"On the Relationship of Technology to Medicine from 1897-1942"

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Technology is a field of fluidity; it is ever changing and ever evolving. Technology’s definition is almost as broad as the array of industries which it affects, but it is best defined as the “practical application of knowledge, especially in a particular area” (Merriam-Webster). Technology began to play a crucial role in medicine as early as 1897, and grew in prevalence through the 1940s. It continues to be ever present, and almost necessary, as medicine, and its practitioners, are becoming gradually more reliant on different types of technologies in all fields of medicine. Since 1897, and especially through the 1940s, technology played a key role in medicine; as technology (and subsequently, medicine) continued to develop, so did patient expectations for the use of that technology. Their expectations were not always warranted though, as an over-reliance on these new developments arguably became just as dangerous as an avoidance of their use. As technology continued to evolve, so did its role in medicine.

Technology seemed to have a direct relationship with medicine; as one continued to advance, so did the complementary.

Beginning in 1897, American culture witnessed one of the first infusions of technological advancement and the medical field with the introduction of the new Roentgen rays, or better known as “x-rays”, into the field of medicine. The polymerization of these two previously separate fields proved to be exceptionally progressive in the medical field, allowing medical professionals to have access to tangible pictures of their patients and their maladies that they previously needed to create mentally. In an article from the *Journal of the American Medical Association*, Dr. Charles L. Leonard writes an article praising the incorporation of the new x-ray technology into the field of medicine, particularly highlighting its undoubted usefulness in the
Leonard was not wrong in his prediction, as it was only fifteen years later that the editor of a leading medical journal issued an editorial to proselytize the continued use of x-rays in medical treatments, urging for precautionary x-ray exams. In an editorial from the Boston Medical and Surgical Journal, the editor begins listing reasons as to why using x-rays can become even more useful in the field of diagnostics. He explains that by using an x-ray to examine the chest cavities of patients, they can detect the early onset of some of the most crippling ailments of the time, spearheaded by pneumonia and tuberculosis. In reference to the detection of these diseases, the editor writes that “…early recognition is vital” (Editorial 560-561). A chart provided by the Center for Disease Control’s “Achievements in Public Health: 1900-1999” shows that in the year 1900, pneumonia and tuberculosis were the two leading causes of death in the United States, accounting for nearly 25% of the total percentage of American deaths that year. Akin to the preceding document, this article attempts to champion the
further use of x-ray technologies by listing the ways in which it could be used in medicine, arguing that “…x-ray examinations of other members of this group [lungs and chest], as a precaution, would show slight changes in the lungs, if present, and thus afford an opportunity for saving lives and preventing a long, expensive, and comparatively hopeless illness….​” (Editorial 560-561).

It is through these modes of precautionary treatment that many medical maladies were since remedied, as doctors now, due to advancements in technology and thus medicine, were now able to detect these conditions earlier than ever before.

In the year 1915, the United States was in the eye of a whirlwind of new advancements and world affairs. With the “Great War” raging in Europe, the United States was maintaining some neutrality, not having yet officially declared war on the German Empire. There was no lack of excitement on the American technological and medical fronts either, as an unprecedented array of new developments had furthered the progression of medical knowledge and technology’s influence on said knowledge. The workings of Louis Pasteur in the 1860s and the further research of Robert Koch and the continued development of the Germ Theory paved the way for new ideas and the creation of the field of “pathology”, or the study of the “pathogens” created by these two researchers. The technological advancements in medical research laboratories proved absolutely crucial, as the development of serologic testing was paramount in the testing for and discovery of new microbes that caused many of the illnesses that plagued much of the world, such as syphilis, which afflicted upwards of 19% of men in New York City in the early 20th century (cdc.gov).

Due to the developments and rapid successes of technology in medicine, a desire to procure as much information as possible about new advancements and techniques became a
commonality in American culture. In 1915, William Armstrong wrote an article for the *Woman’s Home Companion* journal about his findings of “Twilight Sleep”; a newly developed birthing technique popularized overseas in Europe, specifically Germany. The idea of twilight sleep seemed appealing to many women as it made promises of a pain-free childbirth by almost “entrancing” a woman so that she may not feel any pain during the ordeal, and may even forget that the birthing happened. As Armstrong points out, his journal “has had so many letters from prospective mothers, inquiring as to the advisability of having the Twilight Sleep…that this question was referred to the specialist…” (Armstrong 10, 43). These American mothers-to-be intransigently reconnoitered to verify that this procedure was viable, even though much data existed that suggested it was not. A study conducted by Dr. Lester E Frankenthal and Dr. Frank Cary and published in the same year by Joseph Baer in the *Journal of the American Medical Association* definitively determined that the Twilight Sleep treatment was a perilous hoax. They conducted a series of trials on 37 patients, inducing them into Twilight Sleep while providing them with the optimal conditions for success. It was found that there was absolutely no success in 26 cases, with many of the cases resulting in serious injury, such as the death of a patient, and the near asphyxia of multiple babies. Out of the 37 cases, there were only 6 successful cases, and even in those cases many of the patients still suffered some sort of setback. For example, one patient didn’t know when the baby was born, which, as Armstrong points out in his article, can be dangerous. Women who experience this side effect often “…hesitate to believe that the child is actually hers” (Armstrong 10, 43). As Dr. Frankenthal concludes his research, he lists a number of maladies that occur as a result of this birthing method, including but not limited to: “prolongation of labor, the increase in the number of fetal asphyxias…the more frequent
postpartum hemorrhages…rupture of the uterus and even eclampsia…” and ultimately concludes that he feels “…compelled to condemn it” (Baer 1723-1724, 1726, 1728).

Despite these results, women still continued the procedure and still wrote in to the *The Woman’s Home Companion* inquiring about procedures of the sort. This is due in part to a shift in patient expectations. In the article from the *Boston Medical and Surgical Journal*, the editor hints that as technology began to expand, so did patient expectations. He states that the physical exams that technology allows them to conduct will “reassure the patient that he is not suffering from some disease of the chest that he fears is present….” This notion of patient expectations is carried through the World War I era, and is visible in the continuation of Twilight Sleep despite scientific evidence that antagonizes its purported success. The idea of Twilight Sleep, however, may have seemed desirable due to a wish to ease the pains of war, as reports of the physical effects of war, namely from mustard gas, were riddled throughout American media and sensationalized the desire to numb and protect from pain. As one soldier put it, “…suddenly my head seemed to burst from a loud ‘crack’ in my ear. Then my head began to swim, throat got dry, and a heavy pressure on the lungs…the trench started to wind like a snake, and sandbags appeared to be floating in the air…I sank onto the fire step, needles seemed to be pricking my flesh, then blackness” (“Gas Attack, 1916”). Propaganda of this type was not uncommon in media and culture, and was a normal occurrence at the time. According to Ian Cooke of the British Library, it was common for news sources to pull and embellish on stories of war in the hopes of either proliferating a desire to go to war, or to neutralize that desire. The idea of a numbing therapy would be appealing to those wishing to suppress the events of The Great War.

Evidence of the propensity for American media to utilize propaganda to influence American citizens is exemplified in an advertisement titled “What is the Value of a Human
Life?” which depicts a new device, the pulmotor, in use treating a patient. According to the ad, “For a hospital not to have a pulmotor will soon be regarded as reprehensible negligence approximating malpractice.” This type of poster serves as a dual role: it displays the continued connection between medicine and technology, as it shows another instance where a technological advancement [apparently] bettered medicine, and it also serves a purpose as a piece of propaganda that continues to bolster the idea that the newest technology is always the best, and that medicine, and its patients, must rely on this new technology in order to survive. It is unclear as to what physicians advocate in favor of this device, or what testing or trials it has passed [or failed].

Due to successes in technological and medical fusion, and the proliferation of propaganda such as the aforementioned advertisement, there became an overwhelming tendency to place a superfluously unquestioned amount of faith in new technologies and new practices, without proper protocol or testing. American culture reacted to these rapid changes in technology and medicine by developing a devotion to and trust for these new advancements, and some physicians recognized the grave danger that loomed if this phenomena became too widespread. Medical educator Francis Peabody composed an article in the *Boston Medical and Surgical Journal* in August of 1922 advocating against an undoubted faith in laboratory research and technology. As he puts it, it is “obvious to all clinicians of experience that the laboratory never can become, and never should become, the predominating factor in the practice of medicine” (Peabody, 324-328). Peabody is cognizant though, that there is an ever strengthening lean on the technological crutch, adding that “…it is equally evident that sound medicine cannot be carried on without the support of the laboratory and that in the future the dependence of the clinic on the laboratory will probably increase rather than decrease….” He warns that although the use of
laboratory technology can be and sometimes is very useful, it is often overused, and should only be taken in for auxiliary use when necessary. He suggests that “in spite of the extraordinary influence which the laboratory has had on the development of medical science, there is as yet no cause for the physician to feel that he cannot keep up with the requirements of the best modern practice….” It is made explicitly clear that technology has been crucial to the development of medicine thus far, but that as the role of technology continues to grow, so does medical staff’s dependency on it. It should be used only to “derive the greatest benefit” for the patient, not as a means of easing any diagnostic procedure. Peabody was correct in his foreshadowing that the “blind faith” in research can come back with a vicious vengeance, as antibiotics in modern day medicine are now less effective due to an overuse of them over the last 50 years.

Despite there being a sea of technological advancements, and due to their direct relationship to medical advancements, a great surge forward in medical knowledge and practice over the course of 1897 to 1942, these progressions had yet to breach the social stagnation that American culture continued to face in 1942. It was still common belief, up to that time, that African Americans had a completely different anatomical makeup to Whites. African American Professor Montagu Cobb responds to a leading textbook titled The Biology of the Negro by a Dr. J. Lewis. Cobb highlights that Lewis mentions several key differences (between Blacks and Whites), chiefly that they were less susceptible to many major illnesses at that time, such as tuberculosis, or “immunity acquired through longer contact, as with yellow fever and hookworm disease” (Cobb 394). He does note, however, that “…modern improvement in coverage and accuracy of data has altered common opinion in respect to diseases…which formerly were believed to be of slight or rare occurrence in the Negro….” Although a wealth of medical knowledge had been procured over the last 50 years, it is apparent that this newly obtained bank
of information had not transcended the racial boundaries, and thus leaving medical knowledge in a much less enlightened state. As Cobb highlights when concluding his critique, he notes that “On most subjects the evidence appears to have led to no sharp departure from current leading thought…”, meaning that despite the forward movement of medicine and its knowledge may have had, it is still very behind in many ways.

The time period of 1897-1942 was a time of great change for America in a plethora of ways. But one of the most acute ways in which America and its culture were changed is with the conjunction of technology and the medical field. The joining of these two previously separate entities trail blazed a completely unexplored path, and allowed for an explosion of medical advancements and knowledge, including the introduction of x-ray technology into medicine and the further development of the continually expanding field of pathology. However, due to the influence of world affairs and the rise in propaganda pieces seeping through American media, an unquestioned faith developed and was placed into these new technical and medical techniques, which, as some physicians warned, could be argued was disadvantageous to the furthering of medical advancements. Although this time period witnessed an unparalleled growth in technological influence in medicine and a grand shift in patient expectations, these progressive movements did not trickle throughout all society, as African Americans and Whites continued to be viewed in different anatomical perspectives. This was a period of growth, a period of change, and a period of technological imperative in the medical world.

Works Cited


