

TUBERCULOSIS: EFFECTS ON 19TH AND 20TH CENTURY FASHION, CULTURE AND
SOCIETY

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Abstract:

Tuberculosis was a prominent disease in the 19th and 20th centuries during the period in which the Western world as we conceive it today was created. In the USA and the UK, tuberculosis affected societal structure, fashion trends, and beauty ideals through media and literature. Women in particular were extremely affected by conceptions surrounding tuberculosis, which affected the popular silhouettes in fashion and popularized the ideal figure as archetypally pale, thin, and weak. Germ theory and the discovery of the tuberculosis bacilli in the 1880s led to a revolution in public health and how people thought about disease. The proliferation of tuberculosis led to medical advancements and inventions such as the sanatorium in an effort to curb the spread of the disease prior to the discovery of effective antibiotics in the 1940s. Tuberculosis has left a lasting impact on our culture and much of our media carries the legacy of fashions and culture that originated with the widespread reach of consumption.

History

Tuberculosis has been known by many names throughout the ages; scrofula, phthisis, consumption, Pott's disease, asthenica, lupus, graveyard cough, hectic fever, and the white plague, to name a few. The term "tuberculosis" wasn't in widespread use until the second half of the 19th century⁵ while the term phthisis has a significantly older origin, dating back to its use in Greek literature in 460 BC¹. Tuberculosis is, in itself, an ancient disease, perhaps pre-dating the establishment of *Homo sapiens*.² Studies have shown that tuberculosis has been present in the majority of the civilizations of the past; from the spines of mummies in Egypt and Peru to records of disease in ancient Greece and Imperial Rome², tuberculosis has been a rare constant in the evolution of the human species. When archaeologists unearthed the mummified body of the priest of Ammon from a tomb dating back to around 1000 B.C., they found bone lesions most likely caused by tuberculosis.⁸ Other excavations around the same area have uncovered many other bodies with similar tuberculosis lesions, leading to a belief that a large sanatorium may have existed in ancient Egypt⁸. For many people living in the 19th and early 20th centuries, consumption was the dread disease. It wiped out entire families and decimated populations across the world. According to Murray, 1 in 4 deaths recorded in parishes in England at the end of the 18th century were attributed to some form of tuberculosis³.

Tuberculosis in humans is a disease caused by the bacterium *Mycobacterium tuberculosis*. It is closely related to and perhaps evolved from the bovine form, *Mycobacterium bovis* around the time of human domestication of cattle around 15,000-20,000 years ago². *M. tuberculosis* is an acid-fast bacillus with a waxy coating that leads to unusual clumping of rods when viewing samples under a microscope. It was first identified by Robert Koch in 1882, further lending credence to the novel germ theory of infectious disease introduced by Louis Pasteur in 1862⁴. It would be many years before general public acceptance of germ theory led to true innovations and widespread changes in the medical system. The identification of the causative agent of tuberculosis as a communicable bacteria would also irreversibly change the popular public view of the disease as understanding replaced romanticization.

Transmission

Before the popularization of germ theory and the understanding of tuberculosis as an infectious disease, tuberculosis presentation in families was thought to be due to hereditary constitutional defects and personal nature. Public opinion on the contagiousness of tuberculosis was split between northern and southern Europe by the 18th century, with many northern European physicians denouncing the contagion theory as fanciful. In 1852, *A Treatise on Tuberculosis* stated:

The doctrine of contagion has, however, at all times been based on very vague and insufficient evidence; such as isolated cases of the disease in individuals who had previously been in constant attendance upon the sick; or in husbands or wives, where both had slept in the same bed until the fatal termination of the disease in the one first affected ... Against the few facts which tend to support the doctrine of contagion, there are tens of thousands against it.⁶

With the repudiation of contagion as the primary mode of disease transmission, physicians had to fill the gap with other theories. Primary among these theories was the idea that the cause of tuberculosis was a nebulous etiology of various factors including genetic susceptibility, environment, moral failings, and heredity.⁵

Any discussion about tuberculosis, or indeed any other prominent disease before the 20th century must include the predominant transmission theory of the time; miasma theory. Prior to the discovery of the tuberculosis bacteria, popular theories around disease transmission centered

around the idea of foul smells and odors. This was a long-held belief, popularized around the 16th century in the wake of many and varied pestilences and plagues.²⁰ The popular figure of the plague doctor with his long, crooked beak is a remnant of this belief. Doctors would pack the beak of the mask with pleasant-smelling herbs to ward off the “evil” smells believed to transmit disease.²¹ In the 19th century, disease transmission was a highly contested topic. Contagion was the term applied to the idea of person-to-person contact while environmental factors like air or water would fall under the category of infection or miasma⁷. Miasma theory predominantly espoused the belief that a lack of hygiene or cleanliness in your person or surroundings was cause enough for disease; this led to the medical theory and social reform movement termed sanitationism.⁷ Sanitationism was named for the idea that “all possible diseases could be prevented and curbed if the living environment were kept clean, healthy, and free of all materials thought to be damaging or at least threatening to human health.”⁷ As a result, government programs were created in order to facilitate cleaning up urban slums; areas of many cities that were rife with tuberculosis and disease.

Disease and Romanticism

The story of tuberculosis and cities were never more entwined than following the Industrial Revolution. Dubos writes in 1952:

“A great outburst of the disease [tuberculosis] followed the Industrial Revolution. The epidemic became the White Plague, giving pallor to the dreariness of the mushrooming cities, and injecting its fever into the romantic moods of the age”.⁸

These romantic moods came about partially in response to the pressures of disease and death that so prominently affected entire populations. Tuberculosis fed into the Victorian fervor surrounding the idea of a ‘beautiful death’; it was the aesthetic disease that indicated passion, spirituality, and genius.¹⁰ Consumption was unlike other prominent diseases at the time, like smallpox or syphilis; its symptoms remained internal until the last, painful days. However, popular literature at the time painted tuberculosis as a good, easy, Christian death; often in complete contrast to the actual symptoms of the disease. There are 3 main stages of tuberculosis infections which vary in symptomatology. The primary infection phase occurs after the initial infection when the immune system is recognizing and destroying tuberculosis cells. Most

patients do not have any symptoms during this phase; *Mycobacterium tuberculosis* cells can survive the immune system and continue to proliferate. The primary infection stage is usually followed by a latent state in which the immune system keeps the bacterial growth in check by building containment walls around the bacilli. If the immune system is no longer able to keep the bacterial replication in check, the patient progresses from the latent to the active stage. At this point, the patient is now contagious; symptoms of pulmonary tuberculosis often worsen over time. Typical symptoms include coughing up blood or mucus, chest pain, fever, chills, night sweats, weight loss, anorexia, lethargy, and general malaise.⁵³ Diagnosis with consumption was essentially a death sentence but the long period of illness gave the afflicted time to get their affairs in order. Many sufferers of the disease, like the famous poet John Keats, were able to continue writing and creating even in the grasp of illness.¹⁰ Even Edgar Allen Poe was fascinated with consumption, writing,

“The beautiful Lady Mary! How could she die? - and of consumption! But it is a path I have prayed to follow. I would wish all I love to perish of that gentle disease. How glorious! To depart in the hey-day of the young blood...”.¹¹

The symptoms of tuberculosis could ostensibly be characterized as beautifying, especially when so far removed from reality. The hectic flush or feverish brightness of the eyes, the whitened skin and slender body, the winged back, and the apparent blue veins all lend themselves to the rampant romanticization of the time.

Art and Death

The list of famous persons who died of tuberculosis reads like a who’s who list of influential writers and poets: John Keats, the Bronte sisters, Robert Burns, Anton Checkov, Franz Kafka, George Orwell, Jean-Jacque Rousseau, and countless others all perished of the same disease. Is it any wonder then that tuberculosis came to be regarded as a disease that visits those of a particularly creative mind? Alexandre Dumas wryly wrote that “...in 1823 and 1824 it was the fashion to suffer from the lungs; everybody was consumptive, poets especially; it was good form to spit blood after each emotion that was at all sensational, and to die before reaching the age of thirty.”¹⁰ In Britain especially, popular resistance to contagion theory meant that many

people had to accept alternate explanations for the deaths of so many young and promising writers, poets, and actors. Diagnosis of consumption would continue to remain uncertain for the rest of the century and no cure was to be found until the middle of the 20th century. Thus, consumption remained as mysterious as it had ever been which accounts for the continued use of the term “consumption” alongside the more scientific “tuberculosis”. The framing of consumption as a “good and gentle”¹⁰ death had meshed with prominent Christian ideals in which a young woman, often virginal, could be pushed into a consumption from pining for a lover or through the dastardly acts of a rake. Such is the fate of the eponymous Clarissa in *Clarissa, Or, The History of a Young Lady* by Samuel Richardson, written in 1748. In it, Clarissa dies a beatific death, broken-hearted by the rake Belton’s evil ways:

“...when you had seen to what a lovely skeleton (for she is really lovely still, nor can she, with such a form and features, be otherwise) you have, in a few weeks, reduced one of the most charming women in the world, and that in the full bloom of her youth and beauty”.¹²

Richardson casts Clarissa as a redemptive icon, purified through her mortal suffering. She is rewarded for her piety through the clarity of thought that remains until she takes her last breath, having put straight her earthly affairs before ascending to heaven. Throughout the book, Richardson goes through great pains to accentuate the aesthetic allure of her consumptive body;

“One faded cheek rested upon the good woman’s bosom, the kindly warmth of which had overspread it with a faint, but charming flush; the other paler and hollow, as if already iced over by death. Her hands, white as the lily, with her meandering veins more transparently blue than ever I had seen even hers (veins so soon, alas! to be choked up by the congealment of that purple stream which already so languidly creeps rather than flows through them!); her hands hanging lifelessly, one before her, the other grasped by the right hand of the kind widow ... her aspect was sweetly calm and serene; and though she started now and then, yet her sleep seemed easy; her breath indeed short and quick; but tolerably free, and not like that of a dying person.”¹³

Feminine Beauty

It is not a stretch to see how, in a world beset by unexplainable diseases and the death of hundreds of thousands of people in their prime, the fascination with being viewed as beautiful even in death swiftly took hold of young women. Lawlor writes, “Beautifying the dead was one

way of denying its power- the female figure especially being the symbol, and embodiment of the beautiful.”¹⁰ The ideal female form was waifish, pale, and weak with flushed cheeks and bright eyes. Even to modern audiences, this should sound familiar; the beauty ideals of our time haven’t changed as much as we would like to pretend. In Lois Banner’s *American Beauty*, written in 1983, she codifies this ideal in the early 19th century as the “steel-engraving lady”. American women were no less obsessed with the ideals of consumptive beauty than their British counterparts. Banner writes,

“To observers, American women appeared “sylphlike”, “ultra-attenuated”, “etherealized”, “fragile”, “frail”, and “slight”. They had a wax-doll prettiness; groups of them resembled butterflies. Frances Kemble thought they looked as though a “puff of wind would break them in half or a drop of water soak them through... So powerful was the desire for delicacy that it became fashionable to appear ill... the attempt to cope with the threat of consumption went even further than glorifying its victims: women may have triumphed over the fear of infection by affecting its symptoms, and, by thus unconsciously expressing solidarity with all female sufferers, may have anesthetized its dread impact.”¹⁴



Figure 1, circa 1846

Fashion in the early Victorian era was more subdued with smaller skirts, less voluminous sleeves and more demure colors and patterns. Many of the women in fashion plates were illustrated with extremely pale skin and flushed cheeks.

The American publication *Godey's Lady's Book* (alternatively known as *Godey's Magazine and Lady's Book*) ran from 1830 to 1878 and played a major part in the popularization of the so-called steel-engraving lady. In it, fashion plates ran alongside advice columns for home decoration and cooking, poems, and short stories; all acceptable fare for ladies' entertainment at the time. Fashion plates are the precursor to photograph advertisements for clothing; depending on the year and periodical, they could be black and white or colored. Figures 1-3 and 5-9 are fashion plates sourced from the Met Museum.^{42,43,44,45,46,47,48,49} Looking through, you can see how the ideal silhouette for women generally changes decade by decade; the closer one gets to the turn of the 20th century, the more rapidly the silhouette changes. This is in large part to do with the Industrial Revolution and the circulation of women’s fashion books like *Godey's Lady's Book*. As access to fashionable clothing became more feasible for the average person, the ton and

fashionable society had to work harder to create a culture of exclusion. Figures 2 and 3 demonstrate just how rapidly changes in silhouettes developed; these plates were illustrated just a decade apart but look to be from completely different eras of fashion. The 20th century would prove to be a truly new era in fashion as women entered the public sphere and began working outside of the home in record numbers. With this new social mobility came changes in fashionable dress; skirt hems got shorter and dresses became less complex. Without the heavy skirts of the preceding years, corsets were no longer necessary and further clothing revolutions would come as women embraced life in the public sphere.



Figure 2, circa 1906

The turn of the century marked an end to the bustle period as well as a transition towards softer, less restrictive styles. The Edwardian era is most often characterized by the pigeon-breasted blouse shape with all the volume gathered towards the bust.



Figure 3, circa 1917

Dresses shortened and became much less restrictive as women's fashion transitioned to the drop-waist silhouette most commonly associated with the Roaring 20's.

However, in order to hold up the weight of the long, heavy skirts fashionable in the 19th century, corsetry was necessary for women. A corset provides structure and allows the wearer to distribute the weight of her skirts away from her actual waist and hips. At the time, corsets were considered functional undergarments; no more reviled than bras today. Most women wore them, and they were a feature of public life. However, much of the commentary surrounding corsetry and women's fashion must be taken with a grain of salt; for centuries, men held the singular right to discourse in the public sphere. As such, there is a long and storied history of men commenting on women's fashion as a method of control. This continues right through the present day with many men commenting on women's clothing or bodies in either public spaces or, more recently, on the internet. For the majority of history, doctors were men; medical treatises and thoughts at

the time centered specifically around the phenomenon of tight lacing. Tight lacing refers to the practice of waist reduction through the use of a corset. This was only possible with the invention of metal eyelets (called grommets) around 1828.⁵⁰ Previously, hand-sewn or reinforced ivory grommets were unable to take the strain of tight lacing and would rip or tear out of the garment.

In modern culture, tight lacing and corsetry are synonymous; however, historically only a small subset of the population was able to tight lace at all. Tightlacing can be very uncomfortable and the deleterious physical effects of long-term tightlacing have led to one of the most persistent modern stereotypes surrounding corsetry. Specifically, that of the tight lacing, fainting Victorian (or Georgian!) lady, exemplified by Elizabeth Swann in *Pirates of the Caribbean: Curse of the Black Pearl* (see Figure 4).^{22,40} Her spectacular swan dive off a cliff certainly cemented the effects of tight lacing into popular consciousness in the early 2000s. In the film, her father purchases a new dress for her in order to impress her suitor; the dress is too tight and Elizabeth is tight-laced into it. This leads to her falling off of a cliff in a dead faint as the suitor proposes when she isn't able to properly breathe in her corset. Many of the stereotypes we now hold about the Victorian and Edwardian eras come



Figure 4, 2003

Keira Knightley as Elizabeth Swann in *Pirates of the Caribbean: The Curse of the Black Pearl*



Figure 5, circa 1839

The wide bottoms of skirts and large sleeve shapes served to dramatize the waist reduction offered through corsetry in a visual illusion.

from a small subset of high society; women whose husbands had the money and influence to fund their fashionable pursuits.

Women of all classes wore corsets, not just the gentry and the rich. Working women were able to buy corsetry made for movement, such as the “Pretty Housemaid” corset made by the Symington company.⁵⁴ Many of these corsets were corded instead of boned, making them easier to move in and eliminating most of the restrictions that high society corsets featured. In order to attain the fashionable

silhouette, women of the ton would use a combination of tightlacing and padding to shape their bodies. This can be extremely uncomfortable; rigorous physical movement is difficult and the corsets used to attain these figures were heavily boned. In order to tight lace, the corset needs to

have grommets and enough boning to maintain the shape that the wearer is trying to achieve. Silhouettes like the wasp-waist silhouette of the late 1830s, shown in Figure 5, are an example of a fashion ideal.³⁹ Fashion plates recorded the beauty ideal that very few women could ever attain that was often restricted by money or class. These plates are exaggerations of the female form; the majority of women had neither the time nor the money to follow the minutiae of fashion. Figures 6 and 7 are fashion plates from the first and second bustle eras. A bustle is essentially a modified hoop skirt where all the volume is concentrated in the back; the bustle eras are some of the more unnatural eras in women's fashion when it comes to silhouette. In order to create the fashionable silhouette, the correct understructures are necessary; without a corset and bustle, the



Figure 6, circa 1875

This era is most easily characterized by the popularization of the bustle; skirt volumes swung towards the back and dresses became more elaborate.



Figure 7, circa 1888

The silhouette of the day continued to focus skirt volume towards the back with the bustle becoming more rigid and structured.

gowns wouldn't fit and would be extremely cumbersome to move in.

Health advisories of the time scolded women for entertaining the fanciful ideals of fashion; in every era, evidence can be found of people (usually men) writing pleas for women to put their health above fashion. For example, some doctors even took to the newspapers, claiming that the "unnatural and injurious practice of tight lacing" had caused the death of 31,090 English women from consumption.^{5,16} One of the challenges in collecting sources for this paper was the lack of primary resources written by women about tuberculosis. Women were not often allowed into medical spaces and colleges; this leads to the majority of medical resources from the time being written solely by men. There is always going to be a bias in medicine when a group of people is excluded from the major spaces. Keeping that in mind, it's important to remember that many of the resources used in this paper, especially those written for the public, were written by

men. Women had their own opinions about tuberculosis and we can see by the proliferation of fashionable illnesses that they were just as susceptible to the romanticization of consumption as their male counterparts.

In 1820, towards the end of the Regency period popularized in the modern imagination by Jane Austen's works, William Burdon wrote,



Figure 8, 1822

This plate is from the tail end of the Regency era, characterized by Grecian-inspired natural form dresses with empire waistlines. Emphasis was often placed on showing the shoulder blades as dress backs dipped lower.

“Such is the domination of fashion over the female sex, that tho’ the lightness of their dress perpetually exposes them to the attacks of consumption... they had rather submit to the change of these most dreadful calamities, than deviate in a single article from the strictest law of fashion.”¹⁷

The fashionable silhouette at the time placed importance on displaying the backbones in an eerie parallel to the wing-back form of the consumption patient. This would have heightened the visibility of consumption in the public eye; John Reid in his treatise on the origin of consumption in 1806 describes this as “the clavicles and shoulder-blades are thrust out from their proper position,

and made to assume in some measure the form of wings... just raised from the body and about to expand for flight.”¹⁸ Far from being popular among the predominantly male fashion critics, this display of backbone was decried in 1819 as a “strange practical paradox of dress and undress, poor meagre, thin creatures... set one shivering to look at it; and the chest was so exposed with hollow collar bones, distinct ribs, and ill-covered shoulder-blades that a surgeon might have studied osteology from these living anatomies.”¹⁹ Figures 8 and 9 are fashion plates from the 1820s in which you can see the emphasis placed on the shoulder blades.^{41,42} Perhaps to a modern audience, the idea of disease as an ornament for fashion seems odd but one has to look no further than the predominance of the heroine-chic look



Figure 9, circa 1822

White dresses in the Grecian style were extremely popular in the Regency era. Emphasis on the back and shoulder blades is clearly reflected even in fashion plate illustrations.

of the early 2000s to see that society has never lost the fascination with unhealthily thin women. Even as the ideal silhouette for a woman waxed and waned throughout the 19th and 20th centuries, to be thin and pale has remained the archetypal goal.

Germ Theory and the End of Romanticisation

In the year 1882, Robert Koch presented his discovery of the causative agent of tuberculosis in a speech stating, “One in seven of all human beings dies from tuberculosis. If one only considers the productive middle-age groups, tuberculosis carries away one-third, and often more.”⁹ It is almost impossible to find accurate death counts, in part due to the uncertainties of diagnosis at the time. Many different diseases (like cancer, silicosis, or various lung abscesses) could have been confused with tuberculosis, and tuberculosis presentation could vary significantly.⁸ Dubos (1952) writes:

Tubercle bacilli can become widely distributed throughout the body by way of the bloodstream, causing a generalized infection called “miliary tuberculosis” which is characterized by the formation of very small nodules in most organs. Instead of becoming generalized, the disease can be limited to certain parts of the body. Inflammation of the membranes surrounding the brain (meningeal tuberculosis), destruction of kidney tissue (renal tuberculosis), the infirmity of the hunchback known as gibbus or Pott’s disease (tuberculosis of the spine), lupus (tuberculosis of the skin), fistula-in-ano and several other pathological conditions illustrate the power of tubercle bacilli to cause destructive lesions in practically all tissues and organs.⁸

The romantic ideas surrounding tuberculosis could no longer hold up to scientific understanding. With Koch’s discovery came a new understanding of tuberculosis as a communicable illness, essentially overwriting the consumptive archetype. Along with this change in understanding came different social attitudes about those afflicted with tuberculosis. Most of the literature and popular culture surrounding tuberculosis at the time centered around the upper class where it was fashionable to be sick. However, attitudes surrounding poor and working-class people suffering from consumption were quite the opposite. Lawlor (2014) states,

“...the actual high incidence of lower-class consumption... was ignored or placed in a different conceptual category to that of the higher orders: working-class consumption was more likely to be due to various vices like drinking and fornication, whereas middle-class consumption was a disease of refinement

and delicate sensibilities above all. Class divisions were therefore marked by physiological differences, with the higher orders having ‘finer’ nerves than the lower ones.”¹⁰

Contradictory attitudes surrounding tuberculosis were not just divided alongside class lines; there was an ideological disparity between consumption suffered by the affluent white and other races or ethnic groups. Foreigners could be either more or less susceptible to tuberculosis than the middle and upper classes but either way “...labourers, Jews, the Irish, African-American slaves or Native Americans were depicted as suffering from a different order of consumption from their superiors.”¹⁰ While tuberculosis was in some ways a great equalizer, running rampant amongst all persons no matter their race, gender, or class standing, in many other ways it is emblematic of the times in which it was most prevalent.

The impacts of tuberculosis did not end at the turn of the 20th century. In 1919, Hitler accused the Jews of producing a “racial tuberculosis among nations.”¹⁰ After the discovery of the bacterial source of infection, tuberculosis became a tool for ‘othering’. Bram Stoker’s *Dracula* (1897) emulated this fear; the symptoms of vampirism are similar to those of consumption. Dracula is described as being “...’tall and thin, and ghastly pale’, having a particularly thin nose and cheeks: ‘The general effect was one of extraordinary pallor.’”. The vampire often feeds on blood and is shown with a bloody mouth; blood spitting being one of the signs of tuberculosis.¹⁰ In the absence of romanticization, fear of infection sets in, and the outcasting of those affected becomes more predominant. Prior to the popularization of germ theory, the mysteries about transmission meant that consumption wasn’t characterized as a visible disease. The introduction of scientific understanding re-conceptualized ideas about disease and made tuberculosis truly visible in the public eye.

Treatment

In 1887, Koch announced that he had found the cure for tuberculosis; an anti-tuberculosis vaccine called tuberculin. It was a glycerine extract of the tubercle bacillus that soon proved useless as a treatment but would be later revitalized into a useful diagnostic tool. Using a small dose generated an allergic reaction in people already infected by the tubercle bacillus.²⁷ It wasn’t until 1908 that Albert Calmette and Camille Guérin began experiments in France using ox bile to diminish the virulence of *M. tuberculosis* in what would eventually lead to the creation of the

Bacille Calmette Guérin (BCG) vaccine. It would be slowly introduced in the population with vaccination beginning in 1921. Between 1921 and 1928, 116,000 infants had been vaccinated²⁷ and vaccinations continued until a catastrophe occurred in late 1929 when 251 babies in Germany were accidentally given living virulent *M. tuberculosis* instead of impotent BCG.³ This would lead to a rejection of the BCG in Germany in “a fitting backdrop to the rise of the Nazis to power in Germany in the early 1930s”.²⁸ The BCG vaccine was readily implemented in Scandinavia beginning in the late 1920s; vaccination continued in the wake of World War II with the Danish Red Cross instituting a “...programme of mass BCG vaccination in some countries of war-torn Europe—Hungary, Poland, Yugoslavia, Rumania, Austria and Germany...The programme was placed under an international commission, called the International Tuberculosis Campaign, or the ‘Joint Enterprise’... By September 1949, 8 million children and young adults had been vaccinated with BCG.”²⁷

Yet, not all countries were convinced of the veracity and usefulness of the BCG vaccine. In Britain,

“The absence of controlled trials in Scandinavia was referred to, and it was pointed out that, in explaining the decline of tuberculosis in Scandinavia, it was difficult to separate the effects of BCG from other anti-tuberculosis measures such as general hygiene and the high ratio of beds for treatment...The most seemingly convincing of controlled trials in favour of BCG was that conducted among North American Indians in the 1930s and 1940s. In 1947 Sir Graham Wilson, director of the Public Health Laboratory Service in Britain from 1941 to 1963, commented on these trials and doubted whether conclusions pertaining to North American Indian children could be legitimately transferred to a ‘civilised people’ (McDougall, 1949, p. 416). Racial susceptibility to tuberculosis was still under debate, although medical opinion in the US was moving towards socio-economic explanations rather than ideas of racial-genetic susceptibility (McBride, 1987, p. 84).”²⁷

It wouldn’t be until 1949 that the BCG vaccine would be offered in Britain, first for nurses in tuberculosis sanatoriums. In the wake of a new mass radiography campaign post-WW2, far more latent infections were being identified and beds in sanatoriums were rapidly filling up. With the high rate of infection among tuberculosis nurses, the pressure on the government to provide protection for workers intensified. This led to the first vaccination campaign by the Medical Research Council (MRC) for approximately 56,000 schoolchildren in 1950. The subsequent

report was published in the British Medical Journal in 1956 and in 1963 the MRC concluded that BCG offered “substantial protection”.²⁷

In America, the predominant medical thoughts and practices of the 1930s and early 1940s prioritized educating patients about their disease and managing symptoms in sanatoriums. Far more than in Britain, American doctors turned to surgical intervention. In 1942, it was reported that “...70% of the patients discharged from Massachusetts sanatoria had had some form of collapse therapy (surgical intervention), whereas in Britain in the 1930s it was estimated that this treatment was given to no more than 10% of the patients”.²⁷ The development of surgical interventions for tuberculosis was not easy or without risk; thoracoplasty, one of the treatments for pulmonary tuberculosis, was developed in 1879 and involved “removing portions of the overlying ribs, permitting the soft parts to collapse into the cavity”.³⁰ In a world about a decade from germ theory being commonly accepted, surgical intervention prognosis was often poor. During WW1, cases of influenza in the winter of 1917-1918 led to important insights into the basic physiological principles involved in open pneumothorax.³⁰ According to Herbsmann,

“The scope of thoracic surgery was markedly limited as the twentieth century began. Heuer,²⁴ reviewing the literature from 1880 to 1920, found reports of nine resections or lobectomies for tuberculosis, 14 for tumors of the lung or of the thoracic wall invading the lung, and 56 for bronchiectasis. Mortality was high, and all of the procedures depended on a fixed mediastinum or lung so that open pneumothorax could be accomplished. Often two-or three-stage operations were necessary to achieve this by first inducing adhesions of the lung to the parietal pleura. This was also necessary to help limit infection, for upon entering the pleural cavity the lung falls away, opening a wide avenue for the spread of infection.”³⁰

In 1915, tuberculosis was still mainly treated by collapse therapy or thoracoplasty with sparse attempts at resection. It wasn't until 1931 that Rudolph Nissen performed what is considered the first successful removal of an entire lung but resection as treatment remained relatively rare until the discovery of streptomycin in 1943 by Selman Waksman. Figure 10 (shown below) is a graphical representation of deaths attributed to tuberculosis in the United States from 1900 to 2012.⁵² The introduction of streptomycin and other anti-tuberculosis drugs into treatment regimes meant that surgical intervention in the US became increasingly common. Up through 1959, American resistance to the adoption of the BCG vaccine remained stalwart, with the reasoning that “...the belief that giving BCG to all negative tuberculin reactors would

render ineffective the tuberculin testing which was an effective means of tracing the source of infection. They preferred a programme of regular tuberculin testing and treatment of those found to be infected.”²⁷

The debate about the BCG vaccine remains today; the range of effectiveness in various trials ranged from potentially detrimental to an astounding 80% protective benefit. The American and British resistance to adopting the vaccine is considered to have been the result of “...some competitiveness within the international scientific community in relation to vaccination against tuberculosis.

Britain and America alike looked for alternative methods of

vaccination...American nationalism in relation to medical research, and the

“assumption that only American science could resolve American problems...”²⁷ Another potential factor in that resistance was the uniquely American commitment to the sanatorium as a core component of the anti-tuberculosis campaigns waged well into the 1950s. Sanitoriums like the one in Davos, Switzerland remain immortalized in popular culture; this particular sanatorium was the setting for Thomas Mann's 1924 novel *The Magic Mountain* and was the location at which Robert Louis Stevenson was treated.²⁹ The pharmacological innovations made in the 1950s fit into the existing model of sanatoria far more than the BCG vaccine which could go a long way into explaining why the USA remains one of the few countries that does not utilize the BCG vaccine in infant vaccinations.²⁷

Antibiotic treatment of tuberculosis originated in 1943 with the discovery of streptomycin and, soon after, its analog dihydrostreptomycin. While initial treatment of tuberculosis with streptomycin did not often come with debilitating side effects, treatment with dihydrostreptomycin could lead to progressive and irreversible deafness.³¹ It became clear that streptomycin would not be the so-called ‘magic bullet’ to end tuberculosis infections; antibiotic resistance rapidly developed and treatment regimes soon included para-aminosalicylic acid

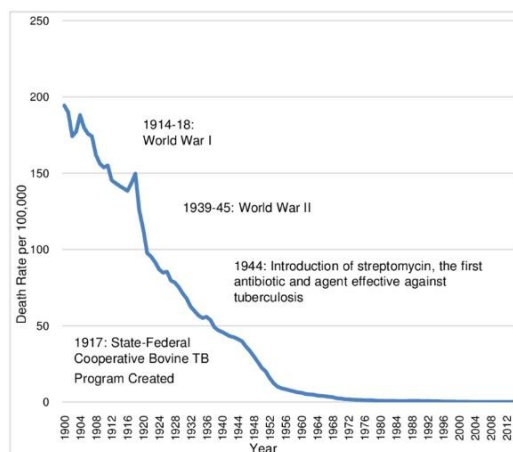


Figure 10

This figure shows the death rates from tuberculosis in the US from 1900-2012.⁵² Tuberculosis deaths were already decreasing prior to the introduction of antibiotics partly due to sanatorium sequestration and better understanding of transmission.

(PAS) in conjunction with streptomycin and isoniazid. Relatively ineffectual when used alone, PAS works in tandem with either streptomycin or isoniazid to increase the effectiveness of its companion drug as well as by reducing or delaying the emergence of bacterial resistance.³¹ Isoniazid, introduced in 1952, soon outstripped streptomycin as the anti-tuberculosis drug of choice. Much like today, treatment regimens for tuberculosis involved multiple antibiotics and a long course time. When primary antibiotics could not be used, a variety of other antibiotics like viomycin, pyrazinamide, or cycloserine would have been prescribed.³¹ These drugs were more toxic and less effective than primary drugs and were avoided unless absolutely necessary.

Surgical and pharmacological interventions were not the extent of the anti-tuberculosis campaigns of the early 20th century. Changing understanding around disease and public health led to measures like the anti-spitting legislation introduced in the USA beginning around 1896. According to Dr. Alfred Hillier, a British Health Expert in 1902, “The abolition of spitting in public vehicles and thoroughfares will in itself be a gain to civilization ... the sputum of the consumptive is practically the sole cause of spreading the disease among mankind.”³³ Aligning well with the Progressive Era’s increased focus on education, social reform, and scientific principles, anti-spitting laws aimed to increase public awareness of the sputum transmission vector and curtail behaviors detrimental to public health. This marks the tentative beginning of legislation recognizing tuberculosis as a social disease with many facets; “promiscuous spitting” being one of them. It would take a combination of medical, legal, and educational advancements to begin to curb tuberculosis but the fight continues and the scars left on our collective cultural memory remain today.

Tuberculosis in Modern Media

One of the primary archetypes of the consumptive woman was that of the reformed courtesan; in her illness, she redeems her sins and dies cleanly. To modern audiences, this is best exemplified by the character Satine in the 2001 film *Moulin Rouge* directed by Baz Luhrmann.²³ Throughout the film, Satine, played by Nicole Kidman, is made to look preternaturally pale. The pallor of her face is often exaggerated not only by her bright red hair and luminous blue eyes but also through the sartorial choices made by the costume designers. Satine is a courtesan, living out her days in the hedonistic, vibrant, and unapologetic *Moulin Rouge*. The film follows Christian, an idealistic “child of the revolution” who came to Paris to write about love.

Satine dreams of finally becoming an actress and leaving behind the days of selling herself to men. This dream is not meant to be; soon, Satine finds herself facing the symptoms of consumption. As the movie progresses, Satine becomes more visibly sick. Initially, she believes her fainting and shortness of breath to be nothing more than passing illness or exhaustion. Viewers, however, are “in” on her diagnosis almost from the beginning. The doctor pronounces her to be in “a consumption” and not long for this world. Harold Zigler decides to keep this knowledge from her in an effort to keep his “Sparkling Diamond” show-ready.

However, once Satine coughs some bright red arterial blood into a pristine white handkerchief, (in a familiar Victorian motif) the game is up. Both the viewer and Satine are now aware of her impending death. One of the critical scenes in the movie is when Satine is sent to seduce the Duke in an effort to secure continued funding for the first legitimate play at the Moulin Rouge. As Satine attempts her seduction, she arrives in a severe, gothic black dress and veil. When she removes the veil, the viewer can see the beading of sweat on her brow and the blood at the corner of her mouth, almost blending with her lipstick. Nicole Kidman looks transformed, almost vampiric; as she turns her back to the camera, her shoulder blades extend above the back of her dress, giving her the eerie wing-backed appearance so characteristic of a consumptive as described by John Reid two centuries before. Cast in a cold blue light, so different from the rest of the film, it’s clear that her death has already begun. This scene is shot in dizzying flashes from the technicolor torment of Christian as the woman he loves once more sells herself, to the blue hues of Satine’s seduction. This reinforces just how ‘other’ she has become in her illness, a world away from the romantic sensibility espoused by Christian throughout the movie.

Satine initially chooses to let go of the man she loves in order to save the Moulin Rouge and save him from the difficulty of watching her die. However, she is unable to continue hurting him; she chooses love over money and it is this act of love that finally “redeems” her. She dies in a white dress, cradled in the arms of the man she loves as red and white rose petals fall around them, no longer willing to be a courtesan. This repeating red-on-white motif is correlated with many of the overt instances of tuberculosis in the film. The initial red blood on the white handkerchief, the blood on Christian’s white shirt in the final scene, Satine’s red hair against the unearthly pallor of her alabaster skin, and the blood-red shiny lipstick on Satine as contrasted with the matte lipsticks of the other dancers all serve as a visual reinforcement of her illness.

Even in a story ostensibly about her, Satine is robbed of a voice of her own; the movie is told through the perspective of Christian as he looks back on his time with Satine at the Moulin Rouge. Her tuberculosis is a convenient diagnosis that ensures she will die at the end of the story, ensuring that the audience will not have to reckon with the moral dilemmas presented during the course of the movie. And yet, this movie is an interesting example of how tuberculosis still manages to capture our attention. The story is set during the turn of the 20th century and has to reckon with both past and present attitudes surrounding tuberculosis.

Satine in *Moulin Rouge* is part of a long and storied literary history exploring the relationship between women, morality, and disease. Richardson's *Clarissa* is part of this same lineage but is by no means the only; Alexandre Dumas' Marguerite Gautier in *La Dame aux camélias* (1848), Violetta in *La Traviata* (1853), and the eponymous Manon from *Manon Lescaut* (1892) are all variations on this theme. *Moulin Rouge* most clearly draws inspiration from *La Dame aux camélias* in which a courtesan falls in genuine love with a young man of slight means that she ultimately abandons to safeguard his reputation. Marguerite dies from a broken heart, destitute and alone. Armand, the man she loved, travels back in a race against time but arrives to find her already dead and buried in a pauper's grave, her belongings sold off to finance her debts, and little left behind but a few letters. The reader learns of Marguerite through the lens of a male narrator as he befriends Armand in the depths of his grief. She, herself, only appears once in the entire book as a gruesome, exhumed corpse when Armand has her body moved to what he views as a more appropriate burial ground.²⁵

Marguerite is redeemed through her illness and selflessness; her reward is a nebulous sense of peace at her passing. She retains her beauty throughout her illness and death but is robbed of any sense of independence or autonomy, much like Satine. *Moulin Rouge* is also told from the perspective of Christian, removing the viewer from Satine's internal thoughts and feelings. The story of tuberculosis and women in the popular imagination is one of voyeuristic fascination as men alternately fetishize and decry the "beautiful death". The impure, morally corrupt woman is only purified through suffering and her eventual death, returning her to a godly Christian woman and leaving the men behind to tell her story. She is not the voice of her own death or even her own life. The preponderance of novels, plays, operas, and later movies entirely focused on the idea of the reformed courtesan is a clear indication of the long-lasting impacts tuberculosis has had on popular culture.

Tuberculosis has left an indelible mark on our culture. It pervades every subset of media and speaks to a real fear that we still hold of disease and death. Fans of the gaming community will be familiar with the main character of Red Dead Redemption 2, Arthur Morgan. He's a rough-riding, gruff, and dogged good-old American cowboy in the last gasps of the Wild West in 1899. As part of the Van der Linde gang, Arthur spends his days committing often violent acts; shooting and robbing, and stealing while running from the law. Even though he commits these acts, he still maintains a moral code for himself, rationalizing it in the context of taking care of the people he feels responsible for. As the gang falls apart, he starts to get sick. When he finally drags himself to the doctor, he finds out that he has tuberculosis. He contracted it earlier in the game, beating a sick debtor nearly to death. This certain, encroaching mortality shakes him like nothing else; he is forced to reckon with the result of a lifetime of bad deeds and he only has 6 months left to live.

Arthur decides that there is nothing that he can do to truly atone for the things that he's done in the past but spends the rest of the game helping people when he can. He tries to make amends with the aforementioned debtor's family and cancels the debts he can. As he gets sicker, his core levels drop and the only way to regain some of the energy you need to complete missions is to sleep. Food and drink don't help and sometimes he's coughing so hard that he falls off of his horse. You, as the player, are brought along with him as he wheezes and coughs up blood, entirely transformed from the man that you were introduced to at the beginning of the story. Arthur is a man living with a deadly, progressive illness and the game will not let you forget it. No matter how you play, Arthur Morgan will contract tuberculosis. He will die, alone, on a mountaintop, watching the sun rise one final time. There is no cure for tuberculosis in 1899, before antibiotics. His end is inevitable and brutal, killed not in a glorious shootout but with one final gasping breath.

Tuberculosis Today

With antibiotic resistance on the rise globally, a return to pre-antibiotic tuberculosis levels could prove possible. Tuberculosis hasn't simply gone away; in recent years, high-profile cases like that of Robert Daniels have gained international attention. In 2006, Daniels was diagnosed with a form of drug-resistant Tuberculosis that he likely contracted while incarcerated in Russia. A judge ruled that "Daniels recklessly exposed others to his illness by going out in public without a mask. Even though he was not charged with a crime at the time, he was placed in

solitary confinement and spent nearly a year in the jail ward at Maricopa Medical Center in Phoenix.”³⁷ His extrajudicial confinement caused an international outcry and necessitated a conversation about the dangers of tuberculosis to public health. He is not the only one: as of writing this essay, a woman in Tacoma, Washington is refusing to isolate and be treated for a contagious tuberculosis infection. According to an article released on February 9th, 2023, legal intervention has not occurred yet but likely will in the face of her resistance to treatment.³⁸ The relationship between public and personal health is a complicated one but in the case of a disease like tuberculosis, the concern over public health must supersede individual liberties.

Conclusion

Tuberculosis had a unique impact on society as we know it today. Disease and death have always been present in human societies but tuberculosis was uniquely poised to affect our relationships, our culture, and our media. For women, tuberculosis was prevalent at a time when gender roles in the public and private spheres were once again beginning to shift. As the Industrial Revolution fundamentally changed society, so too did tuberculosis; even today, we can still see the echoes of a not-so-distant past. Our beauty standards, our movies, our books, and even our video games still reckon with the effects that tuberculosis had on our collective psyche. Understanding where we came from can help us to better understand where we’re going. It takes a community to combat disease and in the wake of yet another devastating global pandemic, it’s important to remember that we are truly all in this together. Understanding the effects of tuberculosis and all its myriad forms can help us to more critically interact with the diseases that still plague us today.

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