999). The attempted "control of tuberculosis," first espoused and pursued as a public health goal in the United State in the 1890s, has proven far from total. Mutating strains of the disease, resistant to antibiotics, task public health operations like the World Health Organization, and private philanthropists like Bill Gates with a mutating form of contagious nature that is not easily identified or contained. Furthermore, in clinics across the world, physicians are faced with not only determining if a patient is tubercular, they also must determine how dangerous a patient might be to the public health. Hospitals have the authority to isolate those tubercular patients that are suffering from a drug-resistant *superbug*, a strain that is difficult and expensive to treat.

Such diagnostic ambiguities and threats to the public health were dramatized, in 2007, when multi-drug-resistant-tuberculosis (MDRTB) briefly took center stage. Andrew Speaker, a lawyer from Atlanta, seemingly endangered the global public health—and, in some accounts, the entirety of the human species—by traveling internationally while infected with a strain of drug-resistant tuberculosis. Speaker became an unwitting threat when he boarded a commercial flight from the United States to Paris, en route to his wedding in Greece. Prior to his departure from the United States, Speaker's physicians ambiguously diagnosed him as "relatively non-contagious" and thus, safe to fly (Haupt 2007). However, a barrage of media coverage ensued

when the U.S. Centers for Disease Control and Prevention (CDC) revised the diagnosis, issuing a forcible isolation order, claiming that Speaker's tuberculosis was, in fact, multi-drug resistant and that he was endangering those with whom he came into close contact. By the time of order, Speaker was already in Europe.

With his name in the headlines, Speaker evaded public health and airline authorities, sneaking out of Europe, into Canada, and covertly crossing the border into the U.S. before eventually turning himself in to the CDC. He was subsequently quarantined in Denver—the first forced federal quarantine since 1963—where he was infamously interviewed by Dianne Sawyer with a mask covering his face. Yet while in isolation, Speaker's physicians once again revised the diagnosis of his condition. The strain he possessed was, in fact, not the feared drug-resistant variety. Rather, Speaker had drug-susceptible tuberculosis—a highly treatable form of the disease—and, as such, had not posed a significant threat. To treat his disease, Speaker took part in the routine World Health Organization (WHO) program, Directly Observed Therapy, or DOTs.

The WHO developed DOTs as a "strategy" for both curing the sick and for combatting the evolution of superbugs after "decades of reports documenting the failure of patients to complete [antibiotic] treatment." The program is based upon a "treatment regimen [that] requires patients dutifully to take multiple antibiotics daily for several months." During this long period of treatment, lasting for years for some patients, the sick must take their antibiotics under the watchful gaze of the physician—"a reporting system to document the progress (and failure) of treatment for individual patients and of the programme [sic] [and] direct observation of treatment by an independent and trained third party." The WHO developed and came to

recommend DOTs to all national governments after observing that, left to themselves, most tubercular patients—facing side effects from medication, feeling cured and no longer in need of drugs—would stop taking their antibiotics (Frieden 2007). The sick, in the parlance of public health authorities, tend toward "non-compliance." DOTs is designed to make compliant subjects out of the tubercular by insuring patient completion of antibiotic regimen.

In the view of the WHO, the importance of this practice—completion of antibiotic regimen—and the concomitant production of compliant tubercular subjects cannot be understated. For public health authorities, the non-compliant tubercular subject, failing to complete his or her antibiotic regimen, is routinely cited as the cause of the evolution of superbugs: "if there are any deviations from protocol or incomplete courses [of drug treatment], drug resistance develops easily" in the microbes. Thus, DOTs is premised upon the tubercular individual—in his or her capacity to dutifully take drugs—as the first line of defense in combating drug resistance as it seeks to remake non-compliant subjects into compliant individuals (Frieden 2007).

Importantly, through both the fallout over the Speaker scare, and the practice of DOTs, humans generally, and individuals, specifically, are rendered not only capable of containing the threat of tuberculosis, but as responsible for doing so. Various takes on responsibility have emerged in the aftermath of the Speaker debacle: some sources argued that Speaker owed it to the public to manage his own contagion—to have erred on the side of caution and not traveled (Haupt 2007, Schwartz June 2, 2007); others pointed to the situation as evidence of the failure of public health officials and institutions to contain the tubercular threat to the international social body (Knox July 4, 2007, Schwartz June 2, 2007); still others claimed that resurgent

tuberculosis underscores the need for individuals to protect themselves from the dangers of contagion—by vigilantly washing hands and wearing masks in public. Finally, through the persistent global investment in DOTs as an antidote to the non-compliance of the tubercular, sick individuals take shape as the parties responsible for the evolution of tuberculosis, as individual failure to complete regimen is cited as the cause of the superbug threat.

In spite of the activist proclamations for the annual March 24th celebration of "World TB Day"—the "I am stopping TB" campaign (World Health Organization 2013)–and the continued investment of public health in taking responsibility for the control of the disease, the contemporary resurgence of tuberculosis, and, more specifically, evolving drug-resistant strains, suggest a form of nature that was never truly stopped or mastered. Indeed, while socio-medical efforts to control tuberculosis, underwritten by Western medicine's proclaimed conquering of infectious disease in the latter half of the 20th century, are key to the elaboration of a particular and commonsensical progressive history that informs contemporary public practices, they are still nascent efforts on the scale of human history. Prior to the late 19th-century, tuberculosis, or *consumption*, was thought to be an uncontrollable force of nature rather than a mastered microbe—a force that was incurable, much less eradicable. Those suffering from the disease were seen as subjects fated to die—incapable of cultivating tissue and an internal physiology fit enough to resist the disease.

This work seeks to elaborate on the very point at which human control over tuberculosis in the United States—with individuals as the tools of this control—emerged: a point, in the late-19th century, when the articulation of bacteriology, liberal public health initiatives, and charitable investment in the treatment of tuberculosis remade the disease as

conquerable, and individuals as responsible for this conquering. How has Western medicine arrived at a point where tuberculosis is a conquerable disease? How have medical science, public health, and charity in the United States come to produce tubercular individuals as responsible for overcoming or controlling the disease in their own bodies? How has the evolution and propagation of the disease come to be understood as a human failure—as a failure of individuals?

In what follows, I argue that the remaking of tuberculosis as a curable disease was produced by and productive of an emergent late-19th century subjectivity: an individualism, formed through the practices of bacteriological science, public health, and medical charity, that constituted tubercular subjects as possessing a willpower—a capacity—to shape their own physiology and internal tissue to a desired end—a state of immunity—so as to resist the disease. I argue further that this novel capacity of individuals to take responsibility for their health, through a witting cultivation of particular physiological states, is sustained through a socio-medical elision of the agency of the nonhuman microbes that cause tuberculosis. The very historical reduction of the disease to its microbial cause—the tubercle bacillus—and the rendering of the bacilli as inert and passive objects in the discourses and practices of both the laboratory and tuberculosis treatment and prevention campaigns, produced a late-19th century world in which a patient's overcoming or succumbing to tuberculosis appeared as the outcome of individual success or failure in willing a particular bodily state: in willing of a state of health.

To make clear the emergence of this new liberal subjectivity, I trace a genealogy of those attitudes and practices in the United States, focusing on the emergent anti-tuberculosis movement, in late-19th century Philadelphia, that produced the disease as a controllable form

of nature. Prior to the last decade of the 19th century, a sick tubercular subject—a consumptive—was not capable of surviving the disease, much less controlling it. Yet that very decade, changes within the co-constitutive worlds of science, public health, and liberal charity took shape—changes that were themselves bound up with a progressive-liberal-investment in the capacity for individuals to forge their own destinies, the circumstances of their own success, and their own propensity to life or death. This is a place and point in time where a particular type of liberal individual emerges—bacteriology and tuberculosis treatment and prevention were not the only sites where liberal individualism was taking shape. Yet the modern liberal individual emerges, in late-19th-century Philadelphia in a unique form: unique in his or her capacity—and duty—to will him or herself into a particular biological state: a state free of tuberculosis.

This emergent subjectivity, formed through the articulation of medicine, public health, and charity, is not wholly different from that of other times and places to the extent that it is constituted by the canonical qualities of liberal individualism—rationality, calculation, self-interest and self-determination; qualities that purportedly take shape through the exercise of individual willpower. The dutiful liberal subject of 18th and 19th political economy was expected to exercise this willpower as a means toward an independent and productive life. Yet what differentiates the tubercular subject of the last decade of the 19th century from that of the prior historical incarnations is the manner in which the assumed willpower of the individual is increasingly produced as a capacity, not simply to become an independent and productive member of liberal society, but to wittingly shape one's internal bodily processes and the material—the tissue—of one's body. Through the treatment of the tubercular, the modern liberal

individual emerges, in the late-19th-century, in a unique form: unique in his or her capacity—and social duty—to will him or herself free of tuberculosis.

This subjectivity clearly materializes through the bodies of poor Philadelphians struggling with health and sickness in the last decade of the 19th century—Philadelphia, where a growing investment in bacteriological science articulated with a nascent anti-tuberculosis movement, public health investments in the management of disease threats, and a spirit of medical charity directed toward treating and eradicating infectious disease, including tuberculosis. The remaking of the subjects of consumption in Philadelphia as a population fated to die into individuals capable of cultivating bodily tissue strong enough to resist and retard the disease—capable of cultivating immunity—took shape through this very constellation of science, charity, and public health. The traffic between the bacteriological laboratory, the coffers of philanthropists, and municipal concerns with curbing death rates and protecting the public from disease threats, coalesced into an urban landscape where physicians, city officials, and reformers sought to regulate the habits of the population, and in particular, the poor tubercular, in the interest of containing tuberculosis.

I focus on Philadelphia as it was a city heavily invested, from its founding in 1682, in both medical treatment and research, and in the municipal reform of the needy and sick into purportedly responsible individuals. My study materializes through a particular Philadelphia physician and anti-tuberculosis reformer, Lawrence Flick. The young Flick, a former sufferer of tuberculosis, spent the 1890s advocating for the treatment of the tubercular—for more hospital beds and better treatment methods—while simultaneously attempting to convince his colleagues that the disease was both contagious and curable. From his creation of the United

States' first anti-tuberculosis organization—the Pennsylvania Society for the Treatment of Tuberculosis—and his charitable service, his participation on hospital boards, and his founding of numerous institutions for poor consumptives in Pennsylvania, Flick embodied a liberal reformist spirit and a positivist investment in knowledge as a tool for the achievement of social reform. Preaching the progressive nature of science, the efficacy of modern medicine, and the legitimacy of liberal governmental interventions as rational and necessary means to treat and eradicate tuberculosis, Flick, in the 1890s, initiated what he termed a "crusade" against tuberculosis.

Rather than taking an autobiographical approach, I use Flick's life—his investment in building an anti-tuberculosis movement in Philadelphia, his sensitivity and charity, and his academic investment in this history of tuberculosis—as a tool for analyzing the emergence of late-19th century poor tubercular individuals and the concomitant materialization of the disease as a form of nature purportedly subject to human control. Indeed, Flick served as a conduit through which the late-19th-century medical establishment in Philadelphia struggled over the new bacteriological paradigm, new forms of diseased-nature, new forms of microscopic medical evidence, and the new iterations of public health that constituted the state and municipal efforts to accommodate this emergent model of microbial disease transmission. Precisely because he was outspoken and controversial on many issues related to the science of tuberculosis, and social approaches to treating the disease, Flick would find himself respected and followed by a new vanguard of medical practitioners, even as he bemused and frustrated an old guard of physicians.

Flick is also important to the extent that his praxis—his approach to tuberculosis treatment, prevention, and eradication—materialized a philosophy that was heavily invested in a belief in the progressive nature of science and social reform. As I show throughout, Flick's commitment to Enlightenment narratives of science as capable of mastering, dominating, and controlling nature required a concomitant investment in producing humans—individuals—as having a personal capacity to control disease, and thus as subjects capable of taking responsibility, on the physiological level, for the enactment of such control. Disease, in this narrative, is there to be subjected—all that is required is the design of the correct technologies and the implementation of an "enlightened" approach to the management of urban populations.

In pursuing his "crusade" against tuberculosis, Flick's investment in science was evident in his advocacy of the work of Robert Koch—the bacteriological experiments that would form the foundation of 20th-century research on and approaches to treating contagious disease. As one of the United States most outspoken proponents of both the "truth" and utility of Koch's discovery of the microbe responsible for tuberculosis, Flick promoted the bacteriological paradigm and a series of practices for containing tuberculosis, before such a model and such practices were fashionable. The laboratory "mastery" of the disease in culture catalyzed a remaking of the disease: tuberculosis, formerly an uncontrollable force of nature, would take shape, in the last decade of the 20th century, as an object, subject to human efforts to control it. In reaction, Flick and his colleagues would work to translate the purported laboratory "power over the disease" into the social sphere, pursuing the "administrative control of tuberculosis" in urban environments.

As I argue throughout, this laboratory subjection of the disease was produced by and productive of the broader liberal remaking of sick individuals as masters of both their own bodies and of the microbes seeking to take up residence in their tissue. This sense of subjects as capable of mastering their bodies took shape, in the late 19th century, through an inherited tradition, present in the 18th and 19th century almshouses and hospitals of reforming the sick poor. Flick and his peers and colleagues in Philadelphia inherited and propagated a standard understanding of the worth of the subjects of charity and disease as being linked to a capacity to better oneself. The emergent understanding of tuberculosis as a curable disease thus articulated with a broader liberal commitment to the care of the sick poor on the grounds that the subjects of medical charity demonstrated a will to get better. This will, traditionally measured through the capacity of a subject of medical charity to "better" him or herself, moving from a state of economic dependence—dependence upon hospitals and almshouses—to a state of independence and productivity, materializes, in the last decade of the 19th century, as a physiological capacity to better oneself by intentionally cultivating a resistance to tuberculosis.

This liberal-reformist production of the subjects of medical charity as possessing a willpower capable of shaping their tubercular state and, thus, their bodily futures, articulated with the practices of the bacteriological laboratory—the objectification of the disease in the laboratory. The will of the tubercular to overcome the disease in the sphere of the clinic materialized through the laboratory transformation of *consumption* as a force of nature into the microbial tubercle bacilli, the material cause of tuberculosis. The objectification and subjection of the microbe through the bacteriological experiments of Robert Koch translated into a

clinical model—the sanitarium as a space for the pursuit of regimen—through which to produce individuals capable of subjecting the disease within their own bodies.

Importantly, institutional conversations and practices took shape around the cultivating of this willpower—both a physiological capacity and a desire—within individuals, to master the disease in their own bodies. The tubercular thus came to struggle, not with an external and unwieldy force, but with an internal-pathological object—an object that only proved deadly to the extent that the sick failed to control it through the cultivation of the requisite bodily *soil*. In sanitaria and clinics, those suffering from the disease were remade as subjects capable of exercising control, like that of the scientist in the laboratory, over the disease in their bodies. I thus demonstrate the manner in which the very willpower of individuals was dependent upon the laboratory remaking of the disease as a controllable and inert object: the will to make oneself better was constituted through a concomitant elision, amongst physicians and social reformers, of tuberculosis as a "vital" force, actively shaping the bodies of the sick in a manner that consistently undermined the efforts of the tubercular to cultivate immunity.

This historical production of tuberculosis as controllable and individuals as responsible for this control remains important to the extent that the vestiges of Flick's late-19th century investment in progressive science and technology recur in the visions, practices, and explanation of contemporary public health officials, even in the face of evidence that challenges this purported human capacity to master disease. Rather than hailing the ingenuity of the *Mycobacterium tuberculosis* in evolving in the face of human attempts to eradicate it, "non-compliant" individuals, in their failure to hew to antibiotic regimen, are viewed as the cause of the superbug evolution. Furthermore, rather than viewing science and technology as elements

in this evolution, the continued progressive investment in science, evidenced in CDC and WHO responses to tuberculosis, posit contemporary techno-scientific solutions as better or more informed than those of the past. Western science's participation in producing the very superbugs that threaten global public health through the invention of the antibiotic is omitted in favor of explanations centered on failed individuals—explanations that focus on the irresponsible use of technologies rather than on questioning the assumed progressiveness of the technologies themselves. Indeed, the very ingenious creation of medicine—the antibiotic—has proven both the solution to the initial problem of infectious tuberculosis, and a key element in the resurgent threat. By disregarding the constituent roles of both the bacteria and the technologies used to treat the bacteria, contemporary approaches to tuberculosis treatment and prevention leave in place a key assumption: the assumption that science is forward-moving and that scientific-technical solutions fail because of a paucity of individual willpower.

I critique this attitude that focuses on human error and human irresponsibility in the treatment of tuberculosis by arguing that liberal individualism and individual willpower are, in fact, constituted by the elision of the will of the nonhuman and the erasure—through public health and social reform discourses and practices—of limitations on the human capacity to achieve a total mastery of nature. In critiquing this contemporary attitude and approach to solving disease problems with socio-medical technologies, I tell the story of its development, in relation to tuberculosis, through Lawrence Flick's late-19th century anti-tuberculosis "crusade." The story hinges on the modern constitution of liberal subjects as possessing certain qualities and capacities, and on the concomitant modern rendering of the nonhuman as a passive object rather than a vital force shaping humans, the world, and history.

Liberal Individualism and Willpower

In what follows, I introduce liberal individualism as it has been studied through a particular lineage of scholarship that views the very substance of such individualism—the will of the subject—as a social product rather than a natural capacity. I then locate my project within this lineage by pursuing the question of how the state of being healthy—the bodily state of being immune or resistant to tuberculosis—becomes a quality subject to the will of liberal individuals. Health, in the late 19th century, becomes a political-economic consideration as the body is remade as an object to be shaped by witting individuals: the body becomes the currency and the material of the individual pursuit of health—an object subject to the personal pursuit of a wise liberal economy.

My analysis takes shape through an focus on scholarship shaped by a particular political economic tradition of the 18th and 19th centuries. It is but one approach to the theorization of the formation of liberal subjectivity and it is necessarily limited as it is heavily invested in the work of a handful of white-male-Western thinkers. Other lineages of liberal scholarship look beyond these limitations to, for instance, the colonial context and the constituent presence of non-Western and non-white colonized subjects in the formation of liberal individualism (Stoler 2002, Anderson 2006, Fanon 1970). The analysis of liberal individualism as a product of the West is dangerous to the extent that it ignores the role of colonized non-Western subjects in the elaboration of the discourses and practices that constitute Western individualism.

The liberalism of classical political economy is a political orientation, philosophy, and approach to governing that promotes individual liberty and rights and the maximizing of individual interest. As a mode of thought and a constellation of practices, its thinkers and

practitioners have viewed "liberty…as a specific grant or right bestowed [to individuals] by law" (Ross 1991, 11). A primary consideration of liberalism, then, is the question of the role of the state in legislating and facilitating this liberty for individuals. Dorothy Ross outlines the fundamental primacy of individualism in liberalism by tracing a genealogy of the word "liberal." The designation "liberal" took shape in the early nineteenth century through "english and continental radicals [who] sought to destroy the remains of feudal and mercantilist power in the state and to place justice, representation, and economic activity on individualistic bases…Their visions of society, polity, and economy acknowledged a central place for the rights, powers, or potentialities of the individual person" (10). Liberal ideals, by linking freedom, individualism, and government, have historically organized around various principles, practices, and institutions—legislative and judicial and regulatory bodies, markets—that seek to maximize individual freedom while simultaneously limiting the influence of government as evidenced in the liberals radical resistance to "feudal and mercantilist power."

Liberalism and the liberal individual materialize in the 17th and 18th centuries as both increasingly integral features of governance in the Western world, and as primary objects of study amongst political economists. From the 18th century onwards, the substance of this "individual person" of liberalism was defined and constituted, through both formal and informal practices of governmental bodies, and, academically, through the work of political economists. The body of classical political-economic-thinkers such as Adam Smith of the 18th century (Smith 1937), and David Ricardo (Ricardo 1911), and John Stuart Mill (Mill 1975) of the 19th century contributed to the production of the political subjectivity of the liberal

individual—a figure referred to, amongst historians and political economists, as "economic man."

The classical-liberal canon theorized this figure of "economic man" as a self-interested, enterprising, rational subject. This figure has formed the basis of many of the assumptions, policies, and practices of liberal-governmental efforts. Economic man, according to Nancy Cohen, "demonstrated his rationality by calculating his self-interest, all the time aware that natural economic laws determined and constrained his behavior" (Cohen 2002, 32). "Liberal reformers," like Philadelphia's Lawrence Flick, according to Cohen, "equated "economic man" with "citizen," thereby subordinating political activity to a normative model of economic behavior" (32). This "normative model of economic behavior" thus established, not only an inhabitable subjectivity for citizens of liberal societies, but it also constituted the socio-governmental network for the making of these subjects. In the realm of late 19th century health and medicine and liberal charity, this network takes shape through the evaluation of subjects—the worth of the poor and sick—in relation to the normative standard of "economic man."

Cohen continues, noting how this notion of the "individual subject of interest," or economic man carried with it both a normative and a naturalizing function: "a man's character should be judged according to how well he performed according to the norm of the instrumentally rational, acquisitive economic man" (38). Liberalism thus presupposes individuals with certain desires, or with a certain will to achieve particular standards of subjecthood—standards based on the qualities of rational acquisitiveness, and the perceived capacity for subjects to act both autonomously, and in their own best interest. Yet liberal society is also productive of these very desires and standards: the very substance a liberal individual is

supposed to act upon, supposed to desire, supposed to shape is, itself, produced and policed through social practice. While "health" and "happiness" take shape, as early as the work of Adam Smith (Wealth), as desires central to the pursuit of liberal individualism, this dissertation seeks to understand how the desire for health becomes a technical capacity through discourses and practices to treat and prevent tuberculosis in the late 19th century. Indeed, the remaking of tuberculosis, detailed in this dissertation, was, itself, produced by and productive of a concomitant remaking of liberal individualism that broadened the standards and the presumed technical capacity of economic man to include the cultivation of the physiological economy of the body—the rational pursuit of a state of health through the willful remaking of diseased tissue into resistant tissue.

Liberal Individualism and "Modes of Government"

These remakings—both of tuberculosis and liberal individualism—are, themselves, the products of a series of governmental discourses and practices, or what Barry Hindess calls "mode[s] of government" (Hindess 1996) According to Hindess, these modes are themselves productive of the liberal values of autonomy, and productive of practices through which individuals can realize or perform their freedom. Elaborating on this particular orientation toward the study of liberalism, Hindess draws off of the work of Michel Foucault, locating liberalism in relationship to the manner in which this subject—economic man—with his or her presumed right to autonomy, is a product of various governmental practices and governmental bodies. He writes,

> the sphere of individual liberty should be seen, not so much as reflecting the natural liberty of the individual, but rather as a governmental product—that is, as the effect of a multiplicity of interventions concerned with the promotion of a specific "form of

> life"...centered on the regulative ideal of personal autonomy—a composite notion including, on the one hand, ideas of personal independence, rationality and responsibility, and on the other, a persistence slippage between the idea of the person as adult individual and the idea of their person as (male) head of household. Personal autonomy, then, is often understood as involving responsibility for oneself and also for the care and the behavior of a few select others—who are accordingly regarded as less than fully autonomous. The liberal mode of government fosters the form of life appropriate to a community of such autonomous individuals. (Hindess 1996, 65)

Thus, liberalism emerges as a governmental technology for the production of autonomous individuals, all the while setting the conditions of possibility for, and policing the borders of, such autonomy. The very capacity to be independent and productive, and the sense that a person is constituted by a willpower that in some ways, determines their successes and failures, their health or sickness, their life or death, does not inhere in the nature of the human being; rather it is, in Hindess' estimation, a "governmental product" that serves as a regulatory tool: the government of liberal society proceeds, in part, through the production of individuals as subjects capable of taking control of their destinies—including, in the late 19th century, those destinies that are intertwined with the unpredictable circumstances of the tubercular disease process.

Liberal-economic modes of government take shape through a hailing of subjects—the citizenry—into practices of economic self-government—individual management of one's body. Nikolas Rose writes of liberalism as working through mechanisms that produce individuals who "will govern themselves, master themselves, care for themselves" (Rose 1996, 45). Such self-government, in the realm of disease prevention, is fundamentally about bringing the will of individuals in line with the broader social establishment of what subjects ought to do—the way they are supposed to behave—so as to ensure their own health and the protection of the public

health. The tubercular and those subjects exposed to the preventative measures of the late 19th century anti-tuberculosis movement increasingly take shape through the pursuit of practices of regimen and disinfection, and through self-care in the form of the cultivation of tissue capable of resisting the tubercle bacillus. Emerging from these articulations of liberal modes of governance and individual subjectivity, and the pursuit of economy on both the level of the state and the level of the individual, is a question of the willpower of subjects—of the willingness and of the intent of an individual to, in the words of Foucault, "do as he or she ought" by practicing economic self-government.

The burden of this willpower thus appears in the liberal expectation that individuals are not only capable of, but expected to make economic choices—choices, in the present, that facilitate the future materialization of a subject's best interests. The value of this liberal will emerges in discourses and practices of monetary and medical charity where the sick poor are hailed into modes of government that presuppose both their capacity and their desire to exert control over their financial and physiological futures, realizing a future state of being where they are independent and productive. Liberal autonomy thus takes shape as not just a desirable state of being, but rather as a required state of being. To the extent that a subject does not possess the capacity for such autonomy, liberalism presumes the capacity of charitable social institutions to better or reform subjects, so as to produce within them, this will, and thus, the capacity to intentionally pursue an independent future. The role of reform and education in forging the willpower of the subject is evident in Ricardo's suggestion that "by impressing on the poor the value of independence by teaching them that they must look not to systematic or casual charity, but to their own exertions for support, that prudence and forethought are

neither unnecessary nor unprofitable virtues, we shall by degrees approach a sounder and more healthful state" (Ricardo 1911). Hence Ricardo defines the health of the broader population of the state in terms of the production, through reform of the poor, of prudential individuals—individuals capable of being autonomous in the present, or, though the exertion of willpower, the achievement of future independence through a bettering of the self. Late 19th century efforts to treat and prevent tuberculosis increasingly introduce the cultivation of healthy tissue as an element of "prudence and forethought," as sick individuals are called upon to help themselves get better.

As I will show throughout the dissertation, this capacity to practice self-government in the realm of tuberculosis treatment—the ability to exert one's individual will over one's body—while theorized by physicians, officials, and reformers as a capacity that inheres in individuals, is paradoxically, a product of modes of government. Indeed, in spite of the fact that individual willpower is valued because it ostensibly exists independently of the will of others and the will of the state, the willpower of tubercular subjects takes shape through the provisions of medical charity, through the caring of physicians, and the dependency on liberal institutions. This very paradox, and the question of the substance of liberal willpower, form the material through which tubercular individuals are remade, from subjects of a force of nature into tools for the control of tuberculosis and into cultivators of a healthy bodily soil capable of retarding the growth of the disease.

Within the context of tuberculosis in late-19th century Philadelphia, the purpose of studying liberal modes of government and individualism is thus to understand the formation of this individual will as a product of the articulation of self and government—to understand

how the choices and actions of individuals are constituted by modes of government, and how the subjectivity of "economic man" becomes a hegemonic standard, mobilized, through various liberal fields, including bacteriological science, public health, and charity, through which individuals and populations are produced through processes of *valuation* and *evaluation*. Such modes of government take shape, both through formal political processes and law, but also, and perhaps more importantly, through informal techniques and individual conduct—through the efforts of liberal Philadelphia institutions to educate and discipline the urban population in the correct hygienic behaviors for curing, treating, and preventing the spread of tuberculosis. Burchell writes of these informal and non-legislated codes of conduct as "assembled techniques [that] require and integrate within them ways in which individuals conduct themselves…they involve governed individuals adopting particular practical relations to themselves…the promotion in the governed population of specific techniques of the self around such questions as, for example, saving and providentialism, [and…] the development of habits of cleanliness, sobriety, fidelity, self-improvement, responsibility and so on" (Burchell 1996, 25-26). Public health and private institutions of medical charity served as the spheres for the promotion of these habits—for the promotion of the development of hygienic and self-help techniques amongst sick urban individuals.

Following Burchell, where, for much of the 18th and 19th centuries, liberal individualism largely concerned the cultivation of productive industrial habits—the worthy individual was one for whom productivity, in the form of laboring, was paramount—late 19th century liberalism in Philadelphia introduces the expectation of the economic management of the body or the *physiological economy*. As I show throughout this dissertation, the very notion of economy

broadens to include health and the self-government of the human body and any accompanying disease processes. More specifically, through tuberculosis treatment and prevention, the worthy tubercular individual is increasingly disciplined through educational campaigns, rule placards, and cautionary codes of conduct, developed by charitable and medical institutions, into the management of his or her internal body and into the containment and disinfection of his or her personal pathological material—the disinfection of infectious sputum. The subject of liberal individualism thus becomes a technology through which diseases, like tuberculosis, are to be controlled, through the individual exercise of willpower so as to combat disease.

Enlightenment Science and Technology: Challenging the "Bifurcation of the World"

This investment in the capacity of the tubercular subject to make him- or herself healthy through the cultivation of healthy tissue articulated with the practices of the bacteriological laboratory and, in particular, with an investment, on the part of reformers like Flick, in a progressive vision of bacteriological science as having provided a more true version of the nature of tuberculosis. Flick, reacting to Robert Koch's 1882 discovery of the microbial cause of tuberculosis proclaimed, over ten years later, that "[s]cience has given us…power over" tuberculosis (Flick 1896). Indeed, for many physicians and public health officials, tuberculosis prevention emerged naturally out of the bacteriological truths about the disease and its transmission. In telling the story of this traffic between the laboratory and the city streets and clinics, I also aim to critique the manner in which such Enlightenment investments in science and technology took shape through a presumed human capacity to subject nature.

Critiques of Enlightenment narratives of the progressive nature of science are well worn within the field of Science and Technology Studies (Smith and Marx 1994, Haraway 1991,

Latour 1993). Such critiques are attentive to the manner in which ostensibly progressive scientific and technological solutions are produced by and productive of two presumed separations or "bifurcations" (Whitehead 1920). The presumed separations include that between science and society, and that between the human and nonhuman. Historians of science have established the manner in which science and scientists operate within the realm of the social rather than in an idealized space separate from society (Haraway 1991, Latour 1993). In what follows, I will show how science in late-19th century Philadelphia is both produced by and productive of the social: Western scientists are embedded in human communities and engage in a social profession that both affects and is affected by liberal society.

By viewing scientists as actors engaged in a social practice, the very act of studying nature becomes a matter, not of "discovering" an objective natural world. Rather, the space of the laboratory takes shape as a space that facilitates the interaction between human subjectivity and those material objects of study—microbes, for instance. In approaching the subject matter in this manner, I elaborate on the ways in which the laboratory work of discovering, studying, and cultivating the tubercle bacillus is a remaking of the disease rather than an uncovering of the "true nature" of tuberculosis. Furthermore, the laboratory practices of cultivating the disease and, in Flick's words, demonstrating "power over" the disease—a practice that underlies the emergence of a tubercular subject capable of exercising will over his or her own internal body—is not unique to the lab but emerges in interaction with the clinic and with efforts to treat and prevent tuberculosis. Through the supposed objectification and subjection of the bacillus in the lab, the human body, too, is remade as an object to be subjected by the tubercular individual.

The Human/Non-Human: The Limitations of Human Agency

The second presumed separation that I will challenge is the distinction between microbes and individuals. A traditional humanities orientation, this separation is premised on an a priori distinction between the human and the nonhuman, and the concomitant investment in humans as the legitimate actors and makers of history and the erasure of the role of the nonhuman in contributing to this history (Mitchell 2002). This dissertation speaks to this limitation within the scholarship of the humanities and social sciences by exploring the co-constituitive nature of the human and nonhuman—of liberal individuals and infectious disease—by examining Philadelphia's efforts to govern, contain, and take and assign responsibility for the control of tuberculosis. Engaging this articulation of nonhuman and human, nature and society, microbe and individual requires an approach that complicates the very notion of agency—of willpower—a concept central to the elaboration of both contemporary and late-19th century understandings and embodiments of liberal individualism. This complication, in an oversimplified manner, proceeds from an opening up of the question of the "will" of nature—of the capacity of nature to act upon and through humans: how might the emergence of multi-drug-resistant tuberculosis be understood, not as human failure to control, but as the product of an interaction between individual efforts, human technologies, and the ingenuity of microbes?

In order to explain this process, I draw on scholarly conversations about the "agency" or "vitality" of nature (Bennett 2010)—conversations about the degree to which disease is elided or acknowledged, by scholars of the humanities, historians, and social theorists, as a legitimate actor or shaper of human affairs. This conversation is fraught to the extent that I am using the

notion of agency even as I intend to complicate notions of individualism and intent. I argue, throughout, that the very presumption of individual agency and the corresponding production of subjects capable of acting in their own best interest vis-a-vis disease are, themselves, products of liberal scientific-medical individualism: the willpower of the sick individual does not exist in nature, but rather materializes through the articulation of bacteriological laboratories, medical charity, and efforts to treat and prevent tuberculosis. Thus, in initiating a conversation about the "agency" of nature, I am not claiming that nature has an inherent willpower. Rather, I am arguing that the willpower of liberal individuals takes shape through a concomitant elision, in socio-medical discourses and practices, of the nonhuman as a legitimate actor of shaper of events. In other words, for individuals to master tuberculosis, the disease had to first be rendered a non-participant in the process: increasingly, tuberculosis did not make people sick; rather, tubercular individuals failed to get better. Human failure is made possible by the Enlightenment presumption that nature is conquerable and controllable: for individuals to fail, nature must first be made inert—it must be mastered and one method through which mastery is achieved is through the routine dismissal of nonhuman agency.

Scholars of Science and Technology Studies have attempted to understand the manner in which the non-human objects studied by science interact with and influence the behavior and thinking of both natural and social scientists (Hacking 1999, Haraway 1991, Latour 1993, Mitchell 2002). In doing so, they stress the scholarly tendency to dismiss the manner in which the nonhuman serves as a driver, an "agent," or a force in the shaping of history. These scholars use a variety of approaches to illustrate the manner in which the objects of science are, in fact, subjects of history. Where some scholars (Hacking 1999) distinguish between the

"interactive" objects of the social sciences—people—and the inert objects of the natural sciences—quarks—others argue that non-human nature possesses biophysical qualities that shape human actions (Prudham 2005)—as though the raw material of nature is making demands upon, directing, or, at least, limiting what humans can do.

Latour argues that the materiality of microbes made demands upon Louis Pasteur by prompting him to seek an ideal medium in which to reproduce the bacillus (Latour 1999). He suggests that Pasteur's discovery that the bacillus thrived best in a urine culture evidenced the preference of the microbe, thereby intimating that the progress of the science of bacteriology was produced, in part, through Pasteur's ability to interact with the demands made by biophysical properties of the non-human bacillus—through his search for *the* culture medium that would most adequately facilitate the biophysical properties of scientific objects (Latour). Latour's attribution of historical agency to the microbe establishes a world where outcomes are not the product, solely, of human intent or will, but rather the product of the interaction of human and nonhuman. Such an orientation epitomizes the Science and Technology Studies method of rejecting the dualisms as advised by Alfred Whitehead in his critique of the "bifurcation of the world" into subject and object, nature and culture, human and nonhuman.

Donna Haraway articulates this project, this rejection, as a political intervention (Haraway 1991). This intervention is reflected in her attempts to theorize the possibility of the world as actor/actant—the possibility that nonhuman nature does indeed shape the conditions of human success and failure. She begins by positing the Enlightenment-objective-view of science: "any status as agent in the production of knowledge must be denied the object. It—the world—must, in short, be objectified as thing, not as an agent; it must be matter for the self-

formation of the only social being in the production of knowledge, the human knower" (198). Hence we see the Cartesian split between subject and object through the denial of "any status as agent" to the thing being studied. Yet in contrast to this inert object, she advises that the academic observer come to terms with the agency of the object—a method she terms "situated knowledge": "Situated knowledges require that the object of knowledge be pictured as an actor and agent, not a screen or a ground or a resource" (198). Here, Haraway gestures toward a notion similar to that of Ian Hacking's notion of "interaction" wherein she acknowledges the manner in which the social science researcher is "transform[ed]" by the "people studied." She proposes viewing the "object of knowledge" as possessing an agency—again, a problematic notion to the extent that it implies the very naturalness of the willpower that, as I argue throughout, is produced. The scholar, in Haraway's view, should seek the "dialectic" of knowledge production that occurs through the movement between researcher and object. She, like Latour, opens the door to the possibility of such an interaction in the natural sciences as well. Thus a framework emerges within which "the world" can be studied as having, if not an agency, then an urgency that acts upon and through humans—a gross materiality that enables, that limits, that works in interaction with humans.

This study thus seeks to open up the question of what constitutes a historical actor by taking seriously that which is routinely erased, by both scholars in the humanities and by physicians and officials engaged in disease control and prevention: the will of the nonhuman microbe. Microbes are notable as "active entit[ies]" (Haraway 1991, 198) expressing preferences in the laboratory, attaching to dust in the dwellings of the sick, and entombing themselves and hibernating in the tissue of bodies—and in being active, they partially establish the realm of the

possible. Human willpower is both limited and facilitated by the activity of the nonhuman tubercle bacillus.

Braun and Whatmore (2010) note this commitment to the human and its consequences as "the stubborn attachment of many scholars—liberal and radical alike—to a humanism that finds ever new ways of positing the nonhuman as "out there," as Cary Wolfe puts is, rather than "in here," at the very heart of human becoming, and to a liberalism that continues to posit intention and action as attributes of autonomous individuals, rather than locating individuals and their capacities in relation to a larger transindividual field that the precedes the individuation of singular things" (xx). Thus, within the context of the tubercular disease process, the manner in which subjects become sick and become healthy, and take responsibility or fail to take responsibility, are not fully understood to the extent that they are explained as the actions "of autonomous individuals." Taking the "will of nature" seriously includes acknowledging the constituent role of the nonhuman—the microbe—as part of a broader "transindividual field" through which, in the parlance and practices of liberalism, individuals emerge as autonomous entities. As a result of taking seriously the role of the nonhuman, individual willpower ceases to exist as a commonsensical capacity—indeed, one cannot simply take responsibility for one's health, or for a disease, to the extent that those extra-individual forces, including the behavior of the microbes, are constantly shifting the circumstances through which a subject of disease takes shape. Asking questions of the nonhuman opens up the production of liberal individualism by acknowledging the manner in which human and nonhuman emerge in tandem: a tubercular individual is only capable of shaping their internal bodily physiology to the extent that the nonhuman microbes, and the

very body of the sick, cooperate. Thus, key to my analysis is an engagement with the manner in which the positive materialization of individual willpower is only made possible through a concomitant elision of the "willpower" of the nonhuman.

Telling the story of humans by acknowledging the "willpower" of the nonhuman is an intervention that Jane Bennett recognizes as a "political project" (Bennett 2010). Rather the conceptualizing the agency of the nonhuman as a will, she advises that scholars "take seriously the vitality of (nonhuman) bodies…the capacity of things—edibles, commodities, storms, metals—not only to impede or block the will and designs of humans but also to act as quasi agents or forces with trajectories, propensities, or tendencies of their own" (viii). Thus, the process of becoming a cured subject cannot be reduced to the success of an individual—to their exercise of willpower; rather some interaction between individual and the "vitality" of the microbe has resulted in a state of health.

This "vitality" takes shape through the articulation of unpredictable forces in the work of Timothy Mitchell (2002). In telling the story of the gambiae mosquito in Egypt, and the complex process through which DDT emerged as a technical solution to the problem of malaria at the end of World War II, Mitchell notes the manner in which the calculated intentions of human agents run up against nonhuman limitations in the form of unintended consequences—the products of the unpredictability of nonhuman nature: "[H]uman agency appears less as a calculating intelligence directing social outcomes and more as the product of a series of alliances in which the human element is never wholly in control" (10). Far from viewing DDT as a scientific innovation—a triumph of the human will—he sees it as a technology born of unpredictable alliances between nonhuman actors like the mosquitoes and the puddles

in which they bred and the humans—the soldiers, engineers, and locals—who trod those those puddles and suffered the mosquito bites. This nonhuman interaction with, and indeed, often the nonhuman subversion of the rational-technical calculations of human actors leads Mitchell to a rethinking of human agency as it begins to appear highly contingent and circumstantial.

This reframing challenges both historical and contemporary narratives of tuberculosis suffering, transmission, and propagation: discourses of success and failure, compliance and non-compliance, worth and unworth are inadequate to the extent that they rest on this fundamental denial or erasure of the broader transindividual field—*the multiplicity of vitalities* or *unpredictable alliances*—that constitute the processes of becoming sick or healthy, and remaining sick or healthy. Tuberculosis, and its microbial cause, the tubercle bacillus were, as I show throughout, vital to this remaking of liberal individualism—this remaking by which internal physiological processes came to be regarded, like disease, as subject to individual willpower. And the disease was remade by a concomitant aspect of liberal individualism—namely, discourses and practices of the control of nature that took shape through the contagious propagation of ideas between the laboratory and the clinic. This capacity to control nature was, itself, the product of the discourses and practices of the bacteriological laboratory. Thus, in order for the individual to take shape as a subject capable of exerting willpower over his or her own body and thus over tuberculosis, the disease had to first be objectified, rendered inert, reduced to a controllable form.

In what follows, I aim to participate in the project of confronting and undermining the bifurcation of the world by elaborating on the manner in which the tubercular individual of the late-19th century—an individual constituted by willpower—takes shape precisely through the

elision of the capacity of the nonhuman to shape events and outcomes: the materialization of the subjectivity of liberal individualism is produced by and productive of the erasure of the capacity of the bacillus to act in a manner that defies human intention. As I argue in this dissertation, tuberculosis and efforts to cure, prevent, and eradicate the disease, while not the only site, were fundamental locations in the production of a late-19th century liberal individualism that presumed the capacity of the sick to wittingly intervene in and reshape their internal body. This capacity—this willpower—is made possible by the elision of the vitality of the bacillus and the valorization of human subjects to manipulate, subdue, and resist the pathological nature inside their tissue. The study of tuberculosis and the implementation of methods to treat and prevent the disease thus served as fields through which American society reified its supposed mastery over nature—through both medicine's conquering of disease and the individual's conquering of his or her own body and the disease processes within. By telling this story through an attentiveness to the manner in which the nonhuman—microbes—shapes the human, I mean to make evident the manner in which the late-19th century remaking of liberal subjectivity to include a tubercular individual's capacity to overcome the disease by wittingly shaping his or her physiology, continues to resonate in the contemporary moment in a manner that is contingent upon the continued erasure of this very role of the nonhuman. This erasure of the nonhuman is important as the absence of nonhuman vitality constitutes the presence of individual willpower: the willpower of the liberal individual is the product of the elision of the nonhuman—an elision that assumes the human mastery of nature.

Dissertation Chapter Summaries

I tell this story of the interaction between humans and microbes by beginning in the late-19th century, with the laboratory encounter between scientists and the tubercle bacillus. In Chapter 1, I focus on the late-19th century remaking of consumption—the scientific work through which an incurable disease became curable. This remaking was produced by and productive of a concomitant remaking of individuals: no longer subjected by the tubercular disease process, the sick emerge as subjects capable of helping themselves get better through the witting cultivation of immunity.

I place this late-19th century phenomena in the context of Western historical attempts to understand the cause of tuberculosis. I demonstrate the manner in which these attempts largely explained the disease as a natural force that inevitably killed those unfortunate enough to contract it. Western medicine from the Ancient Greeks through the mid-19th century was constituted by a body of medical knowledge and an array of practices that were both based upon an understanding and productive of tuberculosis as a disease that could not be cured—as a disease that was not subject to human control. Medicine, in regarding tuberculosis as incurable, thus simultaneously produced consumptives or tubercular individuals as subjects of the disease: while treatment might lengthen life, the sick were fated to die of consumption.

I trace the efforts of physicians to develop alternative theories of a material agent responsible for causing the disease—explanations that remained unpopular before coalescing into the "discovery" of the microbial cause of the disease, the tubercle bacillus, through the laboratory practices of Robert Koch. This remaking of the disease from an external force of nature to a pathology caused by a specific organism, operating internally, in the tissue of the

human body, constituted a scientific and medical confrontation with what Lawrence Flick called the "physicality" of the disease.

Flick and other anti-tuberculosis reformers translated the laboratory demonstration of "control" over the disease—the capacity to grow it in culture—into the sphere of treatment. I analyze this translation and the corresponding emergence of a revolutionary socio-medical optimism toward the possibility of controlling and curing the disease in the bodies of the sick through the popular late-19th century language of soil and seed and the concomitant remaking of individuals as cultivators of personal soils of immunity. The very production of the sick as subjects with the capacity, through the exercise of individual will, to retard and subject the disease by exercising discipline over their own physiological processes undergirded the emergent understanding of liberal individuals as agents, capable, in Flick's words, of "helping themselves" overcome tuberculosis.

I trace this traffic between clinics and laboratories, arguing that the the control of tuberculosis in the laboratory articulated with political economic theorizations of individualism—of the content, boundaries, and aspirations of "economic man"–yielding both a reworking of political economic thought, to include control of one's own body and health (and thus, over disease processes) and of the substance—willpower—of liberal individualism. Through the remaking of tuberculosis, both the disease, and the human body, were increasingly remade as objects, awaiting subjection by the exertion of individual willpower.

In Chapter 2, I contextualize the emergence of this tubercular individual, capable of helping him or herself in overcoming the disease within a genealogy of Philadelphia's charitable efforts to care for the sick poor. By tracing the articulation of discourses and

practices of self-government within the 18th and 19th century almshouses and hospitals of the city, I detail the manner in which poor-sick-urban subjects were evaluated—valued and devalued—by municipal officials, reformers, and physicians through the application of a political economy of care.

In order to understand how and why the tubercular subject of the late-19th century took shape as an individual capable of helping him or herself, I trace the emergence of this political economy of care: an orientation toward, and set of practices for expediently and efficiently treating the sick and poor through the evaluation of the worthiness of potential subjects of charity. Efforts to run the almshouses in a prudential manner so as to not waste public money resulted in the elaboration of a charitable tradition centered on a triaging of the subjects of aid so as to ensure that money was not wasted on those deemed unworthy.

I detail this political economy of care to establish the manner in which this system of evaluation articulated with chronic diseases like tuberculosis. Where the almshouses and hospitals of Philadelphia historically valued subjects that demonstrated a capacity to "better" themselves, moving from a state of dependence into one of independence, chronically ill consumptives, ever slipping back into sickness, and in need of seemingly perpetual aid, could never embody this idealized subject of independence and productivity. Thus, consumptives found themselves consistently marginalized in the eyes of reformers, and consequently, they remained largely untreated. The lack of worth of subjects, typically attributed to a failure of individual willpower, was, in chronic tubercular subjects, ironically, not a matter of mental fortitude, but a matter of the physiological inability—the chronic inability—of the consumptive body to get well.

With a particular focus on the 18th century Bettering House and on the infamous 19th century Blockley almshouse and hospital, I characterize this challenge to liberal individualism posed by the chronically ill body: diseased subjects in general, and consumptives in particular, proved a material impediment to the realization of the idealized productive and independent liberal subject to the extent that they required aid in perpetuity. In part, through Flick's advocacy, and in part, through the broader remaking of tuberculosis as a curable disease in the late 19th, the emergent capacity for the tubercular to get well resulted in a slow and incomplete re-evaluation of their charitable worth.

In this chapter, I broaden the analysis of the role of the individual in caring for him or herself to explore the threat to both human health, and to the professed liberal boundaries between self and other, that took shape through the remaking of tuberculosis as contagious disease. Contagious tuberculosis, as I show, taxed municipal officials, physicians, and the public in general with a new form of threatening nature. Where most infectious diseases were acute—doing their damage and dying off—as a chronic disease, tuberculosis lingered in the sick: the contagious tubercular were not an easily containable population. Furthermore, the method of its contagious transmission proved vexing: it could seemingly infect in the absence of a sick individual. These curious qualities of the disease required specialized forms of governmental and community interventions.

I detail the process by which Flick advocated and agitated for both the acceptance of the contagious nature of the disease and for governmental intervention in preventing the spread of the disease. Tracing Flick's interactions with his peers in the community of physicians—both contagionists that shared his perspective and anticontagionists that still

believed tuberculosis to be an hereditary disease—I show the manner in which struggles over the science of the transmission of the disease were simultaneously struggles over the rights of individuals and over the appropriate reach of governmental bodies—public health—in regulating both the habits of the sick and the practices of physicians.

I show how these debates over the disease's contagious potential took shape, in part, through reactions to the peculiar materiality of tuberculosis—namely, its capacity to survive for long periods of time, and to infect, even in the absence of a witting sower of the disease through the fomite—objects, like dust particles, that served as vectors for the transmission of the disease. The remaking of tuberculosis as a contagious disease thus confronted liberal physicians and reformers with a disease that paradoxically required both sick individuals "helping themselves," and the broader municipal efforts to facilitate the containment of those dead and inanimate objects were the contagion thrived. It was within this context that anti-tuberculosis reformers came to reassert the capacity for human control over the disease through the implementation of a state-led "administrative control of tuberculosis"—a process of educating, disciplining, and reforming the habits of the public, passing laws designed to contain and eradicate contagious pathological material, and taking more drastic quarantining action where necessary.

In the final chapter, I tell the story of the 1902 founding and the first few years of operations of the Henry Phipps Institute—a sanitarium, clinic, and laboratory created to treat Philadelphia's poor consumptives and to prevent the spread of the disease. I focus on elaborating the tensions between the Institute's two founders, Flick, and former steel-magnate Henry Phipps. I use these tensions regarding the Institute's ideal mission to explore the

paradox whereby the independence of sick tubercular subjects was constituted through their dependence upon institutional and/or charitable resources.

I explore the production of this sick subject—constituted simultaneously by dependence and independence—through attention to the Institute's sanitarium and dispensary. I trace a history of the still-nascent late-19th-century-sanitarium-movement, and the corresponding emphasis on the cultivation of regimen as a tool for healing the sick. I establish the means by which the "cure" of the disease required the structured environment of the sanitarium, and thus proved fleeting once the sick attempted to reintegrate into the world outside the sanitarium walls. The dispensary served as the node for the attempted translation of the elements of physician-surveillance and enforced regimen beyond the space of the Institute, into the private spaces of the homes of the city's sick. In serving as a seat for the elaboration of the "administrative control of tuberculosis," the clinic engaged in educational campaigns, home visits, provision of free resources, and the disciplining of the tubercular in the correct habits for preventing the spread of the disease.

I trace the manner in which these efforts increasingly implicated the Institute and Phipps' resources in the treatment of, not simply individual tubercular bodies, but the social conditions—the poverty—underlying the spread of tuberculosis—the poverty underlying susceptibility to the disease. Flick's desire to treat and prevent the spread of the disease in the entirety of the poor urban population of Philadelphia thus resulted in a situation requiring, in Phipps' estimation, an endless allocation of resources—a "bailing out" of "the sea." It was within this context and through the discourses and practices of Institute charity, discipline, education, and surveillance, that tuberculosis was remade once again—this time, as a

sociological disease. Where individuals attending the Institute's clinic and/or living in the sanitarium were still produced as having a capacity to help themselves through the witting cultivation of immunity, tensions between Phipps and Flick grew as the two founders confronted the emergent understanding that the very capacity to resist the disease was, itself, a function of social status and access to resources—nutrition, time to rest, access to fresh air.

I conclude by tracing the Institute's efforts to distribute free milk to "worthy" patients. I detail this practice as the ground through which Flick's own struggle with this very paradox of producing independent subjects through dependence materialized in an increased mistrust of the motives of those poor subjects seeking aid from the Institute—those subjects who, in Flick's words, ought to be able to help themselves. By the end of the first decade of the 20th century, as Phipps set about transferring the Institute to the University of Pennsylvania, Flick's operating of the free milk program and his realizations regarding the breadth of the sea of needs of Philadelphia's poor undergirded the broader recognition, echoed by the University and by other reformers across the United States, that the disease was sociological—while the tubercle bacilli was the agent responsible for the disease, a subject's access to resources determined their susceptibility to this agent. Facing the complicated nature of treating these social conditions and facing the University of Pennsylvania's distancing of itself from the provision of welfare that seemed necessary to sustain the cure of the tubercular, Flick's tenure ended in bitterness as he both rejected and felt rejected by the Institute's new approach. The very paradox of the cure of the poor tubercular—this very articulation of dependence and independence underlying the capacity of the sick to get better—proved a problem with no immediate solution, and no evident role for Flick.

Chapter 1

The Remaking of Tuberculosis: Bacteriology, the Tubercle Bacillus, and the Cultivation of Individual Immunity

In 1908, tubercular patients using the dispensary of Philadelphia's Henry Phipps Institute found their supply of free milk cut off. Institute co-founder and physician Lawrence Flick—himself, a survivor of tuberculosis—defended this new cost-cutting measure, claiming that a sick individual who had "received milk for six months ought by that time to be restored to a condition of health in which he can help himself" (Bates 1992, 127). Flick made this statement some twenty years after he initiated a novel campaign—a "crusade"—to prevent, cure, and eradicate tuberculosis the world over. This campaign was underwritten by his unbridled optimism in the new bacteriological science: with Robert Koch's late-19th-century discovery of the material cause of tuberculosis, a host of bacteriologists, physicians, and public health officials saw an opportunity for humanity to take control of a centuries-old scourge—a scourge that was responsible, by the mid-19th century, for having killed, in Flick's estimation "one seventh of the human family!" (58). With tuberculosis ravaging Philadelphia and most major cities in the Western world, Flick spent the 1890s organizing and seeking funding for state and private care to achieve his goals. The Phipps Institute was the crowning materializations of his efforts—a space in which he had succeeded in providing resources—space, beds, physicians, free milk—and conditions within which the tubercular could help themselves overcome the disease.

Flick's optimism toward and pursuit of a cure took shape through the articulation of a series of broader late-19th century liberal ideals and practices—ideals and practices that constituted and were constituted by the realms of public health, public and private charity, and

bacteriology science. The mainstreaming of state and municipal public health in U.S. cities was accompanied by a spirit of reform that included a broad range of efforts—cleaning up city environments, promoting individual hygiene, and identifying and quarantining contagious threats. With regard to tuberculosis, these efforts were increasingly influenced by the findings of the bacteriological laboratory: the identification of the tubercle bacillus and the fixation on these microbes as the cause of tuberculosis. The culturing of these bacilli in the lab was addressed, by scientists, physicians, and public health reformers as evidence of the scientific mastery of tuberculosis—efforts that had brought the disease, in Flick's words, "completely within [human] power" to control (Flick 1896, 639). The rhetoric and practice of reform efforts increasingly paralleled that of the bacteriological laboratory, inspired by the belief that if the disease could be controlled in the laboratory it could similarly be controlled in the bodies of the sick and in the populations of cities.

By the 1890s, Flick and other reformers, participating in a burgeoning public health movement invoked the work of Robert Koch, "the father of bacteriology," as foundational to their conviction that tuberculosis was both curable and eradicable. Citing Koch's discovery of the microbial tubercle bacillus, and his establishment of the bacillus as the agent that caused tuberculosis (Flick 1892, 640), anti-tuberculosis reformers organized around the bacillus—a tangible-material-target—for their campaigns. Hopes and visions for overcoming the disease translated into disinfection and prophylactic practices designed to control the bacillus beyond the laboratory, containing its spread in urban populations by educating and disciplining individuals in the proper methods to stifle the disease in their own bodies. The control of the bacillus was routinely equated with, even substituted for, the control the disease.

Yet Flick's statement regarding the capacity of tubercular individuals to help themselves also suggests a challenge to his conviction: in the space of Phipps Institute, his confidence in the capacity of bacteriological science, liberal society, and liberal individuals to master tuberculosis was being undermined by bodies that failed to get better. In spite of all his goodwill, and the Institute's considerable investment of resources in the treatment of the sick, Flick's laborious efforts had run up against a limitation—a limitation that he identified as a certain type of tubercular individual deficient in the necessary willpower to "help himself"; a subject incapable of managing the resources of his or her own body in the interest of controlling the disease, and therefore, unworthy of charitable resources; a subject lacking an affinity for health. In a liberal society where the worth of potential subjects of financial and medical charitable aid was routinely judged, the tubercular subject of the first decade of the 20th century was faced with a choice: choose to be healthy, or choose to be sick. And beneath the roof of the Phipps Institute, it appeared to Flick as though many were choosing sickness.

Flick's linking of the cure of tuberculosis to the exercise of individual will and choice was increasingly common by the end of the first decade of the 20th century, and in many ways, his withholding of free milk at the Henry Phipps Institute appears *unremarkable* given the broader coeval field of liberal social discourses and practices regarding the provision of resources to the poor and needy. His identification of certain patients as unworthy of free handouts reflected general anxieties, amongst liberal policymakers and philanthropists, that charity would produce dependence amongst "unworthy" recipients. I outlined this anxiety, and the social distinction between the "worthy" and the "unworthy" in my discussion of the tenants of classical liberal individualism in the Introduction. The classical liberal individual embodies

rationality, intention, and prudence in managing his or her own resources. In the 19th century discourses of charity and aid, one's worth as a potential recipient of state or philanthropic care was determined, in part, by one's demonstration of the capacity to economically manage one's resources. I will further elaborate on this broader field of circumstances in Chapter 2 by analyzing Philadelphia's late-19th century *political economy of care*, and the co-production of "unworthy" tubercular subjects and the city's "unworthy poor." Given these circumstances, Flick's identification of a problem in those patients incapable of helping themselves was rather conventional for the first decade of the 20th century.

However, in light of the then recent-history of tuberculosis in the Western world, Flick's conviction that individuals were responsible for controlling the tubercular conditions within their body—indeed for controlling their own life and death—*was* remarkable. For Flick, tubercular subjects not only could, but should help themselves by pursuing proper nutrition, rest, and fresh air to wittingly cultivating the proper bodily conditions to stave of the advances of the tubercle bacillus. Flick's investment in the social and individual mastery of The Great White Plague represents a vast departure from the prevalent 19th-century medical understanding of the disease as largely *incurable*. To early-19th-century physicians, those suffering from tuberculosis could not help themselves, nor, in most cases, could they be helped by medicine: medical and individual intervention in the disease process was largely seen as futile, for the tubercular were fatalistically predisposed, via their biology—what physicians referred to as the tubercular diathesis—to be sick (Ackerknecht 1982) (Ott 1996).[1]

[1] This formation of both the disease and the tubercular individual, famously underwritten by the French physician Laennec, bears a Malthusian sensibility regarding inherent limitations in nature: in this case, limitations on the

Indeed, in the United States, this late 19th and early 20th century medical view of the individual as capable of developing the necessary physiological resistance to subject tuberculosis is remarkable in its departure from two thousand years of medical ambivalence toward the curability and controllability of this disease alternatively known as *phthisis*, *consumption*, and the Great White Plague. These varying historical formations of tuberculosis consistently produce the disease as a force of nature—a force that defies human attempts to cure, master, or control—and they produce material, or "natural" limitations on the capacity of both the willpower of individuals and the expertise of medicine to cure, much less eradicate tuberculosis. How, then, in half a century, had tuberculosis, an incurable and uncontrollable disease, become a disease that science had mastered? That medicine could cure? How did the perceived scientific mastery of this ancient plague translate into an optimism regarding the possibility, and a set of practices designed to materialize the control of the disease? And how, in turn-of-the-century Philadelphia, had the cure for tuberculosis become located within the capacity of an individual to "help himself"?

I argue that the re-making of tuberculosis as a controllable disease in the late-19th-century United States, constituted and was constituted by a specific embodiment of liberal individualism premised upon the production of *the biological processes and tissue* of the human body as subject to individual willpower—the production of the body as an object, subject to the intentions, choices, and prudence of the individual. Beyond a mere transcribing of classical liberal principles onto tubercular subjects, Flick and the anti-tuberculosis movement of late-19th-century Philadelphia were involved in a re-making of the classical liberal individual

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capacity of physicians and the sick to overcome tuberculosis. I discuss this and the diathesis in more detail later in the chapter.

through this concomitant re-making of the tubercular body as an object upon which and through which liberal willpower was able, even expected to act. Through the articulation of bacteriological science, liberal charity, and public health practices, the emergent liberal individual of the turn-of-the-century will increasingly be held responsible for the management of his or her internal body—for wittingly developing immunity. Individuals who failed to manage their bodily resources through the application of foresight, intention, and will—those who failed to help themselves—were those who failed, in the words of a popular parable, to *cultivate the requisite soil* necessary to enable themselves to arrest the tubercular disease process.

Yet this hailing of tubercular subjects into the rational management of their internal body does not account for the corresponding assumption, made by Flick and scores of scientists and physicians, that, counter to thousands of years of history, medical science and tubercular individuals were capable of overcoming material limitations and mastering the disease. Indeed, in order for individuals to become responsible for controlling the disease in their own bodies, tuberculosis had to be re-forged. This nonhuman force that had historically subjected human individuals had to be rendered controllable. As I will show below, this historical inversion of master and subject—of nonhuman and human—was produced by and productive of the late 19-century remaking of tuberculosis: what Flick described, in 1896, as the "newly discovered knowledge about" tuberculosis—a disease no longer understood as "the direct interference of an angry Providence," but rather "a physical phenomenon subject to the control of man" (Flick 1896, 639).

I address this historical inversion by drawing attention to the manner in which the social and clinical transformation of liberal individualism takes shape through the scientific

remaking of the materiality of the disease—a shift in the production of knowledge about the disease's physicality. The primary site for this late 19th century remaking is the bacteriological laboratory; and it is through the translation of Robert Koch's bacteriological experiments within the controlled environment of the laboratory—his making the bacilli visible and his culturing of the bacilli (Lechevalier 1965)—into the realm of clinical treatment, that the perceived human mastery over tuberculosis begins to take shape: the assumption of the human capacity of mastery over the nonhuman bacillus that undergirds the remaking of the liberal individual.

My argument is primarily concerned with the effects of this late 19th century articulation of tuberculosis and individualism in Philadelphia. Yet the uniqueness of this particular constellation of science and society emerges, partially, through a re-working of prior articulations of tuberculosis, nature, and self. Hence, before detailing the intercourse between Koch's "mastery" of tuberculosis in the laboratory and the clinical pursuit of the "mastery" of tuberculosis in human bodies, I trace a series of three historical flash points in the making of the materiality of tuberculosis—what Flick terms the "life history" of the disease (Flick 1925)—to establish these shifting articulations. I will juxtapose the telling of these moments with Flick's treatment of the disease in his own body, his vision of preventing and curing the disease at large, and his analysis of Koch and the history of tuberculosis.

These moments are important as they constitute, in differing manners, both the historical production of tuberculosis as a nonhuman force of nature and various "natural" or material limitations on physicians and on sick individuals in their efforts to treat the disease. By natural limitations, I am referring to the manner in which historical makings of tuberculosis

and self are constituted by a corresponding production of "nature" as a force that limits or checks human willpower and techno-scientific attempts at mastery. The capacity of humans—physicians in their prescribing of treatment methods and sick individuals combating the disease in their bodies—to achieve an unequivocal cure is absent prior to the 19th century, as phthisis is regarded as a force of nature and, as such, as uncontrollable.

I begin with the Hippocratic epidemic. Consumption takes shape, in the Hippocratic texts of the Greeks, as an epidemic force of nature. As a force of nature, phthisis is not subject to human will; rather, humans—sick individuals—are subject to the disease: fatalistic subjects. In this historical formation of self and consumption, a cure is limited by the medical production of diseased nature as more powerful than human willpower—more powerful than both the physician's capacity to cure, and the sick individual's capacity to help him or herself get better.

This fatalism toward the ravages of the disease was challenged, though not entirely replaced, through a second flash point, the 18th-century autopsy. Physicians observing the pathological material made visible through the application of the anatomical knife to dead human bodies remade consumption, not as a *force of nature*, but as a disease rooted in *a material form of pathological nature*–the tubercle. In Richard Morton's infamous treatise on phthisis (Morton 1689), this remaking occurs with the concomitant production of the individual as capable, under *limited circumstances*, of intervening in the disease process—in the material development of the tubercle—by subjecting the tubercle, and thus, the disease, through proper "self-government." Yet, in spite of this potential, Morton's work simultaneously reproduces diseased nature as a more powerful force than both the "art of medicine"—attempts, by

physicians, to proffer a cure for disease—and more powerful than the individual will in adopting a regimen to overcome the disease.

Finally, I detail the early 19th century application of various clinical technologies for listening to the chests of the sick—percussion, auscultation, and the employment of the stethoscope. Where the autopsy allowed for investigation into the materiality of the disease after death, these new practices enabled physicians to produce knowledge about the pathological tubercle in the *living* human body. Yet even in reckoning with the specifics of the matter of the disease, these physicians located the cause of consumption in the inherited constitution of individuals: this *inherited constitution served as a limitation* on the powers of both medicine and the individual as the tubercular were produced as subjects, predisposed, by their biological nature, to be tubercular.

These flash points, while dissimilar in many ways, all serve to produce various natural limitations on human willpower—on the human capacity to intervene in the nonhuman disease process known as tuberculosis—*limitations that are increasingly challenged, in the late-19th century, through the emergence of a constellation of discourses and practices that establish human dominance and control of diseased nature as fundamental to liberal individualism*. Developments in liberal public health, medicine, and charity, intersect with Koch's methods of staining and culturing the microbial cause of tuberculosis to challenge the notion that humans are inevitably subject to tuberculosis by producing a subject—a liberal individual—that is constituted by the capacity to control his or her own physiology through the willful cultivation of tissue that resists tuberculosis. I elaborate on the manner in which Koch's laboratory innovations—making the tubercle bacillus visible and isolating a pure culture of the bacilli in a

proper "soil"—humanized and individualized the microbe, solidifying its status as an agent of the tubercular disease process through the production of knowledge of its *preferences* and *affinities*. In designing his experiments to cater to these microbial desires, I show how Koch's work established a material basis for the perception, amongst physicians, that the life of the disease *could be mastered*–sown, or destroyed–*through human means and human willpower*.

Koch's experimental designs were translated by Flick and his late 19th century peers from laboratory practice into clinical methods. In positing Koch's work as having ushered in an era in which humans would master tuberculosis, Flick frames the late 19th-century laboratory experiments of Koch as a challenge to and an overcoming of these natural limitations—an inversion of historical perspectives on the interaction of humans and disease nature. In other words, the outcome of Koch's experiments is the production of tuberculosis as subordinate to humans. Here, both the identification of the material bacillus—the "foe" in Flick's words (1896, 639)—and the mastery of the disease, by cultivation, in the laboratory, translates into a program for the treatment and prevention of tuberculosis modeled on the capacity of individuals to master the disease by wittingly cultivating tissue that is inhospitable to the development of the tubercle inside their bodies. Through the clinical prescription of methods to designed to strengthen patient immunity, early 20th century medical practice would rework the sick as sowers of healthy tissue and the tubercular body—the soil—as a resource subject to the prudential management—the cultivation—of the "worthy" liberal-individual. Beneath the roof of the Henry Phipps Institute, a long history of material limitations on a cure to tuberculosis would lift, in theory, but remain in the form of bodies that would not do as they ought; bodies

that seemingly would not get better; the bodies of individuals that, in Flick's estimation, failed to help themselves.

Flick, Koch, and The Life History of Tuberculosis

In the summer of 1882, a tubercular Lawrence Flick returned from his travels to the Western United states to his father's farm in Carolltown, Pennsylvania to recover from his sickness through a regimen of fresh air, horseback riding, and light work. Flick had sought and failed to find a cure for himself in California (Flick 1944). On March 24 of the same year, shortly before Flick's return home, Robert Koch presented a lecture entitled "On Tuberculosis" to the Physiological Society of Berlin. In the lecture, he patiently delivered his groundbreaking finding that he had "discovered" the *tubercle bacillus*, and proven it to be the germ responsible for tuberculosis (Brock 1988, 128).

In 1896, Flick would reflect on the implications of Koch's discovery, assessing the latter's uncovering of the microscopic organism—the physical cause of tuberculosis—as evidence of the late 19th-century advance of scientific knowledge. Flick wrote that tuberculosis had existed "through myriads of generations…and continues to exist under definite environments, requiring a certain soil for its development, a certain temperature for its prosperity, and certain cycles of organic change for its propagation. These have all been *unwittingly* furnished it by the human family since the days of Hippocrates…although at any time they could have been withdrawn…had man possessed the knowledge necessary to enable him to do it" (1896, 640; italics added). In attributing the survival of the disease over centuries to a lack of knowledge and to the *unwitting* behavior of previous historical incarnations of the human family—including the Greeks—in dealing with the scourge of tuberculosis, Flick underscores a vast-late-

19th-century change in the perception of the interaction between humans and tuberculosis. In Flick's Enlightenment narrative, prior to the 19th-century, Western civilization merely lacked the correct knowledge of the disease—knowledge that would have allowed them to wittingly combat tuberculosis by creating an environment that was hostile to the disease.

The knowledge Flick refers to was that of the knowledge of the cause of the disease—a cause that, through the work of Koch, was increasingly grounded in the physicality of tuberculosis—the material tubercle bacillus. Knowledge of this physicality was, for Flick, a rectifying of the mistaken understandings of past science and medicine. Indeed, while Flick was respectful of the history of medicine and of those who practiced the treatment of disease and theorized disease processes, he viewed the present of the late 19th-century as a progressive improvement upon the past: a substitute of correct knowledge and practice for the flawed knowledge and practices of the past. Such flaws began, in Flicks assessment in his tome *Development of Our Knowledge of Tuberculosis*, with the Ancient Greeks and their understanding of the physicality of phthisis and their attribution of the cause of the disease to a mélange of natural matter and natural forces—phlegm, bile, the humors, bad breath, bad air, and weather patterns.

The Making of Tuberculosis: The Hippocratic Epidemic as a Nonhuman Limitation on Human Willpower

For the Hippocratic authors[2] of the classical Greek texts on medicine, the physicality of tuberculosis was characterized as an excess of "phlegm decay[ing] in the head":

[2] Classical Greek understandings of tuberculosis are based primarily on the Hippocrates corpus—writings that are now generally attributed to an amalgamation of Greek physicians and thinkers on medicine rather than a single individual (Flick 1925, 13) (Arikha 2007, 18, Lloyd 2006).

> When the head gets filled with phlegm it becomes sick and when heat has developed the phlegm decays in the head which having been accomplished, it can no longer be moved in the direction in which it ordinarily goes; then when it is thick and decayed and when the veins have been filled beyond measure, a dropping into the lungs takes place; and the lungs, having received it, presently become affected, being irritated by the phlegm which is salty and rotten. (Translated in Flick 1925, Hippocrates. Littré)

This explanation of tuberculosis as resulting from the changing state and movement of phlegm from the head to the lungs locates the disease within the broader Greek model of the four humors—phlegm, black bile, yellow bile, and blood. Health, according to the Hippocratic corpus, functioned through the balance of these four humors. Disease resulted from a lack of harmony in these bodily fluids. The Hippocratic author of *Nature of Man* argues that "human nature [is] a balanced mixture (*krasis*) of a variety of humors (blood, phlegm, yellow bile, and black bile)" (Sassi 2001, 153). Disease, including phthisis, "is produced by the varying degree to which each humor may grow comparatively hot or cold, dry or wet" and by excesses or deficiencies of a particular humor (153). Diseases, thus, were not constituted by their own materiality; rather they were the products of a pathological imbalance of the material of the human body.

The Greeks characterized the suffering wrought by such an excessive and rotting phlegmatic humor as a *burning up* of the body. The Greek words for tuberculosis—*phthisis* and *consumption*—are derived from this symptom of burning up with "phthisis" translating as "I waste away" (Webb 1936, ix). This "consumption" of the body (ix) manifested as a slow wasting with a variety of symptoms including an intermittent acute cough, expectoration of thick sputum, vomiting, chills, and recurring fevers, producing a "watery transparency" in the body (Flick 1925, 19-20).

The Hippocratic authors delineate three differing types of phthisis. These three types are roughly differentiated by the span of time—one year, three years, or nine years—through which they work their effects on the human body. While physicians make recommendations, in the literature, for treating the disease—fresh milk, and proper rest—such treatments are stopgap measures rather than cures: in Greek medicine, all three types of phthisis lead, inevitably, to death. In the worldview and practice of the Ancient Greeks, the pursuit of a cure for individual cases of phthisis or a wholesale eradication of the disease was unthinkable, remaining beyond the capacity of individuals and physicians.

This was not true for all maladies observed and treated by the Greeks. A patient, under supervision from a physician could become an agent in effecting a cure so long as they suffered from a certain type of disease: those diseases "which arise soon after their origin, and whose cause is clearly known." In such cases, "The patient himself must bring about a cure by combating the cause of the disease, for in this way will be removed that which caused the disease in the body" (Hippocrates 1931, XIII). This location of the capability to combat and overcome disease within the locus of the "patient himself" suggests the formation of a self, in Hippocratic medicine, as a willful agent eliminating the causes of pathologies in his or her own body, thus bringing about the transition from sickness to health. The Classical Greek individual achieved such a transition through the adoption of physician prescribed *regimens of conduct*.

Regimens of conduct—the word "regimen" derived from the Latin *regere* meaning *to rule*—were constituted by practices of bodily self-government: an individual's pursuit of correct diet and exercise. One duty of the Greek physician committed to practicing the "art of

medicine" was "to consider the patient's mode of life and to take it into account" when treating the sick (Hippocrates 1923, XXV). Such considerations allowed physicians to recommend "changes…in regimen to suit the several conditions of age, season, physique, and disease" (Hippocrates 1931, ix). Failure to change one's habits did not merely exacerbate pathological processes; rather an individual's inability to cultivate correct conduct *could cause disease*. Hence, Flick and the late 19th century physicians were not unique in positing individuals as capable of helping themselves in overcoming sickness; rather, Hippocratic medicine carved out a pathological category—*diseases of regimen*—that could be addressed and even cured through disciplined self-rule of one's own body.

Phthisis, however, was not a disease of regimen; rather, it was categorized as an *epidemic disease*. Greek medicine posited the epidemic disease as that which *could not be stopped* through individual willpower. In the literature of the Ancient Greeks, epidemics like phthisis emerge as forces of nature, confronting both physicians—practitioners of the "art of medicine"—and the individual sufferer with material limitations on their capacity to control the disease. At worst, the epidemic as force of nature was unavoidable and uncontrollable; at best, it could be mitigated. Physicians were careful to speculate on cures for epidemic diseases and they did not write of the eradication of such diseases.

The Hippocratic author of *Nature of Man* typifies these two forms of disease by differentiating between sicknesses that "arise…from regimen" and those epidemic diseases that emerge "from the air by the inspiration of which we live" (Hippocrates 1931, vm.-ix.). This distinction between those sicknesses brought on by failures in individual regimen and those emanating from the breathing of bad air hinges on the prevalence of the disease in a

population. As the Hippocratic author explains, diseases caused by regimen affect a single individual; conversely, diseases "from the air" are "epidemics" that affect "many men…at the same time" (vm.-ix.). Where the former could be treated, if not cured, through the cultivation of correct self-rule of the body (ix.), those latter diseases affecting many "at the same time" were "epidemic" and thus, beyond the reach of regimen: "when an epidemic of one disease is prevalent, it is plain that the cause is not regimen but what we breathe, and that this is charged with some unhealthy exhalation" (ix.). In contrast to diseases of regimen, the epidemic as force of nature—bad air—subjected individuals. This pathologized air—this "unhealthy exhalation"—was the product of climate, of seasonal change, and weather patterns. Its deadly whims were determined by variations in natural conditions: shifts in temperature, the direction and virulence of the wind, and the moisture in the air (Hippocrates 1931, I). And importantly, such whims occurred in spite of human willpower.

Phthisis takes shape through these natural conditions in the Hippocratic writing *Epidemics I*. Evidencing a seeming invulnerability to human intervention, it runs its course through the population of the Greek island Thasos, leaving the observing physician (the author) and the observed victims with little recourse to medicine or self-government—regimen—in the pursuit of a cure. The Hippocratic author begins his description of the onset of consumption by tracing the changing weather across the year's four seasons. Having described a relatively uneventful autumn and spring, his account changes with the onset of summer (Hippocrates 1923, I).

The early summer brought consumption—the "coughing of sputa"; chills, "disordered" and frequent bowel movements; the excretion of "slight, thin, pungent" material from the

body: bodies "averse to all food and experiencing no thirst" wasted away. The disease did not discriminate as it struck those "who had been ailing a long time"; those whom the physician had not expected to be consumptive; and those who were predisposed or "inclined to be consumptive." In all cases, the epidemic killed: "of those who took to their beds, I do not know one who survived even for a short time" for "[d]eath came more promptly that is usual in consumption." The author notes that other diseases "with fever" took root; yet they "did not prove fatal": "consumption was the worst of the diseases that occurred, and alone was responsible for the great mortality" that year (Hippocrates 1923, II).

The Hippocratic author further articulates this capacity of the seasons to exacerbate, if not cause the epidemic of consumption, describing a second instance where the "severest and most troublesome disease, as well as the most fatal, was the consumption" (Hippocrates 1923, XIII). This fatal scourge is brought on by "spring…the worst enemy." The Greek location of the "enemy"—the cause—of phthisis in qualities of the air determined by seasonal shifts placed it outside of the reach of both physician intervention—the "art of medicine"—and individual regimen: for the Greeks, human willpower, be it medicine or discipline, could not cure consumption.[3]

The ebb and flow of consumption is further determined by the "crisis day." The "crisis day," a convention of Hippocratic medicine, attributes a natural, predictable, yet largely

[3] Yet where seasonal qualities catalyzed epidemics of consumption, they could also bring the mitigation of disease: "And it seems to me natural that the coming on of summer should have been helpful. For the coming of winter resolves the disease of summer, and the coming on of summer removes those of winter" (Hippocrates 1923, XV). Spring acts as an "enemy," promulgating consumption; winter and summer are accorded the capability to "resolve" and "remove" those traces of disease that remain. Seasons, with their accompanying weather patterns, are the waxing and waning of the epidemic disease process: given the general explanation of all types of phthisis leading to eventual death, the observation of the "resolve" of the disease suggests remission rather than outright cure or eradication.

uncontrollable rhythm to diseases. On certain "fixed dates," laid out in detail by the Hippocratic author, the intensity of the sickness is expected to peak. On such days, the internal suffering of the individual becomes exacerbated by an external crisis—the ravaging drama of weather and disease—as consumption wreaks its havoc inside the body. The potential for physician intervention is minimal—he can anticipate these days and "be attentive" to crises that occur without warning on non-crises days; but primarily, he and the patient must weather the storm (Hippocrates 1923, XXVI).

The physicality of the disease inside the body—the humoral descending of an excess of phlegm from the head to the lungs and the corresponding rot of the humor—thus seems secondary to the external forces: the determining forces of season/weather, and crisis/intensity. Yet, importantly, both internal transformations and external forces acting upon the body are described similarly to the extent that they operate as limitations on human mastery and individual willpower. While those forms of disease caused by *regimen* are treatable, even curable, through physician prescribed and individually pursued changes in regimen, the Hippocratic epidemic, generally, and consumption, specifically, materialize as diseases that cannot be subjected to human will—the Greek consumptive can do little to help him or herself; he or she cannot choose to be healthy in the face of natural limitations on the human mastery of phthisis.

Lawrence Flick's crusade to cure and eradicate tuberculosis thus emerges, in the late-19th-century, as a distinct challenge to the Greek medical production of the disease as a categorically incurable force of nature. Where Flick claimed that previous human incarnations of science and medicine had lacked the knowledge, and thus contributed to an "unwitting"

allowance of the disease to spread, he does not reckon with an important facet of the Greek production of the constellation of human will, medical expertise, and the nature of disease: humans were, in spite of their knowledge, technology, and willpower, simply incapable of controlling some natural forces. This reckoning bears on the underlying production—in discourses and practices of the treatment of phthisis—of the interaction between humans and nature: for the Greeks, humans remained subjects of consumption. Flick and his contemporaries, in pursuing the cure and eradication of tuberculosis in the late 19th century, would produce an inversion in this relationship as tuberculosis would increasingly be seen as subject to human willpower. Over the intervening fifteen hundred years, the consumption of the Greeks would be remade from an epidemic disease to a disease of regimen—from an uncontrollable-external-force-of-nature to an internal parasite that could be starved by sick individuals, helping themselves, cultivating immunity through the application of individual willpower to the pursuit of a disciplined set of habits.

This re-making takes shapes through the shifting materiality of the disease. In Flick's late-19th century, this materiality was constituted by an increasingly microscopic knowledge of the nature of tuberculosis, generated within the bacteriological laboratory. The bacteriological re-making of tuberculosis as a disease of regimen was constituted by changes in the very physicality of the disease: an increased identification of the disease as a product of the pathological material known as the *tubercle* and the microbe, the *tubercle bacillus*. Where the Greeks had identified the tubercle, the linking of this entity with consumption did not occur with any certainty until the 17th century when physicians, aided by the mainstreaming of

autopsy, increasingly looked toward internal bodily material and processes in an effort to specify the etiology of tuberculosis.

From Climate to Tubercle: The Emergence of the Self-Governing Consumptive

The Greek production of consumption as a force of external nature—the weather, seasons, air—would reappear in various guises over the next 1500 years. For much of the 19th century, Western physicians viewed miasmas—"bad air"—as the cause of the disease. In both Europe and the United States, climate was invoked as both a potential aggravator of and remedy to consumption. Well into the early 20th century, many physicians maintained that the tubercular benefitted from dry climates and access to clean air. Flick traveled from Pennsylvania to the Western United States—a primary destination for those seeking a climatological cure to tuberculosis—in the early 1880s in search of precisely such air and such a climate to rid him of his sickness (Bates 1992).

Failing to find his cure in the reputedly good air of the Southwest and California, he returned to his father's farm in Carolltown, Pennsylvania where he overcame the disease. Convinced that the emphasis on climate as a cure was overblown, he would, in the coming decade, forge his "crusade" against the disease in opposition to those physicians who held onto the belief that bad air was a determining if not the most determinative factor in the onset of the disease. Rather than sending sick Philadelphians west for a cure, Flick's interest lay in treating the sick in clinics and sanitaria in Pennsylvania, and prescribing regimens to enable individuals to manage the internal tissue of their bodies.

While he was seeking his cure in the western United States, histologists cast their lenses toward this internal tissue and, more specifically, to the pathological tissue affected by the

tubercular process, to study its structure beneath the microscope. In December of 1880 and January of 1881, M. Jaccoud, Professor of the Ecole de Medecine, Paris, a recognized authority on consumption of the lungs, lectured on his belief in the curability of tuberculosis. Evoking the work of the histologist Grancher, Jaccoud writes of the formers' observation of the "frequency of a healing process which can *arrest the development of tubercle* at any moment of its evolution, and whether of large or small size…*transform it into an innocuous product* having thenceforth no action upon the organism or neighboring parts" (Jaccoud 1885, 14. Italics added.). This late-19th century-medical-movement into the human tissue of the tubercular body was accompanied by the positing of an empirically observable "healing process" born of the "arrest[ing]" of the material development of the tubercle and neutralizing of its pathological qualities. This new understanding of the interaction between the soil of human tissue and the material tubercle stood in stark contrast to the fatalistic Greek elaboration of consumption as external-natural force taking root through weather, air, and seasons: "spring…the worst enemy." And it was this scientific movement into the minutiae of human tissue that Flick would couple with his own interest in tuberculosis to proffer a vision of sick individuals wittingly cultivating tissue that would provide immunity to the disease.

Flick notes this significant change in medical understandings of the nature of the disease: "In ancient times [physicians] knew relatively little about the changes in the tissues set up by the disease and [they] did not even dream that changes might be set up in the tissues of a human being by a living thing which came into the organism from without and which had the power of producing in its own body a poison so intense that it could destroy life" (Flick 1925). It was precisely the identification of these "changes in tissue"—changes in the material state of

the tubercle—and the corresponding production of the individual as capable of "arrest[ing] the development of tubercle…transform[ing] it into an innocuous product" (2) that would set the stage for Flick's contention that the sick, through cultivation of proper-internal-bodily *soil*, should be capable of helping themselves in matters of health and sickness.

Yet this move would not come without debate. The linking of the materiality of the disease—the tubercle—with a potential "healing process" sits within a more long-standing Enlightenment debate in the history of the study of tuberculosis: while physicians from the 17th-century on recognized a "healing process," the source of the bodies capacity to arrest the tubercle was debated. Was it some force of nature that caused tubercles to end their pathological assault? Or was it what physicians referred to as "the art of medicine" and the willpower of the sick individual that arrested the tubercle?

Autopsy and the Self-Governing Individual: The Re-Making of The Tubercle

The movement away from notions of seasonal changes and imbalanced humors as causes of consumption to an internal material cause—the tubercle—was catalyzed by the technology of human autopsy. The scholars and physicians responsible for the Hippocratic texts produced their knowledge of phthisis and the pathological body through minimal autopsy. They were the product of a moment defined by a general Greek distaste for human dissection; a distaste born of cultural views on the state of the body and soul after death. The mutilation of the body threatened the ability of the spirit to "participate in an afterlife" (Prayson 2007, 31). Damaging the human body "impeded a peaceful death" (Arikha 2007, 19). Beyond this broad cultural resistance to autopsy, some of the more pragmatic physicians

opposed the practice on the grounds that knowledge of dead bodies could not adequately substitute for knowledge of live bodies. (Lloyd 2006, 119).[4]

In the absence of consistent human autopsies, animal dissection served as one means of producing knowledge about the internality of bodies. Aristotle, whose philosophy was woven with anatomy, performed "countless dissection on animals" (Arikha 2007, 19); similarly, Galen of Pergamum, the famous Greek physician and elaborator of the humoral system of disease, strongly influenced Western medicine by using animal dissection—particularly the autopsy of apes—to establish, by analogy, the anatomy and physiology of the human body (Lloyd 1973, 119). Galen, in spite of his lack of access to human bodies, nevertheless managed to forge the idea that postmortem symptoms of illness and disease are mirrored in the "affected part of the deceased" (Prayson 2007, 33). This notion that the material of the deceased human body could yield knowledge about disease processes in the living would provide the framework for the 16th and 17th century elaboration of modern human anatomy and pathology.

The medical sphere in the Renaissance was constituted by the detailing of the internal body through the "dissecting of bodies of dead patients" (Dubos 1952, 72). Cultural acceptance of autopsy was increasing as evidenced in 16th century medical schools requiring that students perform dissections of dead human bodies. Vesalius' 1543 publication of his famous *De Humani Corporis Fabrica Libri Septem* (*The Seven Books on the Structure of the Human Body*) supplanted Galen's fifteen-century-reign over anatomy (Vesalius 1998). His "accurate documentation of human anatomy" challenged the human body of Galen's texts—a body based

[4] The ancient Roman city of Alexandria permitted the practice even as the surrounding Empire did not

upon the observation of animal anatomy. In addition to the elaboration of a standard human body, the *Fabrica* contains "an early cataloguing of pathological processes" (Prayson 2007, 34).

In this context, physicians began to add to this "early cataloguing" by producing detailed studies of dead tubercular bodies—studies that both drew from empirical observation of dead bodies and used Galenic humoral theory to explain the pathological matter they encountered. In the 17th century "at autopsies, now becoming more numerous, small, hard nodules were discovered in various tissues, which were called tubercles" (Brown 1941, 11). This increased isolation and study of the tubercle and its *habits* led to conjecture on the relationship between this form of matter and the onset of consumption. Though the precise development of these tubercles was still being determined, physicians began to notice their repeated appearance in cases of phthisical pathology: the small, hard nodules were present in all dead consumptive bodies.[5]

The Tubercle as Cause of Consumption

Franciscus Sylvius (1614-1672) used his findings at autopsies to speculate on the relationship between tubercle and phthisis. Throughout the 17th and 18th centuries, he was one of a number of physicians who produced post-mortem knowledge about the *dynamic* quality of the tubercle—its capacity to soften and suppurate.[6] Drawing his insights from empirical

[5] The wielding of the anatomical knife and the observation of dead bodies on the table were increasingly written up and these written records came to constitute this new knowledge of the tubercle in the human body. This new knowledge produced by autopsy benefited by the increased print circulation of medical observations amongst physicians—those who wrote on their observations of the pathologized dead body also engaged in those dissections reported by others.

[6] Hippocratic writing on the changing state of matter of the tubercle establishes what will become a recurrent theme in the discussion of a "healing process" related to tuberculosis: namely the observation of the varying capacities of both "nature" and the "art of medicine" to intervene in the changing state of the tubercle.

The Hippocratic texts identify the tubercle as resulting from an imbalance in bodily phlegm or bile and the subsequent rotting of these humors. Once the tubercle has formed within the body, it evidences the capacity to

observation in numerous "anatomical dissection[s]," Sylvius characterizes this transformation as such: "I found more than once, large and small tubercles in the lungs, which during anatomical dissection, showed pus. I believe that these tubercles later become purulent and I maintain that cavities form from them, they being closed by a thin membrane. From these, I maintain, phthisis often originates" (Castiglioni 1933, 30-31). Where the Greeks and Romans

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assume varying states: *soft, hard, rupturing*. The author then links the presence of this tubercle to the symptoms of the patient: "so long as this remains hard it produces a light pain and dry cough"; here, the author begins to address something about the quality of the tubercle *that will ultimately bear on 19th century perceptions regarding the curability of the disease*: here, the tubercle "remains hard"; but, as the author notes, this form of pathological matter also has the capacity to change its states, becoming softer: "but when it has ripened, the pain becomes quite acute both in front and in the back and heat and a severe cough seize the patient"; not only does the tubercle possess the capacity to change its state, but here, the author notes that the softening—this ripening—changes the quality of the pain: the patient's discomfort is no longer "light"; now it is "quite acute" and the cough, "severe."

The achievement of this change in the material state of the tubercle—to "mature," to "ripen" from hard to soft, to "rupture" into pus—occurs, according to this Hippocratic physician, through two methods: 1. "spontaneously"; or 2. "through the application of remedies." (Flick 1925, 16). The Hippocratic author links this changing material state of the tubercle to the patient's capacity for recovery. So long as the change from hardness, to softness, to pus occurs 1. in a "prompt" manner, and 2. so long as this change is accompanied by "the pus find[ing] a way out" through expectoration, and 3. so long as "the cavity which the pus has formed contracts and dries up," then the sufferer "get completely well" (15-16).

Here, then, the "healing process" can occur through an act of nature—"spontaneously"—or physician intervention—"through the application of remedies." Yet the will of the patient—his or her capacity to bring about changes in the tubercle—does not shape this process; the patient remains secondary to the shifting materiality of the tubercle

Furthermore, this promptness in the change of state of the tubercle does not guarantee recovery: the precise manner in which the tubercle changes state determines the patient's capacity for overcoming the condition. If the cavity fails to "dry up completely" and if "the tubercle furnishes pus on its own"—as opposed to producing pus as a result of physician intervention, "the case is fatal." The writer attributes this failure to numerous material circumstances: the rotting state of the phlegm; the subsequent spitting of pus; "the looseness of bowls"; the closing of "all the veins of his body." He then offers the following: the fatally occurs due to "the duration of the disease, the severity of it, the virulence of it in the beginning and the complications which have arisen."

The Hippocratic author does carve out a niche for the "art of medicine" in intervening in the changing state of the tubercle. Yet even if the physician facilitates the prompt rupture of the tubercle, the further conditions—the expulsion of pus from the body and the drying of the cavity left behind—must take shape as well. In the Greek treatment of tubercle, the capacity for the physician to craft a cure exists—but in a severely circumscribed manner. What is circumscribing the potential of the physician to cure the condition? The patient does not get in the way; in fact, the patient appears as relatively incidental to the changing state of matter of the tubercle. It is the disease itself that seems to largely dictate the conditions: death form the tubercle is attributable to something largely beyond human control—to a humoral imbalance that materializes in the excess of phlegm or bile that rots and produces this form of matter known as the tubercle.

In Hippocratic writing on the tubercle, the capacity of the individual seems ignored, if not dismissed. The seeds of such a shift are sown on the 17th century autopsy table; yet even this nascent focus on the interaction between the tubercle and the self-governing individual that appears, most robustly, in the work of Richard Morton, maintains a sense of limitation on the human capacity to master tuberculosis.

recognized cavities in the body, Sylvius used autopsy to draw a consistent link between tubercles and the cavities in the dead bodies of those individuals who exhibited phthisical symptoms in life (30-31).[7]

The tubercle and the ulcers and cavities it produced were increasingly recognized as "occur[ing] in all sizes and exhibit[ing] many varied characteristics. Tubercles could be hard as cartilage, as bone, or even appear to be made of chalk. In other cases they contained pus-like material of different degrees of softness—'like suet or like honey'" (Dubos 1952, 73). While such observations were not distinctly different from the Greeks who also observed the capacity of the tubercle to be soft, hard, or in a state of rupture, this data on the dynamic tendencies of the tubercle, gathered over the autopsy table, begins to articulate, in the work of Richard Morton, with his insight that is seems possible to "arrest the development of tubercle at any moment of its evolution" (Jaccoud 1885, 14).

To the extent that tubercles were present in all cases of phthisis, and to the extent that the form of this devastating nonhuman entity could be influenced, the possibility of human intervention in the tubercular process—the intervention of the art of medicine and the will of the sick individual—surfaced. In Morton's 17th century recording of his observations of tubercles on the autopsy table in his well-known tome, *Phthisiologia* (Morton 1694), he elaborates on the treatment of consumption through intervention in the "development of tubercles" by theorizing a place for both "nature" and "art,"—both the capacity for spontaneous

[7] Note that historians of tuberculosis contend that Antoine Portal was the first physician to unequivocally state *the tubercle* as the *cause* of consumption. Antoine Portal conducted autopsies and practiced medicine at the turn of the 19th century. ""With what facts…could one speak better than with the riches which I found in my possession! I would seek the benefit of opening bodies to learn the nature of this disease…I would not be afraid to consult death to learn how to prolong life; and what light would not be shed on the nature of our disease by anatomical research?"" (quoted in Flick 1925, 257).

healing and for healing through an individual's art of self-government—in bringing about the "arrest" of the disease. The re-making of the materiality of the disease and the identification of the dynamism of the physicality of the tubercle would simultaneously re-work the willpower of individuals through the emergent possibility of individuals influencing the state of the tubercle by practicing proper habits and cultivating immunity.

Richard Morton and The Vanishing Tubercle

Where the Greeks located phthisis primarily in relation to the lungs, Richard Morton treats consumption as a disease of the "whole habit of the body." He reveals an indebtedness to the Hippocratic authors and to Galen in using the humoral theory to deduce certain qualities of consumption, including the physicality of the tubercle. He explains the material of the tubercle through reference to an imbalance of bodily fluid—here, an excess of blood (Webb 1936, 61); and he claims that this humoral imbalance—the "run[ing] off" and wasting of necessary humors—results "either by nature or art" (Flick 1925, 91). I will continue to develop Morton's tendency to contrast "nature" with "art" as his distinction bears on the making of the individual.

Morton compliments his humoral-based inquiries with autopsies that allow him to investigate the materiality of the tubercles in the bodies of dead consumptives. In observing autopsied bodies, Morton muses on the tendency for tubercles to "vanish." He writes, in the following passage, of the tubercles as "swellings": "[W]ithout doubt the breeding of these swellings is so frequent and common, that a consumption of the lungs would necessarily be the common plague of mankind, if those swellings did not vanish or were not removed by art, as easily as they are bred at first" (quoted in Webb 1936, 60). Morton thus suggests the possibility

that pulmonary consumption would be even more deadly if not for some arresting of the process of tubercle formation. He suggests two potential agents in this arresting: the tubercle can vanish" by some act of *nature*, or else, it can be "removed" through human endeavor—"by art."

Morton offers a nascent sketch of the articulation between the material state of the tubercle and the corresponding capacity for "nature" and "art" to effect a cure. In autopsying a young patient named Mr. Davison, Morton reports on having opened the body, finding, "all the lobes of the Lungs here and there bespattered with Tubercles of a various magnitude; some that were small and newly bred; others that were inflamed and exulcerated, containing in them a purulent matter that was of the consistency of Honey. This I took to be…Consumption of the second sort; that is, Hot and active" (quoted in Cummins 1949, 44).

Morton thus differentiates between types of tubercles—those "small and newly bred" and those "inflamed and exulcerated." He focuses on this latter type, noting the honey-like pus within them. He then equates this inflamed tubercle with phthisis "of the second sort." Hence, we see here, Morton's relating of a particular stage in the "development of tubercles" in Davison's body to a particular type of phthisis. This "Hot and active" expression of the disease is, according to Morton, an instance of *acute* consumption as opposed to a more *chronic* form of the disease that he has also observed.

The acute form of the disease, produced by a tubercle that has assumed a "hot" and "inflamed" state cannot be cured. Morton claims that once "those tubercles, growing very large, begin to be inflamed and to turn into apostemes," the breaking of these apostemes—these "bags"—produces the pathological matter that proceeds to tickle the windpipe, yielding a

constant cough. Once this stage has been reached, Morton suggests "the patient [cannot] be ever freed from this cough *by any art* till death effectually stops it" (quoted in Flick 1925, 105. Italics added). Here, the acute form of the disease acts like the epidemic consumption of the Greeks, thwarting the capacity of "art"—the willful effort of the physician or the patient—to intervene.

This bleak prognosis is contrasted with his cautiously optimistic understanding of the chronic form of the disease—a form that emerges when the "Matter" of the tubercle "is concocted and hardened into a chalky or steatomatous substance." In this state, the tubercles are not hot and "they are very slow and almost insensible" in turning into pus. He thus relates the specific-material-form of the tubercle—the inflamed or the hardened—to the type of consumption that results (Cummins 1949, 44). Importantly, in linking this "concocted and hardened" tubercle to the manifestation of this chronic consumption, *the possibility of curing the disease takes shape through attention to the quality of the tubercle*. According to Morton, there is hope for those suffering from the chronic form: those living sufferers harboring the hardened tubercles "may be preserved from any dangerous and Fatal effects" (quoted in Cummins 1949, 44).

In linking the state of the tubercle to an acute or chronic stage of the disease, and in seeing a potential for a cure in the chronic form of the disease, Morton begins to depart from the Hippocratic understanding of consumption as an incurable epidemic. He observes that the chronic consumption that results from those hardened tubercles that slowly turn to pus is not necessarily lethal: "These people may be preserved from any dangerous and Fatal effects even without Physic" (quoted in Cummins 1949, 44). Here, then, Morton identifies the possibility

of recovery from the disease without medicine—without "Physic"—in chronic cases. He thus evokes the possibility of "nature" affecting a cure in suggesting that "people may be preserved" without the hand of the physician. Yet his observation is ambiguous enough to suggest that they might also be cured with the art of medicine.

Importantly, Morton's understanding of the disease—and more specifically, with the shifting pathological matter of the tubercle—reveals his overall caution toward the attribution of too much agency to art—to the skill and willpower of the physician and sick individual—in curing the disease. Morton's consumption remains a force of nature, akin to the Greek phthisis, confronting individual willpower with limitations. Yet he begins to open up this medical conversation—why and how do tubercles "vanish"?—by suggesting that phthisis is, partially, a disease of regimen. Hence consumption, in the work of Morton, is partially subject to the "art" of the physician's skillful prescription of regimes of behaviors and the concomitant art of self-governing as pursued by sick individuals. He specifies this pursuit—this regime of self-care—as the "government of the patient" (quoted in Webb 1936, 63).

Morton claims that a "skillful physician" will recognize a prescription of a regime of self-care as equally important to the prescription of "medicines": "a skillful physician ought in this distemper to give directions about the air, eating and drinking, the passion of the mind, and the other things which belong to the government of the patient, with as much care as about the medicines. For without a careful ordering, and a cautious use of them, the most notable remedies signify nothing in the cure of consumption." The "cure of consumption" lies, then, for Morton, in the care of the physician in "ordering" the habits of the consumptive, and, as he will elaborate on below, in the consumptive's "cautious use," or hewing, to such a

regimen. The "government of the patient," in Morton's words, thus involves the "skillful" intervention of physicians and of the care of the sick individual in disciplining him or herself.

Yet again, Morton is cautious, as he argues that this government is not a certain cure; rather, such regimens are not so much cures as they are *preventative measures* against the disease:

> Therefore in the preventing of a Consumption (which is very much easier than the cure of it) [the important approach is] to take all possible care that no error be committed in those six things that we call "non-natural." For in this so slippery a state of Health they are wont, upon every little occasion to fall headlong, into a Fatal Consumption. As, for example, they ought to be prudent in choosing their Meat and Drink that the Chylous may be made to abound with good juice and that the Nourishment may create very little trouble to Nature in digesting and dispensing with it. (quoted in Cummins 1949, 37)

Morton continues, enumerating, in addition to diet, the five other practices where individuals must exercise prudence if he or she is to avoid "fall[ing] headlong" into consumption: getting enough sleep and establishing proper sleeping patterns; "moderate exercise; avoidance of "strong Purges"; the avoidance of worrying (38); and the pursuit of adequate fresh air (37-38). Hence, Morton's program for treating consumption is one of prevention: through a combination of the art of medicine and the art of self-government, individuals can discipline their body so as to aid themselves in preventing the disease altogether, or in mitigating the chances of its recurrence by cultivating, with foresight, a regimen of conduct based upon the avoidance of "non-natural" behavior and, thus, a "slippery state of health."

Ultimately, Morton concedes that even this approach is beset by limitations. The chronic quality of the disease—and its tendency to go into periods of remission only to virulently remerge—makes such self-care a Herculean effort. In explaining the role of self-government, Morton notes that consumption presents a problem to the extent that the disease

will linger in spite of the appearance of its having been cured: “Every consumption, though it be cured, is apt to return” (quoted in Webb 1936, 62). Such regular government of habit is thus required even when it would seem that an individual has gotten better so as to maintain a check on the aptness of the tubercles to linger and develop even after having gone into a state of remission. Morton writes, “even after the most perfect cure of a consumption, there is reason to suspect that there are some crude tubercles yet remaining, which at length may, by often meeting with an occasion, be inflamed, and ripen into “aposthemes,” and so become ulcers” (quoted in Webb 1936, 32). Once an individual has been afflicted, the lingering tubercle, with its capacity to change its state, to inflame, to ripen, to suppurate remains a perpetual threat. This quality—the capacity of the disease to return, even after a cure—places an extra burden on individual vigilance, for “he that has once been in a consumption, *unless he governs himself very regularly*, falls back into the same condition” (quoted in Webb 1936, 32 Italics added). Hence the proclivity of consumption to act chronically hails the sick into a long-term relationship with the tubercles in their bodies—a relationship of vigilant self-government in an effort to avoid a recurrence of “the same condition.” The materiality of the tubercle—its dynamism—and its ingenuity—its capacity to remain alive even as patients were engaged in anti-consumptive habits, was productive, in the work of Morton, of individuals as capable, through the exercise of discipline and willpower, of disease mitigation. Yet, in contrast to Flick's proclamation of a cure for the disease, for Morton, such mitigation has limited effectiveness in the face of the chronic proclivity of consumption.

Even in light of his reflections on the role of self-government in reducing suffering, if not preventing the disease, he is careful, if not fatalistic when speaking of limitations in the

face of the capacity of these tubercles—these glandular "swellings"—to remain a threat. Morton writes, "when I consider myself how often in one year there is cause enough ministered for producing these Swellings [of the lungs in consumptives], *even to those that are wont to observe the strictest Rules of Living*, I cannot sufficiently admire that any one, at least after he comes to the Flower of his Youth, can die without a touch of Consumption" (quoted in Cummins 1949, 41 Italics added). Here, Morton does not claim that all die of the disease, but he is rather pessimistic about self-government—"*the strictest Rules of Living*"— as a means of entirely eliminating tubercles, and thus the lurking danger of consumption. Morton's consumptive individual thus emerges as a prudent manager of his or her long-term health—caught in a constant, vigilant struggle to adhere to an art of self-government that will arrest the tubercle; an exercise of willpower that might extend the life of the sick, but one that will not cure or eradicate the disease entirely.

In spite of Morton's caution in positing limitations to the will of physicians and individuals in curing the disease, his sensitivity to the various forms of matter assumed by the tubercle, as observed through autopsy, provided him with an empirical foundation upon which to think through the disease as mutable—its physicality capable of being arrested, reversed, made to vanish. While he is unequivocal about the capacity of "nature" to make the tubercle vanish, he remains cautious about the degree to which the habit of the pathological body—the tubercle-infested tissue—will follow the habit of the individual under supervision of the art of medicine.[8]

[8] Morton routinely refers to the "whole habit of the body" to describe human physiology as an interlocking system. This invocation of the physiological functions as a system of habits will take on increasing importance in his discussion of the relationship between individual conduct and the formation of tubercles in the consumptive

By the late 19th century, in the work of Flick and other physicians, this co-production of the materiality of tuberculosis and the willpower of the individual was predicated upon the formulation of modern medical science as an enterprise that, in the field of medicine, broadly, and tuberculosis treatment, specifically, knew no limitations. Modern medicine and public health, through the anti-tuberculosis "crusade" of the 1890s, would begin to profess and pursue a sentiment, familiar throughout the 20th century: given the appropriate human endeavors—the requisite medical research and technology, resources and means for treatment, and the witting participation of the patient—diseases could be eliminated. Flick and his peers would, without the hesitations of Morton, remove the "art of nature" from the equation, locating the capacity to "arrest the development of tubercles" squarely within the space of clinic in the interaction between physician and patient: in the interaction between the "art of medicine" and the self-governing capacity of the individual. This move would underscore much of the late 19th century remaking of tubercular individuals as sowers of their own health—not only capable of, but responsible for helping themselves.

An Internal Disease With No External Symptoms: The Clinical Need for Early Diagnosis

The autopsy had allowed for the production of knowledge about both the internal body of dead tubercular subjects and the tubercle—a form of dynamic pathological matter increasingly associated with the severity of the disease. Yet such knowledge, from the perspective of Flick and other historians of the disease, proved limiting: autopsies afforded no knowledge of the *tubercular body in life* (1925, 260). Methods to gauge the state of the tubercle in the bodies of patients—the identification of the early stages of the development of the

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body: through the self-government of one's habits, the individual will manifest agency in governing the "habit of the body" as well.

tubercle—remained elusive. Even if the disease could be prevented or mitigated through strict self-government, the physician was at a loss in identifying the presence of the tubercle when it was new to the body and, as yet, a minor threat. Morton and his contemporaries gestured toward the importance of early diagnosis but they "knew clinically only a late stage of the disease" (Brown 1941, 13). Hence, much of the clinical attention given to consumptives prior to the 19th century was administered to those suffering from an advanced stage of the disease and thus, fated to die. The prognosis for enlisting the art of medicine to bring about the vanishing of well-established-tubercles remained bleak.

The famous 17th century physician and friend of John Locke, Thomas Sydenham posited that a bleak "two thirds of the patients with phthisis died" (14). Gaspard Larent Bayle, working at the turn of the 17th century, only to die young of tuberculosis himself, "thought phthisis absolutely incurable" (14). As late as 1815, the English physician and scientist Thomas Young assessed the grim prospect of recovery from consumption claiming that "Not one patient in a thousand recovers without assistance…and with all known assistance only one in a hundred recovers" (14). Young, himself, was one of those lucky one in a hundred.

Morton's *Rules of Living* as elaborated in the *Phtishiologica* called for prudence—for the foresight of physicians in prescribing regimens and the foresight of patients in governing their bodies so as to achieve the state of health necessary to arrest the disease: prudence as a means of prevention. Yet the difficulty of detecting the disease produced a corresponding limitation on prudence—a limitation noted a century before Morton in Machiavelli's *The Prince*:

> The Roman on this occasion did what ought to be done by every wise prince, whose duty it is not only to provide a remedy for present evils, but at the same time anticipate such as are likely to happen; by forseeing them at a distance, they are easily remedied;

> but if we wait till they have surrounded us, the time is past, and the malady is become incurable. It happens then as it does to physicians in the cure of consumption, which in the commencement is easy to cure, and difficult to understand; but when it has neither been discovered in due time, or treated upon a proper principle, it becomes easy to understand, and difficult to cure. The same thing happens in state affairs, by forseeing them at a distance, which is only done by men of talents, the evils which might arise form them are soon cured; but when, form want of foresight, they are suffered to increase to such a height that they are perceptible to everyone, there is no longer any remedy (9-10)

Machiavelli's comparison of the prince's governing of a state—"state affairs"—and the physicians governing of consumption, takes shape through the practice of foresight, thus articulating with Morton's linking of the practice of prudence with the art of self-government. And the author of *The Prince*, in assessing the downside of failing to identify consumption in its early stages, underscores the cautionary tone of Morton's explication of self-government: even if the disease was treatable through strict self-government and observation of the "Rules of Living," the physician and patient were at a loss in identifying the presence of the tubercle when it was new to the body. This incapacity to foresee the "disease at a distance" made Morton's goal of prevention difficult to attain.

Indeed, part of the difficulty or slipperiness of the disease—what Flick termed its "protean nature"—emerged from physician and patient confusion in identifying the onset of the disease. From a late 19th century perspective, diagnosing tuberculosis through the observation of symptoms proved misleading, for these "subjective conditions" failed to paint a portrait of the entire course of the disease. In optimistically arguing that the disease was curable and in advocating new methods of prevention and treatment of tuberculosis, Flick would touch on the tendency of tuberculosis to fool both physicians and patients through this its capacity to exist and develop internally without manifesting externally: "tubercles could exist

before symptoms" (Brown 1941, 17). While coughs were often an indication of the early stages of the disease, if a physician assumed that every patient who had a cough was a consumptive, they would often be in error and thus waste time and energy treating a condition that was not there.

To the extent that the disease remained incurable, but theoretically preventable, physicians were mired in clinical-diagnostic-deficiencies catalyzed by the ambiguity of patient symptoms, and the confusing tendency of the disease to ebb and flow through chronic and acute phases. The clinical capacity to discern the development of the disease in the patient through the collection of "physical evidence" could be used to corroborate the "subjective symptoms"—and such physical evidence could aid physicians and patients in identifying the disease in its early stages, approaching it with the necessary foresight to effect a regimen in the hopes of a cure.[9] These diagnostic deficiencies would receive a boon in the early 19th century with the innovations of Renee Laennec.

Hearing the Tubercle: Percussion, Auscultation, and the Stethoscope

In describing his perception of Renee Laennec's contribution to the study of tuberculosis, Flick writes of the French physician's success in "looking beyond subjective symptoms for physical evidence of disease in diagnosis" (Flick 1925, 359). Given that consumption could exist without manifest symptoms, or with symptoms that appeared indicative of other diseases, then physicians seeking to treat the disease needed a routine

[9] Bayle's work contributed to an early 19th century re-making of consumption, by broadening the study of the disease to include those disease processes—like the formation of tubercles—that pre-existed manifest symptoms. He recognized that "'patients who are not yet subjected to fever, who are not losing weight, whose sputum is not purulent, may yet be regarded as tuberculous; it is sufficient if the lungs have a lesion that tends to disorganize and ulcerate them'" (quoted in Castiglioni 1933, 43). This highlighting of the presence of the tubercle in the body—the lesion that threatens to ulcerate—as a condition *of the disease*, rather than a condition that *preexists the disease*, constituted the new consumption: a disease of stages.

clinical method of verifying the internal states of the body—a method to clarify potential internal manifestations of pathological matter—the tubercle—and pathological tissue changes inside the bodies of their patients. Through Laennec, the clinical diagnosis of tuberculosis took on a new form—one geared toward the adoption, by the physician, of practices allowing for a more "objective" diagnosis through the gleaning of "physical evidence of disease" in the bodies of patients.

Working in the early 19th century, Laennec discerned the utility of a more accurate clinical diagnosis in recognizing that "in opening dead bodies," a multitude of instances of disease were found that had been mistakenly "overlooked" while the patient was still living. The challenge for medicine was the development of clinical methods to avoid overlooking these pathological conditions in life. As such, he experimented with tapping and listening to the chests of patients for evidence of internal pathology.

Laennec considered "percussion of the chest," developed by the physician Auenbrugger in 1761[10] to be "one of the most valuable discoveries with which medicine has even been enriched" (quoted in Flick 1925, 359). The method enabled clinicians to diagnose abnormality in the chest of patients by "knocking the human thorax" and assessing the "variation on reverberating sounds" (173). Despite the utility of the percussive method, prior to Laennec, it was not routinely used. He not only used Auenbrugger's methods, he contributed to their popularization by translating them into French.[11]

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[10] The discovery was published in a "modest pamphlet" entitled "A New Discovery of Percussion of the Human Chest for Detecting the Sings of Obscure Disease of the Chest Cavity."

[11] Despite the utility of the percussive method, prior to Laennec, it was not routinely used. He not only used Auenbrugger's methods, he contributed to their popularization by translating them into French.

While employing Auenbrugger's techniques in his practice, Laennec ran into a problem in 1816, while examining a young woman "who presented general symptoms of heart disease" (359). Accustomed to tapping on the chest and applying his ear to patients to examine the acoustics of their chest cavity, Laennec found himself limited as both he and his patient "objected to a human head being placed immediately on her breast" (Cummins 1949, 119). Working off his knowledge of an "acoustic phenomenon"—that "if one applies the ear to the end of a beam once can very distinctly hear the scratch of a pin at the other end"—he improvised an instrument made out of a tightly rolled visit-card (quoted in Flick 1925, 359). He placed one end of the paper cylinder on the area of his patient's heart and placed the other end to his ear: "'I was quite surprised to find how satisfactorily I could hear the heart beats, better, more clearly and more distinctly than I had ever done by immediate application of the ear'" (359). With this insight and this rudimentary tool, Laennec achieved the first instance of "mediate auscultation"; over the coming years, he would develop this tool into the stethoscope, the commonplace modern clinical instrument for diagnosing pathologies of the chest. While the discovery of the stethoscope is attributed to Laennec, it was thus made possible by the presence of a woman's body, and both a medicalized and gendered code of conduct that determined the appropriateness of contact between doctors and patients, women and men.

Importantly, Laennec would use percussion, auscultation, and the stethoscope to map the changing state of the tubercle in the bodies of living patients. Experimenting with his instrument "on the numerous chest cases that were gathered under his charge at Necker [Hospital]," he began to identify consistent sounds that reflected specific conditions inside the body—sounds that reflected the state of the development of the tubercle in the body of his

patients. These sounds—this "physical evidence"—of the state of the tubercle took shape through the application of the physician's ear to the patient chest; the state of the tubercle could be discerned through two methods. First, percussing—tapping—the patient's chest area—and listening to and gauging the resonance. Second, assessing the sound of the chest by listening to patient coughs. When tubercles, still hard, would group together "at the apex of the lung," Laennec identified a "decrease in resonance" when percussing "over the clavicle." Similarly, hard tubercles "at the root of the lung and in the bronchial glands" produced decreased resonance—the hard tubercle could be identified but what Laennec termed a "diffuse bronchophony" (Flick 1925, 394).

A similar sound accompanied the softening of the tubercle. Yet the diffuse bronchophony was accompanied by a second element—an indication of the softening—a "rattling" apparent when listening to the chest as his patients coughed. With the increased breaking down of the tubercle, "the rattling becomes more liquid, more like a mucous rale, and the cough, having become cavernous, conveys the impression that an excavation has been made in the tissue of the lung" (395). The movement, in the bodies of the living, from hard tubercle to soft tubercle to the dangerous stage of "excavation"—when cavities began to form—could thus be identified as the stages materialized into sound. With the "increasing spread of the cavity," the sound would shift to from the diffuse bronchophony to a "pectoriloquy" (394): the emergent vomica—the pus-filled cavities—producing changes in the breathing, with a more "cavernous" breathing taking shape relative to the size of the cavity.

Laennec's clinical method for the diagnosing of the stage of the disease thus served as a tool for taxonomizing the various states of the tubercle and the size of cavities in relation to the

resonating of the body achieved through percussion and through auscultation. This allowed for a sketch of the various stages of the disease—those early stages in which the tubercles were still small and hard, and those advanced stages when the tubercles had suppurated, leaving cavities behind—in the living human being. In the clinics of France, thanks to Laennec and the appropriately modest woman he treated, the tubercle had been made to speak.

The Power of Nature and The Power of Art: The Tubercular Diathesis and The Limitations on Medicine

This capacity to identify the material development of tuberculosis in the bodies of the sick served, in Flick's estimation, as a step forward in the movement toward a cure. By the late 19th century, the potential for intervention in the development of the material condition of the tubercle would constitute the foundation of what Flick termed the "healing process." And this healing process would increasingly become medicalized through discourses of immunity and individual responsibility. Both the healthy and the sick would be encouraged, by the anti-tuberculosis movement, to cultivate tissue—a soil—that arrested the development of the tubercle; a soil rich in those nutrients that retarded the tubercle; a soil that isolated the tubercular matter, rendering it harmless within the body.

Yet the optimism of the late-19th century stood in contrast to that of Laennec and his contemporaries. Laennec was cautious, even contradictory, in linking his work—and the art of medicine—to the potential curing of the disease. While his clinical diagnostic methods had made an inroads, in speculating on a cure, he leaned heavily on the capacity of the "power of nature" to heal, while granting little agency to the "power of art"—to medicine. Laennec claimed that "'the possibility of curing phthisis in the first stage is an illusion'" (quoted in Flick

1925, 384). He saw the initial deposit of tubercles as leading, inevitably, to consumption. He expressed his belief in the limited role of medicine in slowing this inevitability: "'Crude tubercles tend essentially to enlarge and soften. It may be in the *power of art* to slow up their development, to hold in check their rapid progress, *but not to make them retrograde*'" (quoted in Flick 1925, 384; italics added). Hence, human intervention—here expressed as the "power of [the] art" of medicine—is capable of retarding the tubercles tendency to "enlarge and soften"; but it cannot reverse or cure the consumptive process.

Laennec continues, attempting to understand the capacity for physicians and sick individuals to shape the consumptive disease process vis-a-vis the stage of the disease. He writes, "'But if it is impossible to cure phthisis in its first stage, a fairly large number of facts has proven to me that in some cases a patient may get better after having tubercles in the lungs which have softened and have formed an ulcerous cavity'" (quoted in Flick 1925, 384). Here, Laennec's positing of the potential for a patient to get better involves letting the tubercles run their course—not retarding their development—resulting in softening and the formation of cavities. Having largely dismissed the "power of art" to cure the disease in its first stage, he sees, in this process of healing after suppuration, the work, not of physicians and sick individuals—not of willpower—but, rather, of the "healing power of nature" (Flick 1925, 391).

Laennec explains this "power of nature" in producing a protective "membrane" around the cavities: "'in consumptives in whom the disease has existed for an extremely long time, many years for example, one quite commonly finds some of the cavities empty or nearly empty of tuberculous matter and completely lined by a semi-cartilaginous membrane.'" He explains the "formation of the semi-cartilaginous membrane on the surface of tuberculous ulcers" "as

an effort of nature to cure" (quoted in Flick 1925, 384). Laennec, reporting on autopsied individuals who had experienced this lining of scar tissue—this formation of *cicatrix*—claims that "'[m]ost of the individuals, about whom I have spoken above, died of diseases which one in no sense could attribute to [tuberculosis]. All had lived a more or less large number of years in a state of fairly good health'" (quoted in Flick 1925, 385). Indeed, Laennec would claim that "'after their softening has produced an ulcerous cavity in the interior of the lung, recovery may take place'" (quoted in Flick 1925, 390). Thus, in spite of Laennec's innovations in the realm of diagnostics—his improvement on methods of early detection—the physician, the practitioner of the art of medicine, is largely incidental to the "healing process." The tubercle is not arrested, rather it is allowed to run its course; it is the "effort of nature" rather than art that affords the individual "fairly good health." As Laennec writes, "'I have already shown that recovery from pulmonary phthisis is not beyond the *powers of nature*; but I at the same time confess that as yet *art possesses no certain way of accomplishing this end*'" (quoted in Flick 1925, 396; italics added).[12]

Laennec's dismissal of the role of the art of medicine in curing tuberculosis took shape in a broader climate of biological determinism in French medicine—an "essentialist medicine"—founded on the belief that disease in general (and tuberculosis in particular) was part of a person's biology—their *essence* (Barnes 1995, 27). He and his contemporaries largely subscribed

[12] Laennec expressed a further concern—namely the capacity for individuals to develop "secondary eruptions of tubercles" during or after the softening and suppuration of the initial tubercles. Hence in describing views on the potential for a cure—on a cause for "'hope…of real recovery or at least of a suspension of the symptoms"—he suggests, rather pessimistically, that the "the patient can be *restored to a condition of health* sufficiently perfect to enable him to perform the functions of civil life for many years before the development of the [secondary] tubercles, still in a state of crudity, brings on a new and last attack of phthisis'" (quoted in Flick 1925, 392; italics added).

to a *fatalism* regarding consumption—a fatalism that took shape through the location of the cause of tuberculosis in the temperament, in the character, *in the biology* of the sufferer: the tubercular were destined to suffer by their constitutional predisposition—by what came to be known as their tubercular *diathesis*: "the body's proclivity to suffer from a particular type of disease" (Haller 1981, 25).

An article entitled "Diathese," authored by Pariset and Villeneuve and published in 1812 in the *Dictionnaire des sciences medicales* defined diathesis as "that state of the body which makes it acquire certain disease" (Ackerknecht 1982, 321). Prominent French physicians studying tuberculosis, including Bayle and Laennec, "adhere[d]…to this notion" of the body's inherent capacity to acquire disease (321)—Laennec claimed that "only the tuberculous diathesis" caused the disease (Brown 1941, 18).[13] In this sense, physicians in the early-to-mid-19th century reproduced consumption as a force of nature; yet in contrast to the external nature of climate, bad air, and bad breath described by the Greeks, Laennec's phthisis was a product of an internal nature, predisposed to be flawed.

This view on biological predisposition and tuberculosis is important to the extent that it also constituted a clinical attitude and approach to treatment founded on the propensity of certain types of bodies to acquire the disease; in other words, the tubercular diathesis, in attributing the onset of the disease to predisposed types, left little room for the individual as agent in preventing, avoiding, and helping him or herself to overcome tuberculosis. The sick

[13] This view on tuberculosis as rooted in a "constitutional predisposition" (Barnes 1995) had a precedent in the Greco-Roman medicine. In Epidemics I, one group suffering from consumption is described by the Hippocratic author as being "'predisposed to it by their constitution.'" (quoted in Flick 1925, 20). Galen translated the humoral system into a taxonomy of biological "temperaments"; the use of Galenic temperament as a guide to medical prognosis proved useful "[f]or more than 1500 years." These temperaments or "*krases*" "play[ed] the role in pathology that diathesis [and] constitutions" would assume in the early 19th century: attributing the cause of disease to something innate in the biology of the sufferer (Ackerknecht 1982, 319).

subject was subsumed by the natural tendency of the biologically predisposed body to "acquire" the disease. The "powers of nature" *to heal* where checked by the even stronger "powers of nature" to *determine* an individual's biological susceptibility to tuberculosis. Wide-19th-century cautiousness and skepticism regarding the role of medicine and the individual sufferer in willfully retarding the break-down of the tubercle took shape through the *tubercular diathesis*—through the medicalization of the predisposed biological tendency to be tubercular.[14] The will of individuals—both physicians and the sick—was dwarfed, in Laennec's France, by consumption as a force of nature.

When, in 1908, Flick claimed that a patient of his Henry Phipps Institute ought to be "restored to a condition of health in which he can help himself" (Bates 1992,127), he had spent twenty years locating himself within a socio-medical movement that he viewed as part of a progressive-Western-medical narrative: medical science had moved beyond the conservative proclamations of Laennec; beyond the hedging of Morton; beyond the insufficient knowledge of the Greeks. In substituting the "power of art"—both the art of medicine, and the exercise of individual will through an art of self-government—for the "power of nature," Flick not only argued that tuberculosis was curable and eradicable: he posited the sick individual as the primary agent in the materialization of these goals. Flick's notion of self thus took shape in contrast to, and in refutation of the notion of diathesis.

[14] By the late 19th century, the notion of a tubercular diathesis was reworked into discourses of heredity. While the word "diathesis" was not as prominent, the underlying premise that consumption subjected those individuals who were naturally predisposed was reworked to address the movement of disease in families: heredity was the method of transmitting susceptibility (Ackerknecht 1982).

He drew on Koch's discovery of the microbial cause of tuberculosis—the tubercle bacillus—to support his challenge to the notion of biological predisposition.[15] It was precisely this challenge to two-thousand years of fatalism regarding the ravages of consumption that allowed Flick to place the locus of responsibility for health and disease—for getting better—within the individual sick subject. The late 19th century tubercular individual constituted through Flick's anti-tuberculosis "crusade" would be an individual, no longer subject to the forces of diseased nature; but rather, one capable of helping him or herself through the cultivation of immunity—the nourishing of a bodily soil hostile to the disease—tissue capable of denying the affinities of the newly discovered material cause of tuberculosis, the tubercle bacillus. For Flick, the pursuit of individual immunity was the most important means of combating the disease and it was through discourses and practices of immunity that the individual would increasingly take shape as possessing a will capable of controlling, not only physiological processes, but the quality of his or her own tissue and, as a result of such control, control of tuberculosis.[16] And he addressed this pursuit using metaphors of soil and seed; metaphors that emerged from the work of the bacteriological laboratory. Indeed, the very language and practices of control of scientist over the bacillus, achieved in the bacteriological laboratory, would translate, in the labor of Flick and the anti-tuberculosis movement, into language and practices of individual control over the disease in the body.

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[15] Note that beyond the discovery of the bacillus, Koch and others had speculated on the contagious nature of tuberculosis. Physicians and scientists in the last two decades of the 19th century began to explore and experiment, in earnest, to establish that the disease was contagious—a movement I will take up in detail in Chapter 2.

[16] Indeed, where most historians of tuberculosis characterize Laennec as having pronounced the disease incurable, Flick sees the contradictions in his orientation toward a cure as evidence of Laennec's optimism: "his great service to humanity was the restoration of hope and confidence in the treatment of tuberculosis by putting the evidence of its curability before the world in such a convincing way" (Flick 1925, 391).

"A Certain Staining Procedure": Robert Koch and The Scientific Production of Microbial Affinities For Certain Colors

The laboratory discovery of the tubercle bacillus, in the early 1880s, articulated with an emergent clinical understanding of bodily tissue as *soil*, and of the individual as *sower* of this soil. Bacteriological practices—the experiments and experimental methods of Robert Koch—designed to individualize and cultivate the material cause of tuberculosis, the tubercle bacillus, constituted a broad traffic between the laboratory and the clinic. The individual as sower—as witting cultivator of bodily health and immunity—took shape through the popularization of this traffic.

On March 24, 1882, some three months before Lawrence Flick returned to his father's Pennsylvania farm in an attempt to recover from the Great White Plague, Robert Koch all but brought his laboratory with him to lecture before the Physiological Society in Berlin. Beneath the glimmer of yellow gas lights he had arranged "his microscopes, test tubes with cultures, Erlenmeyer flasks, small square glass boxes containing cultures, [and] slips of dead human and animal tissue preserved in alcohol" (Ryan 1992, 11). Flick, reflecting upon Koch, spoke of the latter with a praise that is common to scientific history—a praise that assumes the progressive nature of scientific discovery, heralding those individuals that add to the canon of scientific knowledge as innovators, geniuses, fathers.

Poised to present a lecture entitled "On Tuberculosis," Koch had divulged little in advance to the public of the content of his talk. His audience of scientists, including the elder Rudolph Virchow, a noted cellular pathologist, sat, listening to Koch's slow, somewhat hesitant speech as he patiently worked toward his conclusions—toward what would be seen as the

groundbreaking news that he had "discovered" the *tubercle bacillus*, and proven it to be the germ responsible for tuberculosis (Brock 1988, 128).

The tubercle bacillus took shape as an object of knowledge precisely because of Koch's unique use of laboratory materials. In presenting his discovery to his peers, the bulk of Koch's presentation was a precise description of his experimental method—the method through which he had made visible this new form of "nature"; and the praise from scientists that would be conferred upon Koch in the coming decades was largely founded on the perception that he was innovative in his methods and in his manipulation of the conditions and instruments of the laboratory.

This innovativeness, detailed in his demonstration of his conclusions in his May 24th lecture, was preceded, in his laboratory, by failures that spread in blues, browns, and reds (Ryan 1992, 10-11). Using chemical dyes in an attempt to stain the microscopic bacillus, Koch, like the broader Western scientific community, generally believed in the existence of an entity responsible for tuberculosis—a microbial agent; yet he lacked experimental proof of its existence.

Speculation on a type of microscopic matter responsible for tuberculosis emerged as early as the 17th century in the writings of the physician Benjamin Marten. Marten had no access to a microscope, but he knew of this new technology, and he proffered a theory of what the eye, enhanced by such a tool, might find. For Marten, the cause of consumption was the presence of animalcules—small animals. He proffered "some certain Species of *Animalcula* or wonderfully minute living creatures that, by their peculiar Shape or Disagreeable Parts are

inimical to our Nature; but, however, capable of subsisting in our Juices and Vessels" (quoted in Cummins 1949, 57).

Marten's thoughts on parasitic living matter "subsisting" on the human body was not well received in his time. Indeed, it was not until the mid-19th century and the fermentation experiments of Louis Pasteur that the notion of living matter, foreign to the human body, began to assume a primary place in standard medical doctrine of disease etiology. Alongside Pasteur's demonstration of the microbial cause of disease—the underpinnings of the germ theory—physicians set about theorizing and seeking out the specific germs responsible for specific diseases. Tuberculosis was no exception.

Jean-Antoine Villemin (1827-1892), a French military surgeon, had pushed the scientific discussion of tuberculosis toward the realm of microbes by suggesting that the disease was brought on by a morbid agent—"'an agent of determination'"—"'a kind of germ destined to play the role of provocative agent'" (quoted in Flick 1925, 587). Villemin's germ and the broader scientific interest in discovering agents of disease shifted the study of tuberculosis etiology from belief in a cause that took shape spontaneously within an organism—a force of nature—to the search for an external entity—a "foreign" germ—that found its way into the bodily "economy" (Flick 1925, 587)(Brown 1941, 23). In shifting scientific inquiry toward this foreign germ as "agent," Villemin contributed to a late-19th century *personification of disease*: these germs as agents had a quasi-human quality in their capacity to act—in their capacity to be the agents responsible for bringing on the consumptive disease process.

Villemin's personification of the disease bears on Koch's work, for, first, as I show below, the latter's experiments would continue to contribute to this humanization and

individualizing of the microbe. Secondly, the importance of Koch's laboratory materials, and his use of experimental method as a persuasive gesture in bringing his discovery of the tubercle bacillus to light, owes much to a broader shift within the scientific-medical community embodied by Villemin: the valorization of experimental data as the backbone of medical facts. Where medical science had long debated the facts of bodies and disease through "dialectics and quotations from the classics" (Castiglioni 1933, 25)—particularly the works of Hippocrates and Galen—Villemin and his peers worked in a climate that valued reproducible experiments to forge the facts of disease processes.

Villemin conducted a number of inoculation experiments, to establish that tuberculosis was sown from the transference of foreign pathological material from one source to another. Yet he fell short of isolating the specific microbe responsible for the disease—of making the specific germ visible. This entity remained speculative, transparent, a non-entity: "But in vain the scientist peered through his microscope," writes Flick, reflecting on the work that preceded Koch: "he could see nothing to which he could ascribe life or powers such as must be possessed by an organic substance capable of producing the symptoms of tuberculosis. The trouble was that he was looking right through the organism, for it was transparent" (Flick 1896, 640).

Thus, the problem confronting Koch as he presented his evidence to his peers on March 24th, 1882, did not concern the existence of an organism responsible for tuberculosis; rather, he faced the technical problem of how to turn a suspected "nonentity into an entity." The resolution, for Koch, required him to learn and cater to the "affinities," the "preferences," the idiosyncratic desires of this evasive, as-yet-transparent microbe. This catering would take shape in the laboratory through the development of a "certain staining procedure" designed to

make visible the microbial cause of tuberculosis; and in doing so, Koch would give hope to Flick's anti-tuberculosis crusade: "The clue," according to Flick, "of how to [eradicate tuberculosis] came with Koch's discovery of how to stain a microscopic organism (640).

Late 19th-Century Technologies and The Staining of the Tubercle Bacillus

Where Marten had no microscope to view his speculative animalcules, Koch's procedure would have been unthinkable without the 19th century commitment, in medical science, to the new frontier of microscopic landscapes and minuscule bodies: "the but recently explored land of the bacteria, the dark continent of infection" (Burt 1890, 2). Peering through the microscope, Koch "supplemented the natural limits of his vision," observing an "undistorted high-level magnification of the bacteria" (4).

In the latter half of the 19th century, the nascent science of bacteriology took shape around the microscopic study of bacteria, achieving new levels of clarity with improvements in lens technology. Koch took advantage of these emergent technologies, especially the oil immersion lens, an innovation introduced in 1878 and 1879 (Rothstein 1972, 264). By submerging the objective lens of the microscope and the specimen in an immersion oil, Koch was able to view bacteria at a higher resolution.

Yet even with specialized lenses, the sputum of a tubercular patient would be teeming with other non-tubercular microbes. To the eye of a scientist looking through a microscope, microbes remained undifferentiated from the broader field of tissue and competing microbial life in which they sat—"the various bacilli are at the first glance very much alike, often so much alike as to be indistinguishable" (Whittaker 1883, 153). Koch's work thus proceeded in an attempt to solve the technical problem of contrasting the germ he sought from those other

microbial bodies that cluttered the microscopic field of vision. Koch set about the task of *individualizing* the microbe responsible for tuberculosis.

The mid-to-late 1870s included a spurt of technical innovations in the field of staining. One of these was a market innovation as the German dye industry began manufacturing aniline dyes—"chemicals to stain the bacteria to make them visible" (Rothstein 1972, 264). A key technical innovation for the "discovery" of these minute forms of living matter was thus the practice of staining the bacteria to isolate the individual "species" of germ from the other bacteria. Using these aniline dyes and his oil immersion lens, Koch became an innovator of new staining methods. His solution to this technical problem—how to make one form of microscopic nature stand out, in its individuality, from other forms—took shape through his attentiveness to the manner in which the various microbes "differ widely in their chemistry." The germs, as Koch observed, manifested *preferences* for different chemical dyes (Whittaker 1883, 153). He would thus design an experiment to cater to the affinities of the as-yet-speculative microbial cause of tuberculosis.

Months after Koch's lecture, in a presentation to the College of Physicians of Philadelphia in September of 1882, James T. Whittaker, a professor of the Theory and Practice of Medicine, having visited Koch's laboratory and observed his experiments, described this capacity for microbes to manifest preferences as he summarized Koch's staining method—the "color tests":

> which brings us to speak at once of the color tests; for the action of the coloring matters [the dyes] upon the bacilli is *an expression of their chemical affinities*. And here we find very great differences among the different bacilli. Pretty much all the micrococci can be tinted of any color indiscriminately, blue or red or brown, etc. but *the bacilli show*

> *marked preference for*, or perhaps only become visible with, the use of certain hues. (153; italics added)

Where microbes are so similar "at the first glance" as to seem "indistinguishable" they become, as Whittaker suggests, individualized, when stained with particular dyes—they become classifiable through their "chemical affinities" or their "preference for…certain hues." Scientists employing staining methods could thus "distinguish different forms [of bacterial life] by their affinity for certain [chemical] colors" (Whitaker 1882, 192).

Within this context of nonhuman—microbial—preferences, Koch set about his work: designing a staining procedure and manipulating the material of the laboratory to cater to the inclinations of this transparent non-entity. The task would prove difficult for, as it turned out, the "properties" of the germ he sought "ma[d]e it extremely difficult to work with" (Brock 1988, 125). A series of laboratory failures preceded Koch's successful demonstration of the presence of the bacilli—failures that were bound up with the confusing preferences of this sought-after microbe. The tubercle bacillus was confusing precisely because, as he would soon recognize, it lacked an affinity for "the use of any *one* color" (Whitaker 1882, 192; italics added). Unlike other germs that became visible with a single stain, the germ responsible for tuberculosis desired, as Koch would demonstrate to his Berlin audience on March 24, multiple colors.

Koch's employing of his laboratory materials—his cultures, beakers, and flasks—reinforced the technical character of his "discovery": his first achievement of interest that night—the making visible of the tubercle bacillus—was lauded for its experimental innovativeness. This "certain staining procedure" (Ryan 1992, 10-11) was, in fact, a

counterstaining procedure employing two colors, designed to cater to the bacillus' *preference for multiple colors* (12). Whitaker describes Koch's execution of this counterstain.[17]

Koch began by taking a "minute fragment" of sputum with a "platinum hook or wire" and spreading this sputum in "a thin almost invisible, film over the whole surface of a *cover* glass." He then applied a flame for ten seconds to fix the sample upon the glass. With the sputum fixed and thus prepared to be colored, Koch proceeded to stain it twice: first, with methyl violet; and then, a half-an-hour later after the violet had set in, with vesuvin brown. The violet saturated the entire sample, coloring everything. When the sample was subsequently exposed to the second color—the counterstain—the non-tubercular germs and the tissue turned a light brown: they were "decolorized," losing the violet hue.

And there they appeared, the tubercle bacilli, violet against the "brown field." Against the decolorized background of competing microbes, the germs responsible for tuberculosis held onto the methyl violet, unwilling to "let go of all the coloring matter" (Whitaker 1882, 193). The speculative, transparent non-entities, had transformed into motionless, rod-shaped organisms: these microscopic life forms responsible for the Great White Plague, stretching no longer than 1/1200 of an inch (Whittaker 1883, 152). In applying the brown counterstain, the agent responsible for tuberculosis was visually isolated, individualized, "wholly freed from [the] complicating material" of competing germs and tissue (Burt 1890, 2-3).

Flick was impressed by the work of Koch and the post-Koch capacity to make the "physicality" of the disease visible beneath the microscope. In part, his impression was related

[17] Note that Whittaker's observations are taken from his visit to Koch's laboratory some three months after the Berlin lecture. He was not present at the lecture but the experiments he observes are those that Koch employed at the lecture.

to the diagnostic method that grew out of the lab work: the emergence of the sputum test allowed physicians to stain a patient's spit to determine if they had the bacillus in their blood. Yet for Flick, the freeing of the bacillus from its "complicating material" assumed importance for a broader reason: it gave society a clear, identifiable enemy against which to wage a "crusade." The work of Koch thus produced, for Flick, one of the primary weapons available for the subjection of tuberculosis: knowledge. The "crusade" would initially be waged through the "study [of] the habits of this vexatious little organism…what it needs for its maintenance, how it gets it, [and] why man has served so well as its host" (Flick 1896, 640). Indeed, according to Flick, "the knowledge that has been gained in the laboratory about the life-history of the tubercle bacillus" led, inexorably to "the great truth" (641) of "how it can be staved, how it can be destroyed, in short, how it can be stamped out of the world" (640). The "intelligent effort" of "civilization," buttressed by an intimate knowledge of the "habits" and "needs" of this pathological form of nature would surely find a way, in Flick's Enlightenment narrative, to prevent the disease.

Insights into these "habits" were further generated through Koch's next experiment—his culturing of the tubercle bacillus. Importantly, the metaphor of *individuals as sowers cultivating their bodily soil* would emerge through Koch's witting cultivation of an optimal soil in which to grow the bacillus in the lab. In the translation of Koch's laboratory culturing methods, into the clinical treatment of the tubercular body, the modern consumptive individual would be re-made. The tubercular subject of the early 20th century would be capable of choosing to cultivate a soil that facilitated the life of the disease, or a soil of immunity, one that isolated and nullified the parasite in his or her own body. The prevention and treatment of

tuberculosis, in the late 19th-century would increasingly become a matter of the individual will, and individual responsibility—a disease overcome by an individual's adoption of regimen; by disciplined, responsible agents; a disease that took the life of those who failed to help themselves.

Koch and the Culturing of the Tubercle Bacilli: The Laboratory Cultivation of a Microbe's Preferred Soil

As Koch lectured to his Berlin audience on the discovery of the tubercle bacillus, he made it evident that the making visible of the bacilli did not prove a causal relationship between the bacilli and the onset of tuberculosis. The visual individualizing of the tubercle bacillus from the broader field of germs was but a first step. To make this causal connection—what Koch referred to as a "direct causal relation to the disease" (quoted in Lechevalier 1965, 96)—he set about designing an experiment to inoculate guinea pigs with the newfound bacteria. Yet in order to prove that the disease that developed in the guinea pigs resulted *solely* from the pathological qualities of the tubercle bacillus, his inoculation experiments would require a second isolation: the isolating of tubercular material—a *pure culture*—through cultivation in the laboratory: "to put the proof beyond dispute it was necessary *to be able to cultivate* [the tubercle bacillus] *by itself*, apart from every other form of micro-organism" (Whitaker 1882, 192).

Given a competing field of microbial agents the onset of a disease could theoretically be attributed to any of these various germs. Koch worked to produce a laboratory culture—referred to by observers and commentators as a *soil*—and a series of techniques that would allow him to isolate and grow colonies of the tubercle bacillus. Where he had visually individualized the bacillus, Koch now sought to biologically isolate and reproduce this single germ. Such an

isolation would allow him to introduce this "pure" culture—this single uncontaminated species—into a guinea pig. The inoculation of the pure culture of tubercle bacilli would guarantee that any emergent pathological effects in the test animal would be "incontrovertible proof" of the tubercle bacillus as the disease-causing agent (quoted in Lechevalier 1965, 96). The pure culture would thus serve as a means of producing scientific certainty about cause and effect in the tubercular disease, establishing any pathological effects in the inoculated guinea pigs as resulting solely from the tubercle bacilli.[18]

The techniques for isolating the pure culture took shape, in metaphor and practice, through an interaction between scientist and disease, premised on the capacity of bacteriologists to exercise "control" over the disease in the laboratory. Koch's efforts to find the correct "soil" in which to cultivate the bacillus would constitute, as I show, not only the discourses and practices of the bacteriological laboratory, but the space of clinical treatment as well. The capacity to *wittingly* cultivate a laboratory soil capable of nourishing the tubercle bacillus paralleled a concomitant notion, applied to the human body, of the capacity for individuals to wittingly cultivate a soil—blood, and tissue—that was immune to, or capable of isolating the disease, thereby rendering it harmless. The making of this model for interacting with and understanding disease in bodies involved, for Koch, a further discerning and catering to the preferences of the tubercle bacillus.

These microbial affinities were rooted in a laboratory methods of culturing germs—methods explained through metaphors of soil, seed, and cultivation. Whitaker, observing

[18] Perhaps more importantly, the pure culture was a technique that allowed for the control of variables in the laboratory—in the bodies of animal test subjects: if a scientist were to inoculate without a pure culture, the onset of any morbid processes in the test subject would not be indisputably traceable to the specific bacteria in question—the microbial cause of the disease would not be proven.

Koch, suggests that while the aforementioned color tests provided an initial map for distinguishing "different forms" of bacteria "by their affinity for certain colors," the latter's work with pure cultures serves as a "better distinction." The individualized bacteria take shape through "the kind of soil in which they will grow" (1882, 192). For Koch, the nature of a microbe was determined through its preference for a particular type of culture medium—a particular type of soil. Koch describes his attempts to culture the tubercle bacillus as an act of "cultivation" (Lechevalier 1965, 96).

In 1881, Koch had published a report that argued for the "need of improvement," in the field of bacteriology, in techniques for preparing such soils—for "the preparation of pure cultures" (83). In the emergent field of bacteriology, the scientist thus increasingly pursued a means to constructing preferred soils where "the bacteria [are] to be grown" (quoted in Lechevalier 1965, 97). The culturing of the disease required the "implant[ing] and fix[ing]" of the bacillus and the "tillage of the specific bacillus" (Burt 1890, 9) in "its own nutrient soil" (Whitaker 1882, 192)—in other words, in a laboratory-manufactured soil that closely approximated its needs.

The discerning of a type of nutrient soil that would best cater to the preferences of the parasitic tubercle bacillus required, on the part of Koch, the resolution of a further set of technical problems in the laboratory, once again yielding a number of failures along the way. JTW, observing Koch's laboratory practices in culturing the tubercle bacillus, describes how Koch went about working through "the various substances used and rejected as unfit soils for the growth or sustentation of individual germs" (Whitaker 1882, 189-190). Such unfit soils included the surface of potatoes and gelatine-bouillon (191).

Koch's work to discern and cater to the preferences of the tubercle bacillus by cultivating this proper nutrient soil led him to modify pre-existing culturing methods, guided by the notion that "Each parasite has its own soil, like the vegetable world of larger growth" (191). The particular soil in which to sow the tubercle bacillus needed, according to Koch, to meet certain requirements. First, Koch selected a solid culture medium over a liquid medium citing the former as "more reliable and convenient" (quoted in Lechevalier 1965, 96). This soil should "possess the necessary nutrients" to sustain bacterial growth; remain solid "with prolonged incubation at body temperature"; and be transparent (quoted in Lechevalier 1965, 97). The bacilli's preferred "soil or substance was finally found" after much "patience and persistence" "in blood" (Whitaker 1882, 192). Koch had determined that the tubercle bacillus showed an affinity for solidified blood serum.[19]

Having successfully cultured the bacilli, Koch proceeded to demonstrate, to his peers, his successful inoculation of guinea pigs with the pure culture of bacilli thereby establishing a causal relationship between the species of tubercle bacillus and the onset of tuberculosis. The results of Koch's use of the solidified blood serum as soil and the recognition that he had successfully produced a pure culture of the disease was consequential in that his labors enabled scientists to grow colonies of bacilli—pure cultures—for use in other animal inoculation experiments allowing for the further production of knowledge about the effects of the disease. But more importantly, in successfully isolating and propagating the microbes responsible for

[19] As Whittaker comments, these preferences for certain soils become taxonomic indicators of the biological species to which various bacteria belong: "Each form or family of parasite requires or develops best in a particular soil, and the discovery of the particular soil best suited for each form is the object chiefly aimed at" (1882, 189-190). According to Koch, culturing served as a tool for the classification of species of bacteria. Koch writes, "'Great stress should be laid on pure culture. If, in serial cultivation, the same form of bacterium is obtained, this organism must be accepted as a species'" (quoted in Lechevalier 1965, 82).

The Great White Plague, Koch was viewed as having mastered tuberculosis, disciplining the disease and demonstrating power over its life and death in the laboratory. This laboratory control resonated with anti-tuberculosis reformers like Flick who increasingly invested in an optimism over the capacity of sick individuals to practice a similar mastery over the disease in their own bodies.

From The Laboratory to The Body: The Individual as Sower of Personal Soil

In 1896, Flick, gesturing toward Koch's laboratory mastery of the bacillus, would write that "Science has given us…power over the great white plague of consumption" (639). Yet in spite of the renown of Koch's innovative experiments, his discoveries were initially seen by many physicians as lacking direct relevance to clinical treatment. The use of the sputum test to analyze patient expectorant for the bacillus often produced unreliable results and required laboratory facilities—facilities that were, in the late 19th century, uncommon for the everyday physician. Furthermore, merely identifying the bacillus in sputum did not equate to an insight into treating and curing the patient. How, then, did Flick and his peers translate Koch's insights into an optimism toward and a program for the cure of the disease?

By the beginning of the final decade of the 19th century, physicians, citing the centrality of discovery of the bacillus in their work, were starting to challenge the notion, so strong amongst Laennec and his early 19th century colleagues, of the tubercular diathesis. This medical model that biological constitution determined those who would suffer from consumption, made types out of people: there were those that were predisposed to tuberculosis and those that weren't. New elaborations on Koch's work on the bacilli, microbial preferences, and the nascent research on immunity challenged the model of diathesis by positing a more

individualized relationship between the organism and its host: a parasitic interaction between these two bodies through the "soil" of human blood and human tissue. New York physician and professor Stephen Smith Burt, speculating on the relationship between the bacillus and individual constitution remarks, "all tubercle is the outgrowth of a microscopic, disease-producing germ known as the Bacillus tuberculosis [sic]. Without this parasitic plant, however depraved the constitution, there will be no tuberculosis, and also, fortunately with this morbific agent there will be no phthisis *unless the vitality of the tissues is impaired*" (Burt 1890, 4; italics added).

This positing of an interaction between the "morbific agent" and the quality—the vitality—of human tissue surfaces across the writings of many physicians who elaborated on Koch's work. As Burt notes here, the bacillus alone is not enough to cause the disease; rather, phthisis acts upon tissues that are already "impaired"—in other words, the parasite requires tissue that has already been compromised and, conversely, it is retarded by healthy tissue. The recognition that the disease required a certain type of compromised material articulated with understandings of the disease's chronic tendency—its propensity to remain with the sick through acute periods and periods of remission. To the extent that the quality of an individual's tissue could vary over the course of lifetime, tuberculosis seemed to respond to these changes, announcing itself in times of individual physiological weakness. Flick thus found himself, in the late 1880s and throughout the 1890s, elaborating on the applicability of Koch's work by authoring medical pamphlets on tuberculosis that addressed the treatment of this interaction of body and germ as a long term parasitic relationship.

In an era that predated the discovery of "the immune system," Flick set about outlining a cure for this long term relationship—one that hailed the individual sick into the practice of making themselves healthier. The solution lay in building individual immunity, or, as Flick writes, "immunity must constitute the basis of all treatment" (1898, 4). Immunity to the disease could seemingly be achieved, intentionally, if individuals would only pursue a lifestyle that allowed them to cultivate healthy tissue. The foundational practices for achieving this immunity were those of regimen: the physician prescription of long-term behavioral strategies and the corresponding individual commitment to following these strategies in a disciplined manner so as to manage one's own bodily soil.

Amidst the shifting field of late 19th century bacteriological and histological inquiry into tuberculosis, a story began to emerge—a story that ran counter to two thousand years of medical ambivalence and pessimism toward a cure for tuberculosis: individuals—regardless of their inherited constitutions—could willfully cultivate vital, resistant, healthy tissue so as to intentionally arrest, reverse, or ward off the disease. One might be born with a compromised immunity, but in pursuing proper nutrition, rest, avoidance of stress, and access to fresh air, an individual could combat their susceptibility to tuberculosis. With knowledge of the preference and affinities of the bacillus, the sick could manage their own internal soil so as to achieve a bodily vitality that would starve the disease. This story materialized, most popularly, in *The Parable of the Sower*. Attributed to William Osler, Chair of Clinical Medicine at the University of Pennsylvania (1884-1889), it was originally told in 1892.

The Parable of the Sower

Osler recounting *The Parable of the Sower* in an essay in the 1903 *Annual Report of The Henry Phipps Institute*, gestures toward the wide circulation of the tale—based upon the Biblical parable, as uttered by Jesus to his disciples—by suggesting that the parable, with its metaphors of individual as sower, body as soil, and tuberculosis as seed, had been reiterated with such frequency as to have become "hackneyed" (Osler 1903, 146) He begins by equating the potential for immunity to the disease in the quality of tissue: "That we do not all die of [tuberculosis] is owing to the resistance of the tissues; in other words, to an unfavourable [sic], *i.e.*, the rocky soil on which the seeds have fallen." Thus, Osler begins the parable by establishing that human tissue is a soil and that such soil, to the extent that it is "rocky," proves resistant to growth of the seeds of tuberculosis. He continues, noting three possible outcomes in the interaction between human tissue and tuberculosis.

> The parable of the sower sets forth in an admirable way the story of the disease…The seed that falls by the wayside are [sic] the bacilli that reach our great highways, the air passages and intestines in which they are picked up by phagocytes, representing the birds of the air, or they are trodden under foot by swarms of contending organisms. The seed that falls on stony places is that which reaches the lymph-nodes of the bronchi and mesentery, and though it springs up and flourishes for a [sic] while, there is no depth of earth, and, lacking moisture, it withers away into cretaceous healing. And that which falls among thorns represents the bacilli which effect a lodgement in the lungs, the kidneys, or elsewhere, where they thrive and grow and produce extensive changes, but the thorns…grow up also, and in the form of delimiting inflammatory processes and of contracting fibrosis, choke the seed, and recovery ultimately takes place. (146)

Here, then, Osler notes the way that healthy tissue can resist tuberculosis: the bacilli might enter the body and yet fail to establish roots, thus, falling by the wayside only to be engulfed by phagocytes. A less healthy body with its tissue of "stony soil," might allow the disease to take root for a time—it "springs up"–only to eventually starve the parasite, thereby suggesting the

manner in which tuberculosis was observed to affect some subjects "for a while [sic]" only to disappear. He concludes with a third scenario in which the bacilli effectively occupy the body—taking root in the thorns, where they "grow and produce extensive changes." Yet even this scenario can, in Osler's estimation, result in recovery to the extent that the thorns, through an anti-inflammatory process, resist the bacilli by choking the seed.

He contrasts these scenarios of healthy tissue resisting the bacilli with an example of the seed taking root: "But falling on good ground, the seed springs up, increases and brings forth fruit come thirty, some sixty, and some a hundredfold, which may be taken to represent the cases of chronic, subacute, and acute tuberculosis" (Osler 1903, 146-147). Here, then, "good ground" is that unhealthy soil or tissue that allows the seeds to reproduce. Osler links the scale of this reproduction to the type of tuberculosis that manifests, suggesting that those cases wherein the seeds reproduce an excessive amount of "fruit" are those regarded as acute cases.

Osler, departing from two thousand years of consistent medical pessimism in the face of natural limitations on a cure for the disease, offers, in *The Parable of the Sower*, an optimistic theorization of the manner in which tubercular bodies can cultivate immune soil. The Greeks posited phthisis as an external natural force, subjecting its victims on the whims of wind and season. For Morton, the disease touched all, thwarting human effort, killing its sufferers, save those lucky enough to be saved by "nature." Laennec and his contemporaries professed the incurability of the disease, subscribing to a fatalistic medical model of the biologically determined consumptive. For two thousand years, physicians hedged on the "power" of the art of medicine and the capacity of individuals to overcome consumption through a witting

regimen. Yet in Osler's parable, tuberculosis has become a simplified, recognizable, and manageable form of nature—a seed—susceptible to the intentions of the sower of the bodily soil.

Yet notably absent from Osler's rendering of the parable is any mention of this sower—any mention of the individual sick subject. Indeed, recovery from tuberculosis and resistance to the bacilli are rendered, in Osler's words, as natural processes that occur outside of any human intention or will. It is only in his conclusion to the parable that the role of the individual sower become apparent. "We are beginning to appreciate," wrote Osler, "that the care of the soil is quite as important as the care of the seed" (146-147).

Emerging from this vision, then, are not only the metaphors of soil, seed, and sower, but, more broadly, an individualized method of treatment: "the care of the soil." Where the theory of tubercular diathesis suggested that those with the disease got sick due to a constitutional tendency toward the disease, Osler initiates his *Parable* with a distinctly different notion: *all* are exposed to this disease and *all* are potential victims. The defining factor in separating victims from victors in combating the disease—the factor that ensures "we do not all die"—is an individualized "care of the soil"—a matter of the willful-disciplined cultivation of a "stony" "dry" soil with "no depth of earth"; or a thorny soil that, while allowing the seed to "thrive and grow," nevertheless "grow[s] up" to eventually "choke the seed."

Key to Osler's method of treatment, then, is his suggestion, like Burt, that the threat of the disease process does not lie exclusively with the bacillus; rather he emphasizes the capacity for the individual to determine—through cultivation of a certain soil—their vitality of tissue. And this vitality of tissue corresponds, in turn, to the potential severity of the tuberculosis—"chronic, subacute…acute." The solution, then, to containing the threat of the bacillus—

indeed, the very cure for the disease—involves the cultivation of a soil that maximizes individual immunity by avoiding an internal physiology that caters to the parasites desires. Osler's parable of the sower thus provides a model wherein individuals are produced as subjects with the capacity to exert their will over their internal body, cultivating immunity by influencing their physiology and their tissue through the practice of caring for their soil.

Natural Immunity and the Disciplined Individual

In the 1890s, Flick, a professional contact of Osler's, drew on the now familiar continuum between the art of medicine and the healing powers of nature, advocating *both* in elaborating a program for the development of individual immunity aimed at the "destruction of the bacillus tuberculosis…by medicine or by nature's conservative measures" (Flick 1890, 4). He proposed the notion of "natural immunity"–an individual's "resisting power to disease" (Flick 1898, 5)—to describe the process through which the human body could be disciplined so as to maximize its capacity for the prevention and arrest of the disease. The object of treatment would thus be directed at achieving and maintaining a "normal standard" of bodily health: "Could the natural immunity of the individual be maintained at a normal standard, a very large number of cases would undoubtedly recover" (6-7).

Natural immunity required individual cultivation of a "certain soil" through the disciplined pursuit of correct practices. According to Flick, two of the primary practices are "[a]bsolute rest" and the pursuit of proper "nutrition." He cites both of these as tools for the sower to take responsibility for his or her own body and health. In the desire to maximize proper circulation and digestion so as to develop one's tissue into an inhospitable environment, rest allowed for individuals to achieve an economic expenditure of physiological

processes by preventing individuals from wasting the "force" they need to "maintain the normal standard of health" (7). Absolute rest, according to Flick, increased the overall "resisting powers" of the individual, including the maximizing of the "nutritive powers" of the body (7). Furthermore, he advised generous amounts of milk and fruit and vegetables with a single meal of meat a day and supplements of cod-liver oil to achieve this optimal nutritive state (1890, 11). He further specifies that those individuals "who do not overburden [their stomachs] with too much improper food" will increase the probability that they "will not contract tuberculosis" as such a diet will ensure that "the nature of the soil" is not "congenial" to the tubercle bacillus (Flick 1889, 7-8).

Where rest and nutrition were hardly novel approaches—they were prescribed by the Greeks as treatments for disease of regimen and they made up elements of Morton's "Rules of Living"—what was novel is the manner in which Flick and his contemporaries linked the individual pursuit of disciplined habits with the capacity to shape internal, microscopic bodily material: the blood and tissue of the tubercular were becoming objects—a part of Villemin's "bodily economy"—subject, like one's assets, to the prudential practices of the individual. Through witting management of this bodily economy "responsible" and "worthy" individuals could help themselves by cultivating a soil imbued with the power to resist the bacillus.

Flick elaborates on this process by which the internal body shifts out of the realm of "powers of nature" and is brought within the "powers of art"—the realm of individual will—through attention to the articulation of resistance, blood, tissue, and individual habit. For the individual to contract the disease, the tubercle bacillus must successfully "run the gauntlet of

the phagocytic power of the blood" (1889, 3). Indeed, he terms the blood a "gauntlet" for he identifies that it is the primary medium of resistance, for healthy blood breeds healthy tissue:

> protective power lies in the blood. We certainly do know from clinical observations that in proportion to the excellence of nutrition, which is best indicated by a healthy condition of the blood, the system is capable of obstructing the inroads of disease…Persons whose nutrition is at *par* seem to have the power to resist the tuberculosis under ordinary exposure; and persons who have fallen victim to the disease seem to be able to cast it off or to resist its encroaches if their digestive and nutritive powers can be readily restored. (1890, 9-10)

Flick thus develops the pursuit of nutrition through a disciplined diet as evidence of the capacity of the individual to manage bodily material by wittingly cultivating the "condition of the blood" so as to strengthen tissue and deny the bacillus its preferences. He frames this management in prudent economic terms: "The largest amount of nutrition with the smallest amount of labor to the digestive tract should be the golden maxim which every article of diet should be judged" (Flick 1898, 9). The purview, indeed, the responsibilities of the classical liberal subject—a rational agent, managing his or her limited resources with prudence, and with an eye toward maximization of profit through the "smallest amount of labor"—have been made, in the discourses and practices of the treatment of tuberculosis, to encompass the physiological processes and internal resources of the human body.

Conclusion

In denying milk to the patients of the Henry Phipps Institute in 1908, Flick accompanied his actions with his critique of those who could not help themselves to get better—who failed to sow a soil that was inhospitable to the tubercle bacillus. He had, by then, incorporated and developed the premise of individual immunity into his rhetoric, practice, and administrable endeavors at various tuberculosis hospitals and sanatoria. Like Osler, Flick

viewed an individual's cultivation of a "certain soil" as a key technique in pursuing his goal of curing and eradicating tuberculosis. Importantly, the procedures of this individualized clinical-medical dialogue and method for treating the disease were, themselves, a product of the laboratory practice of Koch. The emergent liberal individual of the turn-of-the-century is no longer simply expected to be productive; he or she is increasingly held responsible for the quality of his or her tissue. The laboratory identification and mastery of the tubercle bacillus produced a liberal individual that was required to help him or herself through the exacting of a similar mastery of the bacillus in the body.

In particular, like Koch's conclusion that the bacillus had preferences and affinities for certain laboratory cultures—the solid culture medium through which he was able to derive a pure culture of the disease—Flick approached the internal conditions of the human body as a controlled and controllable medium. Koch's reputed success in designing this soil—a pure culture of solidified blood serum—in which he had seemingly mastered the cultivation of tuberculosis by catering to the preferences of the tubercle bacillus, took shape in the clinical sphere, in a similar materialization of control: the individual as designer and master of a personal soil, hostile to the affinities of the microbial parasite. According to Flick, the tubercular could not only shape the soil of their bodies, but they had a responsibility to do so. The cultivation of a "congenial soil" that catered to the preferences and affinities of the bacillus—resulting in an exacerbation of the disease—was thus coded, at the Phipps Institute, as a failure of the sick to help themselves. Conversely, the nourishing of a "stony" soil that, as Osler suggested, resisted these microbial seeds constituted the successful individual as prudential manager of bodily health. The emergent late 19th-century individualized treatment

of tuberculosis thus required, for many physicians like Flick, the production of "worthy" patients as managers of their own bodily resources.

Throughout the 19th century, the internality of the tubercular body—cells, blood, and tissue—had taken shape as a province to be cultivated, a resource to be managed, a biological economy: the tubercular body had become subject to the witting individual and the responsibility for overcoming what was formerly a force of nature was increasingly placed, by physicians and institutions, on the individual sick. The responsibility for one's own tissue would be a matter of individual discipline and will. The art of medicine could prescribe regimen, drugs, and guidance, but the cure for tuberculosis ultimately required individuals capable of helping themselves.

Yet Flick faced a challenge that materialized in the form of these uncooperative individuals that failed to get better. The various cautions toward and material limitations upon cures that characterize medical production of tuberculosis prior to the late 19th century made space for failure in the face of consumption as an incurable force of nature: Greeks died of phthisis; the 17th century English died of consumption, the 19th century French suffered the fate of the tubercular diathesis. As Flick, in administering the Henry Phipps Institute, encountered bodies that would not get better, he attributed this, not to the nature of disease in interaction with human bodies, but to the failure of individuals. What stands out in this late 19th century of individualism, scientific mastery, and the treatment of tuberculosis is the sense that the art of medicine had overcome two thousand years of perceived natural limitations of the prevention of tuberculosis. In what follows, I want to broaden the discussion to entertain the possibility that those who, in Flick's view, had failed to help themselves embodied a new,

early 20th-century formation of nature and culture: a reworking of a natural limitation on the healing potential of the art of medicine as a problem of discipline.

In other words, as I will continue to argue in the following chapters, Flick's encounter with patients who seemingly would not help themselves is, in fact, the production of yet another material limitation on the cure and eradication of tuberculosis *in a vocabulary that assumes the mastery of nature*. Flick translates the uncooperative material—the nature—of the human body that succumbs to tuberculosis into a discourse of failed discipline—the culture. I will develop the premise that the important point here is not related to failure. Rather, what matters is the manner in which the attribution of failure to individuals was both produced by and productive of a broader elision of the continued and persistent role of the nonhuman—disease as a force of nature—in the making of the 20th-century articulation of the human body and tuberculosis. Bodies that will not heal are evidence, in part, of a continued natural limitation on the "power of art" to cure and eradicate disease.

This limitation remains in evidence in the 21st century as multi-drug resistant tuberculosis suggests, not only the staying power of infectious disease, but the capacity of microbial life to adapt and strengthen itself in the face of prior human "successes" in curing and eradicating the disease. Much of the contemporary debate, as I explored in the Introduction, continues to hinge on matters of individual discipline: the failure of individuals to take their medicine consistently and for the entire physician-prescribed period. Where Koch seemingly successfully disciplined the disease in the lab, the disciplining of the tubercular body continues to resist medical mastery as it requires constant surveillance by the physician: "*the patient has now the power of living with tubercular lesions that can no longer be injurious*...He is cured;

though the cure, I allow, is *relative*, and its persistence can only be insured by *watchful and unremitting medical attention*" (Jaccoud 1885, 15; italics added).

I will explore this need for "unremitting medical attention" further in Chapter 4 as I analyze the disciplinary procedures of the Phipps Institute. Indeed, it is the "relative" quality of this potential for "cure" that Flick would take up, for the "watchful and unremitting medical attention" would be difficult to achieve. The more a physician could produce the conditions—and the *will*—within his patients to pursue the cultivation of the correct soil, the better the chance the patient had, according to Flick, of helping him or herself. Yet the capacity of the individual, in matters of health and disease, to do as he or she ought is, as I will continue to argue, not entirely the product of human will and intention. Having detailed flashpoints in the history of the making of the disease, I will, in Chapter 2, move into the almshouses and hospitals of 18th and 19th century Philadelphia and in-and-out of the empty pockets of the impoverished and ill to explore the how this responsibility, indeed, this capacity, to overcome disease in one's own body was further produced, through the articulation of a liberal political economy of care, charitable aspirations, and a nagging overabundance of sick bodies that simply would not do as they ought.

Chapter 2

Valuing the Tubercular: Almshouses, Hospitals, and a Political Economy of Care in 18th-and 19th -Century Philadelphia

An Acute Epidemic of Influenza and the Chronic Epidemic of Consumption: Philadelphia, 1889

The typically harsh winter of Philadelphia proved especially vicious when, in 1889 and 1890, an epidemic of influenza crossed oceans and time zones to take up residence in the bodies of the unfortunate. From St. Petersburg to Vienna, Paris to London, the afflicted flocked to hospitals filling beds with their weakened bodies (Davis 1890, 75). In contrast to Philadelphia's consumptives—mired in the various stages of chronic phthisis—those with the flu suffered from acute symptoms. It was this very contrast in the nature of the two diseases—the contrast of acute and chronic—and the corresponding medical urgency accorded to the treatment of the former, that linked sufferers of consumption with suffers of the grippe. Indeed, over the coming year, many of Philadelphia's consumptives would find their unfortunate fates intertwined with the more fortunate fates of those with the flu.

From the first recognition of the influenza scourge on December 23, 1889, through its "culmination in the week ending January 18" (Dulles 1890, 296-297), mortality in Philadelphia totaled over one thousand, "largely due to the prevalency [sic] of the influenza" (126). According to reports, "probably one half the [city's] inhabitants…suffered with it." (53). By February 8, Charles W. Dulles, editor of *The Medical Bulletin*, suggested that "1,500 deaths may be attributed [directly] to the malady" (298).

Reporting, after the fact, on the ravages of the grippe, Benjamin Lee, Secretary of the State Board of Heath of Pennsylvania, noted the misplaced glee with which Philadelphians welcomed it to the States—a glee that belied the dangers of the "pandemic." Having observed the disease developing overseas, "[p]eople appeared to look forward to [the appearance of the flu] on this side of the ocean as an experience, which, on the whole, would constitute a mild amusement, rather than an occasion of suffering, distress, terror and death" (Lee 1891, 366). Lee continued, noting that within a few weeks, this glee was met with the harsh reality of widespread sickness as "both the public and the [medical] profession [recognized] that influenza meant a good deal more than a bad cold in the head" (366). In Lee's approximation, it was "probable that not a single individual entirely escaped [the] pernicious effects" of the influenza (367). Extrapolating from data attained from 265 physicians reporting their statewide cases, Lee estimated that 1,120,000 of the six million residents of Pennsylvania were ill enough to seek treatment or observation from physicians due to the pandemic. A writer trying to bring humor to the grimness wrote of the effects of influenza on the body as "one large, burning, lachrymose, damp, and weary sneeze for a few days, and then you will be in shape to enjoy the sufferings of those about you with tolerable equanimity" (Davis 1890, 69).

While the influenza in Philadelphia was only "a mild disease," it was still necessary to treat the sick in hospitals, for the disease became "dangerous if neglected," resulting in deadly relapses (75). Hospital treatment could facilitate recovery by ensuring that sufferers received minimal exposure to cold. But in the absence of clinical oversight, such exposure, along with "imprudence" on the part of the sick could cause a relapse of the flu—a potentially deadly relapse that consistently occurred on the eighth day of sickness (75). Given the acute nature of

the disease, and the clear effectiveness of hospital treatment in ensuring recovery by helping flu victims move beyond the dangerous eighth day, Philadelphia officials placed a premium on making space for the flu victims. Sufferers of the acute flu were afforded hospital beds over those with chronic diseases—especially those with consumption.

At the height of the epidemic, The Philadelphia Hospital required some three hundred beds to house influenza cases. To make the space available to accommodate these sufferers of the flu, in December of 1889, forty-five "poor consumptives" were "hurried off," likely to the cold beds of the almshouses.[20] Months later, in the fall of 1890, an observer reported an absence of consumptives in the wards of The Philadelphia Hospital—an absence due to the "great" mortality recently suffered by the hospital's former tubercular population (Curtin 1890, 318). While the precise fates of these forty-five poor consumptives remains ambiguous in the writings of this observer, it is evident that, during the influenza epidemic, a number of consumptives died, after having been moved out of their beds at the Hospital to accommodate flu victims.

On February 3, 1890, with the influenza epidemic waning, Lawrence Flick gave a paper on the need to establish hospitals designed specifically to care for the tubercular. In delivering his talk, entitled "Special Hospitals for the Treatment of Consumption," Flick claimed that, while an admirable amount of charitable appeals were met in Philadelphia, such aid had "failed to spur us on to practical alleviation of the consumptive poor." "We have hospital provision," said Flick, "for every form of human misery and suffering, except that which appears under the garn of the hectic flush and the racking cough" (1890, 64). Indeed, as

[20] Precisely where they were hurried off to remains vague—likely the almshouse hospital.

evidenced in the displaced consumptives of the Philadelphia Hospital, the poor tubercular had few options in Philadelphia to obtain treatment or charitable aid. The tubercular subject, according to Flick, submits "frequent applications for admission to our general hospitals, where he is either denied entrance, or, if admitted, is simply given quarters to die in" (64-65). Consumptives, with their chronic-incurable symptoms were routinely spurned by both public and private charity as aid and space were reserved for those who, like the flu victims, manifested acute symptoms, and a significant chance of recovery.

In a city renowned for its medial treatment and abundance of hospital beds, how, in 1889, had consumptives in Philadelphia come to occupy such a marginal value in the eyes city officials, philanthropists, social reformers, and physicians? How had hospitals, charities, and physicians come to accord more "worth" to sufferers of the flu than sufferers of tuberculosis? And how, in the decade of the 1890s, would Philadelphia's chronic consumptives be remade as subjects "worthy" of charity and of hospital beds?

As I argue in this chapter, the treatment of the victims of influenza during the outbreak of 1889-1890 was the product of a well-established political economy of care practiced within the nexus of Philadelphia hospitals and charities. This political economy of care that produced the subjects of acute disease as more "worthy" of aid than the "unworthy" sufferers of chronic disease was, in Flick's estimation, a product of the sympathy of his peers: "Our sympathies go out strongly to every form of suffering that is brief; but our hearts are hard as stone toward that which is long drawn out" (1890, 65) Yet, as I show below, while sympathy did play a role in the evaluation of potential subjects of medical charity, the judging of the worthiness of those in need of medical assistance were, at their foundation, economic calculations: rational-

institutional schemas and operations designed to treat the greatest number of poor and sick in the most efficient, cost-effective, and prudential ways.

In what follows, I show that the pursuit of practices and discourses of reform by liberal philanthropists, officials, reformers, and physicians, within these Philadelphia institutions were produced by and productive of a notion and embodiment of "worthy" liberal individuals able-bodied, and thus capable of being independent and productive—laboring for a living. This liberal individualism takes shape in Philadelphia through the 18th-century suspicion that poverty is not a matter of circumstance—the result of an unwanted disease, for instance—but rather, a failure of individual will: individuals worthy of charity, in the eyes of reformers, were capable of bettering themselves. The process of bettering oneself involved moving away from charity and independently pursuing a productive future. The "unworthy" took shape as a population of failed individuals, purposefully incapable of bettering themselves, and perpetually and contentedly dependent upon the largesse of the public. As I show below, this very suspicion would continue to haunt liberal reformers throughout the 19th-century, and color Flick's efforts to gauge the will of his own tubercular patients to move beyond charity, and lead lives of independence. Most importantly, this orientation and embodiment of liberal individualism was complicated by the remaking of tuberculosis: to the extent that the disease remained a force of nature, and its victims, incurable, the tubercular remained marginalized—incapable of being productive due to their biological condition—within the system of liberal charity. Only with the post-Koch possibility of a cure for tuberculosis, and the re-making of the tubercular as curable, and thus as capable of able-bodiedness, would consumptives come to be valorized as worthy subjects of liberal charity.

I locate the emergence of this late 19th-century-tubercular subject in relation to the historical development and application of this political economy of care through an analysis of the various iterations of Philadelphia's almshouses and almshouse hospitals. First, beginning in the 17th-century, I analyze the emergence, in England, of a vocabulary for evaluating the "worth" of subjects in the sphere of charity. Within this system of evaluation, "worthy" individuals take shape as victims of circumstance—subjects whose poverty is the product of elements beyond their will. In contrast, "unworthy" subjects are those whose lot in life is deemed to be the product of some failure of character. I then follow the translation of this system of evaluation into the almshouses of 18th-century Philadelphia.

Through a description of the 18th-century Philadelphia almshouses and almshouse hospitals, I establish the centrality of these discourses and practices of evaluation—this political economy of care—as a constitutive, and defining element of pre-revolutionary liberal individualism in Philadelphia. In detailing the various almshouse managers' pursuit of economy in the execution of caring for the poor, I trace the articulation of "worth" and the elaboration of practices of reform—poorhouse labor, for instance—designed to "better," or reform the subjects of charity. I show how these practices are tailored toward the production of a specific form of liberal individual that is assumed to able-bodied and thus capable of being an independent and productive subject. I analyze the articulation of this form of liberal individualism with the efforts, on the part of the managers, to spend public money in the most efficient and prudential manner possible: aggregating all subjects of charity in a single location, investing in only the worthiest poor, and disciplining the poor so as to insure their bettering or reform.

I then explore the manner in which the bodies of the sick poor—especially those suffering chronic illness including consumption—in their biological incapacity to labor, materialized as an impediment to this cultivation of economy and individualism. I establish the manner in which chronic incurables, including consumptives, confronted reformers, managers, and philanthropists with subjects that could not realize the idealized independence of liberal individualism. Insofar as the circumstances of chronic sickness proved inimical to the "bettered" individual sought by almshouse managers, consumptives and other incurables took shape as hopeless bodies and "unworthy" subjects that, over the course of the 18th- and 19th-century, translated into their consistent devaluation.

In continuing to analyze the space of the almshouse hospital in Philadelphia, I trace the limits of the worthlessness of the consumptive body into the 18th-century. I show the manner in which the value of consumptives was greater in death than in life due to the utility of autopsied bodies. I contextualize this worthlessness within the context of the continued efforts to actualize a political economy of care, in the midcentury, in the management of Philadelphia's infamous Blockley almshouse and hospital. I address three 19th-century critiques of the operations of Blockley—critiques levied at a political economy of care that would fail to differentiate the specialized needs of various populations of sick poor. The critiques of Dix, Ray, and Flick made evident that, in this failure, the almshouse produced the very dependence it sought to erase from its inmates. I show the manner in which these critics reproduce a political economy of care invested in a notion of worthiness, yet introduce a new sense of liberal responsibility toward caring for and treating those chronically-sick poor whose neediness has come about through biological circumstances beyond their control. This responsibility is

underwritten by a challenge to the operational political economy of care in the Blockley almshouse: these critics advocate a more discerning system of evaluation founded upon a differentiation, in social and institutional practice, between the capacity to better oneself by becoming independent and productive and the need to get better by overcoming disease. This distinction is partially made possible, as I show, by the rise of late-19th-century optimism regarding the possibility of cures for consumption and chronic diseases.

I locate this sense of responsibility in relation to the sustained devaluation of the chronically ill in late 19th-century Philadelphia. In a moment of overabundant hospital beds, I trace the continued stigma that follows consumptives, and the recognition, by critics of the stigma, of hospital beds as places where the tubercular were not treated, but rather, were places where they went to die. I conclude by noting the manner in which Flick's plea for special hospitals for consumption gains traction, resulting in the establishment, in Philadelphia, of the first hospital in the United States to specialize in the treatment of consumptives. In a context wherein most physicians, civic leaders, and the general public viewed consumptives as fated to die, Flick's success in establishing a "special hospital" for consumptives served as a materialization of the process by which tubercular subjects were remade as individuals capable of getting better and, perhaps, leading independent lives. The late-nineteenth-century tubercular individual, possessing the capacity to help him- or herself overcome the disease and pursue of future of independence thus emerges from this genealogy of the articulation of worth, almshouses, chronic illness, and liberal individualism.

The Bettering House, Philadelphia Hospital, and The Reform of the Sick Poor: Worth, Unworth and the Emergence of an 18th-Century Political Economy of Care

The population of poor sick that Lawrence Flick sought to treat in the late-19th century did not exist on the same scale when Philadelphia was founded in 1682. A "small seaport town" at the beginning of the 18th-century with some 2,300 inhabitants "liv[ing] within an area less than a mile square," the city's meager population found itself, over the ensuing half-century, drawn into a broad web of global economic and political forces. This transition would include "a series of economic fluctuations, with steepening recessions, [that] plagued the city" leading to both increased (yet concentrated) wealth, and increased destitution (Nash 1977, 71). The forces of the new market and the related shifts in city life included "occupational specialization, redistribution of wealth, spreading commercialization, decay of familial institutions, [and] legitimization of personal interest" (82, 62). These economic changes were produced by and productive of a growing population—reaching 30,000 by 1775. The influx of immigrants to Philadelphia included a large percentage of skilled laborers who, "caught up in [an] increasingly impersonal and unpredictable market-oriented world," found themselves, in spite of their skills, without a job (Nash 1976, 30). [21]

Prior to these 18th-century shifts in population and economics, the care of the poor was primarily a matter of family and kinship ties. Furthermore, explanations of the causes of poverty accounted for the "ill chance" experienced by the poor: indigence, like phthisis to the

[21] "By 1772 the economic malaise had spread so far that about three-fifths of Philadelphia's mariners, one-quarter of the labourers and weavers, one-fifth of the carters, porters, breechesmakers, bricklayers and cordwainers, and one-eighth of the gardeners, blacksmiths, barbers and joiners were identified as poor in the records of the Pennsylvania Hospital for the Sick Poor, and of the Managers of the Almshouse and Workhouse, in the tax reports of the county commissioners, and in church and charitable society records" (Pendelton 1946, 66).

Greeks, was as likely to be viewed as the product of circumstances beyond individual control as it was likely to be seen as a product of individual failure (Nash 1977, 64). However, shifting attitudes toward poverty and individual responsibility materialized, in 1713, with the establishment of Philadelphia's first poorhouse—the privately run Quaker Friends' Almshouse (Pendelton 1946, 161)[22] The forging of a link between poverty and individual failure, and the concomitant stigmatizing of the poor individual as responsible for his or her own poverty took shape, during this period, through the municipal practice of marking indigent bodies by stitching a red- or blue-cloth symbol upon the clothing of Philadelphia's poor.

This practice, instituted through a law passed in 1717, required those "receiving relief from the overseers of the poor," a committee of municipal commissioners, to "wear upon the right shoulder of the upper garment a large Roman P, together with the initial of the county, city, or place of which the pauper was an inhabitant…" (Scharf and Westcott 1884, 1450).[23] This practice of visually marking the bodies of poor subjects with a "P" to designate their status as *paupers*, established a prominently-displayed-visual-link between benevolent city officials—the overseers of the poor—and subjects of charitable aid. This branding of the dependent poor hailed these subjects into a system of public surveillance. Importantly, the establishment of this system of surveillance, in requiring poor individuals to wittingly don the badge of stigma upon venturing into public, materialized liberal expectations regarding the choices of poor individuals and their future successes or failures. The poor were expected to participate in this practice—to exercise a modicum of responsibility—in donning the identifying mark, lest they

[22] And with the 1732 establishment of the city's first public almshouse.

[23] On overseers of the poor and Philadelphia government by committee in the 18th century, see (Warner 1968, 10).

suffer the disciplinary consequences: “Every poor person who should neglect or refuse to wear such a badge was liable to the suspension or withdrawal of the relief, and also to whipping and keeping at hard labor for twenty-one days” (1450). This branded population of indigents was thus granted a conditional form of welfare, and their value—their *worth*—in the eyes of the public and the overseers of the poor, hinged upon their witting and disciplined identification as paupers through the donning of the letter.

This convention of marking the bodies of those requiring public aid, and disciplining those who failed to do so, had roots in 16th-century-English-efforts to ensure the prudential expenditure of public funds on the poor. These efforts included a poor tax—the earmarking of public money for the care of the indigent. English critics of the tax expressed concern that such a tax be used to support only the “worthiest” of poor subjects. The distinction between those “worthy” poor deserving relief, and those who were “unworthy” of aid appears clearly as early as the 16th- and 17th-century English writings and statues. These “semantics of poverty” were outlined by William Harrison, the 16th-century English writer, who used three categories or “degrees” to classify the poor based upon their worth (Jütte 1994).

The first two of these degrees include those poor who fall into the category of victims of circumstance, or what Harrison terms “[t]he poor ‘by impotency’” and “[t]he poor ‘by casualty’.” According to Harrison, the poor “ 'by impotency' ” include “the fatherless child,” “the aged, blind, and lame,” and “the diseased person that is judged [sic] to be incurable. The poor “ 'by casualty’ include “the wounded soldier,” “the decaied householder,” and “the sicke persone visited with grievous…diseases.” In each of these cases, the indigent subject is considered worthy of public aid to the extent that their lot in life—their poverty—has been

caused by that which is out of their control. Importantly, the sick are included, in Harrison's taxonomy, as worthy subjects of aid. To the extent that "the sicke persone visited with" consumption was suffering poverty, he or she was "worthy," as his or her state was attributed to circumstances beyond his or her control (quoted in Jütte 1994, 11).

In contrast, a third degree of undeserving or "poor 'thriftless'" are described as "the riotour that hath consumed all," "the vagabond that will abide no where," and "the rog[u]e and strumpet" (quoted in Jütte 1994, 11). This latter category of indigence classified a population of poor individuals, deemed "unworthy" based upon the belief that they had brought about their own indigence through idleness, vice, or bad habits. The bad habits suggested by Harrison—drinking excessive alcohol, the idleness of the vagabond, and thieving and prostitution—were considered to be behaviors that subjects could control. Lack of control over such habits was thus perceived as a personal choice and as a failure of individual will. For critics of the poor tax, this class of indigent—those who indulged such habits and thus, willed poverty upon themselves—was unworthy of aid: the public, in the eyes of critics, was penalized in having to support subjects who engaged in such irresponsible behavior. The emergent political-economic considerations in 16th- and 17th- century England thus established the worth of potential subjects of aid through an evaluation of the degree to which they had willed their poverty on themselves. The value of the poor, vis-a-vis this political economy of worth, hinged upon the degree to which a needy subject was perceived as committed to helping him- or herself.

Harrison's distinction between those poor deserving aid and those undeserving of aid buttressed the formation and development of a prominent discourse and practice of 18th-century liberal-individualism in Philadelphia: a political economy of care that operated through

the assessment and classification of the worth of would-be-subjects of public charity—the poor and the sick. These categories were not merely theoretical—rather they served as key components in a rationale through which municipal and private charitable groups could calculate and pursue the most efficient distribution of limited public and private funds, avoiding wasted money by investing in what they perceived as the most "worthy" subjects of aid. Yet rather than hewing to a binary evaluation of the poor as worthy or unworthy, the implementation of this political economy of care took shape, in 18th-century Philadelphia through the prerogative of *reforming* the poor and sick—a prerogative that posited that all subjects could, through the almshouse as a reformative institution, achieve worthiness by bettering themselves. This rationale was central to the mid-century establishment of both the Philadelphia Hospital for the Sick Poor, and the successor to the Quaker Friends' Almshouse—the Bettering House. Yet in the operations of these institutions, Harrison's notion of poor subjects of circumstance—especially those suffering from sicknesses—would be marginalized by a political economy of care that valued able-bodiedness and productivity. Indeed, to the extent that those suffering from chronic diseases had to first overcome their disease as a precondition to becoming independent and productive, such incurables would find themselves devalued, throughout the 18th- and most of the 19th-centuries, by the institutional effort to better the subjects of charity.

The Philadelphia Hospital for the Sick Poor

In February 1752, The Pennsylvania Hospital for the Sick Poor opened its doors from a rented house on Market Street to treat the still small, yet growing population of impoverished

Philadelphians.[24] For the most part, the city was able to care for its poor with an "annual three-penny poor tax…occasional donations and a few hundred pounds in fines" (Nash 1976, 6). With expanding mid-century economic conditions, jobs were available and the city was initially able to accommodate a record number of immigrants from Germany and northern Ireland (6). Nevertheless, the rise in poverty, however small, worried civic leaders who were loath, amidst public resistance to taxation, to increase the three-penny poor tax.

The founding of the Hospital, due in large measure to Benjamin Franklin's advocacy, was a direct response to the "growing dissatisfaction of the middle and upper classes with rising poor rates" (7). At the time, Philadelphia's poor relief was based on the allocation of public money to care for indigents both in the limited space of the almshouse, and through outpatient relief—money given to poor people residing in their homes. Both of these methods were managed by Philadelphia's overseers of the poor. Much like the English response to the poor tax, critics called into question the efficiency of such management and the success in translating the relief into the production of independent individuals. Franklin's advocacy for a hospital spoke to these concerns—to the desire to see a more efficient method of managing the sick poor; a method that did not waste public money on supporting the "unworthy" and furthering a population of dependents.

Franklin "waged a shrewd newspaper campaign" to raise money for the hospital; his support for the Hospital was based, in part, on his desire to use charitable institutional space to care for the sick poor, but also to reform such subjects by helping them progress from

[24] The number of poor ranged from 80 to 100 a year during the early part of the 1750s. During its first five years of operation, the Hospital averaged 53 sick poor a year. In its next five years, the number grew to 106 patients (Nash 1976, 6).

dependent and idle to independent and productive. The Hospital, according to Franklin, would enable sick and suffering laborers to "'become useful to themselves, their families and the public for many years after'" (quoted in Nash 1976, 7). The association between charity, sickness, and reform was thus focused, in Franklin's estimation, on producing a capacity, within individuals dependent upon public aid, for future independence. Hence, Franklin focused, not on the cure of sickness as the ultimate aim of the Hospital, but on the process of restoring the sick to a life of labor—a productive life beyond their dependence on charity. This life of productivity began *within* the Hospital through the practice of "keep[ing] the laboring poor at their benches" engaged in tasks designed to combat idleness. The "less was done [for?] them," argued Franklin, "the more they did [and would continue to do] for themselves" (quoted in Nash 1976, 18).

Franklin's vision and the Hospital goals of remaking these sick poor into productive individuals reflected English sentiments on the disciplinary purpose of hospitals: as an English advocate stated, the role of hospitals was not simply the treatment of sickness, but rather, "'to give the poor in general grateful and honorable sentiment of and inspire them with proper love and reverence towards their superiors and by consequence promote that harmony and subordination in which the peace and happiness of society consists.'" (quoted in Nash 1976, 8). Hospitals, then, while ostensibly focused on curing the sick and caring for the disabled, were also about thwarting idleness through forced labor, and disciplining the poor into an appreciation of their subordinate place in a hierarchy, thus ensuring their reverence for those "superiors" whose charity had enabled their reform.

This desire to discipline the sick poor into independent individuals articulated with a broader 18th century-political-economy-of-care that sought efficiency and thrift in the allocation of public resources. Emerging from the vision of Franklin and others amongst Philadelphia's civic leaders, and influenced by the English-poor-tax and workhouse movement, was a prudential calculus founded on the notion that charitable investments in the bodies of the poor should yield a return, to investors, in the form of a reformed individual, a productive individual, an individual capable of helping him- or herself to move past dependency into a state of independence: a bettered individual. At The Pennsylvania Hospital, this attitude materialized in the practice of requiring discharged patients to sign statements attesting to "'the benefit they have received in [the] hospital'" (quoted in Nash 1976, 8). Such a document located the discharged subject in a broader web of personal responsibility and liberal expectations: by acknowledging such a "benefit" in writing, the recipient of aid attested to the success of the Hospital in having done its job. The implicit subtext of such an admission was that any future poverty encountered by the discharged was attributable to a failure of the individual. Once discharged, within the operational political economy of care, the poor bore the responsibility to help themselves materialize a future of independence and productivity.

The requirement that the sick labor at their benches to repay their benefactors, underscores an element in the emergent political economy of care that would continue to constitute Philadelphia's attempts to provide for the sick poor over the coming century: sickness, in 18th- and 19th-century Philadelphia, was increasingly remade as a phenomena that, while often circumstantial in nature, could be overcome through the pursuit of correct regimen: through an individual's prudential management of their own physiological economy.

Yet this equation, as will become evident below, was fraught with ambiguities with regard to recovery from chronic diseases like tuberculosis. For sufferers of chronic consumption, the goal of the emergent political economy of care—the pursuit of independence through hard-work—could, in fact, exacerbate the state of their disease. Indeed, the chronically-ill body was, by its diseased nature, a material impediment to a political economy of care seeking to efficiently reform the sick poor into productive individuals. Far from being resolved through more efficient hospital and almshouse management schemes, consumptive subjects would remain, throughout the 18th- and 19th-centuries, ambiguously constituted by bodies that would not get well—by bodies that required dependence. The material circumstances of the consumptive subject were inimical to a liberal-calculus of value that failed to account for the possibility that productivity could exacerbate the disease. The emergent political economy of care established through The Pennsylvania Hospital thus threatened to reproduce the very dependency that civic leaders sought to mitigate by requiring productivity from sick bodies that needed rest—that needed to be idle. This ambiguous articulation of poverty, sickness, charity, and labor re-materialized in the 1760s when a group of Quaker merchants, reacting to a rising poverty rate, and seeking to limit the poor tax, set about the establishment of what they hoped would be a more efficient almshouse: "The Bettering House."

The Bettering House

An oncoming crisis for Philadelphia's poor solidified with the snow of the unusually cold winter of 1761-1762, shaping both the material conditions of and attitudes toward the impoverished. A wartime inflationary trend had driven up the price of wood, "reduc[ing]" the poor "to great Extremity and Distress," in the absence of fuel for heat. (Nash 1976, 12). The

inflation was accompanied by an end to the full wartime employment as "contracts for uniforms, weapons, and provisions evaporated" (11), and by an influx of immigrants in need of work. These wartime immigrants included a group of nearly five hundred impoverished Acadian neutrals from Nova Scotia and others from Scotland and northern Ireland. During this very period of economic depression—as "hundreds of able-boded Philadelphians could not raise themselves above the level of bare subsistence" (12)—negative sentiments toward the poor took shape. Where economic fluctuations had been used in the past to explain increases in poverty, as poor rates rose, critics fixated on the notion that inflated taxes were the result of "more and more persons…becoming content to live the life of the idler, the profligate, or the street beggar rather than pursue an honest trade" (16). The stereotype that the poor were impoverished due to a self-chosen idleness caught on amongst Philadelphia philanthropists and civic leaders. The use of economic circumstances to explain both poverty and high poor-taxes gave way to characterizations of individual deficiencies and failures—of indigents choosing to be poor.

The Bettering House materialized as an anecdote to these rising costs as Philadelphia's elite scrambled, between 1762 and 1766, to cut costs by ostensibly improving upon the city's system of poor relief. The founders of the Bettering House were a group of Quaker-merchant-civic-leaders, who, critical of the city's increasing poor-tax, submitted themselves and their resources "to replace public authorities and administer the city's welfare system" (Clement 1985, 40). While these merchants did espouse "benevolent concerns" toward the impoverished, they also "distrusted the poor." This lack of trust was founded on the impression that most poor, given the choice, would rather receive public aid in perpetuity than work for their money.

They questioned the political economy of care that had yielded increasing poor taxes. The new administers of welfare saw the increased expenditure of public funds on the indigent not so much as evidence of genuine need amongst the lower classes, but as evidence of individuals taking advantage of the public: "more citizens were loafing and begging instead of working steadily" (40).

Inspired by the "English public-workhouse movement," and reflecting the goals of the Philadelphia Hospital, the Quaker merchants' new system of welfare was founded upon a desire to reform these subjects by linking the receipt of aid to a poor inmate's capacity to labor.[25] While Philadelphia had been institutionalizing the indigent in various poorhouses—the private Quaker house of 1713, and the public poorhouse of 1732—the merchant's rationale for the Bettering House differed. In the eyes of the founders, the increased public expenditure on the poor was having a paradoxical effect: the more spent to alleviate poverty through the higher poor tax, the greater the poor population. In order to dissuade the impoverished from choosing idleness and dependence, the merchants sought to further elaborate upon the liberal principle of hard work by making the receipt of charity dependent upon labor and individual reform.

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[25] "As Dorothy Marshall has shown, English attitudes toward poverty underwent a fundamental change in the eighteenth century. Abandoning the earlier view that economic recessions and depressed wages were the main causes of indigency [sic], social thinkers began to blame the poor themselves for their plight. Some writers also attacked the lawmakers who passed well-intentioned relief statutes that only had the effect of cultivating dependency and encouraging sloth in the lower class. Out of this new climate of thought came the public workhouse movement. Throughout England in the first half of the eighteenth century the poor were taken off outrelief and placed in workhouses where they were set to such labor-intensive tasks as linen weaving and oakum picking. It was thought that through hard labor the poor would help pay for their own support and regain a taste for the rewards of industry and frugality. Between the i69os and the I730S English writers also suggested that by transferring the management of the poor to private corporations the poverty problem could be solved and the investors even turn a profit. The English workhouse thus became a cultural artifact of the early eighteenth century, an institution built on a moral analysis of poverty and committed to reducing the taxpayers (16) load in maintaining the impoverished. In I723, when workhouses were operating in almost every sizable English town, entry into these institutions became a condition of obtaining relief" (Nash 1976, 16-17).

In 1766, the city of Philadelphia accepted the merchant's offer: in return for the latter's resources and initiative, the city granted the merchants the authority to both "determine the amount of the poor tax" and to build "a new and larger almshouse" (40). Modeled after the Hospital for the Sick Poor, the Bettering House—formally named the Philadelphia Almshouse and House of Employment (Nash 1976, 15)(Pendleton 194, 162)(Hunter 1932, 315)—would serve, in both name and purpose as an institution of reform. Key to this reform was the stipulation that the able-bodied-poor work for their care: "The prospect of hard labor in the [almshouse] workhouse…would keep the itinerant poor away from the city and instill in outpensioners, who were now to leave their neighborhoods and go to the Bettering House, new incentives for finding employment or other sources of support" (Nash 1976, 16). Key, then, to the expansion of the almshouse into a larger Bettering House, was the assumption, on the part of the merchants, that out-pensioner aid was an inefficient method of spending public funds: if the poor wanted resources, they were required to leave their houses, to stay in the Bettering House, and to work, all as a means of proving that they were not "idle" or "profligate," through an engagement in productive practices. The Bettering House "would rehabilitate the able-bodied poor who would not work" (19).

The articulation of labor and reform of character materializes in the efforts of the Bettering House to enlist its inmates in the almshouse Workhouse: "the poor of the city were employed at weaving, picking oakum and other simple tasks" (Hunter 1932, 318), including cobbling shoes, manufacturing nails, and weaving cloth stockings (Nash 1976, 20; Nash 1976, 27 on stockings). Putting the poor to work ostensibly actualized several objectives in the mid-18th century political economy of care: it would yield revenue for the almshouse—the items

manufactured and food harvested by inmates would allow the poor to pay for the costs of their care. It would discipline the poor into good work habits. Inmates of the almshouse did not simply work to generate revenue; rather, they worked "in an effort to improve their condition" (Nash 16). And the requirement that the able-bodied work for aid would serve as a disincentive to those who had formerly received outpatient pay: the rationale was that poor out-pensioners, cut off from public funds, would rather seek a job than be condemned to living and laboring within the Bettering House's workhouse (Nash 16). Key then, to the development of poor relief and charity in 18th-century Philadelphia, was the move toward greater efficiency—treating all the poor in a single space—and toward the institutionalization of practices intended to parse out "unworthy" character traits by providing aid to those subjects who willingly reformed themselves into productive individuals through the pursuit of workhouse labor. The ideal product of the new almshouse was thus a worthy individual committed to bettering him or herself by demonstrating progress—through participation in Workhouse labor—toward a state of independence and productiveness.

In spite of the efforts of the Quaker merchants to produce productive individuals, the Bettering House, like the rest of Philadelphia, suffered through economic depression and its utility to the dislocated was questionable. Unemployment remained high—indeed, "[i]t was not…unwillingness to work, but economic dislocation, that had filled the roads into Philadelphia with itinerant poor and left hundreds of new immigrants and resident workingmen without jobs in the city" (20). As intended by the founders, the reputation of the Bettering House amongst the poor was that of a daunting institution. The merchants believed that the cultivation of such a reputation would serve to dissuade idelenss—more poor would

seek employment on their own so as to avoid being condemned to labor in the Bettering House. However, the resultant effect was far more grim as evidenced when, "[i]n 1768 and 1769 [the overseers of the poor] informed the Bettering House managers that many of the poor in their wards, 'when Urged to go in [to the Bettering House] for Relief, declared in a Solemn manner that they would rather perish through want than go in'" (16). The overseers suggestion that the poor saw their options as a choice between laboring at the Bettering House or succumbing to death, suggests both the bleak economic circumstances, and the bleakness of the almshouse, that continued to produce a population of impoverished individuals who *could* not, due to the circumstances of economic depression, find employment—individuals that, in the manager's cynical estimation, preferred death over labor.

In spite of the general dislike for the Bettering House, the institution proved incapable of accommodating all the needy, its ranks routinely spilling over into the Philadelphia Hospital, where "[a]dmissions rose from an annual average of 228 from 1761 to 1765, to…358 from 1771 to 1775" (21-22). In 1772, with a total of 3763 taxable males residing in Philadelphia, no less than 410 adult males resided, for a portion of the year, "in the workhouse, the almshouse, or the Hospital for the Sick Poor, or received aid from private agencies of the overseers of the poor" (28). In addition to one in every ten men circulating through Philadelphia's charitable circuit, some 637 women resided in, or received aid from the same institutions and groups.

Beyond the spatial limitations, while the labor of the poor within The Bettering House *did* generate an income, it was not sufficient to cover the mounting costs of caring for such a large population of poor inmates—a population that, far from "reforming," would leave the

almshouse only to return for aid at a later date. By 1775, the almshouse mangers acknowledged, in their Minutes, that having received aid in the almshouse, the poor usually "ran away, only to 'return mostly as sick, naked, and buthernsome [sic] as at first, and proceed this way with Impunity, as often as they please'" (27-28). Thus, the almshouse materialized paradoxically, as a daunting institution for those who feared its disciplinary practices, and as a revolving door for those who, "with Impunity," came and went, all the while failing, in the eyes of the managers, to reform. The almshouse struggled to care for this revolving cast of inmates, and in spite of the efforts to curb spending, by the end of the year, its managers noted their significant debt (28). By 1768, having failed to cut costs through the institutionalization of a calculus of care based on the reform of the idle poor into productive individuals, the thwarted Quaker-merchants found themselves forced to do what they had organized to avoid in the first place: they raised the poor tax.[26]

Within the walls of both the Philadelphia Hospital, and the Bettering House, a political economy of care thus emerged to address the perceptions, of both civic leaders and the middle class in Philadelphia, that public aid produced the very poverty—and impoverished subjects—it sought to alleviate. And that charitable institutions could serve to lower public expenditures on the poor and ensure that individual subjects were not receiving aid in perpetuity through the indenturing of inmates in workhouses. Yet the Quaker merchant's attempts to improve upon previous iterations of the almshouse proved no more effective than their predecessors. In spite of these failures, the curious effect of these efforts was not to

[26] After the passage of legislation "barring the Quakers from management" the house is said to have failed (Pendleton 1946, 162). The management of the Quaker merchant's ended toward the end of the century, with a new group of managers taking over the Bettering House.

engender debate on the structural conditions and circumstances shaping the shifting fates of the poor; rather, the effect of the materialization of this 18th-century-political-economy-of-care was a further reification of the "worthy" liberal individual as an independent subject capable of laboring for him or herself and a continued stigmatization of the idle and "unworthy."[27] These results were further complicated by the confrontation with chronic illness, for incurables were likely to require aid in perpetuity and to find the effects of hard labor to be exacerbating of their conditions.

19th Century Reform: Illness and the Remaking of the 18th Century Political Economy of Care

The Bettering House's implementation of this 18th century political economy of care, based off of English taxonomies of the value of subjects of aid—worth and unworth—proved, throughout the next century, inadequate to social reformers who found its black and white classification of individuals to be an impediment to reforming individuals—especially the sick. The almshouse's failure to differentiate between the various needs of the differing types of poor seeking charity was clear in relation to illness. For inmates of both the Philadelphia Hospital, and the Bettering House, the formula and goal of charity was to efficiently re-make the idle dependent into productive-independent bodies. Yet the presence, in the poorhouse, of the ubiquitous invalid—a subject formed through the articulation of sickness and poverty—posed a challenge to an economic approach to charity founded upon bettering individuals. Indeed, in practice, it was difficult to appraise the "worth" of a sick body and the precise relationship between a subject's sickness and their destitution. For the 18th century, the difficulty of this

[27] On Bettering House failure to reform and financial troubles see (Nash 1976, 26-27).

appraisal was partially overlooked through the implementation of a calculus of efficiency—an effort to spend public funds with prudence—based upon the gathering and servicing of all types of poor beneath one roof. As a result, poor bodies in various states of sickness—both mental and physical—and varying degrees of destitution were allowed to mix, indiscriminately.

However, there were some efforts to distinguish and treat the sick in a manner specific to their ailment at both the Philadelphia Hospital and within the walls of the Bettering House. While the precise nature of this traffic is difficult to discern, it is evident that the latter institution developed its own medical wards and hired its own staff of physicians to care for the sick who were "admitted [to the almshouse] on account of illness." These wards consisted of "a Laying in Hospital, where upwards of 30 poor destitute women in a year, are carefully delivered and comfortably provided for in that extremity…a Hospital for Curables and Incurables of all ages and sexes, and in every Disease and Malady, even to Lunacy and Idiotism…and very generally an Institution for clothing the Naked, feeding the hungry, healing the sick and administering Comfort and Relief to the Distressed of every kind in different ways" (Hunter 1933, 45). As such, the historical portrait of the almshouse is of a space that strived, in part, to be a hospital and to specialize through the discerning and treating of specific types of impoverished subjects.

Yet, in practice, such specialized treatment proved difficult to implement and tended, like the treatment of the flu victims in 1889, to favor care for acute illnesses. This difficulty was, in part, due to the sheer prevalence of sickness. So rife with sickness were both the bodies of the poor and the air of the almshouse, that by the end of 1795, 114 of the 301 almshouse inmates had some form of illness, including many with consumption (42). The overseers of the

poor would attempt to identify "the more serious" but treatable cases, sending them "directly from their homes to the Pennsylvania Hospital, when a hospital fee was to be paid" with public funds (40). On other occasions, patients residing at the almshouse were sent to the Pennsylvania Hospital as evidenced in the words "Sent to the Hospital" on records, thus suggesting a movement between the two institutions—a traffic likely commencing when an almshouse inmate was diagnosed with an acute, treatable illness (39-40). When the sick were suffering from an acute disease, such subjects were more likely to be placed in a bed at the Pennsylvania Hospital. Conversely, those sick subjects left to suffer in the almshouse hospital wards were primarily those who were deemed beyond treatment, beyond recovery—destined to die. Thus, in spite of the cultivation of space for the sick in the almshouse, those admitted to the wards were often already chronically ill, or in a state of such illness that they "died in a few days" (40). Through the Bettering House's routine bedding of chronic sufferers, the reputation of the almshouse as a space where the sick went to die thus materialized.

Importantly, then, the institutions of charity and medicine in 18th-century Philadelphia tended toward the conflation of poverty and chronic disease. Through the attempted implementation of a political economy of care designed to efficiently manage the largest amount of poor in the smallest amount of space, with the lowest expenditure of public resources, the process of judging the *worth* and *unworth* of subjects articulated with distinctions between acute disease and chronic disease. Yet such categories proved insufficient in representing the realities of sickness and poverty: over time, most inmates would occupy a shifting ground between health and illness. This was particularly pronounced with regard to consumptives. Consumptives set uncomfortably at the intersections of the very intersections of

acute and chronic—capable of experiencing acute symptoms and equally capable of experiencing no symptoms at all, the consumptive subject proved vexing to the extent that they rarely manifested a linear bettering. Rather, they moved in and out of suffering. The specific circumstances of consumptives would prove, throughout the 19th century, incompatible with a political economy of care undergirded by an assessment of progressive betterment. As a result, consumptives would be not be valued—in fact, as late as the 1830s, they proved more valuable in death than in life.

The 19th-century Almshouses: Blockley and the "Indiscriminate Mixing"

When Samuel Morton took up residence in the almshouse hospital in the late 1820s, just prior to the erection, in the 1830s of the infamous Blockley Almshouse, consumptives remained a population fated to die—victims of a dread disease that still had no cure. Morton, a native Philadelphian, who would later garner notoriety for founding craniometry—the practice of discerning supposed racial intelligence through the measuring of the human skull—began his tenure when "in 1829, [he] received the appointment of physician to the Philadelphia Almshouse Hospital," the institutional successor to the Bettering House (Morton 1837, viii). By 1833, he had taken charge of the medical wards and he devoted himself to a thorough study of its consumptive inmates (62). Morton's tenure paints a portrait of the demographics of the early 19th-century almshouse and of the value and fate of those suffering from phthisis.

Morton commented on the prevalence of chronic consumptives in the almshouse: "The wards of this institution habitually contain several hundred patients; exhibiting almost all the maladies to which man is subject, and *especially those of a chronic nature, among which phthisis may be said to predominate*. The deaths from this disease alone are little short of one hundred

annually" (viii; italics added). Morton thus observed a death from consumption nearly every three days.

The worth of these chronically-ill consumptives in the early 19th century is evident in Morton's writings. In the absence of a clear medical cure for the disease, almshouse inmates suffering from chronic disease, generally, and from phthisis, specifically, seemingly had no value in life; rather, they became valuable in death, as objects of scientific inquiry. Morton relished the opportunity presented by the consumptive body in death: the chance "to avail myself of every opportunity of comparing the opinion I had formed during the life of the patient, with the appearances of the body after death" (ix). With productivity and independence as the ideals pursued through the almshouse reform of its inmates, consumptives faced an impossible situation to the extent that they had a low probability of experiencing an independent-productive future. The consumptive awaited his or her death—and subsequent autopsy—with the beds of the almshouse serving as mere receptacles for his or her chronically-ill body. Living consumptive bodies thus took shape as material impediments to a political economy of care based on the productive reformation of the sick-poor. Such bodies held no productive value in life; rather they were fated to be a material drain on public resources, only to become useful in death, on the cold edges of the physician's scalpel and autopsy table.

Flick's advocacy, in the wake of the 1889-1890 influenza pandemic, for "special hospitals" for consumptives derived, thus, from this historical devaluing of the chronic-consumptive body within framework of a liberal political economy of care and through the practices of the almshouse. Flick's concerns developed in reaction to the continued ignoring,

by the management of the almshouses over the course of the 19th century, of the co-constitutive nature of disease and dependence—a nature that produced idleness as an effect of sickness rather than a self-chosen state of being. Flick's agitation for the special treatment of consumptives would emerge from a broader 19th -century critique of the failure of the almshouse to identify, separate, and treat the specific types of sick poor—to value them, in life. The criticism was levied at precisely the incapacity of almshouse managers to distinguish and organize in reaction to the specific needs of sick inmates and the resulting devaluing of ill bodies in the almshouse. The critique was levied, most robustly, at the new Blockley almshouse.

Blockley Almshouse: The Inevitable Mixing of Bodies

The interior of the Blockley almshouse with its "gray walls," was dark—the "embodiment of gloom." With the passing of daylight, the inmates "constantly" burnt "oil in small hand-lamps" to bring light to their surroundings. With a dim glow and dense smoke ushering forth from the lamps, the black corridors reverberated with the incessant coughing of consumptives, "soil[ing] the walls and the[ir] clothing" with sputum (Lawrence 1976, 201-202, Rosenthal 1998, 2).

The almshouse exterior loomed large and square, an imposing mass of buildings spread across ten acres of land on the west bank of the Schuylkill. Atop a vast swathe of otherwise-pleasant-green farmland and meadows, its four interconnected buildings sat, contained within a fence reaching high enough to discourage the intrepid from escaping. Spatially isolated from the city proper, the Blockley almshouse cast its shadow across the meadows of West Philadelphia, a grim specter of the city's commitment to caring for those who seemingly could

not care for themselves. As an isolated and harrowing structure, the architecture and location of Blockley embodied a moral message. Much like its predecessor, The Bettering House, in the minds of civic leaders and social reformers, the sheer presence of such an intimidating structure, with its foreboding interior and reputed discipline-intensive-interior operations, would act as a deterrent to those who were considering a life of self-chosen poverty, idleness, and vice.

Constructed in 1834 in an effort to improve upon the aging Bettering House, by 1872 Blockley housed some four thousand indigents. The operations of the almshouse were designed to actualize the aims of a familiar political economy of care: the allocation and use of public funds to manage and care for the sick and poor in the most cost-effective manner. Indeed, the principles of governance guiding this mid-19th-century iteration of the almshouse harkened back to the visions and goals of both the founders of the Philadelphia Hospital and the managers of The Bettering House. By attempting to gather all the city's poor in one place, almshouse progenitors sought, once again, to streamline both the expenditure of public money and the resources—social workers, management, physicians—necessary to treat what they perceived to be the *problem* of the poor. The almshouse, in its very design, operation, and reputation, was touted as a prudent economic venture: to cut down on costly aid for the poor, the treatment of poverty needed to begin, according to social reformers, by dissuading those who would choose idleness and begging over laboring and productivity.

A place full of anxious "excitement, noise, [and] quarreling" (Ray 1873, 4), the inmates were *ostensibly sorted by their conditions*. By 1872, the four buildings of Blockley were subdivided into various wards to house subjects based on their condition—the men's almshouse, the

women's almshouse, the combined workhouse, hospital and children's and old women's asylum, and finally, a building for the insane (Clement 1985, 95). Blockley thus served as a catch-all for all forms of poor and sick: from the sick who could not afford a private hospital, to the orphans of the Children's Asylum (Ray 1873, 12); from subjects possessed of "innate shiftlessness" to those suffering a "feebleness" resulting, according to reformers, from their pursuit of a life of vice (3). Included, as well, were the venereal patients and the prostitutes—and paupers of all manner. And while the insane were crowded into their own ward, two to three bodies to a room of six feet by ten (3), an over-abundance of such patients, coupled with a lack of space, forced their overflow into the broader population of non-insane inmates. Indeed, this overflowing of one type of inmate into a population of other types, was so typical of Blockley as to be the standard. The ideal of using architecture to maintain separation amongst differing classes of inmates failed to materialize in any systematic fashion.

Beyond the recognition of the various needs that had to be met before an impoverished individual could become independent, the taxonomy of value established through the application, within the walls of Blockley, of the 19th-century political economy of care, was further challenged by the fluidity of the character and ailments afflicting various inmates. Where the almshouse was ideally, in the blueprint of managers and officials, a temporary-one-time stop for indigents moving linearly from dependence to independence, in practice, Blockley's doors were as revolving as those of the Bettering House. Indeed, contrary to this supposed linear process of reform and achieving independence, the almshouse catered to the far-more-frequent tendencies of the needy to move in-and-out of dependency. This circularity

materialized in the almshouse designation of "regulars"–a named applied to those poor subjects who came and went—those to whom the almshouse doors were constantly revolving.

Such was the case with the "regular" John Miller, a Scottish-born blacksmith who passed away, seemingly suffering from consumption, in the almshouse in 1864 (Rosenberg 1992, 186). Miller was characterized by almshouse records as intemperate. And while he had ostensibly been in good health, in mid-1862 the almshouse took him in "with cramps in his legs which [were] attributed to a "debauch" and sleeping outdoors" (186). Miller's initial stay in the almshouse was brief. And while the details of his leaving remain vague, he quickly failed to actualize a permanent state of independence outside the walls of Blockley: four months later, he sought re-admittance.

Importantly, a distinction was made, upon this, his second admittance: in attributing his impoverished condition to his consumption of alcohol, the almshouse managers bedded him in the drunkards' ward. While the populations of Blockley inevitably mixed, the managers attempted segregation by condition. This placing of Miller with the "unworthy" drunkards rather than in the male-medical-ward devalued him. To be located amongst Blockley's intemperate was to ostensibly assume the stigmatized status of an unworthy subject of care. However, the alcoholic subject confronted civic officials and reformers with a difficult subjectivity, "for [alcoholics] occupied a gray area between that of the legitimately (morally neutral) sick and that occupied by the culpable offender. True, the alcoholic might not be immediately responsible for his actions…but he was ultimately responsible for the decision to drink, which over time, brought about his addiction" (189). Furthermore, as Rosenberg notes, "[t]he alcoholic's dilemma was physiological as well as moral; no medical man doubted, no

matter what the drinker's original responsibility, that delirium tremens could and often did kill, and was especially dangerous to inmates thrown untreated and unattended into cells to sober up" (189). Hence, Miller occupied an uncomfortable position somewhere between the failed individualism of a subject whose poverty was the self-inflicted product of the choice to drink, and the worthy subjectivity of one afflicted by a pitiable condition brought on by a psychological and physiological need for alcohol.

Complicating matters, Miller did not last long in the drunkard's ward as he was transferred to the medical ward "for a cough that hinted at incipient tuberculosis" (186). There, he seemingly recovered—so much so, that in the spring he was moved from medical to the male outwards. While housed in the outwards, he was put to work, manufacturing iron bedsteads. His bettering was ostensibly complete, having moved through a state of unworthy drunkenness and circumstantial consumption to a state of productive well-being. In August, a "bettered" John Miller left the almshouse house "on liberty." Within two months, however, Miller returned "complaining of a severe pain in his leg. The Limb became livid and Miller died a few weeks later" (186). The exact cause of his death was not determined.

Through Miller's fluid embodiment of various subjectivities along the political-economic-continuum of value—debauched, drunkard, consumptive, bettered and free to leave—poverty, sickness, and productivity articulate. To the extent that Miller was a "regular" of the almshouse, his moving in-and-out of a state of dependency was not easily explainable—and was surely not reducible to a flaw in his character. In fact, to the extent that Miller was suffering some form of sickness—and possibly suffering from consumption—his very act of laboring over iron bedsteads and pursuing independence, "on liberty," beyond the high walls of Blockley

might have contributed to the circumstances of his death. In other words, the foundational goal of this political economy of care underwriting both the 18th- and 19th-century iterations of the almshouse—the reform of the idle into productive subjects—was *paradoxically at odds with itself* with regard to the reform of the sick. To the extent that the chronically ill actualized their independence though labor, they ran the risk of exacerbating an illness that would incapacitate them, thereby forcing them back through the revolving door of the almshouse. Miller's fate was not idiosyncratic but rather "typical of that of the working men who filled so large a proportion of Blockley's beds" (186).

The indiscriminate mixing of factors that were ostensibly within Miller's control—his drinking—and those circumstantial factors that were beyond his control—his succumbing to a sickness that was, if not tuberculosis, likely a chronic condition—underscores the manner in which the political-economic expediency based on the calculation of the worth of would-be-poor-subjects of public aid was not, in many cases, so expedient. Given all the mitigating social and biological factors contributing to Miller's need for public aid and almshouse care, distinguishing failed willpower from unlucky circumstances proved impossible. Miller thus embodied—though his ambiguous subjectivity and shifting bodily conditions—a material challenge to the liberal-reformist practice of assigning value to the subjects of charity. And the dynamism of his condition suggests the manner in which the sick and poor proved capable—indeed, likely—of moving in and out of certain states and typologies. The very premise of spatially separating the needy inmates by condition was thus undermined by a complicated interplay of factors that included the vagaries of diagnosis, the confusions arising from the relapse of chronic disease, and the capacity for individuals to suffer from social-structural forces

that were beyond their control. Indeed, the difficulty of locating Miller on a continuum of worth and the articulation between Miller's symptoms and his treatment within the almshouse points to an element of inefficiency in the administration of Blockley: the almshouse sick were often not cared for and treated in specialized fashions that catered to the specific natures of their maladies. Such was the concern of reformers like Flick who argued that the bettering of consumptives required that they be treated in a precisely arranged hospital environment—a space designed to cater to their needs.

Lawrence Flick Poses as a "Blockleyite"

Prior to investing himself in the anti-tuberculosis movement, in 1879 and 1880, Lawrence Flick served a year-long tenure as a physician at the Blockley almshouse-hospital. Toward the end of his time at Blockley, he wrote a series of letters to the editor of the *Philadelphia Star*. In these letters, Flick, assuming a sarcastic tone, pretended to be an almshouse inmate—a "Blockleyite" (Flick 1944, 108). His remarks mocked the professed mission of the almshouse as a space of reformation. Flick linked the institution's failure to reform with its managerial failure to segregate the various types of sick subjects living within its walls. He argued that the almshouse paradoxically produced the very vice it sought to eliminate in its subjects, by allowing those "unworthy" subjects of vice to mix with the "worthy" and innocent.

He wrote,

> Characters of every description, and every grade of degradation, are thrown together…The comparatively innocent girl of fifteen, whose first unguarded moment hurled her up with instant physical ruin, the over-confiding maid whose blind love made her the pitiable victim of one of Satan's satellites, and the heartbroken wife who too late discovered that her hand was not sought for the rose in her cheek, have all to mix with the hardened sinner in whom vice comes naturally and whose only ambition throughout life had been to emulate her ancestry. The smooth-faced boy whom bad

> company led into sin, through the convivial influence of the social glass, must be in the steady company of the lascivious rakes and unstrung criminals. What is the consequence? This retreat for the relief of the worse than unfortunate and which ought to be not only a reformatory but a protection to what innocence may be left, is a hotbed of immorality. Every condition which can further the development of vice is there, while no inducements are thrown out to the practice of virtue. The mode of living, the surroundings and the company are all fraught with the most pernicious tendency. (109)

To the extent that Blockley sought the reform of its subjects, Flick's incisive critique suggested that the opposite was in fact happening. Innocent girls suffering from syphilis from but one "unguarded moment," and young boys who had fallen in with "bad company" and alcohol were subjects, in Flick's estimation, with a degree of "innocence…left." Yet, once in the almshouse, they could not preserve their innocence, much less experience a reform of any negative habits they had acquired due to the manner in which they were "thrown together" with seriously degraded characters. For Flick, vice and immorality saturated the very air of Blockely like a contagion—the very "mode of living, the surroundings" and the subjects of charity were all an inducement to vice. Underlying Flick's description of the conditions of the almshouse was a critique of the political economy of care, inherited from the 18th-century almshouse managers, that thought it efficient and prudent to house and treat all types of poor beneath one roof. In his estimation, the execution of such a rationale could only work against the professed almshouse mission of reform: "'Nothing can be done for their reform,'" he wrote, "'but everything can be done, and is done, to cast them deeper into the mire'" (quoted in Flick 1944, 110).[28] Flick's late-19th century concerns were predated in the middle of the century as

[28] Flick's outing of Blockley's lax procedures and institutional failures contributed to the decision to appoint a new board.

other reformers took issue with the indiscriminate mixing of the subjects of charity beneath the almshouse roof and with the failure of the institution to achieve the bettering it sought.

Blockley the "Mere Receptacle"

Such criticisms were evident in the observations of Dorothea Dix, a mid-century reformer and advocate for the insane. Dix traveled through Pennsylvania, surveying the state's prisons and Blockley as part of her broader effort to assess the conditions of inmates around New England and the eastern states. In recounting her experience at Blockley, Dix, like the almshouse managers of the 18th-century, expressed her desire to efficiently treat the sick poor. She situated her observations within a broader concern for a political economy of care: "If idleness is the nurse of vice and crime, it would seem consistent with the purest political economy, to provide employment for all who are able to labour in the alms-house." Thus, Dix, in poetically proffering the capacity for "idleness" to act as a "nurse" for "vice and crime" reiterated the oft-repeated rationale of using charity as a means of reforming idle bodies through the requirement of almshouse labor. Yet key to her assessment was a qualification of the notion that the almshouse was efficient or even successful in producing this capacity for labor in all its subjects.

Dix's criticisms were twofold: on the one hand, the almshouse was not adequately treating the sick. It served as a "mere receptacle" for sick bodies—beds to die in—rather than as a curative or bettering institution. She wrote, "If an extensive alms-house is necessary to receive the crowds, the thousands of sane paupers, surely a hospital on a curative foundation is also necessary, and to be preferred to a mere receptacle" (Dix 1845, 250). Dix carefully documented the relative neglect and sometimes disturbing treatment of the almshouse's insane population,

arguing that the absence of a "curative foundation" at Blockley threatened to perpetuate the very problem reformers sought to alleviate: the production of bodies idling, and thus needing aid, in perpetuity.

Dix continued her critique, entertaining the interaction between circumstances and individual failure that contributed to the destitution of the almshouse's insane inmates:

> It may be argued by some, that many who are sent to this hospital, are the victims of their own vices and indiscretions, and are undeserving the special care solicited. Many of them are unworthy: in all probability the majority may have abused their privileges…and impaired their health by indulgences and excesses…But shall not these find mercy, and pity, and succour! [sic] You do not abandon the criminal in the jail; the juvenile offender finds a "Refuge"; and the halls of your penitentiary echo to the voices of those who, by earnest counsels and instruction, strive to reclaim the convict from perverse and criminal habits, to rectitude and duty. Let not the erring, perhaps once vicious insane, alone be abandoned. (250)

Here, Dix advocates for Blockley's insane population by complicating any easy taxonomy of "worthy" and "unworthy" subjects with regard to an individual's future potential by suggesting that even the "once vicious" are candidates for reform. If the insane were treated in a specialized hospital, she argued, their reform—their "restor[ation] to reason and usefulness"—might be possible. To the extent that an institution was simply a receptacle, it failed to reform.

Dix's critique was successful in convincing the state of Pennsylvania to establish an institution dedicated to the treatment of the insane. Yet the problem remained unresolved and, in the latter half of the decade, observers of the operations of the almshouse would not only reiterate Dix's position on the inadequate treatment of the insane: they would add to the critique by noting that the almshouse's failure to adequately separate the sick poor based on their malady and their requirements for specialized treatment was resulting in further inefficiencies.

A More Efficient Political Economy of Care: Ray and the Need for Specialized Treatment of the Sick Poor

In spite of Dix's expose on the conditions of Blockley, the almshouse still appeared to be a "mere receptacle" almost thirty years later when by Dr. Isaac Ray, a psychiatric expert, presented to the Social Science Association of Philadelphia on the need for poorhouse reform. That March of 1873, Ray broadened Dix's critique of the institutions failure to rehabilitate the insane. He opened up the conversation further by questioning the prudence of treating, not just the insane, but all types of sick poor within the same institution and without specialized treatment.

Ray proposed a charitable approach based on principles of "wise economy and an enlightened humanity" (Ray 1873, 1). He noted the broad liberal advocacy for the provision of public support for the indigent and celebrated that such social welfare had become "an imperative duty of society" (1).[29] He then characterized the problem facing government officials, reformers, and social scientists in the provision of such aid: how to provide public support "to accomplish the greatest amount of good with the smallest amount of harm": in other words, how to achieve the care of the poor in the most economic and least costly manner. In order to do the greatest good with the least amount of harm, the political economy of care in Philadelphia, as envisioned by Ray, would need to take up the following considerations: "the burden upon the tax-payers must be rendered as light as possible by a judicious expenditure of money; the mode adopted must furnish no encouragement to pauperism; and, lastly, it must

[29] The receipt of care was, according to Ray, "a matter of right" for those living in the United States (1873, 2).

furnish relief in the most efficient and humane manner, thus ensuring, where it is possible, a return at the earliest moment of the powers of self-support" (1-2).

Ray's 1873 articulation of the liberal imperative of welfare for the poor thus re-articulated a number of the tenants of the 18th-century Bettering House, including the efficient production of reformed, "self-support[ing]" individuals. Welfare would only work, in his estimation if the following conditions could be met: the public could not be heavily taxed; their resources needed to be invested in practices that ensured that individuals did not become perpetually dependent on assistance; and such resources needed to yield "humane" treatments and lasting results that led to the independence of the poor and sick.

Yet echoing Dix's critique of Blockley, Ray saw no solution to the question of efficiency—no obvious bettering—so long as the practices of the almshouse yielded an indiscriminate mixing of all types of poor bodies within a single institutional space. "It is impossible," Ray suggested, "for any one person to administer the affairs of such heterogeneous bodies as those which compose our almshouse." The heterogeneous bodies undermined attempts at "obtaining the best results of an efficient organization of the service" (14). According to Ray, success in administering economic care would require scientific "principles of management" (3). Such principles, for Ray, involved a re-evaluation of precisely what constituted efficiency in caring for the sick and a corresponding implementation of specialized space and practices of care.

Thus, in contrast to 18th-century poorhouse managers, Ray was sensitive to what he perceived as a failure in the administration of the almshouse—a tendency toward over-economizing by simply throwing all the needy together as a cost-cutting measure: "the problem,

as Ray suggests, is that "economy [will be] carried too far for the best interest" (2). Ray noted that, in practice, the ideal of treating all the poor in a single space did not translate into success when it came to treating the sick within the almshouse. Drawing a distinction between the management of the sick and the poor, Ray claimed that the almshouse hospital should not be "managed in the spirit of a pauper establishment" because the political economic calculus needed to be distinctly tailored to treat the symptoms of the sick inmates. The requirements of the sick, according to Ray, differed from the requirements of the non-sick: "The paramount consideration must be, *not how cheaply the patients can be kept, but how speedily they can be cured*, and how far their sufferings can be alleviated" (10, italics added). This issue of carrying economy "too far" was particularly pronounced in matters of sickness. This was particularly evident with regard to the nursing staff at the Blockley hospital. He critiqued the practice of using former almshouse sick as nurses, and not paying them well. He continues, "this kind of service is the result of economical considerations proceeding from the natural principle of saving the public from each and every expense that can possibly be dispensed with. I have not fault to find with this [economically prudent] motive, but I doubt if the public are not, in the long run, actual losers by the arrangement" (8). Hence, Ray argued that attempts by almshouse managers to cut costs by hiring untrained nurses, while initially effective in lowering costs, and thereby reducing the tax burden, had an inefficient effect in the long run: the untrained nurses provided a lower quality of care, and thus patients who were slower to get better required resources for a more sustained period of time. To the extent that the almshouse failed to invest resources in the curing of the sick, the ill not only could not be expected to be productive in the absence of a cure; rather, they would be a constant drain upon the almshouse coffers.

The critiques of Dix and Ray thus established the need for a political economy of care capable of distinguishing the process of achieving *physiological betterment*–getting over a disease—from the liberal imperative of *bettering poor subjects by reforming the dependent into independent individuals.* They thus challenged a political economy of care, developed through the various iterations of 18th- and 19th-century almshouse management, that sought a blanket efficiency in reforming all poor bodies, without regard for specific illnesses, into independent individuals. Their re-thinking of the economy of care suggested that, insofar as the sick routinely made up a large portion of almshouse inmates, such subjects required specialized attention and treatment to ensure that their health was rehabilitated before they were subjected to the same expectations. To not do so would be, in the long run, to incur greater costs as the sick would only become sicker. And, paradoxically, to impose the same expectations of productivity upon the reform of the sick was to potentially encourage dependence to the extent that labor proved inimical to cures in so many instances. The sick, like John Miller, might very well suffer more from being forced into productivity.

The mingling of pure and impure bodies, noted at various moment by Dix and Ray, undermined the legitimacy of Blockley's hospital wards, as observed by Dr. Wood, a prominent physician, in 1887. Blockley, according to Wood "'is not worthy to be called a hospital. It is nothing but a part of the Almshouse; its inmates are stigmatized as paupers; it is in improper buildings and the pure and impure are mingled indiscriminately together.'" Dr. Horatio Wood, whose resume included time at both the almshouse and the General Hospital, emphasized that there was not a voluntary hospital bed in the entire city, "'in which a poor man or woman, without influence, can feel sure of being cared for in the hour of trouble'" (quoted in

Rosenberg 1992, 194). Such was the case, in 1889, for the consumptives of Philadelphia General Hospital as influenza crossed the Atlantic to dock at the ports of the east of coast of the United States. Yet this lack of hospital beds for the tubercular was especially suspect as it belied the general overabundance of such quarters in the city.

The 1890s and the Re-Valorization of Consumptives

In spite of the critiques of reformers, the specialization at Blockley did not happen. However, in matters of health and treatment, Philadelphia did indulge in creating more generalized spaces for the treatment of the sick. By 1879, the indulgence was so great that the Philadelphia State Board of Public Charities claimed that the city "needs no more hospitals." Over the next few decades, this claim would continue to be repeated as city officials debated the use of public monies to build new hospitals and to fund pre-existing ones. With "the establishment of major hospitals in the 1880s," the city experienced a phenomenon of "over-bedding" (Stevens 1984, 474). Yet in spite of this overabundance, subjects of chronic disease remained on the fringes of treatment as they still proved to be of little value—inimical to a system of medical charity invested in treating subjects that manifested a propensity to get better.[30] "The problem was not sickness alone, but chronic illness, for it was such cases that private hospitals felt unwilling or unable to admit and which filled large numbers of long-term beds at Blockley. As late as 1887, for example, the census at Blockley was 1,200, while the Pennsylvania Hospital was treating only 164 patients" (Rosenberg 1992, 194). Consumptives were included amongst these chronic patients being treated: "'We have classes that the Pennsylvania Hospital cannot receive for want of means,'" the Blockley authorities emphasized,

[30] On the rationale of "limit[ing] the length of stay" as cost-cutting measure, see (Stevens, Sweet Charity, 298).

"'568 chronic or incurable cases, such as consumptives, paralytics, epileptics, and patients with cancer'" (quoted in Rosenberg 1992, 194). It was within the context of precisely this phenomenon—a city with too many hospital beds, yet too few to treat consumptives—and Koch's work on the material cause of tuberculosis, that Flick began to advocate to his peers and to municipal officials, for more beds, for a specialized hospitals, and for the possibility of a cure for consumptives.

The problem then, for Flick, as he faced an audience of physicians, delivering his address on "Special Hospitals for Consumptives" was a problem of value the late-19th century consumptive. These chronic incurables, formed at the awkward intersections of circumstantial misfortune—tuberculosis—and medical limitations—the lack of a consistent and widely available cure—emerged as material impediments to attempts at efficient economy. At best, consumptives simply took up space, lying in wait for their deaths. At worst, they both took up space and disturbed or threatened to make other patients sick. The Boston City Hospital was clear in stating the problem posed by chronic illness and in practicing a policy that mitigated the uncertainties of resource expenditure and management that came along with the treatment of chronic disease: the hospital "'impressively forb[ade] the admission, into a hospital, of patients who can be equally well cared for in an almshouse. The object of hospitals is to treat disease, not to afford an asylum for the idle or decrepit'" (quoted in Rosenberg 1992, 195). Indeed, in the absence of a clear cure, chronic consumptive bodies were not so much sick as they were "idle" and "decrepit" and thus, a tax upon hospitals where the subjects of acute disease, in their curability, received priority. The ease with which chronic conditions were exaggerated into the language of the unworthy subject—the "idle or decrepit"—and the corresponding pursuit of

hospital admissions policies designed to focus on the treatment of acute cases rather than chronic cases underscores the problem posed by the gross materiality of the chronically-impaired body: a body that does not get well, or at best, is unpredictable in recovering; a body that needs sustained care in the form of both physician attention and resource allocation; a body that is idle, not giving back in the form of productivity. As Rosenberg notes, this is a problem—chronically ill bodies—that does not, in fact, cannot be translated into a satisfying economic calculus: "The stigma of charity and the burden of age and chronic disease were never to be solved; even within the almshouse itself, the aged and helpless were the least desirable. Just as the city's private hospitals sent their chronic patients to Blockley, so the aged and particularly feeble within the city hospital were transferred to the 'insane department.'" (195). In 1890, the tubercular were, by default of their biological condition, failed and "unworthy" liberal individuals, lacking value in a political-economic scheme predicated on the investment in bodies that were likely to get better—on independence and productivity. Yet, as evidenced by the voices of reformers, the Blockley model, with its lack of specialized treatment for various types of sick subjects, was increasingly seen as the materialization of outdated, ineffective, and inefficient political economy of care.

When Flick delivered his lecture in February of 1890, neither space, nor resources existed to provide this foundation for the pursuit of a cure amongst consumptives. Flick agitated for an institution invested in the specialized care of the tubercular. He handed out "a thousand reprints" of his "Special Hospitals," targeting those he thought would be supportive. His plea would be met with interest and backing from a number of local physicians. Within months of the presentation of his paper, on September 15, 1890, the support materialized

through the incorporation of the Rush Hospital for Consumptives and Allied Disease (Gould 1890, 698) The Hospital opened on Feb. 4, 1892 in Philadelphia, at the Northeast corner of Twenty-second and Pine Streets was the first hospital of its kind in the United States—the first space designed, not just to house consumptives, but to offer them the chance to pursue a cure. The mission of the institution was to "provide a place where cases of pulmonary tuberculosis can be received and treated exactly as other diseases are cared for in general or special hospitals" (698). It thus gave the tubercular a place to go to live unlike the Blockley, where "patients went only to die" (Flick 1944, 276). The presence of such a space, while small and certainly unequipped to treat the majority of Philadelphia's tubercular population, valorized consumptive subjects separating them, materially and symbolically from the almshouse and the stigma of unworthiness that hung over its subjects.

Within a year of the incorporation of Rush, Flick split with the institution over intellectual differences concerning the precise mechanism of tuberculosis transmission (see Chapter 3). The Rush Hospital remained a small operation. In spite of its presence in the city, Flick and others in the field of tuberculosis treatment returned to a similar conclusion: the city needed a large-scale hospital for consumptives. While Rush valued the tubercular and afforded consumptives a fighting chance of recovery, by the latter half of the decade, it's small size did little to offset the manner in which most of Philadelphia's abundant hospital beds remained cold to the tubercular. Indeed, in spite of Flick's agitation and advocacy, as late as 1898, the problems of locating beds for the tubercular remained.

In 1898, Anders, in "Sanatoria and Special Hospitals for the Poor Consumptive and Person With Slight Means" tabulated statistics on the demographics of the general hospitals in

Philadelphia. In commenting on "[t]he almost absolute lack of proper facilities for the treatment of the poor afflicted with pulmonary tuberculosis," he argued that the refusal of consumptives was "a most potent factor in maintaining the enormous death-rate from the disease" (177). Of the fourteen hospitals in Philadelphia, only six uniformly took consumptives. Two other hospitals would admit consumptives in the winter to be used for educational purposes. And only one hospital—the German Hospital—provided any "special provision" beyond separating the tubercular. Of the six that took consumptives, two took only those with an early, "incipient" form of the disease, leaving chronic sufferers with little bed space (163). Anders concluded by advocating for "[s]pecial hospitals in which every hygienic detail can be arranged with precision" for treating pulmonary tuberculosis (177).

In the absence of such a space, Flick negotiated the persistent lack of beds through his leadership of the Free Hospital for Poor Consumptives. The Free Hospital, founded in 1895 was an organization rather than a space for treatment—a joint committee that sought out beds around the city, paying five dollars a week to hospitalize, in Flick's words, "poor, helpless, and deserted" consumptives (Bates 1992, 137); (Sr. Borromeo to Lawrence Flick, #121, March 12, 1900, Letters 1889-1908). Given the Free Hospital's limited resources and the city's limited beds, the organization was also tasked with assessing the value of applicants so as to assure that the provision of treatment went to, in the language of social reformers, the "worthy" or "deserving" poor. Concerns over the capacity of an individual to become better—to move form a state of infirmity, idleness, and dependence, toward a state of well-being, capable of labor, and productive thus manifested, beyond the walls of Blockley, in Flick's efforts to secure hospital beds for consumptives. Given the limited space available in the city and the sustained

stigma regarding the tubercular as incurable resource sinks, Flick's job was not easy as he lobbied his contacts to take in worthy cases.

From the inception of the Free Hospital through Flick's co-founding of the Phipps Institute in 1902, one of his primary contacts and sources for beds was Sr. Borromeo of St. Agnes' Hospital. The beds of the city were so limited and the bodies of consumptives, so prevalent, that Flick was in routine contact, via letters, with Sr. Borromeo. She "bore the fiscal responsibility for [St. Agnes'] hospital" (Bates 1992, 56) The payments of the Free Hospital to St. Agnes for bedding the tubercular was significant: "By 1899, these payments accounted for 19 percent of the monies collected for patients' board at St. Agnes and almost 10 percent in total receipts" (56). Yet even with the economic incentive, Sr. Borromeo routinely rejected Flick's requests. St. Agnes', too, had limited space.

In 1899, she penned a letter to Flick in response to his request for a bed for a tubercular patient. "Dear Doctor," she wrote, "You really are the biggest beggar giving" (Sr. Borromeo to Lawrence Flick, #27, January 22, 1899, Letters 1889-1908). Some ten years after he began advocating for special hospitals for consumptives, Philadelphia still had a paucity of options—and those options that were open to Flick, were heavily taxed. Sr. Borromeo's characterization of Flick, in her letter, as both subject in need—the dependent beggar—and the philanthropist—the independent giver—reproduced the very paradox of individualism in late-19th-century Philadelphia. Even the seemingly independent Flick remained dependent, in his crusade to eradicate tuberculosis, on the charity, on the beds, on the space, of others.

Conclusion: Contagion

The liberal institutional goal of reforming or bettering the subjects of charity—transforming them from subjects of dependency into independent individual—was complicated by the nature of the tubercle bacillus in interaction with the human body. Indeed, the chronic tubercular body was a material impediment to the ideal of a charitable system that produced bettered individuals. Such a political economy of care struggled to account for the possibility that an individual might leave the almshouse, and become a productive-laboring body, only to experience a physiological setback that sent them back to the almshouse. Indeed, in the case of tuberculosis, such a setback could come unexpectedly, without warning, and in a manner that would crush an individual's capacity to labor. Importantly, to the extent that a tubercular individual was seeking to recover from such a setback, the proper course of action would be rest—the opposite of labor.

As the tubercular found themselves returning through the revolving door of the almshouse after having pursued a productive lifestyle, the return could hardly be attributed to some failure of individual will. Rather, consumptive subjects and consumptive bodies confronted Philadelphia's physicians, managers, and philanthropists with a form of nature born of the interaction of human tissue and the tubercle bacilli—a form of nature that challenged the assumption that poverty and sickness were the outcome of flaws in character of poor individual choices. To the extent that a laboring individual experienced a recurrence of their tuberculosis, they were, ironically, suffering due to their pursuit of the very self-dependency that, according to reformers, was supposed to save them.

The confusing nature of the disease and its corresponding difficulty to both diagnose and treat, was confounded by a generalized stigma against the chronically ill—and a more specific stigma against the chronically ill tubercular. So long as consumptives were incurable, they required space and resources to go and die. For most Philadelphia hospitals, such chronically ill bodies competed directly with limited space that was seen as more efficiently reserved for those suffering acute and treatable diseases. Flick thus faced this context—the failure of the almshouses to adequately separate and treat consumptives and a general stigma, in city hospitals, toward consumptives—when he proposed the need for "special hospitals for consumptives."

The breaking point, in remaking both tubercular individuals and the disease, curiously, had little to do with traditional liberal arguments about "worth" and "unworth"; rather it grew from the shifting scientific understandings of the transmission of tuberculosis. With the increased acceptance of the theory of the contagiousness of tuberculosis at the turn-of-the-century, Flick's appeal for special hospitals would take on new importance as the infectious tubercular became threats to the healthy. Indeed, in the first decade of the 20th century, the need to isolate consumptives would take on increased urgency, as much for the public health as for the health of sick.

Chapter 3

Contagious Tuberculosis and Liberal Responsibility: Corpses, Fomites, and the Human-Non-human

In March, 1892, as physicians in Philadelphia debated the theory that consumption was contagious, the corpse of a former consumptive was exhumed from its grave to have its heart and liver burned by a community of Rhode Islanders. Amidst the hills and valleys of the state's "south country," between the ruins of factories, neglected mills and abandoned farms, such ritualistic burnings were not uncommon in local lore and practice. The stories of the various Rhode Island communities instructed the relatives of dead consumptives to dig up and destroy the bodies of their contagious loved ones. The ominous tales warned that a community member—a relative of the deceased—had to perform a ritual burning lest they tempt the spread of contagious consumption: the failure to burn the dead consumptive would result in the reanimation of the corpse, returning to the life in the form of a disease-spreading vampire. Such was the case in the tale of two lovers—Mehitable and Isaiah: the last of the vampire sightings in southern Rhode Island (Globe January 27, 1896, 5).

Mehitable and Isaiah lived in Exeter on the "western slope of Pine hill." The two were engaged, but before they were to marry, Mehitable grew ill and died from consumption. After her death and burial, Isaiah's mother heard a sound—a groan—from her son's room. Upon investigating, she found the dead Mehitable, reanimated and vampiric, her mouth red and dripping with the blood of Isaiah. With "a half-piteous, half-reproachful look" on her face, Mehitable stole out of the room and vanished. Soon after, Isaiah died, "a victim" of consumption—his heart, according to his mother, broken (5).

Isaiah's mother's observations were corroborated by other local stories that emphasized supernatural blood exchange as the means by which consumption spread: "Sometimes fresh blood was actually discovered on their lips. What proof could be more convincing, inasmuch, as was well known, the buried body of a vampire is preserved and nourished by its nightly repasts? The blood on the lips, of course, was that of the victim of the night before" (5). The consumptive vampires of Rhode Island did not simply drain the blood of the bodies of the living as a normal vampire would; rather, they used their reanimated state to engage in a contagious intercourse, exchanging the requisite fluids to ensure the propagation of the disease.

Where physicians, like Lawrence Flick, argued over explanations of the means and methods through which tuberculosis was transmitted, in the general lore of Rhode Island, and in the specific story of Mehitable and Isaiah, the transmission of consumption materializes through the supernatural vessel of the vampire. It takes shape vividly, through the acts of vampires sinking their teeth into loved ones, through mouths red with blood, and through the exchange of pathological material—blood and spit—from the dead to the living. The lore thus explained the propagation of consumption from one body to another through the supernatural permeation of the bodily integrity of the living.

Beyond the use of lore to explain the passage of contagious tuberculosis through reference to the material practice of blood sucking, the stories also served to assign responsibility for the containment or disinfection of contagious material through the destruction of pathological bodily material, as in the tale of Mr. Stotson. When Mr. Stotson, the father of two boys, lost his sons to consumption, the community recommended that he

"take up the body and burn the heart" (Tribune March 27, 1896, 6). This ritualized use of fire to disinfect the contagious material of the dead corpse required that "a stake [be] driven through the chest, and the heart, being taken out, was either burned or chopped into small pieces. For in this way only could a vampire be deprived of power to do mischief" (6). Upon refusing to drive a stake through his son's hearts, Mr. Stotson took ill with consumption (6). The Rhode Island tales of bloodied consumptive-vampires, spreading contagion after death to loved ones thus assumed a cautionary didactic-tone, serving as instructional material to guide a community in explaining, containing, and eradicating the danger. To not engage in a ritual disinfection by driving a stake through the heart of the dead, one risked becoming consumptive as was the case with Mr. Stotson.

The threat of a consumptive corpse propagating disease confronted Southern Rhode Islanders with an obvious, yet nonetheless perplexing problem: to the extent that the dead lacked willpower and intention, they could not be held responsible for their own vampiric (contagious) potential. In evoking the supernatural to explain the contagious passage of the disease from one subject to another, Rhode Islanders produced a lore premised upon the *agency of nonhuman forces* in propagating disease. Rather than holding sick individuals responsible for the transmission of the disease these stories of vampirism suggested that contagion could be transmitted by forces that were extra-individual—forces that existed outside of the realm of human will and intention. Yet these forces were also grounded in the material of the body—the pathological hearts and livers—and they could be controlled through community "disinfection" efforts—through burning. In the presence of such a force, and in the absence of an individual sower of the seeds of the disease, the vampire folklore thus substituted

community—familial—responsibility for individual responsibility in governing the spread of consumption. The stories and the ritualistic exhumations made material both the generally invisible process of consumption transmission, and the web of social responsibility required to contain this spread—exhumation and burning—in the absence of a witting sower of the disease.

While Flick professed no belief in the supernatural, in attempting to persuade his colleagues of the contagiousness of tuberculosis, he did profess a belief in the capacity for consumption to outlive its hosts by haunting the dwellings, clothing, and linens of former consumptives. Much to the ire of many of his peers—generally an older vanguard of physicians—who remained convinced that tuberculosis was an hereditary disease, throughout the 1890s, Flick wrote prolifically to promote his contagionist beliefs. He claimed that inanimate objects like dust, clothing, or upholstery served as homes for microbes and thus, as vectors of infectious disease. He advocated governmental intervention in the containing of tuberculosis through the disinfection of the (former) homes and belongings of dead consumptives. It was within this context that he was perceived, sarcastically, by a reader of his published material, of believing in the supernatural.

In 1894, Flick articulated his position on the disinfection of the spaces formerly inhabited by consumptives in an article entitled "Tuberculosis" for the *New York World*. Shortly after its publication, Flick received a letter in reaction to his article. The author of the letter, a medical student, writes, "Sir, I have read, with great interest your article on "Tuberculosis" in this days New York "World." In the second half of the concluding paragraph of your article you [write of the manner in which] a consumptive moves out of the house after death" (Alfred L'estoarge to Lawrence Flick, #389, April 8, 1894, Letters 1889-1908). The author continues,

sarcastically questioning the extent to which Flick believes in the capacity of a dead consumptive to move, "I, very respectfully, ask you if it is your experience that when a consumptive dies he, or she, can after death arise, take up his, or her, bed and [sic] move. That is the conclusion I allude [sic] to in your article but as the experience is a novel one to me and my fellow students we wish to get confirmation from so eminent an authority as yourself that it really is your experience." While Flick, in his article, is obviously referring to another person moving the dead consumptive body "out of the house after death," the author of the letter, a medical student, correctly highlights the vagueness of Flick's grammar: his use of the dead consumptive as the subject of the sentence mistakenly attributes agency—the capacity to "arise" and move—to a tubercular corpse.

While the medical students' inquiry was not serious and while Flick was not trying to attribute agency to the supernatural, this miscommunication was produced by and productive of the struggle amongst both Rhode Islanders and medical professionals in the last decade of the 19th-century, to explain the capacity of tuberculosis to spread in the absence of a witting sower. Flick, following the work of Koch and Georg Cornet, believed that the contagious capacity of tuberculosis was located in a hybrid assemblage of human and nonhuman—in a mixture of human sputum, tubercle bacilli, and environmental objects like dust, cloth, or corpses. This hybrid vector of contagious tuberculosis, capable of transmitting the disease in the absence of a witting sower was known as the fomite.

In what follows, I trace the tensions in late-19th century Philadelphia that were productive of and produced by that nature of the fomite, and its role in spreading tuberculosis. I argue that it was through these very tensions—through the socio-medical production of and

confrontation with the fomite—that tuberculosis would be remade as a contagious rather than an hereditary disease. I trace the emergence of this confrontation through paradigmatic clash between contagionists and anticontagionists—over the nature of tuberculosis transmission. I show how this clash took shape through debates about the scientific truth of contagious tuberculosis and through arguments over the preservation of the rights of individuals in the face of an increased public health effort to reshape individual behavior in the interest of interrupting the transmission of consumption.

Through the confrontation with the fomite as a primary vector in propagating a deadly disease, liberal reformers organized around the containment of a force that was not reducible to traditional notions of human intention, and, thus, a disease process that was not governed by traditional understandings of individual responsibility. Indeed, the very materiality of the disease—the way it spread, the manner in which it chronically lingered and recurred, and, most importantly, its capacity to persist outside of the human body by attaching to dust, the pillows in streetcars, and the dark corners of homes—produced a situation in which the reformers increasingly lobbied the municipality of Philadelphia to take responsibility for the spread of the disease by mandating citywide practices to contain fomites.

Efforts to involve the state in the regulation and prevention of fomites so as to interrupt the transmission of consumption generated further tension evidenced in debates over the proper reach of public health in preventing the spread of this nonhuman-human hybrid. Questions and concerns arose over the right of public health officials to legislate the behavior of the public, including the behavior of physicians, and the threat posed to the rights of individuals in granting such powers to municipal authorities. The specter of the chronic

tubercular, deemed a contagious threat by authorities, stigmatized, at best, and, at worst, sentenced to a life of never-ending quarantine haunted the dystopic critiques of anticontagionists.

I argue that the debates and practices designed to address the governing of potential contagiousness of tuberculosis in late 19th-century Philadelphia, remade a daunting, uncontrollable, and illiberal form of nature into a preventable disease. I show how this remaking, which hinged upon the scientific establishment of the fomite as the primary vector of the disease, paradoxically both undermined and valorized liberal individualism, producing the liberal individual both as a subject of a process beyond his or her control and as a technology for the mastering of the disease. I locate this dual remaking of the disease and the individual in debates between contagionists and anticontagionists about the nature of the disease's transmission, and through public health efforts to address the potentially illiberal problems that emerged upon finding a chronic disease to be infectious. The resulting flurry of policy debate, new practices, and new laws dramatized questions of individual and state responsibility, and the limitations of the human will in the face of an agent—the fomite—capable of acting in the absence of human intention. The theory that tuberculosis was infectious provoked a broader liberal anxiety by introducing the possibility of a form of contagious agency that, much like the supernatural agency of the reanimated dead, was not subject to the will of the individual.

Where these questions resolved, for Rhode Islanders in the lore of the vampire, and in the practice of familial exhumation and burning of consumptive corpses, Philadelphia officials and physicians struggled with the manner in which the contagious consumption challenged

notions and embodiments of liberal individualism. Contagion, *in general*, undermined the presumed boundedness—the sanctity—of the individual by highlighting the manner in which subjects were, in fact, implicated in a broader web of shared space, shared breath, and shared bacteria. The sick could unwittingly infect others and the healthy could unwittingly expose themselves to disease. Tuberculosis complicated this challenge to liberal individualism even further because of its chronic nature. Where the threat of acute-contagious influenza was treated and contained through a quick visit to a hospital bed, the possibility of chronic contagion amongst the tubercular raised the specter of perpetually infectious bodies, the perpetual expenditure of public money to contain such dangerous vessels of sickness, and the perpetual isolation of the subjects of the disease.

Where the application of bacteriological and histological insights into germs and human tissue had contributed to a foundation wherein individuals were increasingly seen as capable of exercising their will over their bodies as a means of controlling their physiology and thus, tuberculosis (see Chapter 1), the possibility of contagious transmission contradicted this assumed control and refracted questions of responsibility onto the state, and, in particular, onto the role of public health in intervening into the lives, homes, habits, and bodies of private individuals. The remaking of contagious tuberculosis was thus, also, a remaking of the role of the state—of the role of public health in policing and in enforcing controls on individual behavior.

Where the recognition of contagious tuberculosis confronted physicians, reformers, and city officials with a hybrid form of human-nonhuman assemblage and beyond the control of individuals, over time, the reorganization of urban environments around the "fact" of the

disease's contagious nature paradoxically produced individuals who were integral to the control of this nonhuman force. By focusing on the material through which the disease was transmitted—the fomite—and on engineering the behavior of the sick and the healthy to intervene in the making of these fomites, reformers of the late-19th century contributed to a remaking of liberal individuals as subjects capable of exercising control over contagious tuberculosis.

I begin by situating these debates, tensions, and remakings within the context of Lawrence Flick's appeals, in the early 1890s, for the disinfection of the former residences of consumptions. I show how his efforts to combat tuberculosis through disinfection were informed by his belief in the contagiousness of the disease. I then trace the tensions between Flick and his colleagues over the nature of tuberculosis transmission—the debate between contagionists and anticontagionists—through attention to Flick's appeals to College of Physicians.

I establish the conservative anticontagionist orientation of the physicians of the College and focus on the anxieties, as expressed by Dr. Thomas Mays about the illiberal imperatives—draconian laws and overbearing state regulations—that would result from a recognition of the disease as contagious. I then trace Western historical attempts to think through the contagious potential of phthisis—the association of the disease with "bad breath," "bad air," and "seeds." I then describe the 18th century efforts of the Kingdom of Naples, to treat consumption as a contagious disease. I explore the policies of Naples through both Flick and Mays readings of the Kingdom's execution of a state-enforced preventative campaign. Where Flick used this historical campaign as a blueprint for his preventative aspiration, Mays was equally invested in

outing what he perceived to be the authoritative and illiberal practices of the Kingdom of Naples. Both Flick and Mays project their conviction that social policy follows the nature of disease—that the remaking of tuberculosis as contagious will necessitate certain social arrangements.

I then focus on Flick's claims that the late-19th century science underlying this remaking of tuberculosis is a better measure of reality than previous attempts to theorize contagion. I explore this science through a detailing of Robert Koch's hypothesizing of the fomite as the human-nonhuman assemblage that served as the vector for the transmission of tuberculosis. His student, Dr. Georg Cornet, developed experimental evidence to support Koch's hypothesis. I describe Cornet's inoculation experiments to reveal the manner in which the laboratory forging of contagious tuberculosis took shape.

I conclude by addressing the evolving role of public health officials in investing in a preventative mission, focusing on the controversial issue of quarantining chronic contagious subjects. I then elaborate on efforts to police and discipline the public so as to prevent the spread of tuberculosis, showing how even the outlawing of spitting proved difficult to enforce. Within this difficulty, a method of educating the public in methods of self-help and self-prevention begins to take shape—a method whereby individuals are remade as tools of the preventative campaign.

Cremation, Infected Corpses, and Public Health: Tuberculosis as a Nonhuman Hybrid of Organism and Environment

While Philadelphia public-health officials cited no instances of vampirism, a similar anxiety over the capacity for the dead to act as vessels of contagion materialized in the following

warning, issued in 1888 by the Pennsylvania State Board of Health: "Don't attend any funerals from any of these [people who have died of infectious] diseases" (Lee 1888, 448). Indeed, the threat of infectious corpses was brought before the State Board the same year by the Directors of the United States Cremation Company. Advocates of cremation feared contamination of water supplies by buried-contagious corpses (Cobb 1892, 51). In presenting their case to the State Board of Health, the directors stated their mission as such, "We disapprove of the present custom of burying the dead, and desire to substitute some mode which…shall render the [human] remains absolutely innocuous…All who die of…contagious disease…should be incinerated by the command of law" (Hyatt 1888, 341).[31] Cremation would ensure, in the rhyming verse of an advocate, that "skeletons [will not] walk the grave yard [sic] fences at midnight alone, to frighten people with their rattling bones" (342). Indeed, even in Pennsylvania, evocations of the animate dead, "frighten[ing] people with their rattling bones," served to make material the menacing manner in which contagion ushered forth from normally inanimate objects, seemingly spreading of its own agency, separate from individual intent.

This advocacy for state legislation of the burning of corpses in the interest of the containment of infectious disease took shape, in Philadelphia, in a city rumored for having "a greater mortality from typhoid fever than any other city in the country" with close to one thousand people dying each year (Cobb 1892, 48). Such mortality, argued Dr. Franklin Gauntt to the *Philadelphia Press*, was caused by the interaction of corpses, cemetery soil, and river water.

[31] The movement for cremation—the consumption of dead bodies by fire—was rooted in the advocacy of the late Sir T. Spencer Wells, one time President of the Royal College of Surgeons of England. Wells warned that "[d]ecomposing human remains…so pollute the earth, air, and water as to diminish the general health and the average duration of the life of our people" (Cobb 1892, 48-52).

Typhoid, according to Gauntt, was spread by the contaminated Schuylkill River—"'polluted by the soakage and drainage from the cemeteries along the bank'" (quoted in Cobb 1892, 50). Gauntt, continued, "'These little drops of water, squeezed by 'Father Time' from the dead, are loaded with sure death for the living who drink of it…I have heard professional men in Philadelphia say, that when you drink Schuylkill water you are sampling your grandfather…[I]n certain analysis made of this water traces of the oil of cedar have been found, and it came from the coffins and cedar cases of those buried in Laurel Hill Cemetery'" (49-50). Cobb's assessment that infectious agents leeched from the dead ancestors of Philadelphians, into soil and waterways, only to re-materialize in glasses of city water, with a hint of "grandfather" and tinge of cedar, underscored the scope of the problem: to the extent that disease could travel from corpse, into soil, into water, into human bodies, the average-innocent Philadelphian was threatened by an invisible and unregulated process that he or she could not mitigate, much less contain. The threat of disease spreading, in the absence of a witting sower, through corpses and river water suggested a need for some form of government intervention or regulation—or, in the estimation of the Directors of the United States Cremation Company, disinfection through a privately-run incineration effort.

The Directors' appeal took shape within a climate where state and city departments of public health were already accustomed to enforcing municipal sanitary measures (sewage systems, for instance), quarantines, and decontamination of infected space. In the 1890s, much of the work of public health centered on concerns over mortality from contagious disease. Where Rhode Islanders appealed to familial and community rituals to contain the threat of the spread of disease, Pennsylvania reformers looked to public health officials to take

responsibility for the safety of the urban environment by interrupting the transmission of infectious disease. The Directors' desire to have the state mandate the burning of contagious corpses thus echoed the recognition on the part of the Southern Rhode Islanders', that the invisible and unintentional propagation of contagion required community-enforced preventative efforts—the disinfection of the dead with fire—thereby arresting the capacity for dead subjects to unwittingly propagate their contagion from beyond the grave. In the cities of the late-19-century United States, public health discourses and practices thus emerged, many focused on disinfection, to combat this technical problem: the capacity of disease to spread seemingly of its own accord, through inanimate objects, and in the absence of any human will or individual intent.

Overlapping Paradigms: Contagionism, Anticontagionism, and Tensions at The Rush Hospital

Lawrence Flick was advocating for the disinfection of the former residences of consumptives in February of 1892 when The Rush Hospital for Consumptives and Allied Disease opened its doors. As an original incorporator of the Hospital and a promoter of the contagious theory of consumption, Flick invested, with a number of his colleagues, in the small operation—outfitted with a mere 14 beds—as an initial step toward the realization of his goal of preventing consumption by creating environments to house and cure consumptives (Bates 1992, 22).[32] And this goal, for Flick, was increasingly bound up with his belief—still unpopular at the time—in the contagiousness of tuberculosis.

[32] From the outset, the Rush Hospital was plagued by spatial and financial limitations. Within months of its opening, on June, 16, 1892, institution Hospital Secretary Jenkins wrote Flick, claiming that "The financial situation [at the Rush Hospital] is most serious" (#113, Letters 1889-1908).

He argued his case for contagionism, in a paper published in May of 1892 entitled "The Influence of The Doctrine of Contagion Upon the Death-Rate from Tuberculosis in the City of Philadelphia." In the paper, Flick attributed a declining death-rate in a number of cities to both the "theory that [consumption] is contagious" and to the preventative efforts that had taken shape to address this theory. "To what can this most fortunate reduction in our mortality from pulmonary tuberculosis be ascribed," he queried: "Upon the theory that the disease is contagious" (6) For physicians like Flick, the remaking of tuberculosis as a contagious disease—a process that was still far from complete—was important, not just as a matter of scientific intrigue. Rather, to recognize the disease's infectious potential was to necessitate concomitant public health interventions through the development and mobilization of preventative efforts. For Flick, disinfection was precisely one of these necessary efforts.

However, in associating with his colleagues at the Rush Hospital, Flick encountered resistance to the actualization of his preventative vision. Ironically, in contrast to the contagionist beliefs of Benjamin Rush, the late Philadelphia physician, signatory of the constitution, and the hospital's namesake (Bowditch 1877, 5), the Rush Hospital was filled with anti-contagionist sentiment—with physicians who did not believe tuberculosis to be contagious. Thus, while Flick shared a desire with his colleagues to house and treat poor consumptives, his broader goals and investment in the citywide prevention of tuberculosis were not shared. He found himself marginalized amongst the community of his peers (Flick 1944, 277, 281).

Indeed, Flick's colleagues, in refuting his contagionism, hewed to the majority line. Anticontagionism, founded on the assumption that consumption "was caused or promoted by

hereditary influences" was widely shared by physicians in the United States as late as the last decade of the 19th-century (Teller 1988, 8) (Cassedy 1978, 451). As the advocates of cremation made their arguments in 1888, only a minority of physicians in the United States believed that tuberculosis was contagious. The evidence supporting this belief in the hereditary roots took shape through empirical observations of the tendency of the disease to spread amongst family members—"[t]he frequent appearance of the disease generation after generation in families of sufferers, [and] the fact that sometimes a whole generation of family would succumb" (Teller 1988, 8). They furthered their observations on the manner in which the disease passed from patent to child with the supposition that those with certain inherited physical characteristics—like a narrow chest—were more susceptible to manifest the disease: consumption was a product of "a fate…inherited from a weak ancestry" (8). Hence, one could be born with a constitutional predisposition to consumption—with a likelihood of suffering from the disease. Importantly, then, anticontagionists did not believe in an external cause of the disease. Flick, firmly believing in the tubercle bacilli as the material cause of the disease, thus found himself on the defensive, lobbying and fighting for the adoption of the theory that tuberculosis was contagious.

Disillusioned with what he characterized as the "failure" of his colleagues at the Rush Hospital, he quickly began seeking an alternative organization through which to publicize his contagionist beliefs—"to bring the idea of the contagiousness of tuberculosis before the public" (Flick 1944, 279). The debate over contagionism was not merely semantic; rather the establishment of the contagious nature of the disease would, in his opinion, help catalyze the belief in and pursuit of the prevention and cure of tuberculosis. For Flick, then, methods for

the treatment of the disease grew naturally out of the nature of tuberculosis transmission: admitting the disease's contagious potential would necessitate a series of governmental interventions in the interest of the public's health—interventions designed to achieve the short-term goal of disinfection, and the long-term goal of eradication.

Within months of the opening of the Rush Hospital on April 22, 1892, some 25 women and men—many of them laymen—met in Flick's office to initiate a new venture to pursue the prevention of tuberculosis through education. To directly counter his peers at Rush, Flick ensured that this new organization "excluded" "[a]ll who were unwilling to accept the theory of contagion" (Flick 1944, 279) (Bates 1992, 22). By May 6, with the election of officers, Flick's vision materialized with the founding of the Pennsylvania Society for the Prevention of Tuberculosis. The Society pursued its educational mission through the publication and distribution of a series of tracts that summarized the contagious nature of tuberculosis and instructed the public in procedures to prevent the spread of the disease.

Flick's general outspokenness—and his use of the Pennsylvania Society as a mouthpiece for his advocacy for contagionism—was not lost on his colleagues at the Rush Hospital. Not quite half a year after the opening of the Hospital, on November 11, 1892, President Ashman of the Board of Trustees of the Rush Hospital called a meeting to discuss Flick's unpopular stance on contagion. There, the "difficulties" between Flick and the Board were publicized: in particular, the Board took issue with the unwanted publicity garnered through Flick's publicizing of his contagionist views (Flick 1944, 281).[33] Faced with the frustrations of his

[33] "It was the publicity over Dr. Flick's ideas about contagion occasioned by the tracts and the bitter arguments following his paper at the College of Physicians which brought Rush and Dr. Flick into the conflict that ended in his resignation" (Flick 1944, 281).

colleagues and with the prospect of working alongside men with whom he disagreed on a fundamental aspect of tuberculosis transmission, Flick resigned soon after (281). "'My aspirations,'" wrote Flick, "'were strangled at birth by the men whom I had assembled with me, none of whom, as it turned out, believed in contagion'" (quoted in Flick 1944, 277). In spite of his resignation, over the coming years, Flick and his Pennsylvania Society would remain in a continued-tense dialogue with these anticontagionists as they held onto their belief that the disease was hereditary in nature. In 1890s Philadelphia, through debates and practices over the nature of tuberculosis transmission, through the acceptance and refutation of methods to contain and treat the disease, and through tensions surrounding the proper role of the Board of Health and the rights of individuals to do as they pleased, the remaking of hereditary consumption as contagious tuberculosis would take shape as a slow process of argument and negotiation.

Debating Contagionism: The College of Physicians and the Rights of Individuals

Such negotiation was in evidence when, representing the Pennsylvania Society for the Prevention of Tuberculosis, Flick appeared, at a special meeting, before the College of Physicians and Surgeons of Philadelphia on Jan. 12, 1894. There, Flick implored the influential physicians of College—some of the members were his anticontagionist colleagues from the Rush Hospital—to lobby the Board of Health to mandate the "registration and disinfection of houses which have been infected by tuberculosis" (Physicians 1894, 223). In making his argument, Flick drew on the precedent, established in the Kingdom of Naples in the 18th-century, for the prevention of contagious consumption. The Neapolitan situation was unique in the history of Western tuberculosis treatment for two reasons: firstly, as an instance

of the widespread belief, amongst policy makers and physicians in the contagiousness of phthisis; and secondly, as an instance of state-mandated practices for containing the spread of the disease. In appealing to the College, Flick advocated that his colleagues endorse the implementation of measures that mimicked the experimental approach of the Neapolitans and the 18th century (Flick 1891): state requirement of physician-registration of all consumptive patients with the Board of Health and the disinfection of the former residences—both houses and apartments—of consumptives.

With a carefully worded response, the College rejected Flick's request for mandated physician-registration of consumptives and stopped short of endorsing a Board of Health mandate on disinfection. The College did, however, resolve to support a more tacit Board of Health "insistence" upon disinfection. Their carefully worded statement resolved "that no official action be taken in the matter by the Board of Health, except the insisting on the disinfection of rooms in which consumptives have lived and died, in instances in which such procedure is not likely to have been adopted under the direction of the attending physician" (Physicians 1894, 222). Importantly, then, the resolution did not dispute the utility of disinfection so much as it ruled in favor of leaving the matter up to the "attending physician." The College's conservative response thus protected the authority of the physicians it represented, stopping short of encouraging significant state involvement in the matter of containing consumption through mandated disinfections.

Yet the resolution was curiously paradoxical. By endorsing the utility of disinfection, the College supported a practice—cleaning spaces where the bacilli were likely to persist—that presumed the contagiousness of the disease. Spaces only required disinfection to the extent

that they were contaminated by infectious organisms. However, in rejecting the second portion of Flick's proposal—his appeal for state-mandated registration of consumptives—the College carefully worded its stance so as to avoid an endorsement of precisely such a presumption of contagionism: "Resolved, That the College of Physicians believes that the attempt to register consumptives and to treat them as the subjects of contagious disease would be adding hardship to the lives of these unfortunates, stamping them as the outcasts of society. In view of the chronic character of the malady, it could not lead to any measures of real value not otherwise attainable" (Physicians 1894, 222). In thus arguing against Flick's appeal to "register consumptives," the College simultaneously advanced its rejection of the theory of contagious tuberculosis by arguing that consumptives should not be "treat[ed]…as the subjects of contagious disease" (222).

Yet, rather than treating the question of tuberculosis transmission as an issue of the "nature" of the disease, the College instead addressed the proposal through a liberal concern for individual rights. In the wording of the resolution, to embrace the contagionist paradigm would be to stigmatize consumptives, "stamping them as outcasts" (222). For the College, and, indeed, for many anticontagionists in the last decade of the 19th-century, the "truth" of the nature of the transmission of tuberculosis—its hereditary means of propagating—took shape, not so much a matter of laboratory proof, but as a formulation of disease that protected the rights of both physicians and sick individuals. Indeed, an endorsement of contagious tuberculosis was threatening to anticontagionists to the extent that such an admittance would remake the disease, not as a matter of biology, but as a matter of public health. Flick's appeal for the registration of consumptives confronted the College with precisely the type of illiberal

policy that anticontagionists feared would result from the adoption of the contagionist paradigm. And such registration threatened the both the freedoms of physicians—to the extent that it made them responsible to the Board in a new manner—and the freedoms of consumptives—to the extent that it stigmatized them, or, in the worst of case, to the extent that it led to their forced isolation (222). Flick's peers at the College thus seemed anxious that certain policies would necessarily follow an admittance that the disease was not hereditary, but contagious—policies they feared to be a threat to liberal values—to liberal individualism.

Thomas Mays, a former colleague of Flick's at the Rush Hospital, and witness to the latter's appeals at the special meeting of the College of Physicians, invested energy, similar to that of Flick, in attempting to debunk the contagionist perspective. Mays commented, in 1892, on the prevalence of the contagionist-anti-contagionist rift, characterizing the debate as a "controversy, which has been agitating the medical profession for the last ten years" (Mays 1892, 34). Like most physicians who disagreed with the contagious theory, he viewed consumption as an hereditary disease and went to great lengths to argue against the experimental evidence provided by contagionists.

Mays believed that the disease originated, not from an external source, like the tubercle bacillus, but spontaneously, in those whose constitutions were predisposed to consumption. He stated that "the nature of consumption…is [that] of constitutional depravity" (1893, 111). Mays argued that the symptoms of consumption—the "wasting, the general weakness, the easy fatigue" (111) were the product of a "preceding weakness in one or both lungs, very frequently associated with a feebleness of the whole body" (Mays 1879, 15). Thus, Mays' anticontagionism took shape through a paradigm that saw chronic diseases as products of physiological traits—a

constitution—that one inherited from one's parents. Mays wrote that the predisposition "is true from infancy, although it manifests itself more decidedly towards puberty, and manhood and womanhood. Such children have not received sufficient vital stamina from their parents, and hence they are always unequal to cope with their stronger neighbors in the severe struggle for existence" (15-16). By locating the cause of consumption in the inheritance of a weak constitution and degeneration of one's stamina, his hereditary explanation of the nature of consumption flirted with a fatalistic view that's one's "struggle for existence" was determined by birth.

Mays anti-contagionism reflected the paradigm of the consumptive diathesis, inherited from Laennec and his early 19th-century peers. Yet, in contrast to the fatalism of Laennec—the view that consumptives were hopelessly destined to die—he offered an element of nuance in explaining his anticontagionist stance. Mays broadened his explanation of constitutional weakness by noting that this weakness could be "either inherited," by birth, "or acquired" through an individual's exposure to unhealthy environmental conditions. He explained how the deficiency in constitution that invited consumption to manifest could theoretically be treated through attention to those unhealthy conditions which strained the constitution. Mays treatment program in the early 1890s, thus stressed rest—an attempt to produce environmental conditions to counter an influence that would weaken the constitution. He held out the possibility that the disease could be treated, yet he stopped short of the optimism of Flick—while treating the conditions of constitutional weakness could mitigate the disease, he did not see consumption as preventable, containable, or curable on a large scale (1879).

In 1890s Philadelphia, then, the validity of the contagious potential of tuberculosis would be fiercely debated. The product of these debates and the experimental evidence amassed in the laboratory was twofold: on the one hand, 1890s Philadelphia was a site for the slow remaking of tuberculosis as a contagious disease; on the other hand, this remaking of the nature of disease both made possible and was made possible by a confrontation with a form of human-nonhuman hybrid—the fomite—that acted as a vessel for the transmission of tuberculosis. It was precisely the encounter, between liberal reformers and physicians, and the fomite that the responsibility of city governments and the responsibility of individuals would take shape in preventing the spread of tuberculosis. The articulation of the new-contagious-nature of tuberculosis and the social programs for the treatment of the disease where themselves productive, as I show below, of the turn-of-the-century individual—a subject capable of and increasingly held responsible for containing his or her own contagion.

For both Mays and Flick, the argument was hardly limited to theoretical wrangling—rather, as was suggested by the College of Physicians' resolutions, contagionism seemingly necessitated social policy. Where Mays feared a potential draconian approach to rounding up and isolating consumptives should the disease be deemed contagious, Flick viewed state intervention as a means of reducing mortality through the mandatory disinfecting of the former living spaces and belongings of dead consumptives. In making their arguments for and against the contagious nature of tuberculosis, they both deployed readings of historical attempts to institute policy based on a belief in the contagiousness of consumption. Both Flick and Mays focused, in particular, on the Kingdom of Naples efforts, in the 18th-century, to design social policy to accommodate a belief in infectious phthisis. In what follows, I will detail

and contextualize the policies and practices in Naples within a brief tracing of Western thinking on the contagious potential of tuberculosis.

A Tracing of Western Thinking on Contagious Consumption: Contagion, Bad Breath, and the Seed as Nonhuman Force

The strong anticontagionist sentiment, so prevalent in the United States and Philadelphia at the end of the 20th century, was somewhat anomalous given repeated historical attempts by physicians, to theorize consumption as contagious. Western historical musings on consumption and contagion, were neither frequent, nor canonical, yet they appear with a disjointed consistency in the works of a number of prominent physicians. Like 19th-century scientific attempts to understand contagious tuberculosis by following the distribution of bacilli-laden sputum in the environment, these physicians focused on the manner in which phthisis spread through the pathological-bodily material produced by consumptives. Yet in contrast to the focus on the threat of the saliva and mucus, prior historical formulations of contagion identified the *breath* of the consumptive as the medium of the disease. Furthermore, with the exception of 18th-century Spain and Naples, these contagious perspectives, in contrast to those publicized by Flick in the late 19th-century, were not directly tied to a social plan for prevention and treatment.

Aristotle, in his "Problems," evoked the question in writing, "'Why, when one comes near consumptives…does one contract their disease, while one does not contract dropsy, apoplexy, fever, or many other ills?…With the consumptive the reason is that t*he breath is bad and heavy*….In approaching the consumptive *one breathes this pernicious air*. One takes the disease because there is in this air something disease-producing'" (quoted in Webb 1936, 36-37; italics

added). Galen echoed this sentiment with his claim that consumptives were "'dangerous'" due to their "'putrid exhalation…the houses in which they fell ill smell extremely bad'" (quoted in Webb 1936, 37). In the assessment of Aristotle and Galen phthisis thus assumes its threatening potential through the mediums of breath and air: the consumptive was capable of contaminating spaces and bodies with his or her "pernicious" and "putrid exhalation."

Where Galen and Aristotle both attributed transmission of the disease to the breath of the sick, Hieronymus Fracastorius formulated the first recorded Western-scientific-theory of an object—a "seed"—carrying the contagion of consumption. In his 1546 essay "De Contagione," he posited the existence of "invisible *seminaria* which carried disease, and which could exist outside the body for several years and still infect" (Webb 1936, 37). Fracastorius' theorization—a nascent conception of the fomite—thus provided a ground on which to understand the contagious capacity of phthisis as different from other contagious diseases: where infection was generally thought to spread from person to person, the speculation that an infectious "seed" could live "outside the body" raised the possibility that the vectors of phthisis, once released, no longer required the original sick subject to propagate. For Fracastorius this seed acted as a nonhuman "force"—a force capable of exercising its agency outside of the willpower of the humans it infected: "'It may be considered'" wrote Fracastorius, "'that *the force of the disease* lies in the seeds since they have the power to propagate and reproduce their own kind'" (quoted in Webb 1936, 38; italics added). Importantly, then, like the Southern Rhode Islanders and the physicians of the 1890s, Fracastorius' attempts to understand consumption as contagious grappled with the capacity of consumption to propagate itself—"reproduc[ing its] own kind"—seemingly separate from individual will.

Spain, The Kingdom of Naples, and State Prevention of Contagious Phthisis

For the 17th- and 18th-centuries and most of the 19th-century, the contagionist views of Aristotle, Galen, and Fracastorius regarding consumption generally served as academic medical history that did not contribute to movements in medical practice or social policy. Their theorizations existed largely without any concomitant application. The exception, however, occurred in the 18th-century when a number of Italian and Spanish cities—most notably, The Kingdom of Naples—mandated the first recorded ordinances for the containment of consumption (Dubos 1952, 29)(Webb 1936, 179). These practices, including government-mandated registration of consumptive patients, and officially sanctioned disinfection of spaces and material belonging to consumptives, institutionalized a belief in the contagiousness of the disease—a belief in the existence of a "seed" carrying the disease—and in the capacity of governing bodies to legislate the containment and destruction of these seeds (Dubos 1952, 29). These mandates and the premise of contagious transmission upon which they rested, proved controversial both in their own time, and into the 19th-century. In attempting an honest assessment of these laws, Flick, reading before the Meeting of the American Public Health Association in Charlestown, SC, on December 16, 1890, focused on a particular series of Neapolitan ordinances established in The Kingdom of Naples in 1782. For Flick, the Neapolitan approach, while not perfect, nevertheless offered a model for a governmental response to containing consumption—a model worthy of mimicking.

The initial edict, passed in the Italian Republic of Lucca in 1699, and those that followed throughout Italy and Spain in the 18th-century, sought, like the Southern Rhode Islanders, to establish the purification of consumptives as a community matter: the

community—families of the sick, physicians, state officials—would be jointly responsible for implementing purification procedures to deal with phthisis through containment and eradication of pathological-bodily material. Such procedures were generally concerned with disinfection and they were often elaborate rituals, requiring caretakers to go to great lengths to ensure the containment of a consumptive's bodily excretions. "'It should be'" claims one edict, the "'duty of those around the phthisic patient…to take care that the patient does not empty his sputum except into the vessels of glass or glazed earthenware, and that these utensils be frequently cleansed and boiled in lye at least twice and the same should be done with all clothes of washable wool as well with mattress and pillow-ticking…the floor of the room should be scrubbed at least twice and the walls freshly painted'" (quoted in Webb 1933, 180). The legislating of community participation in practices of disinfection was designed to ensure that the pathological excretions of living consumptives were rendered harmless, thus interrupting the potential spread of the disease. Government-enforced disinfection measures thus hailed families and physicians—"those around the phthisic patient"—into a web of responsibility for containing and controlling the dangerous-consumptive material.

A host of "further precautions and regulations" were put into practice to ensure the disinfection of contaminated objects, spaces, and corpses (Flick 1925, 167).[34] The specific

[34] The Spanish law "passed on the 6th of October, 1751" spoke to the need for intervention to ensure the disinfection of infected objects through the use of fire: The Spanish preamble states the following: 'Having learned by experience how dangerous it is to use clothing, furniture and personal belongings of those who have been sick and have died of hectic fevers, consumptions and other contagious disease; and it having been brought to my attention how important it is to remedy the carelessness with which the very important matter of burning articles which have been infected by those disease is carried out, as I directed it to be; either through the inaction of those whose duty it was to see that my instructions be lived up to or through the covetousness of those who were in possession of such articles, using them either for their own purpose or selling them for what they would bring, thus communicating and propagating those diseases to the lamentable ruination of many families and great risk to public health: therefore, for these reasons, convinced that I ought to take efficient measures at once to give ample

government-mandated-practices included "purif[ying] by fire" all belongings in the rooms of patients; physician "register[ing of] the personal belongings and wearing apparel in the room which has been used by the sick person and mark[ing] them in such a way that they cannot be removed without discovery" (167); the picking clean of the walls of the residences of the sick until the outer surface has been completely removed (167); flooring was to be redone, and the rooms, fumigated (168). The goal of these ordinances was the prevention of future infections by ensuring that "the emanations given off by the patient will have been completely destroyed" (166-168). Thus, contagious phthisis took shape as an emanating threat, ushering forth in a nondescript, yet deadly fashion from the bodies of the sick, saturating their belongings, and hanging in air of the rooms they occupied. Far from targeting the sick, the consumptive individual emerges from these legal requirements and social practices as a subject with limited ability to contain, prevent, and control his or her own phthisis. Indeed, the focus of the social policy in Naples was on the responsibility of the community of the healthy in their capacity to disinfect the pathological products cast off, and the environments infected by the ailing consumptive body.

Foreshadowing the Southern Rhode Islander lore, governmental and community intervention in containing phthisis in Naples was intended to control the lingering spell of the disease after the death of consumptives as well: "'Pulmonary consumption is of such a malignant nature…that even after the death of the sick person the seed of his malady remains hidden and unseen in many houses, with serious danger to those who move into them

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protection against such serious mistakes with their consequences, I have decided that not only in Madrid but likewise in all cities, towns and places of my entire dominion there will be in each and every one of them established, observed and inviolably carried out [a host of] precautions and regulations'" (quoted in Flick 1925, 165).

thoughtlessly…[it] is so penetrating that it can be communicated even without immediate contact with the infected person or thing'" (Gaetano Ruberti quoted in Flick 1925, 169-170). This attribution of strength to the invisible "seed" in propagating "even without immediate contact" underscored the manner in which 18th-century efforts to govern contagious consumption divorced the chain of infection from the will and even the presence of the sick individual. Phthisis in 18th-century Naples, as in Fracastorius' theorizations, was communicated even in the absence of a human sower. Responsibility is here directed at those who "thoughtlessly" came into contact with a dead individual's environment or belongings.

In addition to the enforcement of measures designed to purify the possessions and spaces of both living and dead consumptives, Spain and Naples mandated that physicians "secretly" report, to the government, anyone suffering from phthisis—the practice that informed Flick and his rejected appeal to the College of Physicians for physician registration of the tubercular (Dubos 1952, 29). With regard to reporting: "'Any place in which a sick person has been declared to live or has been known to live, suffering from any of the disease enumerated…must be secretly reported by the physicians…or any other person who has assisted, to a magistrate, not only before death but also after the patient has died'" (quoted in Dubos 1952, 29). The state required this secret reporting so as to generate a map of the distribution of consumption and other disease and, thus, the knowledge to enable the carrying out of the necessary disinfections. The regulations included steep punishments—fines, potential suspension from the practice of medicine, and potential imprisonment—for those who failed to report consumptives.

Flick, in assessing the historical record, viewed this approach as generally successful in curbing death rates—for him, the laws of Naples were "a test of the practicability of preventing tuberculosis and as an argument for or against the theory of its contagiousness" (Flick 1891, 4). He acknowledged the limitations of the Neapolitan approach and the potential for authoritarian abuse, noting that, in practice, something must have gone wrong as evidenced by a change in popular medical opinion regarding the rightness or effectiveness of the laws. The "medical profession was at first almost unanimous in its adherence to the theory of contagion and in its support of the law," according to Flick. He continued, "as time rolled on it became nearly as unanimous in its disbelief in contagion and its opposition to practical measures for prevention of the disease" (3). Indeed, significant resistance manifested amongst a number of Italian and Neapolitan physicians. These critics argued that the public health measures were doing more harm than good to the extent that they often involved a severe transgression of the rights of individuals—most noticeable in state-mandated quarantines of consumptives that were deemed contagious threats. Importantly, much like the debates in Philadelphia in the last decade of the 19th century, in The Kingdom of Naples, arguments about the nature of the transmission of consumption were inseparable from arguments about the correct way to approach a disease; about the necessity of maintaining a balance between state interventions and individual rights.

Flick acknowledged what he perceived as "oppressive superfluous practices fostered by the law," yet he suggested that the policies still "contained some merit, and to some extent fulfilled the object for which [they were]" enacted (Flick 1891, 4). In spite of the potentially oppressive character of the laws, he promoted the positive effects of the establishment of these

policies, arguing that the Neapolitan admittance of the contagious nature of phthisis and the subsequent establishment and enforcement of ordinances had led to a reduction in mortality due to phthisis in the Kingdom of Naples from the 18th into the 19th century—a reduction that was "no doubt due to the immediate influence of the Neapolitan law" (10). The key for Flick, then, was to translate his belief in the contagiousness of consumption into a similar social program–making the citizens of Philadelphia, both healthy and sick alike, participants in the process of preventing tuberculosis through disinfection, the reporting and registering of sick cases, and, in extreme cases, through the quarantining of threats.

Thomas Mays and The Critique of The Kingdom of Naples

Where Flick lauded the efforts of the Neapolitans in reducing mortality from consumption, conveniently dismissing the more questionable practices, his colleague Thomas Mays evoked the very same historical instance to argue that contagious tuberculosis was necessarily illiberal. Mays indulged the darker side of the Neapolitan experiment to argue against both the contagious theory of phthisis and state intervention in attempting to contain consumption. Mays critiqued "the strenuous efforts which the unfortunate Neapolitans put forth to crush this disease. It was not enough for them that consumptives should cease to spit in handkerchiefs, on floors, ground and pavements, and use spittoons instead, and that they should prevent their expectoration from becoming dry, and diffuse the bacillus through the air; but these people were at once separated from the well and in all probability neither they, nor their bacilli, ever came into contact with the outside world again" (Mays 1892, 8). Mays thus expressed the view that the smaller mandates designed to encourage disinfection—those directed at ensuring that pathological sputum was correctly disposed of—did not satisfy state

officials. In his reading of history, and in his fears over governmental overreach in the 1890s, he argued that such officials took their mandate to a logical, nightmarish endpoint: isolating the sick—those subjects "separated from the well"—in perpetuity so as to allow them to never come "into contact with the outside world again."

Thus, for anticontagionists like Mays, the danger of excessive state involvement in the prevention of phthisis took shape through fears that it would be in the best interest of governments to quarantine the sick for the duration of their sickness—and due to the chronic nature of consumption, such a duration would naturally be the rest of a consumptive's life. Mays anxieties thus took shape in regard to what seemed to him to be an imperative, born of finding a chronic disease contagious, for a government to forego individual freedoms for the sake of the greater good—abusing its power in doing so, by assuming the right to both judge those who needed to be quarantined, administer the space of the quarantine, and determine the time spent in quarantine. Within such a scenario, not only would governments be legitimated in exercising undue influence over the future of these unfortunates: physicians, required by law to report consumptives, would be arms of the state. Expressing concerns similar to those of other anticontagionists, Mays thus feared that to deem a chronic disease contagious was to open the door to an abuse of governmental and medical authority—an abuse that, at best, threatened to undermine individual rights—and at worst, condemned certain subjects to a life of isolation. In his view, "all the experimentation which has been devoted to showing the contagious nature of phthisis, is not only a wretched failure, but perpetuates a terrible iniquity on those who are afflicted with this disease…and I am safe in predicting that

he who persists in hugging this contagion delusion will live to reap 'from the hope which around him he sows, a harvest of barren regrets'" (1892, 8-9).

Yet where Mays saw a dark illiberal future should consumption be deemed contagious, Flick used the oppressive practices of the Neapolitans as a platform for indulging his faith in science as a progressive force. Indeed, Flick claimed that the draconian governmental measures of the Kingdom of Naples were not a product of any malicious authoritarianism; rather, they were the product of a flawed scientific understanding of the precise nature of the disease's transmission. Thus, poor social policy, for Flick, followed what he regarded as incomplete scientific knowledge of nature: "It was known that tuberculosis was contagious, but it was not known wherein lay the medium of contagion" (1891, 3). Flick continued, elaborating on his understanding of the Neapolitan orientation toward contagion and forwarding his vision that late 19th-century progress in medical science would serve as a corrective for any misdirected social policy: "It was believed that the breath and the odor given off from the body of the consumptive were infectious, and that consequently it was not only dangerous to be near those affected with the disease, but that anything which had been near them was infectious. The fact that the contagion is confined to the sputa and tubercular pus was not known, and thus the only real sources of danger were in a measure overlooked" (3-4). Hence, for Flick, the Neapolitans lack of correct scientific knowledge—the erroneous "fact" of the breath being the medium for contagious consumption—was productive of erroneous and authoritarian social policy. He concluded his meditations on faulty policy by stating, "With the abstract idea that tuberculosis is contagious as the basis, the most heroic and sweeping preventive measures were haphazardly constructed" (3-4). Generally supportive of the Neapolitan policies, Flick

explained away the worst of the them by offering a vision of the present—1890s Philadelphia—where the science of the contagious nature of tuberculosis was so refined and, thus, accurate as to eliminate the threat of authoritarian indulgences in the governmental pursuit of a preventative crusade proffering that these policies had led to reduced phthisis mortality, admitted the limitations of such. The late-19th century antidote, for Flick, to the misdirected social policy, was a "better" scientific understanding of the medium of tuberculosis transmission.

The Science of Contagion: Experimental Evidence, Inoculation and The Making of the Fomite

Amongst physicians and social reformers in the anti-tuberculosis movement, an effective social reaction to contagious tuberculosis was made possible by the scientific work of the late 19th-century. A more "accurate" scientific understanding of contagion would yield, in their estimation, a more just social program for the prevention of the disease. This new understanding was largely the product of a series of inoculation experiments that developed in reaction to the work of Robert Koch. These experiments produced, for Flick, "real scientific knowledge" of the transmission of the disease. Such knowledge served as "a practical demonstration of the preventability of the disease; and secondly, it gives us some idea of what measures will bring about such a result…Now that we have real scientific knowledge of the etiology of tuberculosis and know something of the biology of the organism which produces the disease, we can understand how the empirical practices in Italy…produced such…results" (1891, 11). This "real scientific evidence" of the contagious transmission of tuberculosis directed attention away from the Aristotelian and Galenic notions of the "bad breath" of

consumptions, focusing, instead, on new knowledge of the pathological human-nonhuman hybrid—the mixture of sputum, tubercle bacilli, and objects in the environment. This "real scientific evidence" was the knowledge of the fomite.

The discovery that tuberculosis was communicated through objects that were contaminated by the tubercle bacilli from patient sputum was taking shape, in the late 1880s and early 1890s, through the work of Cornet, a student of Koch, and through Dr. John Tyndall who translated Cornet's works for the English-speaking world. The Aristotelian and Galenic theorizations of pathological "bad breath" as the vessel through which contagious tuberculosis was transmitted, while not widely subscribed to, nevertheless influenced thinking throughout the 19th-century. However, by the 1890s, the association of "bad breath" with consumption worked against contagionists, for, as anticontagionists observed, if the disease were airborne and communicated through the breath of the tubercular, would it not follow that everyone who came into contact with the tubercular would have the disease?

Philadelphia contagionists, in their attempt to establish consumption as infectious, would thus have to overcome a lingering legacy of medical confusion sown by the unique nature of consumption. Where other diseases were transmitted through the air—the flu—or through the water—cholera—tuberculosis, in its capacity to afflict long after the initial infection, was not obviously traceable to any single source. To resolve the vectors through which the disease spread, researchers needed to inquire along the lines of Fracastorius' theorizations on an external "seed." Scientific challenges to the anticontagionist position thus came in the form of the refutation of contagion as a product of the bad air or bad breath of the consumptive.

Experimental efforts to prove tuberculosis contagious took inspiration from Koch's confident proclamations on the manner in which the expectorated sputum of the tubercular transformed, over time, into infectious dust particles—into fomites. "'There is no uncertainty,'" wrote Koch, "'regarding the medium and [infectious] manner in which phthisis patients can transmit the disease'" (quoted in Lechevalier 1965, 106). According to Koch, while one *could* catch the disease by simply breathing infectious-atomized-sputum particles—the "bad breath" of the consumptive theorized by Aristotle and Galen—such a scenario did "'not often occur, because sputum particles generally are not small enough to remain suspended in the air.'" (106-107). In other words, where air and breath could be the mediums, the more likely vector was the product of a merging of "'dried particulate sputum, which can remain suspended in the air'" with objects in the environment of the sick (106-107).

Koch explained the journey of the infectious tubercle bacillus from the mouth of the sick, to the lungs of the healthy. He wrote, "'Sputum that has been expectorated and that has dropped to the floor, dries, and by trampling is resuspended as dust'" (quoted in Lechevalier 1965, 107). The "resuspended" and "infected dust" spread, not only through the spaces occupied by the tubercular, but through personal belongings as well: "'Sputum is also often discharged on bed linen, clothing, and handkerchiefs. Even tidy patients, by wiping their mouths with handkerchiefs after expectorating, contaminate handkerchiefs which may then become sources of infected dust.'" (106-107). Thus, infectious bodily material—sputum laden with tubercle bacilli—demonstrated the capacity to interact with inanimate objects in the environment of the tubercular, producing the fomite—a hybrid of human, bacterial, and environmental material. This fomite—this human-nonhuman carrier of disease—remained

infectious even in the absence of sick individual. Healthy individuals, breathing in such fomites, ran the risk of infection.

Koch's early musings on the spread of tuberculosis underscored the nuances of the disease's transmission: where the transmission of contagious diseases was generally understood as a process taking place amongst sick and healthy bodies *sharing the same air*, and *occurring instantaneously, upon exposure*, tuberculosis behaved differently. The disease was capable, through the hybridization of pathological sputum and objects in the environment, of infecting a space *over a period of time*. Thus, confusingly for observers, individuals were exposed to potential infection long after the original expectoration of sputum and in the absence of the original infectious subject. Indeed, the capacity of the disease to haunt corpses, as identified by the Southern Rhode Islanders, and homes, as identified by Flick in his assessment of "house infections" was explained, bacteriologically, through the presence—an agency of sorts—of the fomite. As the vessel of contagious transmission, the fomite became the lynchpin of the contagionist paradigm—a material challenge to the anti-contagionist claim that an inherited constitutional weakness was the cause of tuberculosis. This scientific basis of the infectious nature of tuberculosis was further developed through the work of Koch's student, Dr. Georg Cornet.

Experimental Evidence: Cornet's Inoculation Experiments

In the late 1880s, Koch's musings on contagious tuberculosis and on the fomite as the primary vessel of contagion remained hypotheses. His student, Cornet, took up the theory of the fomite as the vector through which tuberculosis was communicated, and sought to demonstrate, experimentally, the validity of Koch's hypotheses. The work of Cornet was

designed, in part, to challenge anticontagionist theories of predisposition and constitutional weakness. Indeed, both Cornet and Koch "reject[ed] altogether the theory of predisposition or hereditary tendency as a cause of phthisis, and they believe[d] that all those cases which suggest[ed] the notion of predisposition if properly examined would turn out to be distinct cases of infection" (Roscoe 1891, 311).

Cornet's challenge to hereditary anticontagionism took shape through his pursuit of experimental evidence to answer the question of the material and the medium through which tuberculosis infected its subjects. Professor John Tyndall, known for his work in chemistry and physics, summarized the questions underlying Cornet's work: "How, [Cornet] asks, does the tubercle bacillus reach the lungs, and how is it transported thence into the air? Is it the sputum alone that carries the organism, or do the bacilli mingle with the breath? This is the problem of problems" (Tyndall 1892, 403). Cornet thus sought to demonstrate, through laboratory proof, that the bacilli were carried by sputum mixing with objects in the environment, and that the inhalation of these hybrids of human material, microbial material, and environmental material—these pathological dust particles—were the sole vector of the disease.

In order to do so, Cornet he went about demonstrating that a guinea pig, inoculated with bacilli-laden dust, would contract the disease. He hypothesized that contagion could be proved by establishing a chain of virulence linking the tubercle bacilli in expectoration from the mouth of the sick, to the development of tuberculosis in the guinea-pigs through the medium of dust: "If tuberculosis followed from such inoculation, a proof of virulence would be obtained" (401). He set about measuring "the *precipitate* from the air…the dust of the sick-room" (400) in a number of hospitals, lunatic asylums, and over fifty private houses, in an

effort to establish that the dust carried the disease. To further demonstrate that direct contact with the patient—with the breath, or air surrounding the sick—was not necessary, he sought out dust in "places inaccessible to the sputum issuing directly from the coughing patient" (401). After gathering the dust, and mixing it with a "suitable liquid," he went about "the infection of guinea-pigs with his dust" injecting the substance "into the abdomen of the guinea-pig" (401). The animals were then "allowed to live" to "permit the development of the bacilli." (401). His results revealed that the "animals were found charged with tubercle bacilli," thus, "the virulence of the inoculated matter [was] established (401).[35] For contagionists, Cornet's experiments were empirical proof of the infectious potential of the dust. This scientific establishment of this dust, and other fomites, as the disease vector, while not immediately embraced by all physicians, would, over time, constitute the evidentiary ground through which the nature of tuberculosis was remade: laboratory practice and evidence had remade the disease as contagious, not hereditary.

This location of disease transmission in the fomite challenged the fatalism of anticontagionists. To the extent that a consumptive constitution or a tubercular diathesis could not be helped, contagionism offered a paradigm wherein prevention seemed possible. Tyndall,

[35] To be sure, upon killing and examining the guinea pigs weeks after the inoculation, Cornet admitted mixed results. "In some cases the animals were found charged with tubercle bacilli, the virulence of the inoculated matter being thus established. In other cases the organs of the guinea-pigs were found healthy, thus proving the harmlessness of the dust" (Tyndall 1892, 401). Hence, a grey area emerged out of Cornet's research. To the extent that some inoculated subjects came down with the disease and others did not get tuberculosis, Cornet and others reasoned that the variation was a result of the difference the variation in the concentrations of infectious material across different spaces: "the animals injected with dust from certain consumption hospitals [and other spaces] were impregnated with phthisis, whilst in other cases no such result followed the inoculation. In the one instance the bacilli contained in the sputum of the patient had found their way into the dust of the room, in other cases they had not done so, owing doubtless to different arrangements of the hospitals. In the first instance, therefore, a healthy person living in the room and inhaling the dust—as he must do, for it is always being disturbed by sweeping and dusting, and then flies about—might become infected; in the second, no such danger would be incurred" (Roscoe 1892, 311).

reflecting on the intimate articulation of this remaking of the nature of tuberculosis and the future of tuberculosis prevention, spoke to the manner in which the adoption of one paradigm or the other "will show whether we are able to protect ourselves against tuberculosis, whether we can impose limits on the scourge, or whether, with hands tied, we have to surrender ourselves to its malignant sway" (1892, 403). Advocating for contagionism and challenging both the fatalism of the anticontagionists and the older theories of contagion that identified bad breath and bad air as the vectors of disease, Tyndall connected the acknowledgment of the agency of fomite as the carrier of the infection to the social capacity to cure the disease, "If the tubercle bacilli are carried outwards by the breath, then nothing remains for us but to wait till an infected puff of expired air conveys to us our doom. A kind of fatalism, sometimes dominant in relation to this question, would thus have its justification. There is no inhabited place without its proportion of phthisical subjects, who, if the foregoing supposition were correct, would be condemned to infect their neighbors" (404). Indeed, the theory of "bad breath" or "bad air," had limited preventative utility to the extent that breath and air were, matter-of-factly, ubiquitous and uncontainable. Fomites, however, were material substances that could theoretically be contained, disinfected, or prevented from forming in the first place.

While these experimental results were enough to convince Cornet, Tyndall, and others that the disease was contagious and the fomite was the medium of infection, the evidence was not enough to assuage the criticism of Mays and other anticontagionists. Mays critiqued the very method of the experiments—inoculation—as an inappropriate means for producing scientific knowledge. "Inoculation," wrote Mays, "merely teaches that a disease may be

transmitted, but whether the disease originates in this manner in practical life is quite another question" (Mays 1892, 1). He described the experiments as a "wretched failure" (8).

Given this co-emergence of the contagious nature of the disease and methods for prevention and treatment, for both Mays, the anticontagionist, and Tyndall, the contagionist, the "truth" of tuberculosis transmission was not simply a laboratory matter. Rather, in their eyes, the deeming of the nature of the disease to be contagious was, at the same time, an endorsement of a set of practices for the containment of consumption. For both parties, to choose one nature over the other was a matter of life, death, and individual liberty. Mays called out Tyndall for the latter's characterization of anticontagionists as "'a number of loud-tongued sentimentalists, who, in view of the researches they oppose, and the fatal effects of their opposition, might be fairly described as a crew of well-meaning homicides'" (quoted in Mays 1892, 7). While Tyndall was perhaps exaggerating in his characterization of anticontagionists as "well-meaning homicides," by charging his opponents with murder, Tyndall underscored the extent to which the resolving of the nature of tuberculosis transmission seemingly had material, indeed, life or death consequences, for the sick.

New Preventative Approaches: The State and Tuberculosis Prevention

These life or death consequences articulated, for Flick and other contagionists, with the view that Koch's discovery of the tubercle bacillus and Cornet's demonstration of the contagious potential of the fomite had direct material consequences for society: their discoveries, for contagionists, were determinative of a new course of prevention, control, and treatment. The emergent nature of the disease as contagious was not merely a matter of the laboratory; rather the remaking of the disease constituted a simultaneous remaking, not only of

the social practices surrounding the treatment of consumptives, but of the public and private spaces of the city environment. Hence the goals of Flick and his Society for the Prevention of Tuberculosis—the state-mandated disinfection of the former residences of consumptives, the registrations of tubercular cases, and the educating of city dwellers in methods for policing pathological bodily materials—took shape through the conviction that the containment and eradication of the fomite was a major step toward prevention of the disease.

Koch, himself, in his 1884 paper "The Etiology of Tuberculosis" argued that "'emphasis must be placed on prophylaxis. Such measures must be directed, in part, toward suitable disinfection and, in part toward prevention of contact of healthy persons with tubercle bacilli.'" (quoted in Lechevalier 1965, 109). Tyndall suggested that "'[t]he most pressing work of sanitary reformers is not now so much to legislate as to educate, to make the mass of the people in some degree participators in the knowledge of the causes of disease which is possessed by the man of science'" (New York Times Dec 2, 1891). The nascent anti-tuberculosis efforts of reformers like Flick and New York's Hermann Biggs (see Chapter 4) thus took shape through their appeals for state-mandated education of the public in behaviors that would re-make individuals as technologies—as "participators"–in containing their own contagion and that of those around them. And they took shape through appeals to state-mandates like those developed in Naples—the identification of all consumptive subjects through mandatory physician registration of consumptive and the containing and destruction of disease-carrying fomites through state-organized prophylactic measures designed to disinfect the homes and belongings of consumptives.

Where hereditary theories of the disease generally posited that consumption could not be cured, the contagionist perspective, with its theorization of the fomite as the material vessel of contagion, underwrote the increased conviction, amongst public health officials, of the prudence of state legislating and funding of tuberculosis prevention. Benjamin Lee, secretary of Pennsylvania's Board of Health expressed these sentiments, tying the new nature of the disease to a changing medical attitude: "But once [sic] admit that consumption is an infectious and therefore a preventable disease, and presto, the whole situation is changed…That which would before have been an unwarrantable and vicious use of the public treasure now becomes an imperative duty…of the state" (Bates 1992, 76). This linking of the changing nature of the disease's transmission with the notion of the disease's preventability thus served, not only as a foundation for elaborating the proper methods for prevention and treatment, but as an issue for clarifying and reworking the responsibility—the "duty"— of the state in intervening in the lives and habits of its citizens in the interest of preventing disease.

In the 1890s, this state duty would be clarified through the increased participation, across the United States, of boards of health in the containment, treatment, and prevention of tuberculosis. And the role of public health in controlling tuberculosis transmission would take shape, primarily, around the technical problem of "controlling" the disease—of containing the fomite, the hybridized assemblage of microbe, sputum, and dust. This problem was articulated, shortly after Koch's discovery of the tubercle bacillus, when James T. Whittaker, speculated on the course of tuberculosis prevention to come in presenting before Philadelphia's College of Physicians. "So…we have the clue," Whittaker proposed, "to the control of the disease…when the phthisical patients pulls out his sputum-saturated handkerchief, he opens the box of

Pandora on the public highways" (1883, 11). State control of consumption would involve an intervention in—indeed, a policing of—this very moment, this very behavior, and this very bodily material. The contact between the pathological sputum of the sick individual and an environment rife with potential fomites—in this case, the handkerchief—would require retooling: "the really crucial point [of prevention]—whether the patient has deposited all his sputum in the spittoon, thus avoiding the possibility of the expectorated matter becoming dry, and reduced afterwards to a powder capable of being inhaled" (Tyndall 1892, 404). Tuberculosis, no longer a force of nature, no longer reproduced through the inheritance of a weak constitution, no longer subjecting the fates of human to its deadly whims, was increasingly reduced to a containable material and a policeable moment. For boosters of the emergent preventative spirit, the disease could be mitigated—even eradicated—if the tubercular were merely identified, educated, and exposed to surveillance, and their premises (and former premises), registered and disinfected. The precise role of public health authorities in pursuing prevention would take shape through questions of the very police powers of the state.

Contagionism and Concerns Over the Purview of the State Board of Health

In 1889, the Philadelphia State Board of Health clarified its position on the police power of quarantine. Dr. Benjamin Lee summarized the power of the Board to isolate those subjects that were disease threats.

> What is the actual power of the health officer in the matter of removing persons infected with contagious diseases. I found during a slight outbreak of small pox which we were having, that the board of health was much hampered in its work from the fact that persons whom it considered ought to be removed, refused to be removed…[I]t has been determined in our State that a health officer has the absolute power to remove cases, which he deems necessary to be removed, for the protection of the public health. (1889, 239)

Lee's concerns, while directed at small pox, underscore an emergent articulation—the articulation of public health, law enforcement, and individual discipline. With Lee's citing of certain sick subjects who "refused to be removed," the Philadelphia Board of Health was faced with the question of its right to police individuals and to both decide when a subject required removal, and to use force in conducting such a removal. These emergent police powers were unsettling, within the context of the prevention of tuberculosis, to those who feared that the Board of Health might unnecessarily or in an authoritarian manner, exercise its relatively newfound "absolute power."

The fears of Mays and others over the powers of the state in seeking to prevent the spread of a chronic contagious disease continued to play out. Philadelphia physician Owen J. Wister, in making a point about the dangers of investing too much authority in public health officials, recalled a cholera scare suffered by the East Coast in the summer of 1892. Wister described the sensationalism and "state of hysterics" that accompanied the outbreak and sarcastically condemned the health officer for "propos[ing] a quarantine against New York." While the Philadelphia papers indulged in characterizations of the "raging" disease, Wister noted that, in spite of the Board of Health's characterization of the cholera outbreak as raging, it was hardly so: "this case amounted to [merely] four cases in a population of a million in a month" (Physicians 1894, 224).

Critiquing the Board of Health for perpetuating "spams of terror" where terror was unjustified, Wister, an anticontagionist, evoked what was, for him, the frightening specter of finding tuberculosis to be contagious. He argued that a similar overreaction—a consumption

scare—would not end, like the overblown cholera "epidemic," in mere weeks. Rather, given the chronic nature of consumption, "instead of a scare of two or three weeks, it will last ten or fifteen years, while from forty to fifty are dying a week…[such hysteria] may lash the whole community into a panic, and that instead of regarding the unfortunate victims of consumption as objects of compassion they will be looked upon as peripatetic fountains of danger, and a feeling of hostility to them will arise" (Physicians 1894, 223). For Wister then, like Mays, much of the validity of the nature of the transmission of consumption did not rest on laboratory results. Rather, it rested on a social incompatibility: how would a society treat the victims of contagious-chronic diseases? Wister feared their being stigmatized as constant threats.

He elaborated, describing the material process of consumption in the body of a victim in articulation with his projection of social stigma: the disease, and the stigma "may last for years, for during the whole period of softening [of the tubercles and the accompanying degeneration of tissue] they are regarded as sources of danger. In fact, they are to be treated as criminals guilty of consumption. As I said before, their residences, however temporary, are to be disinfected and their miserable lives are to be rendered more wretched by being haunted by the familiars of the inquisition" (223). In Wister's fearful scenario, then, tuberculosis ceases to haunt; rather, the board of health authorities, "the inquisition," become the haunters, stalking registered consumptives, waiting for just the right moment to criminalize those dangerous tubercular subjects. Mandated disinfection and registration threatened, in Wister's opinion, to make consumptives dangerous for life, and, perhaps, even more threateningly, legitimated isolating them for life. The capacity for public health authorities to act, like the inquisition, in grabbing consumptive bodies and isolating them permanently, while exaggerated, was, for

anticontagionists, founded upon both recent codifications of the power of public health departments vis-a-vis the right to quarantine, and by readings of the history of attempts—especially those of 18th century Naples and Spain—to contain consumption in communities where it had been deemed contagious by the state. Lee recognized the potential for concerns like those of Wister and Mays, yet he maintained that "The people would soon regard [the policies of the Board of Health] as a refuge and relief rather than a means of tyrannical and cruel invasion of their rights" (Lee 1889, 221).[36]

Conclusion

Lee's words were prescient. In spite of the College's resistance to the theory of contagious tuberculosis in 1894, attitudes amongst physicians and the public were changing. This change was in evidence, when on January 22, 1897, a Pennsylvania paper noted a declining death-rate from consumption. The paper noted that "The Philadelphia Board of Health…attributes the [decline] to the…avoidance of [consumption's] contagion." What had been taboo in the early 1890s was quickly becoming conventional: "There can be no doubt that the change is due to the prevailing belief that the affliction is communicated from one person to another" (Health 1896-1897). The grammar of the paper's report is telling: left, standing, in the description of the transmission of tuberculosis is the human subject—the person. However, this human subject is not, in fact, the subject of the sentence. Rather, the disease "is communicated"—the agent transmitting the disease, while left to the imagination of the reader, was firmly established, by 1897, as the hybrid of human and nonhuman: the fomite.

[36] Note that these are not Lee's exact words but, rather, a paraphrasing of his comments.

By nightfall, the sidewalks and streetcars of Philadelphia bore a day's worth of human spit as professionals, steelworkers, and opera-goers expectorated with little concern for the dangerous bacteria potentially stewing in their saliva. The casual practice of spitting in public had become increasingly criticized as physicians linked the spread of contagious tuberculosis to the production of the human-nonhuman fomite. In an effort to regulate this unhygienic practice, the city would employ a "Cuspidor Brigade": an army of impoverished and uneducated young men clad in clothes of red, white, and blue, and wearing signs reading, "One cent a spit." The Cuspidor Brigade would solve two urban problems: on the one hand, they would police the public's spreading of germs and producing of fomites by fining those who spit; on the other hand, the Brigade would employ formerly shiftless boys: the money made off the fines would supply the wages for the boys.

Such was the sarcastic vision of a letter printed in *The Philadelphia Bulletin* on May 11, 1897. While the author's suggestion of a Cuspidor Brigade was *fanciful*, it was also a legitimate reaction to *practical* social concerns regarding the breadth of the preventative mission (Health 1896-1897). Such concerns took shape, on the night of May 10th, as Philadelphia police apprehended a train engineer for violating a new citywide anti-spitting ordinance. The ordinance was an attempt to address, through policy, the national concerns of physicians and the warnings of the local Women's Health Protective Association regarding human sputum as a necessary element in the transmission of tuberculosis (Health 1896-1897).

Yet, echoing the *Bulletin's* recognition of the absurdity of enforcing such a law as described by the author of the "Cuspidor Brigade" letter-to-the-editor, Philadelphia Desk Sergeant Martin would not hold the train engineer—this outlaw—in custody. Indeed, according

to the May 11 *Telegraph*, Commissioner Kerr, and Chief Badenoch admitted the inefficiency—if not impossibility—of adequately enforcing a law that was broken with such frequency (Health 1896-1897). Tuberculosis was worth containing—but the literal policing of individual conduct would require the constant attention of a police force that had other matters to attend to.

There *was* something fanciful about policing individual conduct—where was the city to get the labor power and resources to apprehend and process all the deviant expectorators? Similar ordinances had been passed a few months earlier in Chicago and New York. The Chicago measure to prohibit spitting was described by the city's *Chronicle* as "Hard to Enforce" and "Farcical" (Health 1896-1897). Furthermore, the prohibition raised questions about the proper reach of government in a city environment structured to honor the rights of individuals. Attorney A.S. Trude commented on the constitutionality of the Chicago initiative, "Whether it is the right of a citizen to spit all over the floor of a car and inconvenience other people is a matter that will have to be decided by courts higher than those which pass on city ordinances" (Health 1896-1897). Indeed, it would seem that there were those who maintained that even spitting was an individual freedom worth preserving.

Over the next decade, city anti-spitting ordinances would remain in place across the United States. The resources required for such efforts proved taxing and city officials were confronting the realization that the successful governance of a chronic communicable disease would require more than the funding of a diligent police force to enforce hygienic laws; more than the presence of an army of public health officials mapping and surveilling sick populations; more than the heroic efforts of city and public health officials to quarantine populations at risk of spreading contagion; more than scientific attempts to use new

understandings of disease properties to eradicate contagion at the source. The work of containing tuberculosis would become increasingly dispersed amongst city officials, physicians, reformers, and individuals—both sick and healthy; and this work proceeded in the fraught space of a liberal order challenged by the growing scientific production of the microbial and environmental interconnectedness of biological bodies.

Following New York's passage of its anti-spitting ordinance in 1897, on January 22, Privy Councilor Ehrlich, in a letter to the editor of the *New York Journal*, argued for "self-help" as a means of enforcement: "The most effective agent against consumption is the self-help of the public, which should hinder patients in closed apartment from expectorating anywhere save in water spittoons" (Health 1896-1897). Ehrlich's understanding of the utility of social mores and the limitations of using official laws to discourage people from their habits proved prophetic of things to come in the management of contagion over the next decade in the United States. While the anti-spitting ordinances remained in place, nearly five years after the law was passed, a Philadelphia physician commented, on May 12, 1904 in the *Public Ledger*, on the ineffectiveness of the policy relative to individual behavior: "In spite of the ordinance which prohibits spitting on the sidewalks and of the notices in the cars there are…hundreds of consumptives who ignorantly, carelessly or from vicious habit violate the one and disregard the others. The sputum-soiled cars should be mopped with carbonized water on entering the depot" (Charities 1903-1904).

Change would seemingly not come from without—from a power over bodies, or through procedures of legislation and policing. Rather, in urban areas of the United States at large, and in Philadelphia, specifically, a new tool for containing contagious tuberculosis was

taking shape through the very terms of "self-help" and self-reliance. In light of the pernicious and overwhelming potential of infectious consumption, reformers like Flick and his Society would advocate the education of the public in methods for containing their own pathological material and that of those they lived with and cared for. Indeed, the drift of prevention was increasingly toward the production of a more hygienic population: a citizenry armed through voluntary vaccination; a public careful in sterilizing their own food and water; individuals vigilant in their pursuit of a hygienic regimen; a people willing to cultivate healthy bodies and characters founded on correct conduct, and practices of self-care and self-responsibility. In this regard, tuberculosis was but one of many infectious threats—smallpox, yellow fever, diphtheria—that increasingly contributed to circumstances in which the educating of the public and the tailoring of individual conduct in matters of health and hygiene seemed like the most rational and economic means of governing contagious threats.

While contagionism was viewed, by anticontagionists, as a potential threat to and imposition upon liberal individualism, the eventual embrace of the theory of contagious fomites and the medical admittance of the communicability of the disease had a wholly different effect: the remaking of tuberculosis as a contagious disease simultaneously remade individuals—in their agency, in their freedom, in their capacity to help themselves—as the very tools of the preventative mission. Individuals were increasingly to become technologies of the broad social effort to contain tuberculosis. Thus, where contagious tuberculosis confronted liberal society with a hybrid human-nonhuman assemblage that demonstrated a capacity to act in a realm that was seemingly beyond the scope of the will of individuals, the governmental response—public health initiatives to educate the populace in methods of self-care and

hygiene—paradoxically constituted individuals as subjects possessing a capacity to control the disease—to prevent and eradicate the fomite. The late 19th-century individual, educated in policing his or her own bodily material, and caring for his or her own soil thus emerges as a technology for the control of that which was formerly incontrollable. What began, as it had in Rhode Island, with an acknowledgement of the need for a community response in the face of a threat that proved beyond the scope of individual control—in the realm of the supernatural or transindividual—resolved into a reengineering of the very capacity of individuals: the subject of the late-19th century was increasingly an individual capable of controlling the spread of the disease. In practice, however, the execution of the control of the fomite would prove uneven, messy and, in many instances, ineffective.

The precise mechanism by which the Philadelphia medical establishment—indeed, the United States medical community—began to accept the contagious theory remains vague. Yet the positions of contagionists and anti-contagionists—the positions of Flick and Mays—were not, in the end, as incommensurable as they seemed at the height of debate in 1894. Indeed, explanations of the "cause" of tuberculosis would, over time, broaden to include the tubercle bacilli, the fomite, and the constitution of the sick. The hereditary heuristic of Mays was not entirely discarded, but rather, it became incorporated into the broader theory of immunity and resistance: those with strong constitutions seemed, as Mays argued, less predisposed to the disease—they were less likely to contract it. Yet, rather than emphasizing a predisposed constitution, Flick and his cohorts in the anti-tuberculosis movement would increasingly focus on the capacity of the sick to cultivate resistant constitutions through the practice of regimen. Indeed, this focus would constitute the basis of treatment of in the emergent sanitaria

movement and the foundation of the preventative mission that Flick would undertake in 1902, with the founding of The Henry Phipps Institute for the Treatment and Prevention of Tuberculosis. It was within the walls of Institute where Flick set about actualizing his crusade for the eradication of tuberculosis—where, over his seven years as director, he would be confronted with the nagging materialization of bodies that could not be cured, and subjects that failed to help themselves get better.

Chapter 4

The Henry Phipps Institute: The Remaking of Tuberculosis as a Sociological Problem

On February 1st, 1903, Lawrence Flick's relentless advocacy for the preventative and cure of tuberculosis, materialized in the slums of Philadelphia, in the form of The Henry Phipps Institute for the Study and Prevention of Tuberculosis. In the late 1890s, a few years before the founding of the Institute, these very slums raised concerns amongst reformers. While the living quarters of Seventh and Lombard were "much improved" from their state in the 1840s and 1850s, the alleys remained garbage-strewn and the majority of the houses lacked sewer connections. The cobbled streets of the narrow Gillis' Alley, where a differentiation between house and stable could not be drawn, were infamous amongst the police. Entering one of the homes of the Alley's four African-American families through a slim-two-foot-wide courtyard, the houses sat beneath an almost permanent blanket of darkness that yielded, only briefly, to the midday sun. The small outdoor space of the backyard was unusable—a "pile of ashes, garbage, and filth." Observing the situation, health inspector Dr. Frances Van Gasken, shared his observations with the Civic Club, remarking, "In such heaps of refuse what disease germ may be breeding?" (Du Bois 1995, 307).

While the tubercle bacillus did not literally breed in the "heaps of refuse," the unhygienic conditions of the homes Philadelphia's slums limited the capacity of the sick to cultivate healthy tissue and retard the bacilli in their bodies. To the extent that the tubercular required sunlight, fresh air, and a hygienic space in order to combat the disease, much of the city's homes proved hospitable to the disease. With "one of the largest concentrations of blacks and…the third highest prevalence and mortality rates of tuberculosis among blacks in the

country," Philadelphia was one of a number of American cities that reported a slower decline of the disease amongst blacks in the late 19th and early 20th centuries (Carthon 2008, 3-4). In spite of the increasing acknowledgment by reformers and physicians that these socio-economic conditions underlying the decrepit state of Philadelphia's slums were serious barriers to the cure of the disease, alternative hereditary explanations of the transmission of tuberculosis, like those espoused by anticontagionists, continued to linger into the 20th-century. These biological explanations overlooked the importance of social conditions in disease transmission.

In 1896, Frederick Hoffman, a statistician for the Prudential Insurance Company, used heredity to explain the high mortality rates due to consumption amongst blacks—rates that were higher than those amongst whites. Hoffman's theory—"Race Traits Amongst the American Negro"—published in a mainstream journal of political economy[37], was proffered to calculate the risk involved in insuring African Americans (Hoffman 1896). Hoffman argued against the insurance of black consumptives, citing the high mortality rates as evidence that the physiology of "the black race" was weaker than that of the white race. The scientific effort to specify the biological differences between blacks and whites was fueled by the overlap of the then-legitimate "science" of eugenics, and a translation of the Darwinian notion of the "survival of the fittest" into the social context of American race relations. Hoffman viewed black susceptibility to tuberculosis as part of a larger struggle—a downward descent of the "American Negro." He wrote, "it can be proven that at the present time the colored race is subject to an inordinate mortality from consumption and respiratory diseases, which will menace the very existence of the race in the not far distant future" (82). The black race, then,

[37] Publication of the American Economic Association.

in Hoffman's estimation, was engaged in a teleological progression toward its own eventual destruction as evidenced by biological weakness to tuberculosis.

But he appealed to the broader community of political economists by framing this racialized biological susceptibility as a threat to whites as well. Blacks, in Hoffman's argument, were not only destructive to themselves to the extent that they manifested a tendency toward social regression and disease: they also threatened the progress of whites. This threat manifested in "diminished social and economic efficiency, which in the course of years must prove not only a most destructive factor in the progress of the colored race, but also in the progress, social as well as economic, of the white race…" (311). Fearing the effect of what he perceived as inherently-weak black-bodies upon the white race, Hoffman offered a political economy of care cautioning against the provision of all aid for blacks.

Hoffman's solution was both refusing the insuring of black consumptives, and a more general appeal to limit "liberal charity" for the black race. Positing the inferiority of the non-white "lower races," he declared, "Easy conditions of life and a liberal charity are among the most destructive influences affecting the lower races; since by such methods the weak and incapable are permitted to increase and multiply, while the struggle of the more able is increased in severity" (326-327). Charity then, in Hoffman's formulation, enabled weak populations to grow, thus increasing the strain upon "the more able" populations. He continued, claiming that one of the primary characteristics of the modern liberal subject, "self reliance," would not come to those, who, due to charity, received "easy conditions of life…" (327). Hoffman claimed that aid made life easy for blacks and linked the refusal of aid and the corresponding perpetuation of "easy conditions of life" to the retarding of black

individualism—in his theory, blacks receiving aid would never manifest the liberal ideal of "self-reliance."

Thus, Hoffman's appeal to keep things difficult for blacks so as to insure that they develop the "virtues of…self reliance" established an operational notion of individualism—an individualism premised upon the capacity of subjects to help themselves in the most adverse of situations, in the absence of any form of dependence or assistance. He framed the challenge as one of allowing blacks to "struggle": "Instead of clamoring for aid and assistance from the white race the negro himself should sternly refuse every offer of direct interference in his own evolution. The more difficult his upward struggle, the more enduring will be the qualities developed…Together with a higher morality will come a greater degree of economic efficiency…The compensation of such an independent struggle will be a race of people who will gain a place among civilized mankind and who will increase and multiply instead of dying out with loathsome diseases (329)." He thus cautioned that should aid continue to be given to blacks, "gradual extinction [of the black race] is only a question of time" (Hoffman 326-329).

Hoffman's blending of a Malthusian courting of the naturalness of disease as a limit on population with a Darwinian assumption that society is a struggle of fitness, also echoed rationales of individual betterment, prominent in the management of the 18th-and 19th-century almshouses. His critique of both the perceived inferior biology and the insufficient will of blacks to be healthy and independent, ignored the multitude of social factors that cultivated the soil of the slums in which tuberculosis spread. His political economy elided the very conditions of production of the squalor of the homes—the dark and dirty back alleys, where so many African Americans suffered to be independent.

Hoffman's reduction of tuberculosis mortality amongst blacks to inferior biology and an inability to be self-reliant was not lost on W. E.B. Du Bois. In *The Health and Physique of the American Negro*, Du Bois confronted tuberculosis amongst blacks, directly addressing Hoffman's biological determinism. Noting that between 1901 and 1905, 1589 blacks, or "an average of 26.5 per month," died from consumption (1906, 87), Dubois elaborated on the numbers in relation to Philadelphia. He wrote, "Consumption is the chief cause of excessive death rate. One out of every six Negro persons who die in Philadelphia, dies of this disease, and probably five out of every seven who die between 18 and 28 die of this disease. It attacks the young men and women just as they are entering a life of economic benefit and takes them away. This disease is probably the greatest drawback to the Negro race in this country" (88). Where Hoffman located the economic inefficiency of blacks in a racial trait, Dubois targeted the tendency of tuberculosis to kill those who were at a ripe age for productivity as a major cause of the black struggles. Tuberculosis was thus a "drawback" to perceptions of the "Negro race" to the extent that it furthered the stereotype of blacks as incapable of actualizing the self-reliance undergirding liberal individualism of self-reliance: it was not weakness, but tuberculosis that eliminated, in blacks, the capacity to be laboring and productive citizens. Indeed, the treatment for tuberculosis required that the sick avoid certain forms of labor in order to get well—for the tubercular, the pursuit of a livelihood, independence, and productivity, could hasten their death. To the extent, then, that the very tenants of liberal individualism were contraindicated for the tubercular, the black-consumptive subject thus emerged as materially inimical to the liberal values lauded by Hoffman.

Dubois further contextualized black death rates to tuberculosis by engaging the question of the relationship between tuberculosis, black mortality, and heredity—and more specifically, the question of Hoffman's inferiority thesis: "The undeniable fact is, then, that in certain diseases the Negroes have a much higher rate than the whites, and especially in consumption…The question is: Is this racial? Mr. Hoffman would lead us to say yes, and to infer that it means that Negroes are inherently inferior in physique to whites" (89). Dubois thus noted Hoffman's use of the inferiority theory and his linking of a racialized understanding of biology with susceptibility to the disease. However, he challenged the premise of racial susceptibility, arguing that the causes of tuberculosis were more than biological. "But the difference in Philadelphia," he argued, "can be explained on other grounds than upon race…If the population were divided as to social and economic condition matter of race would be almost entirely eliminated (89)." Thus, for Dubois, the very "social and economic" factors that produced the conditions of squalor within the slums were the primary drivers of mortality due to tuberculosis: consumption was "not a racial disease but a social disease" (89). In challenging black inferiority by arguing against biology, and thus, race, as a determinative factor in the high-tuberculosis-mortality rates of blacks, Dubois shaped and was shaped by a broader movement in medicine and charitable practice: a remaking of tuberculosis as a sociological disease. This remaking increasingly looked, not simply to the bacillus as the cause of the disease, but to the very social conditions that produced environments in which the bacillus was more likely to thrive. And there, in the very slums of Dubois study, emerged a key site in this remaking: the Henry Phipps Institute.

The Origin of the Henry Phipps Institute

On a wet Saturday in April, 1902, Lawrence Flick and the philanthropist Henry Phipps traveled a half mile from Smith's Hotel to the White Haven Sanitarium. There, in the small country town of White Haven, PA, Flick and his colleagues at Philadelphia's Poor Hospital for Consumptives had established a ragtag-country-hospital for the care of the tubercular. Touring the grounds of the sanitarium, Flick, seeking to impress the wealthy Phipps, felt an unease—an anxiety regarding the bricolage facility he had erected on limited resources. The iron beds for the male patients sat in a large barn amongst the haystacks. The administrative offices were housed in a small two-story farmhouse. The sewage disposal was, according to Flick, "primitive" (Flick 1944, 179). In spite of his anxiety, he would learn, through a letter delivered the next morning, that Phipps had both enjoyed his visit and given his approval to Flick's crusade: "It really surprises me," wrote Phipps, "how much good you are doing with so little money at your command. It is very creditable to your management" (179-180).

This visit lay the foundation for continued negotiation between the two—negotiation that would revolve around a question of management: how to do the most good for Pennsylvania's consumptives with limited resources. Flick, the reformer, sought funding to establish a state-of-the-art urban sanitarium—that "special hospital for consumptives"—to pursue both the cure of tuberculosis, and the citywide prevention of the disease. He imagined a space with a clinic, hospital beds for convalescent consumptives, and a laboratory to study tuberculosis in the hopes of finding a means—a drug or vaccine—to eradicate the disease. Phipps, a retired steel and railroad magnate with connections to Andrew Carnegie, was seeking a noble cause toward which to direct his philanthropy (Bates 1992, 99). Flick convinced Phipps

that the cure of tubercular was not only possible, but important enough to warrant his resources. The desires of these two, the vision of Flick, and the money of Phipps, would meet and materialize, in February of 1903, with the opening of the doors of The Henry Phipps Institute for the Study, Treatment, and Prevention of Tuberculosis at a temporary location of 238 Pine Street in the slums of Philadelphia.

While the two founders shared a vision, the purpose of the Institute and the degree of its success during Flick's tenure, between 1903 and 1909, was a matter of dispute between the two. The charter spells out the institutional mission as such: "The study of the cause, treatment and prevention of tuberculosis and the dissemination of knowledge on these subjects; the treatment and cure of consumptives" (Hatfield 1909, 841). From its inception, Flick and his staff pursued, with varying levels of success, the overlapping goals outlined in the charter: curing tuberculosis in individuals, preventing its contagious spread through the educating and disciplining of the public, studying its interaction with both human bodies and with drugs. Yet in spite of the overlap in the vision of both Phipps and Flick, the charter's complicating of the "cure of consumptives" with the "prevention" of tuberculosis underscored a divergence in goals between the two. Where Phipps admired the sanitarium model and sought similar results—patients check in sick, and leave cured—Flick desired the wholesale eradication of the disease. For the latter, the focus of the Institute needed to be broader than the mere treatment of convalescents in hospital beds; rather, he sought a reengineering of the behavior of urban subjects—re-making city dwellers into tools for containing their own contagion and thus preventing the spread of the disease (Flick 1944, 213-217). Even the Institute's hospitals ward, a

potential sanitarium for the cure of the disease, was, in Flick's mind, a space less for curing, and more for preventing the disease's spread through isolation of dangerous-advanced cases.

To achieve his goals, Flick cast a wide net in establishing the operations of the Institute, implicating himself and Phipps' contributions in a web of social relations that extended far beyond the hospital walls. Within Philadelphia, thousands of tubercular were treated. Some were cured—more often than not, only temporarily. Additionally, the Institute was central to the growth of the national and international anti-tuberculosis movement. It experienced a degree of renown for its International Lecture Course (202-203), its scientific experimentation with the Margaliano serum, its role in founding The National Association for the Study and Prevention of Tuberculosis (211), and its courting of the International Congress on Tuberculosis to a meeting in the United States (205). Yet in the pursuit of these larger goals, Henry Phipps, with his modest desire to see an individual come in sick and leave cured, began to question the prudence of Flick's management—that same management that the former found so respectable on that wet Saturday at White Haven in 1902.

Within months of the opening of the doors of the Institute, the tension between the Institute's two visionaries took shape—a tension regarding the precise mission of the Institute and the means through, and terms by which they would pursue and measure success. Not even a year after becoming operational, the two men faced rising expenditures, prompting questions over the day-to-day operations and the populations being served. Phipps' resources, while directed at the tubercular, were also being used to support various other sick and poor subjects that made use of the clinic. On December 2, 1904, Flick penned an enthusiastic letter to Phipps, lauding, in characteristically grandiose terms, "what the [first two years of work at the]

Henry Phipps Institute had meant to the civilized world" (Flick 1944, 214). While Flick was clear, in the letter, about some of his "misgivings" in addition to the Institute's successes, he was met with a decidedly stronger misgiving in a conservative response from his colleague. Phipps wrote, "Replying to your congratulatory letter…I hope the future has a great deal more for us than the past year" (214). Phipps cautious assessment of the work of the second year left Flick with a sense of opposition that would remain unresolved for the duration of his tenure.

While the details of Phipps dissatisfaction remained vague in the initial letter, over the next six years, they would become clearer to Flick. Where Phipps was invested in the pursuit of measurable results—definitively cured individuals—Flick's broad preventative campaign and his goal of eradicating the disease, would position the Institute at the intersection of medical treatment and a more generalized social welfare—precisely the charity that Hoffman critiqued. While the tubercular suffering from advanced stages of the disease were best treated in the beds of the Institute sanitarium, prevention was designed to reach those suffering early or incipient stages. The Institute dispensary was the primary node in the preventative mission, allowing for the diagnosis of walk-in subjects, the evaluation of individuals in an effort to discern those who required hospitalization, and the education of the sick in the correct habits to contain and treat their disease. Flick's operations sought to extend the principles of regimen, pursued in the isolated and controlled environment of the sanitarium, into the homes of the poor. The preventative mission, with its extension of the eyes, arm, and resources of the Institute into the homes of the sick poor brought Phipps' resources to bear on a population of all but "invisible" tubercular subjects—in Flick's words, those needy "unknown people, whom one never sees."

This mission, with its unseen subjects of aid, would prove uncomfortable for Phipps as the funding of these broader preventative measures would imbricate the Institute in treating a potentially endless sea of costs with immeasurable returns. Where Phipps had initially praised Flick's management at White Haven, over the course of the next decade, the latter's investment in prevention, while praiseworthy, entangled the Institute in a variety of efforts that seemed, to Phipps, to be more tuned to the treatment of poverty—the sociological conditions underlying the disease—than the cure of tuberculosis. The success of such an project was, to Phipps' mind, all but impossible.

Importantly, then, the disagreements between Phipps and Flick reveal an underlying difference of opinion with regard to an effective political economy of care. The difference hinged on a utilitarian calculation: how to most efficiently spend resources in the interest of achieving the best results for those suffering from tuberculosis? Yet, in locating a hospital and clinic in a poor urban environment, the Phipps Institute had to confront tuberculosis as a disease with a cause that was not reducible to biology—the tubercle bacillus, a necessary agent in the disease process, acted in tandem with the social circumstances—the poverty—of the subjects of the slums. These social circumstances included labor, income, housing, nutrition—the very conditions in which a subject's health, their quality of tissue, took shape. Given the urban location of the Institute, and due to the manner in which Philadelphia's broader poor population—even the non-tubercular—sought aid and medical treatment from the Institute's walk-in dispensary, Flick found himself confronting, on a daily basis, not only subjects of tuberculosis, but subjects of destitution.

In what follows, I argue that the tension between Phipps and Flick was produced by and productive of a broader remaking of tuberculosis as a "sociological disease," and the concomitant limitations, encountered by liberal reformers and physicians, in efficiently treating the multitude of social variables underlying the disease. While physicians maintained their exploration of the interaction between the tubercle bacillus and the physiology of the human body, the Phipps Institute took shape in a decade characterized by an increased focus on the social factors—particularly those factors contributing to and resulting from social class—that shaped individual susceptibility to tuberculosis. Where Flick, in the 1890s, dramatized consumption as a simple biological struggle between individual immunity—the capacity to cultivate a resistant "soil"—and the tubercle bacilli's ingenuity in surviving within human tissue, the 20th-century saw increased discussion of the manner in which the very human capacity to cultivate resistance was, in fact, as much a product of social circumstances as it was of biology.

The acknowledgement of the sociology of the disease contributed to the desire, amongst reformers, to provide charity—in the form of both resources and education—to help the tubercular get better. I explore this articulation of charity, sociology, and tuberculosis through the operations of the Henry Phipps Institute between 1902 and 1909. As the Phipps Institute initiated and pursued programs of treatment and prevention within its own walls, and throughout the city of Philadelphia, both tuberculosis and tubercular individuals were remade. Through the Institute's network of actors and practices and its engagement with the community of sick poor in Philadelphia, liberal individualism—in the form of an individual's capacity to overcome sickness and poverty and be self-reliant—takes shape, not as some inherent internal quality, but as the product of a variety of social and institutional practices. The

willpower of independent individuals was, in fact, dependent upon extra-individual forces in the form of Institute physicians and nurses, social reformers, philanthropists, landlords, public health officials, and the preferences and affinities of the tubercle bacillus.

Within this context, I argue that tubercular individuals seeking treatment at the Institute found themselves constituted, paradoxically, as subjects both dependent upon charity, and independent in their supposed capacity to help themselves get better. I trace this paradoxical production of the liberal tubercular subject in turn-of-the-century Philadelphia through an analysis of the discourses and practices of the Henry Phipps Institute—in particular, the operations of both the sanitarium and the dispensary. I focus on the institution's execution of its various missions—treatment, cure, prevention—and the concomitant divergence, between Phipps and Flick, that surrounded this execution. Through these operations, I show how liberal individualism took shape through the organization of efforts to confront tuberculosis as both a biological and sociological phenomenon.

I begin by describing the Institute's sanitarium—referred to, by Flick, as a hospital—placing it in the context of the late-19th century sanitarium-movement. In establishing the mission of sanitaria, from their roots in Silesia through the development of the Saranac Lake sanitarium in New York, I trace the manner in which sanitaria practices, in their origins, produced a subject whose "cure" was necessarily temporary and required a form of dependence. This form of dependence was a product of the sanitaria emphasis on patient pursuit of regimen—and on the tight structuring of institutional space and time so as to discipline tubercular subjects in such a pursuit. Focusing on the observations of Dr. Trudeau in New York, and those of Flick in Philadelphia, I show the manner in which this sanitarium

tendency to produce dependent subjects was constituted by a biological paradox a paradox whereby the human body could be simultaneously free from tubercular symptoms, yet still infected with the disease—and thus susceptible at a future date. The very capacity for the bacilli to survive, dormant in the bodies of the "cured," and the very preferences of the tubercle bacillus for the squalid environments of the impoverished made the transition from sanitaria to home a dangerous one. These bodies that existed in the dual state of being both cured and sick at the same time confronted science and anti-tuberculosis reformers, physicians, and philanthropists with the intimidating question of how to design social policy capable of replicating the controlled conditions of the sanitarium within the homes of poor consumptives so as to dissuade the tubercle bacillus from propagating. The capacity of the sick to be "cured" thus required the specialized conditions, resources, and discipline of the sanitarium environment. In analyzing the elaboration and enforcement of rules and attempts to educate and discipline sick bodies at the Phipps Institute, I thus show how the "cured" individual emerges, in the space of the sanitarium, through the paradoxical intersection of dependence and independence.

I then shift to the preventive operations of the Institute's dispensary—the node of Flick's preventative mission—to describe how this paradoxical constitution of the cured individual was, itself, a component in the remaking of tuberculosis as a sociological disease. Through the dispensary's efforts to reach Philadelphia's poor population, Flick maintained "The poor consumptive…can make him self harmless to others if shown how and supplied with the means of doing it" (Flick 1903, 262-263). Analyzing the practices of the dispensary to show and supply the means to a cure—educating and disciplining the sick, home visits, the provision of free

resources—I analyze how the efforts of the preventative mission to translate sanitaria regimen into the homes of the city imbricated the Institute in the investment of resources in a citywide campaign. This campaign increasingly brought Phipps generosity to bear, not simply on the treating of tuberculosis, but on the treating the poverty.

Where the disease had transformed, in the 19th-century, from a force of nature into a material form—the tubercle bacillus—and a material vector—the fomite—the remaking of tuberculosis as sociological disease required the acknowledgment of the manner in which the tubercle bacillus and its effect upon the human body were shaped by social factors—especially the factor of poverty—that were beyond the control of individuals. Indeed, where the problem of translating the environment of the sanitarium into that of the homes of the sick was framed as sociological, I address the manner in which it was simultaneously biological: the assertion of the failure of individuals—individuals who seemingly could not help themselves—was, in fact, a product of the capacity of the disease to succeed. Such social factors thus articulated with the very preferences of the tubercle bacillus—its affinity for the environmental conditions resulting from poverty. The dual spaces, then, of the sanitarium and dispensary in producing individuals through the paradoxical intersection of dependence and independence *would prove to be* inimical to the subject of liberal individualism: the very dependence cultivated within the sanitaria and perpetuated through the preventative mission with its dispensary practice of providing material assistance produced dependent subjects—subjects incapable of helping themselves.

The Roots of the Country Sanitarium: Finding the Cure in Regimen

In conceiving of the Institute, Phipps and Flick took inspiration from the European sanitarium model—hospitals, located in country environments, that specialized in the treatment of consumptives. Where the urban hospital had traditionally afforded the tubercular little more than a bed to die in, the country sanitarium materialized as a space of hope and possibility—a space for curing. Through the concerted regulation of the habits of the sick and the right combination of intangibles, a consumptive seeking the cure at a sanitarium might actually get well. Importantly, the country sanitarium extricated the sick from the social circumstances of their lives, offering isolation from the stress of the home, and, perhaps most importantly, from the stress of the urban environment.

This practice of removing the sick from their homes and isolating them from stress and overwork reflected the belief that individual sick subjects could not adequately recover so long as they remained in their native environments, subject to day-to-day stresses and distractions. Nor could the tubercular be left to their routine behaviors—including the pursuit of their livelihoods—if they wanted to get better. With its physician-enforced disciplining of the sick in the pursuit of healing regimen, with its enforcing of eating and sleeping schedules, and with its investment in the surveilling eyes of authorities (physicians), the sanitarium emerged as an environment for regulating the sick so as to make them capable of cultivating tissue healthy enough to retard the disease. To treat the tubercular, sanitarium proponents thus pursued methods that presumed the necessity of bringing extra-individual factors to bear on the bodies and habits of consumptives. Paradoxically, to cure the tubercular—to make them independent of the disease—they first had to become dependent upon a regulatory environment. The

sanitarium provided this in the form of an isolated, structured, resource-rich space: a space that denied the preferences of the tubercle bacilli for weak tissue forged in squalor. The sanitarium as a tool for treatment thus materialized through the concomitant production of tubercular individuals as subjects incapable of curing themselves without the resources and structure provided by professionals. And the model was becoming increasingly popular.

At the time of the founding of the Phipps Institute, the state of Pennsylvania, as mentioned above, had already made a foray into the country treatment of the tubercular with the White Haven Sanitarium. The genesis of state support for this sanitarium appeared in a Board of Commissioners of Public Charities annual report from 1901, authored by Board General Agent and Secretary, Cadwalader Biddle. Biddle echoing Flick's sentiment from the early 1890s, noted the still-low priority of treating the tubercular. Biddle wrote, "The number of hospitals for sick care are increasing....There is, however, one class of patients for whom Pennsylvania has not provided as good accommodation and care as have her sister Commonwealths. We have, as a State, made no provision for the care of consumptives" (1901, 7). The following year, Biddle's successor, Francis Torrance would report on efforts to overcome this lack of accommodation through the establishment of a state-supported facility in the country, "under the provision of the last Legislature...steps have already been taken for the erection of cottages for the care of consumptives and now a number of patients are being treated and successfully so, at White Haven...We trust that the success of the institution at White Haven will equal, if not rival, similar stations established in sister States for the mitigation of the dread disease" (1902, 2). The sanitarium movement in Pennsylvania, at

White Haven, and across the United States looked, for guidance, toward one of these particular "sister States"—New York—home to the well-known sanitarium at Saranac Lake.

Founded in 1885 by Edward Trudeau, the Adirondack Cottage Sanitarium set the precedent, within the United States, for country hospitals for consumptives: an isolated and "controlled" space where physicians could keep patients under constant surveillance, regulating and disciplining the sick in a regimen designed to enable individuals to cultivate healthy tissue, and thus, immunity to the tubercle bacillus. Trudeau, a sufferer of consumption himself, highlighted the isolation of the environment in reflecting on his first trip into the Adirondacks in 1873, "…Saranac Lake…was then situated forty-two miles from the nearest railroad, and consisted of a saw-mill and half a dozen guides' houses" (Trudeau 1905, 123). The mountain environment and the isolation from the social conditions that proved preferable to the tubercle bacillus would prove key to curing individuals.

Trudeau characterized the isolated nature of the space and the effect it had upon his tuberculosis. He and his wife "settled down in 1874 at…a small summer lodge, to face the severity of an Adirondack winter…completely cut off for weeks at a time by the deep snows from any communication with the outer world. The spring found me much improved [and] Dr. Loomis published a paper in the "Medical Record" in 1876, drawing attention for the first time to the climatic value of this region for pulmonary invalids. The following winter, and indeed the next twenty-nine winters, have been spent in Saranac Lake (123). At a time when, as Trudeau recalled, tuberculosis "was generally believed to be fatal" by both the physicians and

the public (123)[38], the genesis of his own cure came in a privileged form of isolation "from any communication with the outer world." He sought to translate this opportunity for isolation and for a cure to others. By 1903, the year the Phipps Institute opened, Saranac Lake had "grown to be a town of four thousand inhabitants and [was] known [in the United States] and abroad as a health resort" (123), and the sanitarium-model was regarded, the world over, as a legitimate tool for treating the disease.

For Trudeau, the 19th-century change in attitudes toward the curing of consumption (see Chapter 1) was bound up with his perception of the role of country hospitals in facilitating this cure—no longer a mere place to go and die, special country institutions for consumption provided an isolated-treatment environment tailored to the needs of the tubercular. This isolation translated, beyond the geographical sequestering in the country, to the containing of the sick in a "controlled" environment—a space where patient schedules, diet, and activities could be regulated and where the minutiae of patient behavior could be subjected, constantly, to the disciplining gaze of physicians. Trudeau acknowledged the debt he owed to Dr. Brehmer of Silesia, the founder of the European sanitarium, in emphasizing the procedure of isolation of the patient as a means of achieving a complete regulation of their habits.

The cure of the tubercular, in Brehmer's program, required the authoritative regulation and surveillance of patient behavior. Indeed, for Brehmer, it was not a question of an individual's capacity to help him or herself—quite the opposite, he "insisted that [the tubercular] cannot be left safely to his own devices as to his mode of life…A life spent entirely

[38] "The poor, and the large class of men and women who depend upon their daily work for their support, were left to their fate. No special stress was laid on the early recognition of the disease, as it was generally believed to be fatal. This, then, was approximately the attitude of the profession and the public toward tuberculosis when I went to the Adirondacks in 1873." (Trudeau 1905, 123)

out of doors, in any kind of weather, good and abundant food, and rest and discipline, are the all-important factors to utilize in bringing about a cure" (Trudeau 1905, 123). Consumptives required, in Brehmer's estimation, a regulatory environment so as to structure and direct their willpower toward the maintenance of a hygienic regimen that would enable individual cultivation of immunity. Trudeau wrote that Brehmer "demonstrated by the excellent results he obtained that the careful regulation of the patient's daily life (so far as air, food, rest, and exercise are concerned) is necessary, if the best results are to be looked for, and that if this is done for many months a cure may confidently be expected in a fair proportion of cases. Nowhere can this plan be followed thoroughly except in a sanatorium built for this purpose, and where the patients live with the physician and are constantly under his eye" (124). Thus, the roots of the sanitarium treatment, and the investment in curing consumptives, took shape through a treatment method based upon facilitating a relationship of dependence between the tubercular and the environment and resources of the sanitarium: the very capacity for individuals to recover on their own, independently of isolation, regulation, surveillance, did not inhere, naturally, in individuals; rather this capacity was a product of the resources and structure of the sanitarium.

The surveilling eye of the physician allowed for the structuring of patient lives so as to ensure the pursuit of a regimen designed to encourage the cultivation of healthy tissue capable of retarding the tubercle bacillus. The regimen began with a diet—a common facet of the cure of the disease—to facilitate proper nutrition. Charles Fox Gardiner, author of *The Care of the Consumptive* (1900), described a diet suitable for the tubercular. Beyond the specification of foods—milk and eggs being fundamental—he also prescribed food-preparation methods, and the

time of day in which a patient should consume certain foods: "On awakening, the patient was to drink a half pint of milk and eat a piece of toast ("in making toast, use stale bread, cut thin, and toast quickly"). Breakfast, less than an hour later, should include eggs (poached, soft-boiled, or raw), mutton chops or broiled steak, poultry, sweetbreads, scraped raw meat, sardines…crisp bacon, "mush of several kinds provided it is boiled at least four hours," fruit (though "pineapples, bananas, and al tropical fruits are not allowed"), and bread (two days old)" (82). Gardiner also touched upon the manner in which the food was to be consumed, "The food must be eaten slowly" (47). In the regulatory space of the sanatorium, physicians could prescribe a regimen that included an emphasis on the minutiae of patient behavior—details such as the specific foods, the proper method of consuming food, and the correct time of day in which to eat. Such attention to this minutiae and the disciplining of the sick in such a regimen, however, was not as easily pursued beyond such a structured space. The question of how to translate the controlled conditions of the sanitaria into the homes of individuals would become central to Flick's investment in preventative mission of the Phipps Institute.

By the first decade of the 20th century, the successful sanitaria of Brehmer and Trudeau increasingly served as models as other specialized hospitals for the tubercular materialized, not only in Pennsylvania, but across the United States. In 1899, twelve sanitaria existed in the United States. By 1904, the number had increased to fifty-five and by 1908, one hundred and thirty (Teller 1988, 82). Brehmer's seminal emphasis on an ostensibly controlled environment—a space that afforded the "regulation of the patient's daily life"—coupled with constant patient surveillance—the omnipresent-regulatory gaze of the physician—constituted the foundational practices of treatment through which the tubercular individual of turn-of-the-century

Philadelphia took shape. In the absence of a miracle drug, vaccine, or serum, the emergent medical cure for the disease came in the form of the tubercular subject's pursuit of self-discipline within the highly structured environment of the sanitarium. Like White Haven, many sanitaria (if not most) were open-air environments in the country. Both Flick and Phipps saw the promise and utility of such a model that efficiently centralized advanced tubercular patients under one roof, subjecting them, not only to the benefits of physician oversight, but to a regimen of fresh air, good diet, and proper rest—inculcating the pursuit of a "hygienic mode of life" in those who might overcome the disease through isolation, regulation, and discipline. Yet tensions would take shape over the precise mission, and the necessary conditions in which to cure individuals. Where Flick advocated an urban sanitaria bucking the trend of country hospitals, Phipps would vacillate between support for a city hospital, and a desire to fund a more conventional country sanitarium—a space where individuals were unambiguously cured of the disease. While Brehmer and Trudeau seemingly had success in curing the tubercular, Flick's increasing investment in the preventative mission—focusing on the social conditions enabling the spread of the disease throughout Philadelphia—was partially a product of his recognition that the sanitaria cure was, more often than not, impermanent.

"Cured" Individuals and The Phipps Institute Sanitarium

The promising work of Brehmer and Trudeau inspired the vision of Phipps and Flick—a vision that materialized, in 1903, as sunlight shone through the windows, onto the wooden floors and faces of the sick, gathered on the second floor of The Henry Phipps Institute. Located "in the slum district" of Philadelphia (Walsh 1908, 399), the tuberculosis ward was anything but squalid—with its potted flowers on the table in the middle of the room, and well-

spaced beds lining the walls. There, tubercular patients—advanced cases—sought to recover under the supervision of medical professionals. Paid physicians and nurses provided oversight in the ward regulating the schedules and behavior of the sick—creating conditions within which the sick could discipline themselves—exacted control over their pathological tissue—by following a tightly prescribed regimen.

During the first year, a staff of sixteen physicians treated two-hundred-and-fifty-four patients in the sanitarium. The average stay of each invalid was forty eight days, with one patient staying for two-hundred-and-eighty-six days (Flick 1905, 9). The doctors participated in routine daily activities—the weighing of patients, the updating of case histories, the staffing of nascent departments—neurological, laryngological, and dermatological (29)—the examining of brains and nerves (6, 62-66), the "recording" of "derangements" (65), and the studying of "attitude." By mobilizing connections with other hospitals, by the end of 1904, the Institute, "through staff appointments in other hospitals…control[led] 621 beds"—in the Philadelphia Hospital, White Haven, Sunnyrest, and other institutions—fully three-quarters of the hospital resources available for tuberculosis in Philadelphia and its vicinity" (Francine 1906, 233).

Patients were scheduled in their daily exposure to fresh air, they slept for a predetermined number of hours, and they ate what they were prescribed—a regimented diet of "milk, eggs, and plain nutritious food"—in the controlled portions: "three quarts of milk and six raw eggs a day and one meal of solid food" (Flick 1905, 30). Physicians measured the "mental attitudes" of patients—their "hopefulness" and "hopelessness; and they took notes on the degree to which the sick observed the rules—the success of the sick in "caring" for their pathological "sputum" (65).

The space of the Phipps Institute was carefully arranged so as to achieve the optimal conditions to regulate and discipline patients in habits that would allow for the strengthening of tissue—an effort to maximize "cleanliness and economy" in the treatment of tuberculosis: "We put a dining table in each of the wards for the patients who are up and about and a food carriage to keep the food warm while being served. These three large rooms made excellent wards, having high windows on two sides, and a ventilator above a door on the third side. We placed three electric fans in each ward to supplement the natural ventilation and also to keep the wards cool in summer. We placed a gas range in the little kitchen on the fourth floor. This we did as a matter of cleanliness and economy" (5). Thus, space was carefully arranged to both provide a clean environment, access to fresh air and sunshine, and ease in eating. The careful structuring of the space, so as to do the most good for the most patients in the most efficient manner, echoed 18th-and 19th-century almshouse ideals regarding the treatment of the poor. Yet Flick had improved upon the dinginess and the indiscriminate mixing of bodies he experienced at Blockley, creating a clean, more organized, and more efficient space. The entirety of the temporary space—"every available foot of floor space"—was being used "for some useful purpose" (Flick 1906, 3). Yet, in spite of the careful arrangement of space, and in spite of his optimism and advocacy throughout the 1890s for the possibility of hospitals to treat and cure the tubercular, Flick was conservative in his assessment of the potential benefit of the Institute sanitarium—of its capacity to cure.

For both Flick and Trudeau, the success of the sanitarium could not be solely evaluated through the tallying of "cured" bodies. In presenting the results of the work of Saranac Lake as part of the Phipps Institute's International Lecture Course, Trudeau spoke to the difficulty of

measuring success through a simple counting of cured patients—a difficulty resulting from the very impermanence of the cure. He summarized the results of the work of 1902 at Saranac as such:

> In my report for 1902 we find that of the really incipient cases, which were only forty in number, 75% were discharged as apparently cured, 15% had their disease arrested, and 10% improved; while of the advanced cases, ninety-nine in number, 12% improved, 8% failed, and 1% died in the institution; of the far advanced cases, none was apparently cured, in 33 ½ % the disease was arrested, and 33 1/3% failed while under treatment. Thus, for the one hundred and sixty-five cases at whatever stage treated during the year, we find that 30% were discharged as apparently cured, in 41% the disease was arrested, 19% improved, 7% failed, in 2% the diagnosis was doubtful, and 1% died in the institution. (Trudeau 1905, 127)

Trudeau's numbers were, on the one hand, cause for optimism to the extent that few patients under his care died: three out of every four patients at Saranac left the Institute cured. However, those cured were primarily the incipient cases—those that had been diagnosed and treated in an earlier stage of the disease and thus, were usually regarded as having the highest chance of recovery. The trend of the far advanced cases dying bore out as well. Yet the specifics of the instability of the distinction between "cured" and "uncured" were made evident by Trudeau's choice of words for categorizing his patients: "apparently cured," "disease arrested," "failed." Was a "failed" patient a dead one? Was the arrest of the disease permanent? What made the cure "apparent" rather than certain?

Trudeau complicated his numbers by drawing on "a most exhaustive and yet unpublished inquiry by Dr. Lawrason Brown, the Resident Physician" at Saranac Lake. He noted the "relapsing nature of tuberculosis" and expressed his concern in summarizing Brown's "inquiry on the permanence of the results obtained"—results that "promised most discouraging revelations." Referencing Brown, Trudeau noted "that 31% of all cases discharged from two to

seventeen years ago have remained well, that 66% of the incipient case discharged during the same time continue well at present" (128). While Trudeau's data suggested that those "incipient cases" who had received an early diagnosis had a legitimate chance of getting and staying well, the recognition that two of every three patients treated did not stay "cured" pointed to a limitation of the sanitarium model: *the inability to translate the controlled conditions within the sanitarium into those of the home and the outside world and the corresponding inability to ensure that the treated maintained regimen after leaving.*

Trudeau, recognized this problem as one linked to the nature and/or lack of appropriate work available to discharged patients: "more patients could be permanently restored if they could procure suitable employment after leaving the Sanatorium" (130). Thus, where the sanitarium ostensibly cured consumptives, tuberculosis waned, only to wax again when the "cured" attempted to reintegrate into the world outside the sanitarium walls—especially into the world of labor. Echoing Trudeau, Flick maintained that such aid could best be realized through facilitating the livelihood of the sick with "fair incomes": "[r]esults…cannot be made permanent unless a way is found of helping those who have been restored to a mode of life which takes them out of the ordinary struggle for existence. Positions at fair incomes must be given to people of this kind…" (Flick 1908, 61). Flick thus acknowledged the vastness of the problem to the extent that the practice of disciplined regimen within the Institute—and thus the arresting of the disease—was impermanent, unless recovered individuals were removed from the "struggle for existence." Those who were recovering could not "struggle" on equal footing with the non-tubercular lest they run the risk of weakening themselves and inviting a relapse. The presence of "cured" tubercular subjects attempting to reintegrate into the world

outside the sanitarium thus confronted the liberal imperatives of independence and productivity with a material challenge: bodies in which the disease had been arrested appeared, on the outside, to be better—to be capable of actualizing individualism. Yet were they to push this capacity too far, they made themselves susceptible to relapse.

This impermanence of the cure was a product of what Flick called the "nature of the disease" (Flick 1899, 192). He wrote, "In tuberculosis permanent immunity is exceedingly difficult to establish." He continued, describing the interaction between human physiology and the tubercle bacillus: "its parasitic life runs its cycle in some restricted portion of the body where it is soon cut off and entombed in such a way, that it cannot have any effect upon the vital fluids until necrosis has taken place and it again finds its way back into the circulation to begin a new cycle of life somewhere else" (192). Thus, the ingenuity of the tubercle bacilli in maintaining its "life cycle" in an "entombed" state, awaiting the break down of tissue—necrosis—to enter "back into the circulation" of the human physiology established the biological basis of the disease's chronic quality tendency—and concomitantly, of the impermanence of the cure (192). Flick continued, "In practical every day life persons suffering from tuberculosis usually have one exacerbation of the disease after another until they finally go under; and this is so because each attack really prepares the victim for a subsequent attack by leaving him with less power of resistance" (192). Thus, given the capacity of the bacilli to remain alive, in a state of suspended life, awaiting the vulnerability of the human host, the very possibility of an absolute cure seemed fleeting. "The word cured," according to Trudeau, "can be used only in a relative sense, as we know that relapse is the rule rather than the exception in this disease" (1905, 127). According to Flick, for his physicians, "the word cured [was] not

permitted to be used at all in records"; rather, he required them to use the phrase "Disease arrested" (1908, 106). Echoing Trudeau, the arresting of the disease suggested a temporary state, rather than a permanent one.

Flick, with characteristic sympathy for the afflicted, summarized the manner in which the compromised physiology of tubercular subjects made them vulnerable even after arresting the disease. This vulnerability, while biological, could be treated, in Flick's estimation, through the provision of material assistance.

> No one who has had both lungs involved can again be strong and vigorous enough to compete with those who never have had tuberculosis, and when persons advanced to this stage are restored to a fair condition of health they can only maintain that health by a life of moderate activity. This means that when a poor person advanced to that stage recovers with the aid which is extended him he maintains his health only so long as the helping hand is held out. The moment assistance is withdrawn he relapses and goes under. Usually the family is too poor to give the necessary aid, and the stricken individual either depends upon charity or succumbs to the disease.
>
> [This complicated social process] explains the high ultimate mortality from tuberculosis even among those who have been restored to a physical condition of health in institutions for the treatment of this disease. (Flick 1908, 60-61)

Thus, in Flick's assessment, given the manner in which tuberculosis incapacitated bodies and given the impermanence of the cure, those within whom the disease were arrested reintegrated back into their lives at a severe disadvantage. The antidote to this disadvantage was not medical—rather, Flick located it in the provision of material assistance. In the absence of material changes to the lives of the poor subjects of Philadelphia's slums, Flick conceded that the former patients of the Institute were likely, die to poverty, to experience a relapse: "the average earnings of consumptives are insufficient to purchase the food, bodily comforts, home comforts, and sanitary conditions for restoration to health or maintenance of health after it has been regained. This seriously complicates the problem of the cure of consumptives who are

very poor. It explains, in a great measure, too, the instability of the results obtained in sanatoriums [sic] for poor consumptives and points the way for philanthropy in the crusade against tuberculosis. The work, to be permanent and efficient, must go further than the sanatorium; something must be provided for the consumptive after he has left the sanatorium" (Flick 1907, 19-24).

For Flick, the disappointing results as the "cured" attempted to assimilate back into life outside the sanitarium complicated the purpose and the value of Institute's hospital. In reckoning with the impermanence of the sanitarium cure, and in spite of his optimism, throughout the 1890s, regarding the potential role of special hospitals to cure consumptives, he increasingly adopted a practical, if not cynical view of the Institute sanitarium. "[T]he hospital," according to Flick, "is for advanced cases only and that all cases which are admitted *are expected to die*, while the dispensary is for ambulant cases, very few of which are supposed to be far enough advanced to be classified in the terminal stage" (Flick 1908, 106; italics added). Staff physician Joseph Walsh reiterated Flick's take on the sanitarium, commenting on its purpose, "*The principal object of the hospital is prevention*. It takes the poor workman from his home, where he has not sufficient care, and where he is probably infecting other members of the family, and gives him a proper place in which he may improve, if that is possible, and in which at least further contagion of the family is prevented" (Walsh 1908, 398; italics added). The Institute sanitarium thus veered away from the direction taken at Saranac Lake, seeking, not to cure, but to prevent, through the removal of those subjects so advanced as to be incapable of containing their own contagion—the hospital, in Flick's vision, would serve, like the dispensary, as an arm of his preventative campaign.

Indeed, the limitations on the capacity of the sanitarium to permanently cure the tubercular, and the concomitant provision of charity to those attempting to move beyond the isolated and regimented space of the hospital, increasingly produced tuberculosis as a social disease. Those in whom the disease had been arrested required continued charity: "Occasionally one gets well who can stand alone and maintain his health through his own resources. Most of them, however, go under unless assisted" (Flick 1906, 48). Flick's description thus suggested that the individual capable of helping him or herself—the independent individual "who can stand alone"—was an anomaly. The key then, for Flick, was to reengineer the social conditions of the sick by investing in prevention, providing assistance for outpatients, and extending the influence of the Institute into the homes of the sick. The preventative mission would address this need for continued assistance. Indeed, while restoring the sick to health within the Institute was possible, the task of "keep[ing] them well" required continued investment—the continued dependence of the sick.

This practice of attempting to perpetuate the cure through the provision of assistance suggests the manner in which Flick and Phipps, would come to struggle with the paradoxical nature of the Institute and their attempts to treat tuberculosis: as a space designed to produce "cured" individuals, capable of independent living, it seemed, instead, to forge dependent subjects—subjects whom, upon leaving the space, found themselves caught up in the physiologically taxing struggle of pursuing a livelihood and in need of continued material aid. While an individual's discipline—their capacity to follow a regimen—was a necessary component of becoming cured, this very capacity was, itself, an ability that did not entirely inhere entirely in individuals; rather, the will and capacity to get better was made possible by those socio-

economic conditions in which individuals—outside of the sanitaria—worked to make ends meet. And in making ends meet, it was all but necessary to sacrifice regimen for the pursuit of a livelihood, and to thereby tax one's body, one's tissue, and one's capacity for immunity. Such dependence was materially inimical to the actualization of the self-reliant subjectivity of liberal individualism.

The reflections of Flick and Trudeau thus established the manner in which the foundational requirements of liberal individualism—independence and productivity—were qualities that could, in fact, encourage relapse. Consumptives were often destined to a life of invalidism to the extent that even routine labor was too strenuous and thus, could threaten to end in the relapse of the disease. Flick challenged the utility of independence by proffering that the solution to making cures permanent was the perpetuation of welfare—keeping the "helping hand…held out." Mortality from tuberculosis then—especially amongst those who were attempting to recover from advanced stages of the disease—was not cured through merely inculcating certain habits—regimen—in individuals. For such subjects to succeed they remained dependent on charity and conditions that allowed for "moderate activity." Yet in attempting to extend the resources and influence of the Institute throughout the city and to continue to treat those who could not entirely care for themselves, Flick's endeavors increasingly appeared to Phipps, not simply as care for the tubercular, but as generalized charity—the provision of "material aid" to combat poverty itself.

Indeed, the missions of the Institute—cure and prevention—were ostensibly complimentary. To prevent was to regulate the spread of the disease in the urban population so as to eliminate the need to treat it. Fewer sick individuals would result in fewer advanced cases

and the need for beds for consumptives to die in would decrease. Yet within the context of his relationship to Phipps, Flick framed treatment and cure as binary approaches. And it was in this difference of approach that Flick identified a major source of tension between he and Phipps:

> Prevention of tuberculosis by removal of the focus of infection in the advanced cases from the home was not well understood and made little appeal. Mr. Phipps had grasped the idea when he started out the crusade, but became confused about it…To cure a person of the disease grips one's heart, because there is a definite individual whom once can see, whose sufferings are knowable, who has relatives and friends with whom one sympathizes, whilst to prevent the disease appeals to reason only—one deals with unknown people, whom one never sees, and with whom one can have no sympathy. (Flick 1944, 196)

Flick thus explained his investment in prevention as a recognition of both the elusiveness of this definitively cured individual and of the much larger effectiveness, and, in his opinion, the reasonableness, of treating the disease at its source—removing the "focus of infection" through citywide preventative measures. Flick's critique of Phipps' confusion and emotionally-motivated investment in curing individuals framed his divergence from his co-founder as stemming, in part, from the immediate immeasurability of his long-term goal compared to that of the ostensibly-definitive measurement of the cured individual. To prevent the disease was to save people before they were even sick—"unknown people, whom one never sees." Yet, as both Flick and Trudeau had learned in their close interaction with the tubercular over many years, even cured individuals were not so easily measured and tallied due to the capacity the tubercle bacillus to hibernate in the recesses of the "cured," only to attack in a subject's moment of weakness. The tension between the two founders would continue to play out as Flick committed resources—labor, materials, free milk—to the preventative mission: a mission that

increasingly looked, to Phipps, like the treatment of a more general problem of poverty—an effort that Phipps would come to regard as endless and futile.

The Pursuit of Prevention: The Administrative Control of Tuberculosis

Flick, facing the difficulty of permanently curing advanced cases, set about pursuing a preventative mission. Given the improbability of making a cure last, the best hope for treating tuberculosis began, in Flick's blueprint, with the interrupting of the disease in its early stages—and preferably, containing its contagious transmission so as to avoid the implantation of the bacillus altogether. This mission took shape through the educating of the sick and the families of the sick in methods for containing contagion, and in the attempted translation of aspects of the controlled sanitaria environment, including the practice of regimen, into the homes of the urban environment. By focusing the operations beyond the walls of the Institute, on the broader population of sick poor, Flick would further imbricate the Institute in a number of resource-intensive practices that continued to blur the line between medical treatment and social welfare.

These preventative pursuits were not unique to Flick and Philadelphia. Rather, they had already materialized through the work of Flick's colleague, New York public health official Hermann Biggs. On February 16, 1904, Biggs presented a lecture in the Institute's series, entitled “The Administrative Control of Tuberculosis.” In the lecture, he outlined his vision and those practices already implemented in New York City designed to prevent the disease. Much like Flick’s efforts, the “administrative control of tuberculosis” would effectively seek to extend the principles of regimen, pursued in the isolated and controlled environment of the sanitarium, into the homes of the sick poor.

For Biggs, preventing the disease through the administrative control of tuberculosis began with educating and disciplining the public in proper methods of disinfection—methods for containing and eliminating their own pathological bodily material—their expectorations. Biggs summarized the situation, focusing on the "fundamental importance of the careless disposal of sputum in the causation both of pulmonary tuberculosis and the acute respiratory disease" (Biggs 1905, 185). Echoing the contagionist emphasis on containing sputum, Biggs established his understanding of fomites as the primary vector in transmitting the disease: "in tuberculosis, the causative microorganisms are found in the secretions of the respiratory tract; and when these secretions are not properly destroyed at the time of their discharge form the body, they become more or less widely scattered, dried, pulverized and suspended in the air as dust" (185). For Biggs, individuals could serve as technologies for interrupting this scattering—this formation of fomites—if they were educated in the correct manner for policing their spit: "It is of vital importance in the propaganda for the prevention of tuberculosis…that we should educate all classes of the people to a…belief in the fundamental importance of the proper disposal of the expectoration and should gradually inculcate the idea that the habit of spitting carelessly anywhere is not only filthy and indecent, but is in many instances to be regarded as almost criminal" (185). Biggs thus reiterated the position, developed in the 1890s, that disinfection was the basis of the preventative mission, and that the administrative control of tuberculosis began with the containment of personal pathological material—the "chief factor in the solution of the problem of the prevention of tuberculosis" (185).

The preventative mission could further be actualized by ensuring a presence in the homes of consumptives. Biggs advocated home visits—sending medical authorities—a "physician

or trained nurse"–into the private spaces of the city to document the severity of tubercular subjects, assessing the "sanitary condition of the premises," and instructing the sick and their families in the practices for containment of the disease. Rather than curing the sick, these visits were intended to educate in the interest of interrupting the transmission of the disease, and to evaluate and monitor subjects so as to ascertain if and when they moved from an incipient to an advanced stage in the disease process. "In the course of these visits," Biggs reported, it becomes evident in many instances that a patient should be removed to a hospital or sent to a sanatorium outside the city. In such instances…the patient should be induced by persuasion to avail himself or herself of such institutional care as seems desirable or available" (177). Thus, the administrative control of tuberculosis included both the educating of the sick and the families of the sick in methods for containing the spread of their disease, and in removing and isolating dangerous advanced cases in hospitals.

In offering a final important aspect of this preventative framework, Biggs echoed Flick's conclusions on the necessity of the provision of welfare. In lecturing to the physicians of the Institute on that February evening, he noted the relationship between the sick—the difficulty of "controlling" them—and the availability of assistance. In order to achieve the prevention of tuberculosis, Biggs proffered the belief that poor consumptives were more likely cooperate in adopting preventative habits—containing their own contagion—to the extent that they were provided with some form of welfare.

> It will be readily understood that the classes of cases which have been referred to as necessarily coming under the supervision of the health authorities generally are very undesirable and difficult to control. Yet the experience of the Department of Health of New York has shown that rarely is any real difficulty experienced in the management of

> these cases if the accommodations which are provided and the food and care given are of a superior character. (184)

Biggs elaboration of the need for the "administrative control of tuberculosis" thus took shape through his formulation of the equation that welfare translated to acquiescence. To the extent that the poor were lacking in means, they thus lacked the resources to invest in a change of behavior. Yet more tellingly, Biggs' preventative procedures challenged the notion that tubercular individuals possessed an innate willpower to get better; rather, in Biggs' formulation, poor consumptives and those poor populations deemed potentially at risk for contracting or spreading the disease would not possess a will to participate in hygienic regimens to ensure the policing of personal pathological material in the absence of some form of material accommodations. The very *unwillingness* of such poor consumptives to do as they ought was revealed, in Biggs assessment, to be a product of social circumstances—a product of material need. He thus located the problem of the administrative control of tuberculosis less in the individual, and more in the social circumstances of the poor—in their material needs. In New York, Biggs implemented a socio-medical vision that viewed welfare as a governmental technology for making subjects controllable—making them do as they ought vis-a-vis the adoption of hygienic regimen. In the process, obedient subjects became technologies themselves, of the preventative mission. The will of individuals to do as they ought thus took shape through the enabling conditions of material aid, as tuberculosis materialized as a disease that could not be reduced entirely to biology—rather, it increasingly took shape as a social disease.

Prevention and The Phipps Institute Dispensary

The educating and disciplining the sick in preventative methods, the surveilling the sick in an effort to track the progression of the disease, and provision of relief through home visits, required a considerable infrastructure. This infrastructure began, at the Phipps Institute, with the operations of the dispensary. To the extent that individuals could not be relied upon, due to social circumstances, to maintain their own strength—and thus immunity to the disease—and to contain their own contagion outside of the gaze of the Institute's physicians, the dispensary allowed for Institute physicians to treat, assess, educate, and track—through the keeping of copious records—the contagious tubercular population of Philadelphia. The surveilling physicians off the Phipps Institute dispensary labored to both restore the sick to health and to re-make the sick into self-surveilling individuals—"bettered" individuals capable of living at home and regulating their own habits so as to maintain a physiology resistant to any future recurrence of tuberculosis. The regulation of the habits of the sick was intended to shape the tubercular subjects dependent on the Institute, into individuals, wittingly and independently cultivating immunity through the pursuit of disciplined regimen. A successful dispensary would, in theory, not only cure those suffering the early stages of tuberculosis, it would enable the emergence of independent liberal individuals.

By Flick's accounts, the work of the first two years—especially within the dispensary—was accomplished in an ad hoc and chaotic manner, born of too much to do, and too few resources—a disorganized effort, that betrayed the careful organization of space and the precise arrangement of schedules, beds, and flowers. Physicians at the Phipps Institute labored in the dispensary visiting with, educating and disciplining, and caring for tubercular patients. Limited

to no more than one new patient a day, the twelve doctors operating the dispensary were overworked by an over-abundance of sick bodies appeared, in need of care (Francine 1906, 228). Nurses and doctors "carefully outlin[ed]" the rules they expected their patients to follow (230), providing "careful instruction in prophylaxsis" (237), the times in which the sick should remain "confine[d]…to bed" (22), emphasizing the imperative to get the "greatest amount of fresh air and sunshine" by resting on a roof or porch, and the need to keep "windows…wide open both day and night (22-23); and, of course, the necessity of pursuing a proper diet (230).

Clinic nurses, in discharging first-time patients, sent them home with "prophylactic measures," "sputum cups, paper napkins, and bags for the street; a printed list of rules to follow" (229). Poorer patients were sent home with "up to four quarts" of milk (230). These daily practices of the Institute dispensary thus served disciplinary, regulatory, and charitable functions: educating the sick in hygienic regimen—not unlike that followed by the patients in the hospital ward—and providing resources for the containment of contagious material and, in the case of the poor, milk for sustenance and nutrition, in the hopes of regulating the spread of consumption by preventing its development.

With a packed dispensary and a constant stream of sick bodies to attend to, physicians had their hands full. In addition to this labor of curing, they were also required to take histories and make records of each patient. Physicians spent an hour to an hour-and-a-half recording, according to a Phipps employee, with a "painstaking scrutiny of detail," the minutiae of each case (227). "[A]ge," "sex," "color," "residence," marital status, "occupation" (Flick 1905, 8-25), "respiration, pulse, temperature…weight…notes made of the treatment and progress of their condition" (Francine 1906, 228); "the condition of the lungs and the cardio-vascular

system, and a most detailed report on the rest of the body" (230)—"chartings of the condition of lungs and heart" (231). Physicians took records "systematically," "symmetrically," and "accurately" on "printed forms" for each case, "unfailingly and accurately fill[ing] out" (226) "data of symptomatology [sic?] and physical examination" (227). This labor of observing and record-keeping served the preventative mission as it facilitated efforts to diagnosis and treat consumptives in the early stage of the disease, and to track the tubercular, form visit to visit, and, in some cases, from dispensary to home, allowing for surveillance in the interest of minimizing threats. Indeed, the work did not end at the doorstep to the Institute. Rather, the preventative mission required physicians and nurses to translate the discipline and control exercised in the sanitarium into the lives and homes of incipient tubercular subjects.

Reaching into the homes of the sick required, firstly, education and discipline in the dispensary. Beyond caring for patients, physicians were called upon to teach the sick the components of a hygienic regimen. "All the dispensary patients" according to Flick, were "taught and drilled in preventative measures"–in methods for policing and disposing their pathological material. He continues, "As each patient comes into the waiting-room he is handed a spit-cup, and during his stay he is taught to use it. When he goes away he is given a tin spit-cup holder, a bundle of paper cups, and bundle of paper napkins and paper bags to take home with him. He is also given a set of rules on a large cardboard to hang up in his house, and on a folder to carry in his pocket. Every time he comes back to the dispensary he is given a new supply of preventative measure material, and it further instructed in its use (Flick 1905, 29-30).

The verbal instructions, made material in the form of objects for containing contagion, and rule boards for the home and the pocket, thus subjected the private spaces and bodies of city dwellers to the disciplinary influence of the Institute. Even when outside of the dispensary, miles away, the population of incipient tubercular subjects theoretically remained within the sphere of the Institute, regulating their own behavior through the internalization and performance of Institute rules and regimen. The effects of the operations of the clinic were thus to discipline the sick and to encourage them to influence their families to pursue a similar regimen and to practice the disposal of sputum. As Flick noted, "The dispensary is an excellent means of bringing ambulant tuberculous subjects under control and discipline and of getting into the homes of such patients to educate and direct them and the healthy members of the family for protection and self-preservation" (1908, 106).

Yet this "control"—this subjection—was, like the sanitarium cure, incomplete, as the mere training of the sick did not necessarily equate to their adoption of the regimen. Within the sanitarium, physicians could insure greater compliance through surveillance of patient behavior. However, to ensure patient compliance across the city, following Biggs, the Institute developed a program to train and deploy home-visiting "Inspectresses" to act, like the physicians in the sanitarium, as watchful-disciplining eyes. According to Flick, "At regular intervals [the patient who has been treated at the dispensary] is visited in his home by a pupil nurse and is given such instruction and assistance as he may need for prevention of the spread of the disease" (Flick 1905, 29-30).

These Inspectresses of the Henry Phipps Institute combed through the crowded dwellings of the poor, led by the coughs—the ubiquitous rasping—that plagued early-20th-

century Philadelphia. They moved through spaces hidden from the streets and stuffed full of people—three to a single outhouse. (Sutherland 1973, 176). These families lived in dark rooms without windows: masses of bodies, breathing, coughing, and sharing the same communal dust. In tending to the rattling bodies of the sick, the Inspectresses surveyed the conditions of the outpatients in their homes, working through a checklist of assessments of patient behavior: "Does patient take cure out of doors?"; "Does patient sleep with windows open?"; "Does patient use spit cup?"; "Does patient burn spit cups and napkins?"; "Are premises of patient clean?"; "Does patient use stimulants?"; "Are any other inmates of house sick?"; "Is [Institute] milk used by patients?"; "Have the rules of the Institute been hung up in the house?" And, finally, the Inspectresses evaluated themselves: "Have you instructed patient in observance of rules?" (Flick 1906, 430).

These questions—but a sampling of the inquiries covered on the official worksheet—were an attempt, by the Phipps Institute, to map the movement of contagious expectoration and document the minutiae of patient behavior in their homes—the degree to with the sick were following Institute-prescribed regimen and prophylactic measures so as to help themselves get better and so as to contain their own contagion. Out-patient observance of rules was tracked closely by the Institute. According to Flick, "The nurses who make the inspection are required to report upon the observance of rules…The percentage of patients who observed rules well is quite high…Usually a patient is quite anxious to co-operate with the Institute in the prevention of the disease when the purpose of the rules which have been laid down is clearly explained to him" (Flick 1908, 104). The Inspectresses, having identified, through their checklists and observations, tubercular individuals who continued to practice unhygienic

behaviors, sought to further educate and discipline these subjects into the practice of correct sanitary habits. The ideal sick patient was one who vigilantly policed his or her own sputum, containing the personal pathological material by spitting into napkins or cups, burning any objects that bore the trace of tubercular spit; a subject who ate the proper food and got the proper rest; a subject who kept his or her windows open at the proper times to ensure the circulation of fresh city air. By mapping and documenting the degree of Institute "control" over Philadelphia's poor tubercular population, Flick hoped to materialize the preventative mission: containing tuberculosis by reforming individuals who practiced habits that spread the disease and identifying and removing advanced cases from the home and planting them in the sanitarium.

The Inspectresses, subjects whose title was bound up with their role as a vessels of surveillance, were, themselves, former objects of this very surveillance: subjects who had previously been "cured" of tuberculosis at the White Haven sanitarium. The hiring of a nursing staff at the Institute took shape in reaction to overabundance of sick bodies that needed attention. Organizing the staff was not easy, however, due to a "fear of tuberculosis." "The nursing problem was finally solved by opening a training school with girls who had been cured at the White Haven Sanatorium…The nursing staff at the end of the first year consisted of five trained nurses and five pupil nurses" (Flick 1905, 6).

By using the clinic to treat those who were in the early stages of the disease and by mobilizing Institute workers and resources to move across the city and into the homes of the sick, to discipline subjects in hygienic regimen and to seek out dangerous-advanced cases, Flick's preventative mission was constituted by a the re-making of tuberculosis as a sociological

problem—not simply a problem of individuals with bad tissue. Where the definitive curing of individuals in the sanitarium left him grasping at ambiguities, prevention seemed, to Flick, to be a more certain means to stopping the spread of the disease: nip the contagion in the bud by reaching out to and treating incipient cases before the disease had ravaged the body. Paradoxically, as the remaking of the disease as sociological confronted physicians and reformers with those circumstances perpetuating tuberculosis that were beyond the control of individuals, the emergent focus on prevention re-constituted the subjects of the city as individuals with the capacity, through their participation in Institute-prescribed regimen, to help themselves and those around them. Through the disciplined observing of Institute rules, the poor tubercular and their families were reconstituted as technologies for the control of tuberculosis—preventing the contagious spread of the disease through the cultivation of regimen.

The Sociological Disease: Free Milk, Poverty, and "Bailing Out the Sea"

Phipps eager to use his money for curing rather than isolation, was not entirely at ease with the pursuit of prevention and with the Institute's sanitarium—isolating advanced cases until their death, rather than curing those who still had a chance at life (Flick 1944, 195). In spite of his financial backing of Flick's vision of an urban sanitarium, he had, on many occasions during the Flick's tenure, advocated moving the operation to a country setting—a sanitarium designed expressly for curing tubercular individuals. The country would seemingly have been less financially risky, for Phipps, to the extent that it would have focused on the cure of consumptives and on a particular population—consumptives seeking long-term care in the pursuit of getting better. The urban sanitarium with its attached dispensary, opened up the

Institute, to city foot traffic—to a broad population of subjects, many without consumption, in need to treatment and aid. Indeed, during the first year of operation, Flick admitted that he and his colleagues were treating far more than tuberculosis. He explained to Phipps in December 1903, "the poverty and distress of the poor people who appeal to us are so great that it is difficult to say no" (Bates 1992, 122). In the dispensary, physicians were confronted, daily, with the blurred subject of poverty and tuberculosis. A sick-poor woman dropping into the clinic, fearing she had tuberculosis, might be diagnosed with another disease. The clinic, with its treatment of the general poor population—both tubercular and non-tubercular—and its provision of free resources, seemed, at times, to be serving the roll of an almshouse by saying "yes" to all those who appeared in need of treatment.

The modest goal of an environment where the tubercular could convalesce in fresh air and isolation to get better was dwarfed by Flick's discomfort with enforcing a triage of the subjects seeking treatment in the dispensary and by his far grander goal of re-engineering the habits and lifestyles of an entire urban population in the hope of suffocating the contagious spread of the disease. Phipps was not cold to these practices or the sentiment driving physicians to care for the sick poor. Yet the decision to locate a sanitarium in the city, and subsequent expenditure of resources on the treatment of general urban population had raised questions of economy and prudent management. In writing to Flick, Phipps was pragmatic in his concerns, "'I can quite understand the great pressure upon you to help the poor people, and you are the best judge what extent the work should go'" (quoted in Bates 1992, 123) In putting the decision in the hands of Flick, he continued to invest in the latter's managerial skills. But Phipps remained skeptical about any goals and practices that spread his limited resources

beyond the treatment of the tubercular. Phipps argued that the Institute was operating on a slippery slope, for to treat Philadelphia's general sick and poor population was, in his words "'like bailing out the sea'" (quoted in Bates 1992, 123).

In comparing the poor to a force of nature—an endless sea—and Flick's preventative efforts as an attempt to "bail out" this force of nature, Phipps communicated his reservations and his own political economic assessment. To the extent that poverty was like a sea, and the preventative efforts, like bailing out this very sea, Phipps established his aversion to throwing money at a problem that he considered futile. Even Flick acknowledged the difficulty of calculating the successes of the preventative mission: "One of the objects of the Institute is the prevention of tuberculosis. What has been accomplished…in this direction cannot be measured" (Flick 1905, 29). The success or failure of the preventative mission was difficult to judge and the operations and resources—the home visits and record keeping—required to track the progress of patients beyond the walls of the Institute proved a distraction from, what Phipps considered to be the more immediate and more measurable concern, of curing.

The seeming endlessness and immeasurability of the preventative mission and the ambiguities of the Institute's success would cast shadows over the relationship between the two men. Where Phipps had invested in curing "definite" tubercular individuals, his vision ran up against a limitation in the form of the very ambiguities of the cure, known intimately by Flick and Trudeau. Indeed, where Phipps invested in combating tuberculosis as a biological disease affecting individuals, the shift, in United States cities, to the preventative mission—the "administrative control of tuberculosis"—was, itself, produced by and productive of the remaking of tuberculosis as a sociological problem. Where he had initially praised Flick's

management at White Haven, and where he continued to support Flick's investment in a host of sociological preventative measures—home visits, the provision of free milk to dispensary patients, the treating of the general-non-tubercular sick population of Philadelphia—Phipps hesitation, and at times, tacit support, was apparent and frustrating to Flick.

In spite of the tensions, Flick was not immune to Phipps' concerns over the indiscriminate provision of welfare and the repercussions of treating poverty itself. Given his investment in the sociological conditions undergirding the transmission and perpetuation of tuberculosis, his claim, five years into his work with the Institute, that a subject who had "received milk for six months ought by that time to be restored to a condition of health in which he can help himself" (Bates 1992:127) suggests a paradox at work in his thinking and in the practices of the Institute—a paradox of early 20th-century liberal individualism: poor tubercular were both victims of biological and social circumstances—or, rather, biological and social circumstances were inseparable as evidenced in formation of tubercular subjects that could only achieve independence through dependence. Where progressive medical reformers like Flick and Biggs initially embraced and admitted the necessity of this paradox, investing charity in the poor sick, through the Institute's practice of free milk distribution, the former had become increasingly ambivalent. Indeed, in his ambivalence, Flick would express concerns similar to those of Frederick Hoffman, about the prudence of providing charity to certain populations, and the potential for abuse of the Institute's helping hand.

In attempting to influence the citywide social conditions that propagated tuberculosis, Flick invested the Institute in a program for distributing free milk to the poor tubercular. Given the prominent role of milk as a nutritional staple in the prescribed diet for

consumptives, and given the inability for so many of the Institute's patients to afford nutritious food, charity through free milk seemed an appropriate practice to treat the social conditions underlying the propagation of tuberculosis. The process began, as it had for two centuries of charity in Philadelphia, with a "judgment," by a physician, of the worth of a dispensary patients: were they, in fact, "too poor to buy"? After having been evaluated as "entitled" to the receipt of free milk, these patients were then required to visit depots, manned by milkmen. Flick describes the process—the attempt to ensure that the needy tubercular were not taking advantage of the system. He writes, "Alphabetic card-indexes of those who are entitled to milk are each morning taken to the depots by the nurses who give out the milk, and each patient is identified by an assistant before he gets his milk. When the party presents himself he calls out his name. If the name is found in the index, he is given the amount of milk indicated on the card" (Flick 1906, 42).

While Flick found this system to be "the most satisfactory of those tried so far," the provision of free milk caused a number of headaches for the Institute as it allowed for the "misuse of milk." Flick described this misuse as such, "Many of the patients probably do not use the milk which is given them. Some give it to other members of the family, and some perhaps even sell it. Every effort which can be made in a practical way is made by the Institute, to guard against abuse of the charity which is extended to its beneficiaries. It is impossible, however, to prevent the misuse of milk. When the milk is used for members of the family, especially children, no action is taken, as such use is in the interest of prevention; when, however, there is suspicion of the milk being sold, it is stopped" (Flick 1906, 42). Milk distribution thus confronted Flick and his colleagues with the very sea of poverty that

concerned Phipps. It was difficult to fault those patients who, rather than drinking their allotment of free milk, gave it to their family members. Was it reasonable for Institution devoted to the treatment of tuberculosis to provide material aid in the knowledge that some, if not much, of the charity was being used to treat the general rather than the tubercular poor population? Furthermore, and more to Flick's frustrations, there was also evidence of the subjects of Phipps' beneficence committing "fraud"—selling the milk.

The practice of providing free milk to dispensary patients, more than any other practice, situated the work of the Institute at the intersections of social welfare and medical care, thereby contributing to the remaking of tuberculosis as a social disease. Where Phipps wanted to provide discriminate rather than indiscriminate charity, milk distribution and others provisions of assistance to the poor sick imbricated the Institute in that broader sea of neediness. Flick, in his frustration with the abuse of the Institute's generosity, would come to clearly articulate the danger brought about through this articulation of preventative measures, welfare, and the treatment of the general poor population—the danger, in his words, of "pauperization." In 1909, the York County Medical Society met to debate the merits of tuberculosis dispensaries. Concerns had emerged in relation to patients abusing these clinics and receiving treatment for maladies that did not include tuberculosis. Indeed, the Phipps Institute had struggled with this very problem. In the middle of the meeting, Flick was quoted: "Indescriminate [sic] charity works for degeneracy rather than for upbuilding….many people are able to help themselves, but will not do so when others are willing to help them." For Flick, being more discerning in the provision of charity would "help to stem the tide of pauperization which threatens the crusade against Tuberculosis" (Flick 1909).

The provision of free or indiscriminate care and the distribution of free milk, then, produced individuals, in Flick's opinion, that were too dependent—individuals capable of being independent, yet unwilling to do so in the face of Institute charity. The very remaking of tuberculosis as a sociological disease and the concomitant—and intentional—investment in practices that created dependency in patients thus ran into a limitation, in Flick's eyes, in the form of voluntary pauperization—a limitation in the form of the "unworthy" poor. Indeed, it was seemingly possible for the sick to be too dependent—a state of being that was inimical to the foundations of liberal individualism. This very outing of the limits of prudential dependence in relation to milk distribution laid bare the paradox by which the entirety of the preventative program of the Institute took shape through efforts to create independence through dependence. So long as the maintenance of the cure of tuberculosis in the poor required some form of material assistance, the Institute ran the risk of producing too much dependence in the vast sea of Philadelphia's poor.

The tense mix of social conditions, a bacillus that showed affinity for the unhygienic conditions of the slums, and the threat of patients becoming too dependent had an effect on Flick's optimism. Ultimately, in spite of his continued investment in the dispensary, Flick was increasingly cynical about the capacity of the clinic to serve the preventative mission, "Much can be accomplished in the way of treatment in tuberculosis dispensary, but it has relatively little preventative value. Patients get better, have their lives prolonged, and sometimes even get well. The majority of them, however, ultimately become advanced cases, serve their turn as sources of seed-supply for new cases, and die" (Flick 1908, 84). With the ideal of curing the disease already complicated by the ambiguous success of the sanitarium in producing "cured"

individuals, the recognition that much of resources of the dispensary had been invested in producing more "seed supply" complicated the very notion that liberal medicine, in the early 20th century, could, in fact, treat tuberculosis. At the very least, efforts to treat the disease were risky ventures. Indeed, the remaking of the disease as sociological and the accompanying complicating of the "cure" of the disease brought the ventures of the anti-tuberculosis movement to an awkward crossroads that would not see resolution until the antibiotic revolution of the 1950s.

By 1908, Flick had grown agitated with Phipps failure to invest in a new, permanent location for the Phipps Institute. The "old, inadequate quarters" were embarrassing to Flick. He required "new facilities," lest the Institute "abandon its scientific work," and focus exclusively on charity (Bates 1992, 130). Writing to Phipps' assistant, he expressed his frustration, "The delay…in putting the Institute on a permanent basis…has a very disconcerting influence upon my organization here." He continued, arguing that, due to the impermanence, he had difficulty maintaining the morale of his staff—Phipps' reticence was "a damper…upon the zeal and ardor or our organization" (129). Indeed, between 1906 and 1908, Flick had witnessed the resignation of a number of his colleagues and, consequently, work—especially record keeping—was falling through the cracks. For years, Flick had made do, in spite of his frustrations, with the limitations of the space. Upon hearing from Phipps' assistant, on October 29, 1909, that the Institute would neither create new facilities, nor move to a new location, Flick tendered his resignation (219).

Rather than appoint a new director, Phipps, seemingly reacting to Flick's resignation, set about looking for a new location for the Institute. In the winter of 1909, Phipps, on the

advice of a number of other physicians, including the prominent William Osler, "selected the University of Pennsylvania to carry out, on an enlarged scale, the work now being done by the Phipps Institute" (Pennsylvania 1910a). While the successes of the Institute, prior to the shift, had been difficult to measure, in the years of its operation, tuberculosis had firmly taken shape, in the medical world, as a sociological disease. This firmness of this remaking materialized, in 1910, with the statement, by the University of Pennsylvania, that "tuberculosis [is] a disease of the people, offer[ing] a problem that is much more social than medical in nature" (Pennsylvania 1910b). Indeed, the operations of the new Phipps Institute would, ironically, move almost entirely away from curing consumptives. Citing efforts to cure—the former "medical endeavor" of the Institute—as "of but little avail except in individual cases," the University chose to streamline the operations, considerably reducing the size and investment in sanitaria treatment, eliminating the dispensary, and focusing, instead, on "sociological imperatives" (Pennsylvania 1910c) and an educational campaign: "Money hitherto expended for the maintenance and care of the advanced cases could bring larger results," according to the "Report of the Committee Appointed by the Provost to Consider Plans for the Future Operation of the Phipps Institute," if put to other uses, especially that of "the conduct of a vigorous educational campaign, in order that the people themselves and through them the Municipality and State officers may recognize their responsibility to this class of incurable consumptives" (Pennsylvania 1910d). While aspects of the preventative mission remained—a focus on educating "the people among whom the disease exists," the charitable impulse—and especially, the provision of welfare—was gone (Pennsylvania 1910b).

Flick's fate in relation to the Institute was convoluted. In spite of the staff of physicians endorsing him as director in December of 1909, he established his lack of interest in continuing as medical director in a polite letter sent to the University on January 6, 1910 (Pennsylvania 1910b). Upon learning that he had not been appointed to a position at the new Institute, Flick, according to his daughter, lay "on the couch in his study, shading his eyes with his hands." The University would be the permanent location that Flick had so desired. However, it would not serve as the home Flick sought. And while he appeared to have chosen to not pursue a position at the Institute, Flick's pain on that day, as attested to by his daughter, suggests a deep ambivalence born of a career spent investing unbridled optimism in a cause—and in a disease—that ebbed, only to flow again, and again, with a relentlessness that perpetually defied the human will.

Epilogue

The conclusion, proffered at the end of the first decade of the 20th century by the University of Pennsylvania as it absorbed the Henry Phipps Institute, that tuberculosis was a sociological disease, was both encouraging and disconcerting. While it directed attention toward the manner in which healthy subjects and resistant bodies were partially the product of class-based access to resources including nutritious food, and the time to pursue health, the sociological orientation offered no obvious medical solution—no immediate improvement upon the sanitarium method for the cure of tuberculosis. The pursuit of regimen in sanitariums continued to be a popular means of seeking the cure as evidenced in the tubercular "tourists" that flocked to institutions across the United States—to Arizona and New Mexico, Kentucky, and Virginia. In spite of the questionable effect of the sanitarium cure and in the absence of a new medical solution, death rates from tuberculosis declined in cities across the United States in the first half of the 20th century. In hindsight, the decline was less likely a product of medicine and regimen, and more the effect of an overall rise in the standard of living of the average American (Dubos 1952, 216).

As late as 1952, with the publication of *The White Plague*, a seminal work in the historiography of tuberculosis, René and Jean Dubos were still directing attention toward the nexus of sociology and disease, while simultaneously implicating individuals in the continued propagation of consumption. Tuberculosis, they argued, "is the consequence of gross defects in social organization, and of errors in individual behavior. Man can eradicate it without vaccines and without drugs by integrating biological wisdom into social technology, into the management of everyday life" (xxxviii). Such an orientation toward the disease reflects the

sensible understanding that the treatment of tuberculosis cannot be located solely in the tools of medicine and that such treatment should proceed through attention to social circumstances—through intervention "into the management of everyday life." Yet in valorizing management, they simultaneous established a continued investment in a form of progressive social reform that proceeded through the production of diseased natures as subject to humans: weed out the errors and defects in social organization and social management, and humans can effectively take responsibility for tuberculosis. Gesturing toward the lingering influence of the anti-tuberculosis movement, Dubos and Dubos noted that the "tuberculous patient has been indoctrinated in the belief that it is his responsibility to take measures to minimize the spread of bacilli" (219). The residue of Flick's investment in the "crusade" against consumption, the re-making of individuals as responsible for the disease, and the transformation of tuberculosis into a sociological problem colored, and continues to color, thinking and approaches to preventing the disease. By rendering the disease as technical social problem, tuberculosis repeatedly takes shape as something that not only could, but should be eradicable if only humans pursue more efficient "science of social engineering," organizing correctly and rationally in the fields of science and social reform (Dubos 1952, 228).

The White Plague was published on the doorstep of the antibiotic revolution—the Western scientific-medical discovery of antibiotics and the emergent feeling, accompanying this technological accomplishment, that infectious disease was conquerable. The confrontation with the sociological conditions undergirding susceptibility to the disease would yield to a socio-medical model based upon the administration of antibiotics and the disciplining of the sick into regimens, not of fresh air, diet, and rest, but regimens of antibiotic consumption. The

"problem" of tubercular subjects failing to do as they ought re-emerged, in a slightly new form: no longer an issue of hewing to a regimen for cultivating the requisite tissue to resist the disease, tuberculosis treatment in the latter half of the 20th century increasingly revolved around individual success or failure in completing an antibiotic regimen.

This orientation continues to dominate public health discourse and practice today serving as the commonsensical framework through which to practice the treatment of tuberculosis. Where contemporary global health campaigns would have us focus on individuals as both responsible for the propagation of superbugs, and as the primary agents in overcoming multi-drug-resistant superbugs, such an orientation, like that of the anti-tuberculosis movement of the 1890s, produces the individual as a technology for the control of the disease and as a subject, either robust or deficient in willpower—compliant or non-compliant. The will of this individual continues to take shape through the erasure of microbial agency—through silence on the question of the disease itself in "willing" its own evolution.

This unquestioning investment in the human capacity to control disease is evident in an often-cited book, Laurie Garrett's 1994 *The Coming Plague*. Garrett, anxious about the potential-apocalyptic-disease-scenarios facing humans in the last decade of the 20th century writes, the "wonderful news in the emerging disease story" is the understanding that "nearly all outbreaks and epidemics are the fault of our own species—of human beings—not of the microbes" (32). Garrett, in claiming that contemporary disease threats are not the fault of the microbes, but rather of humans, means to allay anxieties. To the extent that humans have caused these threats, in Garrett's narrative, this is "wonderful news" as it can thus be reversed through rational social reorganization. Yet to suggest that the contemporary disease climate is

simply the failure of humans—and a correctable failure at that—is to overlook the much more complicated parasitic interaction between science and technology, human physiology, and unpredictable microbial tendencies.

While the specifics of Garret's text are more nuanced in addressing the fascinating capacity of microbes to survive, her call to action necessarily remains invested in the notion that, while control of infectious disease has failed in the past, it remains a possibility for the future through "better" science—genetic engineering—and through "better" social organization: human beings moving beyond their "personal ecospheres" to participate in a new form of global community. This progressive investment in humans evolving superior socio-technological solutions to disease in the interest of eventual eradication of microbial threats is a contemporary iteration of the optimism of reformers like Flick in the late-19th century and scholarly interventions like that of Dubos and Dubos. Technological solutions in conjunction with a reengineering of human behavior are posited as a means of interrupting apocalyptic disease threats and ensuring the survival of the human species.

Furthermore, with regard to contemporary disease threats, both as they take shape through global public health practices and campaigns, and in popular representations, the scale of individual responsibility has grown to encompass, not simply the care of oneself and thus, the care of the public, but a purported responsibility (and a presumed capacity) for taking care of the entirety of the human race. Indeed, as Andrew Speaker's remains haunted by his own contagious potential in the form of a number of outstanding lawsuits filed by those who sat upon the same plane as he did, those suffering from drug-resistant strains of tuberculosis ostensibly carry a pandemic threat within their bodies—within their spit. This responsibility for

the spread of the disease and the evolution of superbugs continues to hinge on the production of humans as having the capacity to control tuberculosis and a concomitant tendency to downplay or subsume the role of the disease in the processes of its own spreading and evolution. This reasoning that we, as humans, have brought superbugs on ourselves and we, as humans, can combat this threat—this Western investment in both the power and responsibility of humans to control disease—is, itself, a reification of the Enlightenment narrative of science and technology as capable of mastering, dominating, and controlling nature. Such reasoning continues to constitute human societies as capable of subjecting disease through the technology of individuals—individuals that are themselves constituted by a willpower that is responsible for this subjection. Disease, in this narrative, is there to be mastered—all that is required is the correct "enlightened" approach. Such thinking leaves in place the assumption that science and technology yield progressive improvements on past approaches so long as they are implemented correctly—without human error.

Lost in narratives of progressive science and social engineering is the question of the manner in which science and technology are implicated are implicated in the evolution of drug-resistant diseases. The creation of antibiotics locates scientists as actors in the history of the evolution of superbugs. Scientists and scientific practice are thus constituted, paradoxically, through practices and creations that are both solutions and problems. The contemporary confrontation with the monstrous-tuberculosis-superbug suggests an avenue for a discussion on the role of science and technology as partially "responsible" for the creation or propagation of disease threats. This discussion must necessarily confront the historically repeated scenario whereby a technological fix—lead in gasoline to prevent engine knocking, for instance—yields

unintended and often dangerous consequences. Indeed, focuses on individual responsibility and individual failure in propagating threats like multi-drug-resistant-tuberculosis elide frank discussions on the dual capacity of scientific innovations to be both beneficial and dangerous.

Where Flick did not give up on tuberculosis, as evidenced in his publication, in 1925, of the comprehensive medical-historical text, *The Development of Our Knowledge of Tuberculosis*, the very crossroads in which he was formed and his inability to fully materialize his visions through the Phipps Institute are indicative of a broader limitation born of a progressive-reformist-humanism founded upon a commitment to positivist knowledge about society and nature, and the investment, often unstated, in the capacity of humans to manage, and control, not only nature, but society as well, through socio-medical social engineering. Flick's solutions and contemporary approaches to the evolution of drug-resistant strains of tuberculosis remain incomplete not because humans—and human individuals—are prone to error or deficient in willpower, but because this very evolution evades totalizing efforts at control and adapts to, overcomes, and works through those very human technologies that reformers uncritically call "solutions." The late-19th century marriage of modern bacteriological science, with progressive public health investments, and a liberalism that increasingly produced individuals as possessing a capacity to overcome their own tuberculosis through the willful shaping of their internal bodies, continues to haunt the contemporary confrontation with tuberculosis superbugs: the very premise that tuberculosis is controllable, and the commitment to its control, is produced by and productive of an erasure of "vitality" of the *Mycobacterium tuberculosis*.

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