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Magistrsko delo

ANALIZA DRAMATIZACIJE MEDICINSKE ZNANOSTI IZ 19. STOLETJA V NANIZANKI

*KIRURG*

Master's thesis

AN ANALYSIS OF THE DRAMATIZATION OF 19TH CENTURY MEDICAL SCIENCE IN  
THE TELEVISION SHOW *THE KNICK*

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**Povzetek:**

Za svoje magistrsko delo sem raziskal, kako natančna je bila dramtizacija medicinske znanosti v nanizanki *Kirurg*. Naloga je razdeljena v dva dela. V prvem delu primerjam, kako natančno so bile dramtizirane zgodovinske osebnosti v nanizanki. Glavni lik nanizanke John Thackery je adaptacija resničnega kirurga Williama Halsteda. Lik dr. Cottona je uprizoritev resničnega psihiatra Henryja Cottona. Nanizanka vključuje tudi zgodbo Mary Mallon, irske imigrantke, ki je nevede širila trebušni tifus v domovih, kjer je delala kot kuharica. V drugem delu naloge sem analiziral natančnost dramtizacije medicinskih posegov in na kakšen način so producenti nanizanke z vizualnimi efekti dosegli zgodovinsko natančnost.

Ključne besede: Kirurg, dramtizacija, adaptacija, znanost, analiza, primerjava.



**Abstract:**

I researched how accurate the dramatization of medical science is in the television series *The Knick*. The thesis is separated into two parts. In the first part, I analyze the accuracy of the depiction of real persons in the series. The main character John Thackery is an adaptation of the real-life surgeon William Halsted. The character of Dr. Cotton is a dramatization of the real psychiatrist named Henry Cotton. The series also adapts the story of Mary Mallon, who was a healthy carrier of typhoid fever and was responsible for spreading the disease in households where she worked as a cook. In the second part of my thesis, I analyze the accuracy of the medical science depicted in the series and explain how the producers used visual effects to achieve historical accuracy.

Keywords: *The Knick*, dramatization, adaptation, science, analysis, comparison.

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## 1. INTRODUCTION

*The Knick* is a television series that aired on the Cinemax network for two seasons. Set in 1901 New York, it explores the developments in the field of surgery and the changes New York society faced at the time. It was created for television by Jack Amiel and Michael Begler. An Oscar-winning director Steven Soderbergh directed all the episodes. The cast was headlined by British actor Clive Owen.

The setting of the story is The Knickerbocker hospital, also referred to as The Knick, after which the series was titled. People working in the hospital are the main characters of the series, including the surgeon John Thackery, played by Clive Owen. His character was inspired by real-life surgeon William Halsted, whom Gerald Imber calls the father of modern surgery (Imber 282). Thackery and his team of surgeons solve the problems medicine faced at the beginning of the twentieth century: for example, the team discovers a procedure that cures an inguinal hernia, the team performs the first successful separation of conjoined twins, Thackery discovers reliable method to locate appendix, etc.

The series also explores attitudes towards drug addiction in 1901. Just like William Halsted, John Thackery is a cocaine addict. Cocaine was legal in 1901 and its use in medicine widespread. The series dramatizes its use in medicine and how drug addiction was looked at and treated in the early twentieth century.

In one of the subplots, the wife of a surgeon working at the hospital suffers a mental breakdown. She is treated for her mental illness by Dr. Cotton, a character inspired by the real-life psychiatrist Henry Cotton, who treats her mental illness by removing all her teeth. The series portrays his controversial methods and the stigma people with mental illness faced a hundred years ago.

In the first season, *The Knick* dramatized the story of Typhoid Mary, a healthy carrier of typhoid fever who unbeknownst to her infected and killed several people by infecting them with the disease. She was the first recorded healthy carrier in the United States of America and was the first person to be quarantined for life because of her disease.

The series is set during the period of major technological advancements which push medicine further. Medicine is not the only thing that is going through a major change. The world is

changing with technological advancement as we see a transition to a hospital implementing electricity, ambulance transitions from horse-drawn carriages to automobiles; Thomas Edison makes a brief cameo to present the newly invented phonograph, the hospital buys its first x-ray machine, a film camera is used to capture a surgery and a telephone is used to communicate. *The Knick* presents a surgery, city, and society that are being transformed because of technological advancement.

Just like most traditional medicine television series, the exploration of medicine is often tied to the exploration of social issues (Turow and Gans-Boriskin 268). *The Knick* explores several of them, such as sexism, birth control, racism, the treatment of mental illness and the treatment of drug addiction.

An exploration of the American society at the time is a big part of the series. The story is set at the time when immigrants from Europe and African Americans from the south moved to New York in search of a better life. *The Knick* explores how New York society dealt with these changes. This part of the story of that is told through the character of Dr. Algernon Edwards, a brilliant African American surgeon, who struggles to find a rightful place in the society because of his skin color. Dr. Everett Gallinger is a white surgeon who loses his promotion when Edwards is hired. Losing his place to an African American worsens his already racist attitude and leads him towards the movement of eugenics, a pseudo-science which was a reaction to the rising number of minorities and immigrants in New York. As one of the characters says, it is a struggle between two sides of society: one that thinks that world is moving forward too fast, and another, which believes that it does not move forward fast enough.

Just like African Americans and immigrants from Europe, women are also seeking their place in society, from Cornelia Robertson, daughter of the main hospital patron Captain August Robertson, who struggles balancing her personal ambition and expectations of being a society lady, to a young nurse who moved from a rural part of America to New York and struggles with her independence in the big city. The series tells this story of women struggling to succeed in the professional world.

Another aspect of the fight for women's rights is the story of the fight for birth control and the right to abortion. The story is told from the point of view of a nun Sister Harriet, who struggles

balancing her Catholic faith, with her belief that birth control should be accessible to the women at the bottom of social ladder – prostitutes and immigrant women who have no means to take care of their children and no way to prevent pregnancies.

I will compare the medicine dramatized in the series to the real-life medical achievements of that time, and analyze how accurate were creators of the series in dramatizing medical science of the late 19<sup>th</sup> century. I will analyze the dramatization of real-life persons who were depicted in the series, surgical procedures presented in the series, the use of cocaine as a pharmaceutical and as an addictive substance; the attitudes towards addiction problems and mental illness, eugenics and some nonsurgical treatments presented in the television series.

## **2. METHODOLOGY**

I will use the historical method and comparative method to compare and analyze the accuracy of dramatization of medical science and dramatization of historical persons.

To analyze the changes that occurred during the process of adaptation, I will use McFarlane's model, used in his study *Novel to Film*, that distinguishes between elements of the novel that are transferable and those which require adaptation.

I will compare the character of John Thacker to William Halsted by using Gerald's Imber *Genius on the Edge* and Howard Markel's *Anatomy of Addiction*. *Genius on the Edge* is Halsted's biography and presents his life, career, his battle with drug addiction and explores the era in which he lived and worked. *Anatomy of Addiction* explores Halsted's and Sigmund Freud's research of the drug cocaine and Halsted's battle with addiction to the drug.

My main source for the analysis of dramatization of Dr. Cotton will be Andrew Scull's *Madhouse*. *Madhouse* is a study of Cotton's work at Trenton hospital. It also presents the circumstances in the field of psychiatry that made him consider his unorthodox methods. To analyze the case of Typhoid Mary I will use Antony Bourdain's book *Typhoid Mary: The True Story of What May or May Not Have Been the Greatest Hoax Ever Played on the Citizens of Gotham* and Judith Leavitt's *Typhoid Mary: Captive to the Public's Health*.

The series provides a graphic depiction of surgery at the time. The writers did exhaustive research into the medicine and the history of America at the time and created a series (Amiel, Jack and Begler Michael. Interview with Christina Radish). To analyze the accuracy of dramatization I am going to use medical history books. To analyze the visual effects the creators used to dramatize surgery scenes my main sources were behind the scenes videos that were uploaded to official YouTube channel of television network Cinemax. In these videos actors and Justin Raleigh, the special makeup effects designer, explain how certain scenes were filmed and which effects were used for an authentic dramatization of surgery.

### 3. THEORY OF ADAPTATION

Dudley Andrew defines adaptation as “matching of the cinematic sign system to a prior achievement in some other system” (McFarlane 21).

Since the invention of film, film directors have drawn inspiration from literary sources. Soviet film director Sergei Eisenstein compared the film to a novel. He argued that Victorian novel’s “attention to visual detail, empirical psychology, atmospheric close-ups, alternating omniscient and character viewpoints, and shifts from one group of characters to another, all shaped Western film techniques” (Elliot 4).

Eisenstein further argued that “montage (editing) constitutes the “language,” “diction,” “syntax,” and “speech” of film images, because it creates syntactic and discursive relationships between them, just as sequencing and spacing do between words” (Elliot 6).

According to McFarlane, people pour into cinemas to see if the film matches the mental image of the novel they themselves created when they have read the novel (McFarlane 7). The conventional language of adaptation criticism has been moralistic, in terms that imply that adaptation did a disservice to the original work. Terms like infidelity, deformation, betrayal, and bastardization are often used in adaptation discussion. People more often discuss what was “lost” during the transformation from text to screen, instead of focusing on what has been “gained” in transfer from text to film (Stam 3). Both McFarlane and Stam call this fidelity criticism.

Fidelity criticism goes against the idea of intertextuality, which considers that all texts are constructed from other texts. No work is “self-contained, individually authored whole, but the absorption and transformation of other texts” (Snyder 121). Every text is influenced by another text, and that text can be “a film, or a book, or a play, or a song” (Intertextuality: Hollywood’s New Currency).

Intertextuality can be intentional or accidental. Film adaptations of literary works are intentional works of intertextuality. Accidental intertextuality can happen when a writer is influenced by other texts “without realizing it, through the author’s research into her topic, or texts she has studied previously to her work” (Snyder 122).

Critical notions of intertextuality present a different approach to adaptation. Christopher Orr explains that “Within this critical context, the issue is not whether the adapted film is faithful to its source, but rather how the choice of a specific source and how the approach to that source serve the film’s ideology” (McFarlane 10). This ignores non-literary influences on the film such as cultural and social climate at the time of film’s making, director’s style, actors’ ability, genre conventions, etc. (McFarlane 22).

Fidelity criticism depends on a notion of text having a correct meaning which the filmmaker either adapts faithfully or violates the fidelity to the text. Often times a distinction is made between being faithful to the letter and being faithful in spirit, or to the ‘essence’ of the work (McFarlane 8-9).

Fidelity criticism raises some valid questions about the adaptation of themes, setting, plot, characters, setting and style of a novel. Despite this, it is a largely unproductive way to criticize adaptations, since every individual creates his own faithful interpretation of the novel when that person is reading the novel. It also fails to account for what exactly a film should be faithful. Should the film plot be exactly the same as the plot in the novel? Should all the actors match the physical description of the book characters (Stam 14-15)? It is also a poor way to evaluate the film because it does not allow for an evaluation of film on its own merits. “If one has nothing new to say about the novel, Orson Welles once suggested, why adapt it at all?” (Snyder 225). It is also unfair because fidelity evaluations will always favor the source text to the adaptation (Snyder 212).

Fidelity criticism ignores the fact that film is a different medium. The novel is a verbal medium. The film, on the other hand, is a multitrack medium which can play with words, music, sound effects, etc. The novel is usually a work of a single person. Films, on the other hand, are collaborative projects. Novels are largely unaffected by budget issues, while films are limited by them. With film, there are also issues of “available talent, studio or producer pressures, censorship in terms of performers, screenwriters, editors, and so forth” (Stam 17). These issues make complete fidelity in adaptations impossible.

To counter fidelity criticism, writers have considered different categories for adaptations. Geoffrey Wagner suggests three different categories of adaptations. The first is transposition in



which a novel is adapted directly on the screen with minimal changes. The second is commentary where an original work is altered in some respect because the film-maker had a different intention than the writer. The third is analogy which represents “a fairly considerable departure for the sake of making another work of art” (McFarlane 10-11).

McFarlane, Stam, and Snyder evaluate novel to film adaptations. The source text for *The Knick* adaptation is not a novel, but multiple historical texts. Interestingly, historians who evaluate history films face similar issues when evaluating adaptations. Just like adaptations of novels are plagued by fidelity criticisms, adaptations of historical texts are too often plagued by historical accuracy complaints. Just like with adaptations of novels, the transfer from historical text to film often means that film creators are forced to make some changes to the story to fit the story to the new medium.

Historians are of differing opinions about whether analyzing historical accuracy in films is a pointless exercise since the medium is so different from history texts. This is similar to the belief of some writers who consider comparing novels to their film adaptations a waste of time (McFarlane 3).

Historian Robert Toplin believes that because films influence public opinion on history, it is important, that film creators should be mindful of historical facts. At the same time, historians must realize that filmmakers cannot be expected to be perfectly accurate. Historian Natalie Davies, who worked as an advisor during the filming of *The Return of Martin Guerre*, believes that even historically inaccurate films can carry a historically accurate message. She uses the example of Stanley Kubrick’s *Spartacus*. *Spartacus* is a historically inaccurate film but carries an important message of the slave revolt in Ancient Rome (Metzger 9).

What novels, historical texts, and films have in common is narrative. As Christian Metz writes: “The basic formula, which has never changed, is the one that consists in making a large continuous unit that tells a story and calling it a ‘movie’” (McFarlane 12).

Some historians argue that historical explanations do not take place through the process of narration, but that history writing is a scientific practice separated from literary discourses (Guynn 27).

This view has been challenged by historians, such as Paul Veyne. Veyne argues that “what historians do is tell stories, that telling stories is a universal mode of making sense of the world, and that historical narratives have a fundamental kinship, not only with fictional narratives but also with the most mundane forms of storytelling in daily life” (Gynn 29). If history texts are stories, just like novels, perhaps film adaptations of historical texts can be evaluated using the same tools with which novel to film adaptations are evaluated.

McFarlane considers narrative is the main transferable element of the novel. McFarlane describes narrative as a “series of events, causally linked, involving a continuing set of characters which influence and are influenced by the course of events.” (McFarlane 12). The same definition of narrative can be applied to literary text (both novel, and history books) and to film.

When evaluating novel to literature adaptations, McFarlane makes a distinction between *transfer* and *adaptation* during the process of adaptation. Both can occur in the same film. The transfer is a process during which narrative elements of the novel can be displayed in the film. Adaptation is a term he uses for a process in which “novelistic elements must find quite different equivalences in the film medium” (McFarlane 13).

This belief is similar to that of historian John E. O’Connor, who believes that history adaptations should be analyzed by how adaptations change historical facts to make a better movie, and why certain changes are made when creating a movie (O’Connor 9).

The second process of evaluation I will use will be the analysis of narrative functions. Barthes defines narrative functions as the seeds planted in the narrative, which will come to fruition later. The two main groups of function are *distributional* and *integrational*. The former refers to action and events that are strung together linearly throughout the text. The latter refers to “psychological information relating to characters, data regarding their identity, notations of atmosphere and representations of place” (McFarlane 13). While Barthes did not use them to analyze films, McFarlane believes that they are useful when studying film adaptations, and uses them in his study *Novel to Film*. I will use these elements to look at how the creators of *The Knick* adapted the story and distinguish between the elements from history which were transferable and those that involved the process of adaptation (McFarlane 20).

#### **4. ADAPTATION OF HISTORICAL PERSONS**

Various historical persons make appearances on *The Knick*. Most of the characters make brief cameos. The character of Robert Van Wyck, who was a real mayor of New York in 1901, makes an appearance at the opening of the new hospital. J.D. Rockefeller is a friend and a business rival of hospital's major donor August Robertson and makes a few short appearances in the series. The inventor Thomas Edison attends a birthday party at which he presents his latest invention, the phonograph.

Some adapted characters have larger roles in the series. The inspiration for John Thackery was William Halsted, an American surgeon, who was one of the founding members of Johns Hopkins University. The character of Dr. Cotton was an adaptation of real-life psychiatrist Henry Cotton, who worked in New Jersey at the beginning of the twentieth century. The series also adapted the story of Mary Mallon, better known as Typhoid Mary, who was a healthy carrier of typhoid fever and caused deaths of several people.

##### **4.1. Comparison of John Thackery and William Halsted**

The series' main character is John Thackery. His character was inspired by real-life surgeon William Steward Halsted, who worked as a surgeon at the same time as Thackery in the series. In this chapter, I will compare the character on the series to William Halsted. I will use Gerald Imber's biography *Genius on the Edge* and Howard Markel's book *Anatomy of Addiction*. *Genius on the Edge* goes into great detail in presenting Halsted's life, career, and his battle with drug addiction. It explores the era in which he lived and worked. *Anatomy of Addiction* explores Halsted's and Sigmund Freud's research of the drug cocaine and Halsted's battle with cocaine and morphine addiction.

The creation of fictional character gave series-makers greater freedom when writing the series. It allowed them to choose most interesting moments from Halsted's life and to adapt them in form of fictional character and ignore the parts they were not interested in. It also allowed them to compress his lifetime into two seasons, as the plan of the series runners' always was to conclude Thackery's story after two seasons (Keene). It allowed them to move the character from Baltimore, where he spent most of his life, to New York. Despite this, there are clear similarities between both characters and between Thackery's character arc and Halsted's life.

There is little mention of John Thackery's youth in the series. The only time he mentions his youth he says that his father was a Christian fundamentalist, a drunkard and "mean, violent son of a bitch" who killed Native Americans for money in Colorado, and believed that his Christian faith excused his actions. During one of the arguments, he threatens the other person to stab him with his father's Union knife, revealing that his father fought in American Civil War on the side of the Union forces. Halsted's father owned a company that was dealing with "wholesale importation and sale of dry goods" (Imber 45). His father was strict and adhered to Presbyterian ethics but was in no way violent and did not participate in Civil War.

According to his friends who were his colleagues at Yale, Halsted "gave no evidence of unusual ability or of great ambition" (Markel 44). He gained interest in surgery when he purchased medical books in his senior year in college and gained curiosity for medicine. He applied to *College of Physicians and Surgeons* and was the best student in his class. Upon completing his studies and internship he traveled to Austria and Germany where he studied at the European medical universities, which were superior to American ones at the time (Markel 44-45).

The series does not go into detail about Thackery's childhood or education since those are irrelevant to the story. Through some flashbacks, we learn some important information about his past. In one of the flashback scenes, we find out how he decided to become a surgeon. He worked as a general physician in Nicaragua. There he saved August Robertson's life. Robertson was the main donor of The Knickerbocker hospital and he offered him a job at the hospital in return. Thackery accepted the offer because he had heard about of Dr. Christansen's work and wanted to learn from him. When Thackery arrives at The Knickerbocker he tells Christansen that he wants to work with him because he is legitimizing surgery – taking it out of the barbershops and putting it in the hospitals where it belongs. Christansen becomes his mentor and his best friend.

Both characters in the series and a real person were defined by their exceptional surgical talent and their drug addictions. Just like Halsted, Thackery is the inventor of various surgical procedures and respected by his peers as the most talented surgeon of his generation. Their fame brings both patients and money to their hospitals. Both nearly lost their careers to drug addiction.

Both were addicted to cocaine. In the late 19<sup>th</sup> century cocaine was a legal drug, which was available in pharmacies without a prescription. It was used in medicine as a painkiller and local

anesthetic. William Halsted pioneered its use as a nerve block local anesthetic. He discovered that if injected into nerves, it blocks the sensation of pain below the point of injection. By injecting cocaine in the spine he could block all sensation of pain below the spine (Imber 51). This is what allowed doctors to perform bowel surgeries without full anesthesia. In the series, Thackery invents the same technique in the series' first episode, when he has to operate on a patient without general anesthesia.

In the series, cocaine is a fuel for Thackery's relentless work ethic. He is introduced to the drug by his mentor when they both work in the hospital at night. Thackery is unable to keep up with his mentor and takes a nap while his mentor keeps working. When he wakes up, he is amazed to find his mentor still working. When asked, the mentor reveals he is able to work through the night due to his use of cocaine and offers the drug to Thackery. This is the beginning of addiction they both share for years. Years later in the series, Thackery is the one with whom others cannot keep up, and his colleagues are the ones amazed by his seemingly endless energy.

Halsted's colleagues noted that "he worked with superhuman energy and endurance of ten men" (Markel 92) and marveled at his work ethic. His experiments with cocaine began in 1884 when he worked as a surgeon in multiple New York hospitals and "demonstrated his talents as an operator on a daily (and often nightly) basis" (Markel 92).

Halsted and his colleagues were experimenting with the use of cocaine as a local anesthetic. The subjects of those experiments were often the doctors themselves. They regularly injected cocaine to test the effects of the drug. They noticed that they can work longer and harder when they take cocaine. This increased the drug use among them. Markel notes that "not every dose of cocaine was administered strictly in the cause of advancing science" (Markel 98).

During the experiments, Halsted and his colleagues also discovered other pleasant side effects of the drug. As one of the surgeons in *The Knick* says to his patient before injecting cocaine into her arm: "You're going to feel nothing in your arm, and wonderful everywhere else." Halsted and his team of medical students and professors discovered the same wonderful side effect and soon, cocaine was not used just to battle fatigue, but also for pleasure and entertainment in social settings. Regular use of cocaine led to many of them developing cocaine addictions. "The students began to drop from sight. The doctors' behavior grew increasingly erratic. They slept

less, talked endlessly and excitedly, and eventually performed less surgery and ignored their duties” (Imber 55).

Halsted began missing his duties and started exhibiting erratic behavior in meetings. His hands were shaking. He was often sweating profusely and had trouble staying focused. He made excuses that his behavior was a result of poor health. At first, he was able to hide his addiction but when he publically embarrassed himself after he published an incoherent paper in the *New York Medical Journal* he was unable to hide his addiction anymore. Claiming exhaustion from work, he went on a trip abroad (Imber 56).

In the television series, Thackery has better control over his drug addiction. He is able to function as a surgeon normally despite it. He is able to do so until the war in the Philippines disrupts the supply of cocaine to New York, and he is unable to procure cocaine. This disrupts Thackery’s regular cocaine use. According to Imber imbalance in dosage can lead to “early signs of withdrawal or overdose” (Imber 281). The shortage causes Thackery to develop similar symptoms to Halsted. He becomes irritable, twitchy and he sweats profusely, prompting his co-workers to become worried about his health. He makes excuses, claiming that he just had a bit of flu. When called to surgery he is unable to perform it. He has a hard time focusing on the procedure, slurs his words, and his handshake. During the surgery, he abruptly leaves the operating room, which forces his assistants to finish the procedure. This crisis later leads to complete breakdown and forces, Thackery, to seek help in a rehabilitation facility.

The series accurately dramatized the effects of cocaine. Shaking, twitching and paranoia that Thackery experiences are symptoms described in Markel’s book. Halsted often exhibited similar behavior (Markel 138-139).

Just like Thackery, Halsted fell “ill” during several of his operating procedures and left the surgery, leaving his assistants to finish the procedure. While there is no record of Halsted’s addiction causing him to make a mistake in the surgery room, there is no doubt that his addiction had a big impact on his work. It caused him to be unreliable. He was often absent from work without explanation. He missed lectures on a regular basis and took sudden leaves of absence citing illness as a reason. During these leaves, he spent most of his time taking cocaine (Markel 205-209).

Eventually, Halsted was forced to seek hospitalization. After traveling abroad, Halsted returned home and continued working and using cocaine. “His state of constant excitement did not go unnoticed, though few understood its nature, and no one questioned him about it” (Imber 79). Soon he was unable to work. His close friends who knew about addiction convinced him to seek hospitalization and he went to Butler Hospital in Providence, Rhode Island (Imber 79).

Just like Thackery in *The Knick*, he signed in under assumed name and remained in the hospital for seven months. To make a withdrawal from cocaine easier they were both given medicine to help mitigate withdrawal symptoms. Thackery was given heroin and Halsted morphine, which caused both of them to develop new addictions. The use of morphine to treat a cocaine addiction is ironic because years earlier cocaine was lauded as a cure for morphine addiction. Morphine addiction was widespread in the United States of America following the Civil war. After the war, many veterans used morphine to battle chronic pain (Markel 58).

Despite receiving new drugs, they both craved cocaine and bribed hospital staff to give it to them. Thackery even performed surgeries in the hospital in exchange for drugs. Performing surgery outside of the hospital was not unusual for the time according to Imber. Many rich clients preferred to have surgery performed at their homes and paid well for private treatments (Imber 248).

Thackery and Halsted stayed in their hospitals for several months but were unable to shake off their addictions. As a result of his rehabilitation, Halsted remained a morphine addict for his entire life. He replaced cocaine addiction with morphine addiction but still occasionally relapsed and took cocaine. Imber writes that cocaine “produced heightened sensations and a feeling of omnipotence, the other (morphine) a peaceful release from the world” (Imber 80). Thackery was using a similar combination in *The Knick*, but instead of morphine, he smoked opium. After he was done working in a hospital, he would usually visit a brothel where he would smoke opium as a “peaceful release from the world.” According to Markel, addicts who mix opiates and cocaine say that the combination “produces a far more stunning high than either agent can produce alone” (Imber 78).

The feeling of omnipotence was important for Thackery and his mentor. They both used the drug to calm their nerves before the surgery. Injecting cocaine became part of the preparation for

surgery. Every time Thackery is called to perform a surgery, he opens a drawer in his office desk, takes a vial of cocaine and injects some before going to the surgery room and scrubbing in. Halsted's biography from 1960 describes a similar episode with Halsted. Before operating on an appendix Halsted administered cocaine to both, himself and his patient. Markel discredits the biography as "likely embellished, and difficult to verify" (Markel 110) and believes that the idea of Halsted, or anybody else, operating under influence of cocaine as improbable because the drug would make it impossible for him to focus and stay calm. Markel's book even records a story in which Halsted abruptly leaves the operating room because he is unable to operate under influence of cocaine.

Both had friends who tried to cure them of their addictions by taking them on a long sea voyage. When Thackery is visited by his colleague at the rehabilitation facility, the colleague notices that his condition has worsened because of the treatment that included regular doses of heroin. He decides to take the matter into his own hands and kidnaps Thackery from the facility. He takes him on a voyage with his boat. He hopes that by denying him access to drugs he is going to help him fight his need. Thackery demands to be taken back to the rehabilitation center, where he is given his drugs on a regular basis. His friend takes him back to shore after his withdrawal is complete, and Thackery returns to society a clean man. Back in New York he quickly relapses and uses cocaine again.

Halsted's colleague William Welch tried the similar method to try to cure Halsted's addiction. He believed that during sailing trip Halsted could complete the process of withdrawal and permanently cure his addiction. Welch arranged a two month trip with a sailing boat and brought some cocaine with him, hoping that with a gradual decrease in dosage he could ease the withdrawal and slowly wean him off the drug. The trip was cut short after Halsted ran out of his cocaine supply and broke into captain's medicine locker to steal drugs. They returned home and his friend convinced Halsted to enter the rehabilitation facility (Markel 110-111).

After their stays in rehabilitation hospitals, they were both able to find work again. Thackery is able to return to his medical practice at The Knickerbocker but is put 'on probation'. He is regularly inspected by the nurse for his cocaine use. His needle marks are mapped out and he is checked regularly if there are any new ones. He solves the problem by snuffing cocaine instead of injecting it.



Halsted was unable to return back to his hospital in New York and was forced to move to Baltimore, where his friend William Welch was able to get him a job at newly formed Johns Hopkins hospital and medical school. He had to spend years working in the pathological laboratory before he repaired his reputation enough to be allowed to work as a surgeon. After that, he was offered a job as the head of surgery and a professor at the institute. But that was only because his close friend was in charge of Johns Hopkins and another candidate rejected the job (Imber 87).

Even in Baltimore Halsted remained an addict and would still regularly miss his lectures and take long leaves of absence. This caused frustrations for hospital's donors and his students who were unhappy with his erratic behavior. Despite this, the donors were reluctant to fire Halsted, because his innovations in the surgical field had raised the reputation of Johns Hopkins and drove a lot of rich clients to the hospital (Imber 142). In the series, The Knickerbocker hospital was faced with a similar dilemma. Thackery's addiction led to great embarrassment for the hospital, but his innovation and fame attracted many rich clients to the hospital.

Both had a similar approach to solving medical problems: the first step was extensive research on cadavers in the pathological laboratory to find the cause of the problem. After they came up with a possible solution, they performed the experimental surgery on animals. If successful, they then tried the procedure on a human patient. Halsted was often described as "surgeon of the head, not the hand" (Imber 273) and was more interested in searching for causes of diseases and improving procedures than in operating the patients. Both Thackery and Halsted leave routine surgeries to the assistants and focus on research and invention of new procedures.

Animal experimentation was important in their discoveries. Thackery experiments on pigs, therefore the hospital has its own pig sty. Halsted practiced his surgical procedures on dogs. Halsted insisted that animals were treated in the same manner as human patients – the dogs were anesthetized and procedures were carried out in sterile conditions and proper technique was used. According to Imber, he afforded the animals the same respect as he did to his human patients and did his best to keep dogs alive during the procedure (Imber 87). Thackery has no issue with sacrificing pigs in the name of science. Thackery had a dog, which he killed when he experimented on him but says he thinks about the dog every day. Halsted never experimented on his dogs, but Imber notes that he performed autopsies on them after they died (Imber 174).

Halsted learned this way of work in medical school. While most of the curriculum was just learning information by heart for oral or written exams, one of the professors, John C. Dalton, encouraged students to do practical learning by performing animal and human experiments. Halsted became extremely interested and he kept that interest his entire career. During his study days, Halsted went as far as buying additional cadavers to perform additional autopsies (Imber 23-24).

Thackery is introduced to pathology by his mentor. His mentor suggests that despite being frowned upon by other hospitals, he believes that there is more to be learned by studying dead bodies than by paying house calls. In an interesting twist of irony – later in the episode (set some years later) Thackery is having troubles procuring dead bodies because every hospital had started to study them and the dead bodies are hard to come by.

Just like his real-world counterpart, Dr. Thackery is always shown as keeping calm under pressure. While other surgeons on staff sometimes show signs of uncertainty and hesitation, he is always completely in control and calmly proceeds with the operational procedure. Even when he is operating on himself in the series finale, and realizes that he made a mistake that could cost him his life, he remains calm. Halsted was famous for his complete calm and detachment in the operating room. He remained completely calm when he had to operate on his mother and sister on two separate occasions (Imber 277).

The series also presents the social problems of New York in 1901. When an African American surgeon is hired, Thackery does not seem to be bothered by the fact that he is black, but is reluctant to hire him because he believes that people would refuse to come to the hospital if it employed a black surgeon. He does not believe that a hospital should make political statements. He is not a racist in a sense that he thinks white people are better than black. At the same time, however, he does not seem to be bothered by the ugly reality of racism which prevents black people from being treated in the hospital. This is consistent with Halsted's behavior during similar episodes at Johns Hopkins Institute. When the Johns Hopkins hospital banned African American patients from the hospital there is no record of his protest. Imber claims that he treated African American patients as well as rich ones and was not a racist. He referred to his African American servants as *darkies*. Imber suggests, however, that this kind of vocabulary was considered normal at the times. When the Johns Hopkins ran into financial troubles, some rich

female donors offered to help, on condition that women are allowed to study at the medical school. This led to professors arguing whether they should allow women or not. Imber notes that Halsted took no side in the debate and remained silent during the controversy (Imber 185).

They were both workaholics and had largely lonely personal lives. While they both had affairs with their surgical nurses their relationships were very different. Halsted married his surgical nurse in what seemed more of a marriage of convenience for both of them. As his then-fiancée wrote to her aunt “it is very pleasant to be the first with someone and be taken care of /.../ we are enough alike to make each other happy /.../ I will never find Dr. Halsted anything but considerate and respectful” (Imber 131).

Before his marriage, there was no mention of any women in Imber’s book. One of his colleagues from the university said that he liked women, but he did not pursue them. Another suggested that he was a homosexual. Halsted’s marriage was boring and dispassionate and the couple did not spend time together. At home, they ate together but spent most of the leisure time in separate rooms. He read surgical papers and she was sewing. They spent their summers in the countryside at her farm. In his sixties, he had a brief affair with a woman forty years his junior but the affair ended when she eventually married another man (Imber 331-333).

Thackery’s personal life was, like Halsted’s, consumed by his work. When he was not working, he spent most of the time in a brothel where he smoked opium and spent time with prostitutes. He had one failed love relationship and, towards the end of the first season, he starts an affair with a younger nurse that was, unlike Halsted’s, passionate but coincided with his drug addiction spiraling out of control. He ended the relationship upon his return from the rehabilitation center.

Drug addiction impacted their personal as well as professional lives. Both were introverts and Imber attributes Halsted’s introvert behavior to his drug addiction. When he was a young man he was more outgoing and would regularly attend dinners with his colleagues and spend time with them in New York's social clubs. Some of his close friends, such as William Welch, knew about his addiction. To keep his secret safe from others he kept his distance from them and many of his colleagues were unaware of his addiction. After his death, it was revealed in *The Inner History of the Johns Hopkins Hospital* and the revelation shocked a lot of them (Imber 278).

Thackery kept a distance from his colleagues as well and did not socialize with them after work. A flashback scene, set years in the past, shows him drinking with his colleague and singing songs. Scenes in the present show a lonely man whose life is consumed by his drug addiction and his work.

If we use McFarlane's model, the story of John Thackery is not the transfer, but an adaptation of Halsted's story. As I mentioned at the beginning of the chapter, this approach gave writers more freedom. Despite this, a look at the narrative functions below reveals many similarities between Halsted's life and Thackery's narrative arc. He becomes world class surgeon, gets addicted to cocaine, nearly loses his career to addiction and manages to return to the hospital. If I use McFarlane's system for analysis of Barthes' narrative functions, they can be summarized as follows. I use Roman numerals to mark integrational functions and letters to mark distributional functions:

- (i) Gains interest in medicine which leads:
  - (a) to a career in surgery
  - (b) inventing new medical procedures
  - (c) fame
  - (d) experiments with cocaine
- (ii) Cocaine addiction
  - (a) a supplement which allows him to work more
  - (b) invents a nerve block local anesthesia
  - (c) gets addicted to the drug
  - (d) erratic behavior and subsequent breakdown
  - (e) leaves New York hospital
  - (f) a trip to Europe
  - (g) returns and has a boat intervention
  - (h) the decision to enter a rehabilitation
- (iii) rehabilitation
  - (a) addiction to a new drug
  - (b) better control of his addiction
  - (c) move to Baltimore

(d) return to medicine

(e) rehabilitation of reputation and return to medicine

We can see that Halsted's early life was accurately adapted into the series. In the process, it was transformed from a decade of Halsted's life to a two-season story of John Thackery.

By fictionalizing the character, the creators could take the most interesting parts of Halsted's life and attribute to him some accomplishments that were achieved by other doctors of that era. For example, John Thackery becomes the first surgeon to separate conjoined twins, the surgery that Halsted never attempted.

The writers were also free to come up with their version of personal life for Thackery and did not have to adapt Halsted's dull personal life. Like Halsted, Thackery lives a solitary life. Instead of spending time at home with his wife, he spends his time in a brothel, where he befriends the Chinese gangster named Wu, who owns the establishment. Eventually, he falls in love with a young nurse who works at The Knickerbocker and, in the second season, he restarts the relationship with his former lover.

After he moved to Baltimore, Halsted's life was less volatile and less appropriate for adaptation. He got married and was better at controlling and hiding his addiction from others. The series creators adapted his volatile youth and ended the story in the second season by killing the character. Despite the creation of a fictional character, they writers mostly followed the narrative arc of Halsted's life prior to his move to Baltimore.

#### **4.2. Dr. Cotton and his cure for depression**

The series also takes a look at the attitude towards mental illness in 1901 and tells the story of the infamous psychiatrist Dr. Henry Cotton whose story, according to Scull, confirms people's worst "imaginings about asylums, the mad, and those who claim to care for them" (Scull "Madhouse" 15). Cotton was a psychiatrist who worked in New Jersey State Hospital Trenton which housed the mentally ill of the state.

The series is set in 1901 before real-life Dr. Cotton began his work at Trenton (Scull "Madhouse" 19), which makes the timing of his work slightly inaccurate. Despite that, the series is accurate in

the portrayal of his methods and of attitudes people had about people who suffered mental illness in 1901. The story is told through his character and the character of Eleanor Gallinger, the wife of a surgeon Everett Gallinger, who suffers a mental breakdown after her newborn daughter dies.

Her child dies after contracting hepatitis through her father, who works at The Knickerbocker. After the treatment fails, the young girl dies and her mother becomes depressed. One of the nuns who help at the hospital suggests the couple to adopt a young girl that was left on the doorstep of the orphanage. She believes that taking care of a child will help Mrs. Gallinger to deal with the loss of her child. When the baby is brought to the house she panics being afraid that they will infect and kill another child. Despite her reaction, the husband decides to adopt the child anyway. Mrs. Gallinger is unable to connect to their adopted daughter. Instead, she keeps taking 'care' of her dead girl and ignores the adopted child. Her mental breakdown leads her to believe that the adopted girl also contracted meningitis. When she attempts to cure her, she accidentally kills her. After that, her husband institutionalizes her. She is sedated and taken to mental institution led by Dr. Cotton.

When Gallinger visits his wife in the mental institution he is horrified when he discovers that Dr. Cotton pulled out all of her teeth as a part of her treatment. This was done because, according to Dr. Cotton's research, a mental disease was caused by infection to the brain, and teeth were supposed to be "havens for bacteria and sepsis". Therefore, they should be removed. This was an accurate portrayal of Cotton's methods. He believed that infection was the cause of mental illness and that the only way to treat it was to remove the source of infection. He usually began treating his patients by removing their teeth. This was the result of a belief that infected teeth were a danger to the brain because of their close proximity to the brain. The removal of teeth would prevent the spread of infection to the brain and thus prevent or cure madness.

Most of his patients began their treatment at his hospital by getting the x-ray of their teeth. If x-ray showed signs of infection, their teeth were removed immediately. If that did not help Dr. Cotton removed their tonsils. If this also proved to be insufficient then the surgery that removed part of patient's colon followed (Scull "Madhouse" 37). These were the most common surgeries performed by Dr. Cotton in real life and were proposed by the character in the series as a follow-up treatment if the tooth extraction proved to be insufficient.

While the teeth and tonsil removal and colon resection were the most popular surgeries performed at Cotton's hospital, he did not hesitate to remove other organs. For example, during the experiments at his hospital, he determined that stomach was one of the least important organs and can be easily "dispensed with" (Scull "Madhouse" 54). 80% of female patients had their cervix removed. During his earlier days at Trenton hospital removal of ovaries was very popular, although later experiments led him to believe that ovaries were important for women's health and should not be removed unless absolutely necessary. Male reproductive organs were also targeted and according to Dr. Cotton half of chronic male cases showed infection of seminal vesicles. These were treated with castration (Scull "Madhouse" 55).

Gallinger is enraged when he learns of his wife's teeth extraction. However, Cotton calms him down when he assures him that he performed the same procedure on his children. This is an accurate dramatization. Real Dr. Cotton removed all teeth from his eldest son when he "showed a marked change of disposition" (Scull "Madhouse" 58) at the age of thirteen. He removed all permanent teeth from his younger son as well. This was followed up by abdominal surgery, during which part of his colon was removed. He also removed all teeth from his wife and had his own teeth extracted on multiple occasions. After he was diagnosed with a heart condition at the age of 52, he removed all his remaining teeth, when one of his colleagues advised him to do so (Scull "Madhouse" 245).

Despite these assurances, Gallinger takes his wife home. When she gets home she gets a new set of teeth. She is visited at home by a tooth salesman and presented with a large array of teeth. She picks the ones that will be transplanted into her mouth. She chooses teeth by comparing them to her sister's teeth. The man selling her the teeth tells her that she need not hurry with her choice because he will soon receive new teeth from the morgue.

While tooth transplant has been performed since the 18<sup>th</sup> century it would be unlikely that a patient would receive new teeth from the morgue, since such a practice has been replaced by the invention of ceramic teeth. However, before the invention of ceramic teeth, human teeth were transplanted. The teeth were often taken from corpses, although people usually preferred to pay a higher price to have their teeth come from a living person because they considered teeth from the dead repulsive. Ceramic teeth were later used because transplanted teeth could transmit diseases. The implants were sometimes rejected, and the teeth discolored over time and had to be changed

annually (Hollingham, 100-102). The practice of teeth transplant was abandoned when dentures were invented in the late 18<sup>th</sup> century by French Dubois de Chermant (Jones 76-78).

Ironically, Cotton's methods were inspired by the same advances in science than those of Halsted and Dr. Thackery. Just like Halsted and Thackery Cotton was determined to revolutionize the field of psychiatry by discovering biological causes of mental illness through pathological research. Just like discovering the bacterial causes of diseases, anesthesia and antiseptic methods revolutionized medicine and surgery, Cotton believed that such discoveries were necessary for the field of psychiatry which was not as respected as the other fields of medicine. According to Scull "as most of the medical profession was concerned, the words "science" and "psychiatry" scarcely belonged in the same sentence" (Scull "Madhouse" 20). This was the result of the fact that treatment of mental illness was rarely successful. Mentally ill were removed from society and closed in asylums. However, they were actually made better by therapy rarely. Psychiatrists were tasked with jailing their patients and not treating them. In 1878 neurologist Edward Spitzka said that psychiatrists were "experts at everything but the diagnosis, pathology, and treatment of insanity" (Scull "Madness in Civilization" 261). Cotton and peers who shared his belief that infection caused mental illness, were convinced that they were changing the standing of psychiatry with this new approach.

His "commitment to tracing biological roots of mental disorders" (Scull "Madhouse"23) was cemented when he worked with Alois Alzheimer and Franz Nissl, who pioneered the study of the microscopic structure of the brain. During this research, Alzheimer identified the form of dementia that was later named after him (Scull "Madhouse"24).

In the series, the story is not concluded after Mrs. Gallinger returns from the hospital. Her mental breakdown was not treated properly and she is further traumatized because of her stay at Dr. Cotton's hospital. Furthermore, she has to deal with the stigma of mental illness. Her sister, who arrives after her return from the hospital, tells Dr. Gallinger that her family hopes that she will get better quickly because they hope that they are not going to be forced to close her in a mental hospital for the rest of her life to hide her mental illness. Her mental breakdown impacted the family's social standing as their other sister's engagement was broken off when the news of her mental illness spread among the high society. Her marriage prospects were abysmal as well.



This stigma was the result of popular belief of the time that mental illness was a hereditary problem. Psychiatrists explained mental illness by calling the mad “degenerates and defectives” (Scull "Madhouse" 21), whose mental illness was a “reflection of hopeless heredity” (Scull "Madhouse" 21). It was a theory that originated in France in the second half of 19<sup>th</sup> century. The explanation became accepted among society and mental illness was “seen as the product of degeneration and decay” (Scull "Madness in Civilization" 154). The mad were seen as a “biologically inferior lot” (Scull "Madness in Civilization" 154). This explanation was a result of the fact that psychiatrists were usually unable to cure mental illness. Because none of the treatments for mental illness worked, psychiatrists suggested that mental illness was not treatable and that society had some “degenerates and defectives” (Porter 58). Supposedly the best option to deal with mentally ill was to simply remove them from society and prevent them from breeding to prevent “future generations of recidivists and imbeciles” (Porter 58). If somebody was struck by mental illness, the entire family suddenly became social outcasts.

According to Scull, this belief played a big part in the popularity of Cotton’s method. His explanation of mental illness meant that mental disorders were caused by infection and not as a result of degeneracy. His theory absolved the rest of the family of mental illness. What was once “a condition that banished hope and induced the deepest shame and social degradation” (“Madhouse” 86) was now just another illness caused by infection. Psychiatrists all over America reported that they were visited by people who demanded this new treatment.

The story of Dr. Cotton concludes when Mrs. Gallinger invites him to dinner to thank him for her treatment despite her husband’s objection. During dinner, Dr. Gallinger is unable to hide his anger towards Dr. Cotton. Dr. Cotton tells him that the fact that she is able to sit with them for dinner is a testament to his successful treatment. The husband is unimpressed and Dr. Cotton offers another example of successful treatment: a patient who was hypochondriac, paranoid, mistrustful of others and heard voices was brought to the hospital. Immediately upon arrival, he removed the teeth. Because there was little improvement he continued his treatment and removed patient’s tonsils and his gallbladder and his mistrust disappeared. After that, he removed his spleen, colon, and testicles. When the other dinner guests were shocked upon hearing this he reassured them that the patient’s symptoms disappeared: he found a job and is leading a “relatively normal life.”

This story was an accurate portrayal of his treatment. If the first surgery was not successful, it never occurred to him that his methods might be wrong. He believed that failed treatment proved that more surgery was necessary to remove the infection (Scull "Madhouse" 246). He ignored low success rate of his surgical procedure (and high mortality rate for abdominal surgeries) and ignored the fact that patients in his hospital who were not operated on, had much higher recovery rates than those operated on (Scull "Madhouse" 264).

He also had a different idea of “relatively normal life” than other people. Often he declared person cured despite the fact that there was no real improvement after surgery and released them back to their families, claiming great success. Consequences of surgery were ignored and deemed lesser evil than madness (Scull "Madhouse" 169-170). During the independent investigation into his work it was discovered that he misrepresented success of his treatments and that statistics he published to prove his success were inaccurate (Scull "Madhouse" 166, 200).

During the dinner, Dr. Cotton excuses himself because he does not feel well. It is later revealed that he was poisoned by Gallinger’s wife as a revenge for what he did to her. A detective investigating his death discovers that he was slowly being poisoned by his sons. They were putting the arsenic in his food as a revenge for him pulling their teeth, hoping to kill him slowly. They were giving him small doses of arsenic hoping to kill him slowly, but he dies after Gallinger’s wife adds rat poison to his food. His sons confess to his murder and commit suicide and Mrs. Gallinger’s role in murder is not discovered by the police.

In real life, Dr. Cotton lived until 1930’s and died of natural causes. It is true, however, that both his sons committed suicide. His younger son disappeared during a ship voyage from Europe three years after his father’s death. His death was ruled an accident but dentist who worked for Cotton and retrieved his son’s belongings after the disappearance claimed it was a suicide. Twelve years later his older brother killed himself by intentionally overdosing himself with drugs (Scull "Madhouse" 291-292).

Dr. Cotton was a minor character in the series and his treatment of Mrs. Gallinger was a minor subplot in the series. The focus of the plot was the treatment of Mrs. Gallinger and mental illness treatment in 1901 so Dr. Cotton did not receive a lot of screen time in the series. The lack of screen time makes the analysis of his character hard since there was no time for writers to

develop his character. However, one character trait that was adapted accurately was his unwavering belief in his methods.

The little time the character did receive was an accurate transfer of real Dr. Cotton. Unlike Dr. Thackery, the character on the series was supposed to be an adaptation of real person and not just a character inspired by the real person. His methods for treating mental illness were adapted accurately. The attitude toward people with mental illness was also adapted accurately; the social alienation of the entire family was the consequence of one family member suffering from mental illness just as presented in the series and was more feared than the actual illness.

*The Knick* accurately depicted his character but it made one big change when it concluded his arc by killing him. The murder of Dr. Cotton is Mrs. Gallinger's final act in the series. With Dr. Cotton's murder, Mrs. Gallinger's arc is finished and she is institutionalized in a mental hospital by her husband. This is a big departure from the real story of Dr. Cotton, who died of natural causes. However, the writers of the series decided to give Mrs. Gallinger a closure, which Dr. Cotton's patients did not get in real life.

### **4.3. Typhoid Mary**

The series also adapted one of the most notorious cases in medical history – the story of Mary Mallon, better known as Typhoid Mary. It is a story of an Irish immigrant cook who was the first person in North America who was a healthy typhoid fever carrier. She spread the disease in the households she worked at and caused several deaths. Because her disease could not be cured and she refused to stop working in the kitchen she was quarantined for life on a small island next to New York (Leavitt 28). Her story gained such notoriety that the words Typhoid Mary became “a metaphor for a dangerous person who should be reviled and avoided” (Leavitt 76).

Typhoid fever is a disease that can be traced back to Ancient Greece and was likely the disease that killed Alexander the Great (Emmeluth 8). In the United States of America, it dates as far back as 1607, when it was credited with killing six thousand settlers in Jamestown, Virginia. Until 1880, when Karl Erbert isolated and identified the particular organism associated with the disease, there was no way to accurately diagnose it. There was no way to cure it. The only hope was to put a patient to bed and hope that the fever would not kill him. It is dramatized as such in the series as the doctors put the feverish patient in bed and hope for a fever to break. It was not until the invention of antibiotics in 1940's, that disease could be treated. Until the invention of

antibiotics, the disease killed about 10% of people who contracted it. After the invention of antibiotics, the number fell to 1% (Bourdain 18).

Typhoid fever is an infectious disease caused by bacillus *salmonella typhi* and is “transmitted by food and water that has been contaminated with human feces or urine” (Bourdain 18). It can also be transmitted by people who do not wash their hands after using the bathroom. Most only carry the disease for a short time after getting ill. Mary Mallon was one of the few people, who carried the disease in her body for the rest of her entire life. She exhibited no symptoms of the disease. However, because she carried it she could infect those around her. Most people transmitted the disease because they did not wash their hands after going to the toilet. Because Mary worked as a cook she transmitted the disease when preparing food, especially the uncooked food (Bourdain 19).

The fact that poor hygiene is how disease spreads is why throughout the investigation on *The Knick* Health Inspector Speight, who investigates her case in the series, expresses his disgust with Mallon several times by calling her: “filthy thing,” “sick as a cod in cesspool,” “cow,” “twat,” “bitch,” and calling her hands “filthy mitts.” The similar vocabulary was used in real life to dehumanize her in the media. Words such as “human culture tube,” “menace”, “a germ”, “vehicle,” “factory,” and “culture tube” were used to describe her in newspapers that covered the story (Leavitt 78, 156).

Her case was a front page story and Leavitt speculates that press magnate William Randolph Hearst was the benefactor, who paid her lawyers so that he could keep her story alive in the newspapers. Hearst often did so for people whose stories interested the readers of newspapers he owned (Leavitt 95).

In the series, the Typhoid Mary story begins in the series’ second episode, when family friends of hospitals patrons are brought into the hospital because they have contracted typhoid fever. In the following episode, the daughter of the patron learns of two more affluent families being struck by disease over family breakfast. When asked about the disease her best surgeon suggests they bring the health inspector to investigate the spread of the disease because typhoid fever spreading in homes of the rich is unusual. The disease was usually concentrated in poorer neighborhoods that

did not have proper sewage. Later, inspector concludes that “something giving rich folks, poor folk’s disease” certainly needs to be looked at and agrees to take the case.

In real life, the investigator George Soper was not a health inspector, but a civil engineer. He had a degree in sanitary engineering and some experience investigating typhoid fever outbreaks (Leavitt 28). In real life, the investigation started as a private matter. A rich family whose house was struck by disease worried that unless the source of disease is found, the value of their house would decrease. They decided to hire an investigator to find the source of disease (Bourdain 13).

The series’ dramatization of the investigation is similar to the real-life experience. Investigator interrogates occupants of the houses and their staff and looks if their water supply is contaminated. Soper quickly ruled out contamination of the water and determined that the source of the disease was human (Bourdain 13). Just like in real life it is quickly determined that source of the disease is human. Investigators began looking at the staff that works in homes struck by disease.

The difference between the investigations in the series and the real ones is that Soper identified Mallon as a source relatively quickly. After he eliminated poor hygiene and corrupted water supply, he investigated the staff and discovered that Mary was hired as a part-time worker just before the outbreak. Through investigating Mary, he found about other homes where she worked and caused typhoid fever outbreaks. He concluded that she was responsible for the outbreaks (Leavitt 29).

In the series, investigators found Mary after multiple typhoid fever outbreaks had happened. They got the names of all the people who worked in those households and Mary is the only person who worked in all the houses.

Another big difference between dramatization and the real story is that in real life the outbreaks occurred over multiple years and not during the same summer, as in the television series. The series creators made that change to increase the tension. If the outbreaks occur one after another, the investigators are under pressure to stop further outbreaks.

The investigation in the series is similar to detective films, where detectives are trying to stop a serial killer. The investigators in the series interrogate witnesses, collect the evidence, and look

for a pattern connecting all the cases. They even have a large map of New York, where all the outbreaks are marked. Investigators find out that the only person connected to all the outbreaks is Mary Mallon and decide to arrest her.

Just like in real life, Mallon was found through the agency which arranged to hire temporary cooks and servants for rich people. Upon identifying her as a suspect, Soper used the agency to look at her job history and upon investigating that he found multiple other outbreaks that happened in homes where she worked (Leavitt 124). In the series, the agency is used to give the names of all the cooks and servants who worked at places where the disease hit. Mary Mallon is the only one who worked in every household.

In the series, Mary is arrested in an affluent home just as she is serving her Peach Melba ice cream. Health inspector is accompanied by a policeman who arrests Mary. After being accused of spreading the disease, Mallon claims that she is healthy. After being asked by health inspector to come to the hospital where her saliva, urine, and feces may be tested, she gets angry and spits in his face and attempts to escape but is stopped by one of the investigators who jumps after her and tackles her by the leg.

In real life she also resisted arrest. Soper visited her at her place at work, and just like in the series, she did not accept the news kindly. She got angry and threw him out of the house. Because he had no power to arrest her, he brought her case to health inspectors who went to her place of work with police officers to arrest her. When police officers and health inspectors came for her she hid in a closet. When found, she became violent and had to be dragged into an ambulance. During the ride to the hospital, one of the officers had to sit on her the entire way because she did not calm down (Leavitt 143).

She was imprisoned in a cottage on North Brother Island in New York where she spent the next two years of her life in isolation removed from healthy people, save for medical workers who collected her stool samples. In the television series, she spends four months in isolation before her hearing in the court. North Brother Island was an island that was used to quarantine people who had infectious diseases. Most of them were immigrants who came to New York ill and were removed from the general population to prevent epidemics. The island had city hospital for tuberculosis patients who were placed there. On the island, Mallon lived alone in a one-room

cottage, but was not confined to the cottage and was allowed to spend time with other patients (Bourdain 43-44).

In the series, she spends four months in isolation. After that Mallon is scheduled to appear in court where she contests that her incarceration is unjust. In front of the judge, she claims that it is impossible for her to infect others with the disease because she is in perfect health and that she cannot infect others if she is not sick herself. Throughout her life, this was the argument Mary Mallon used when arguing her case to the court or when she defended herself in newspapers. It was ultimately her downfall in real life as her refusal to accept that she could infect others was one of the factors that resulted in her being handed down a sentence of life imprisonment on North Brother Island. The other reason was the fact that she refused to stop working in the kitchen.

After her testimony, one of the doctors takes the stand and says that just because she does not show any signs of the disease it does not mean that she does not have it and cannot infect others with it. It is revealed that in places where she worked she infected 18 people with typhoid fever and caused several deaths. Her feces tested positive for bacillus typhi. The doctor tries to explain that she is the first asymptomatic case ever found and that prior to her case they were unaware such a thing was even possible. In real life Mary was not the first such case, as scientists had “already firmly established that healthy people could carry salmonella typhi ... and transmit the disease to others” (Leavitt 46).

On the stand, Mary points out that she had been regularly tested for disease and her tests were negative in five instances (out of sixteen). This was part of Mallon’s defense in real life and she even hired a private laboratory to test her samples and used negative results to prove her innocence (Leavitt 48). In the series, judge expresses doubts over the validity of the tests and asks the doctor whether it is possible that the tests are inaccurate. The doctor loses his composure and angrily tells the judge that he does not understand what he is talking about which results in judge siding with Mallon and releasing her from custody. After that Mary is released from custody.

In real life, the judge “voiced his sympathy” (Leavitt 11) but decided to send her back in isolation, as he did not want to be responsible for further outbreaks. She was quarantined for another year when the new health commissioner offered to release her if she promised to quit

working in kitchens. She accepted his offer and was released after three years in isolation. The health commissioner even helped her get a job in a laundry. Because she could not earn as much money as when she worked as a cook she quit her job and began working as a cook again until causing another typhoid fever outbreak which resulted in her being quarantined at North Brother Island for the remainder of her life (Leavitt 11).

After her first incarceration, the policy in New York became that healthy carriers were banned from jobs which involved preparing food and their health was monitored on a regular basis. They were not isolated as Mary Mallon was because if they were not working in food preparation they were not a threat to other people. But her refusal to stop cooking and accept that she was a typhoid carrier resulted in such a harsh punishment (Leavitt 51).

Her story in the series concludes after she is released from her custody. In her final scene, she is searching for a new job in a kitchen. Due to the public notoriety of the case, she is forced to look for a job under an assumed name because nobody is willing to hire a cook called Mary. This is consistent with her real story, as she was forced to work under an assumed name after she was released from custody for the first time (Leavitt 86).

In the series, Mallon complained that news coverage of her trial was extensive and largely negative. The real Mary Mallon faced a similar problem (Leavitt 156). Because she spread the disease in the home of the rich “she was a threat not only to public health but to social hierarchy as well” (Leavitt 156). Because she spread the disease unwittingly she received some sympathy, but that sympathy was gone after she was caught working in the kitchens after her first release (Leavitt 156).

McFarlane would consider dramatization of Mallon as an adaptation. The writers changed small details of her story to adapt it to the series, but if we look at the narrative functions and the macrostructure of her story it remained the same. The details, however, were changed to fit the medium. The story of both real-life and series Mary Mallon depends on three narrative facts:

- (i) the spread of typhoid fever
- (ii) her arrest
- (iii) release



In both stories, these constitute integrational functions. Despite minor differences, the story can be summarized as follows:

- (i) the spread of typhoid fever which leads to:
  - (a) an investigation into the investigation into infected households
  - (b) a conclusion that one of the staff is responsible for the spread of the disease
  - (c) investigators finding Mary through the hiring agency
  - (d) her arrest
- (ii) her arrest which leads to:
  - (a) quarantine
  - (b) the trial
  - (c) her release
- (iii) Her release which leads to:
  - (a) Mary working as a cook under assumed name
  - (b) her spreading the disease again
  - (c) her second arrest
  - (d) her second quarantine

The macrostructure of the story remains the same, but some details were changed during the transfer to visual media. The story begins in a similar manner with Mallon infecting her patrons without her knowledge. Instead of George Soper, the investigation is led by two fictional characters: Health Inspector Jacob Speight and Cornelia Robertson. This is done so the investigation is conducted by characters that worked at The Knickerbocker hospital and were introduced to the viewer before Typhoid Mary subplot.

The one big element of Typhoid Mary story that was adapted poorly was her infamy. The series did a poor job communicating the fact that she was a sensational story at the time to the viewer. We only receive that when Mallon testifies in court. There was no scene of people discussing her story at the newspaper stand or young paperboy yelling updates of the Typhoid Mary story while trying to sell newspapers. The series does a poor job communicating the fact that she is on the front page of every newspaper in New York.

The story is told from investigators' point of view so the effect of this infamy on Mary is not shown. Her incarceration on North Brother Island is also not dramatized. We only hear about her stay on the island when she is on the stand. The only scene in the series which is presented from her point of view is her final scene during which she is looking for a new job.

A major change was the reason for her first release. As mentioned, the reason in the series was the judge getting angered instead of Health Inspector taking pity on her and releasing her back. This change allowed the screenwriters to wrap up her story by the end of the first season without the series making a time skip required for accurate dramatization.

The series ignored her second arrest. After she is released, Mary's final scene in the series depicts her looking for a new job under an assumed identity. The series decided to finish her story with that and not to bring the character back for a second season.

Typhoid Mary investigation was a subplot that was investigated by supporting side characters and the writers did not deem the subplot important enough to bring Mallon back in the second season. This would require repeating the same investigation again which would feel repetitive. Concluding her story on that series at that point can still be seen as accurate adaptation since it took five years for her to get arrested again after the first investigation.

## **5. ANALYSIS OF DRAMATIZATION OF MEDICAL SCIENCE**

*The Knick* dramatizes the state of medicine and surgery at the beginning of the twentieth century. Michael Begler, one of the series runners, came up with the idea for the series after he fell ill. With a lot of time on his hands, he did some research on how this problem would be treated 100 years ago. He became interested in the topic and with the help of Jack Amiel, the other series runner began researching old medical journals to learn about how certain medical problems were treated 100 years ago. They decided to make a television series which focused on how medical problems were solved a hundred years ago (Amiel and Begler interview by Christina Radish).

According to Pernick, a “key feature of medicine’s moving pictures as a genre /.../ is the dedicated effort of producers, writers and the people on film – whether actors or “real people” –to produce *accurate* images and information.” (Reagan, Tomes and Treichler 10) In this chapter, I will analyze the techniques *The Knick* employed to achieve the accuracy and look at some individual medical cases and how accurately were they presented in the series.

I used literary sources to analyze the medical facts and behind the scenes videos that were uploaded on Cinemax's official YouTube channel. The videos include interviews with Justin Raleigh, the special makeup effects designer, and the cast who explain how certain scenes were filmed and how the visual effects were used to accurately dramatize surgery.

### **5.1. Dramatization of surgery**

To make *The Knick* as accurate as possible, the creators of the series were helped with their research by doctor and historian Stanley Burns. He was constantly present on the set during filming and made sure that medical procedures were dramatized to be medically and historically accurate. He was also responsible for training the actors, who were put through short medical training before filming the series. They were taught about the medical techniques and procedures that were later dramatized in the series. After that, they were taught to handle medical instruments which were used during filming and how to perform a different kind of sutures. Actors practiced surgeries on prosthetic dolls. The same prosthetic dolls were then used during filming (Burns interview by Chris Higgins). This contributed to the authenticity of the series. Because there was no need for real doctors to act as stand-ins for actors, there was no need for the director to use different angles to conceal stand-ins. He could use uninterrupted shots in which actors performed surgical procedures in real time.

Burns was not just the technical advisors but also assisted the creators with the script. Burns is the director of Burns Archive, a museum which hosts a collection of historical medical photographs and “is well known to scholars as one of the world’s most important repositories of early medical history” (Schuessler). The content of the museum was used as the primary source for the creators. Photographs from the museum were used to create props of medical instruments used in the series and to build the set. Many stories of real-life patients that are part of museum’s exhibit were adapted by the creators. In one of the interviews, Burns said, that the screenwriters came to his museum with the written pilot episode, and left with the entire season’s worth of stories (Burns interview by Science & Film).

Surgeries were performed in the middle of an amphitheater with a head surgeon explaining the procedure to spectators. During filming, Burns told the director that the surgeons who were observing the procedure were seated according to seniority, with the most senior having the best

seats in the front, and the youngest sitting in the back. The director then made sure that older background actors always sat in the front (Burns interview by Chris Higgins).

Surgeries were performed on prosthetic dolls. Dolls were done by making cast impressions of actors' bodies. Dolls were made out of silicone (*The Knick* Season 2: Post Op Episode #7 (Cinemax)) which made dolls flexible and malleable under the hands of the actors. This made surgery scenes look more realistic because prosthetics body not only looked real but could also be manipulated by actors. During filming, actors performed surgeries on them. The organs were created in accordance with body anatomy and all the organs could be touched, moved and removed from the body (*The Knick* Season 2: Body Shop Heroin Addict Autopsy (Cinemax)). A system of tubes was designed with which the fake blood was delivered to the fake body. The flow of the blood was controlled and could be increased or decreased according to the needs of the director (*The Knick* Season 1: Inside the Body Shop – Previa (Cinemax)).

According to the actor Clive Owen, most surgeries were filmed in one take. This was done because visual effects were dynamic. Actors cut open human dolls and fake blood was flowing from them, which meant that surgeries had to be performed in real time with the director filming the procedures (*The Knick* Season 1: Surgery 101 (Cinemax)).

Another thing that made the dramatization of surgeries unique compared to some other medical television series and films is that in *The Knick* medical procedures are shown in great detail. Medical procedures on film or television are usually shown from a distance. The details are obscured and the procedure is explained by an actor performing the procedure. But in the case of *The Knick*, the surgeries were filmed in a way that showed what the surgeons were doing.

This is especially apparent in a leg surgery presented in the first episode of the second season. The surgery had to be performed to remove puss from an abscess on the leg. A prosthetic leg was made for this and surgeon had to cut through the skin of the leg and actually squeeze the leg to remove puss from the leg. The quality of dolls allowed the surgery to look realistic. Like in other scenes body liquids were delivered into dolls with the system of tubes. In this particular case, separate tubes for blood and puss were needed. (*The Knick* Season 2: Body Shop Leg Abscess (Cinemax)).

The prosthetic dolls were so good, that after the first season the company that was making them was hired by Boston's Children Hospital to create prosthetic body parts which were then used by surgeons for surgery practice (Boissonneault).

## **5.2. The operating room**

The creators made sure that surgeon preparation was as accurate as possible. As mentioned in the previous chapter, real hospital plans and photographs of old operating rooms were used to build the set.

The interior scenes were filmed on a set. To build a historically accurate set, creators used old hospital plans and pictures from the turn of the twentieth century. The surgery room was built in the shape of an amphitheater. It was made to look like a small theatre from Ancient Greece. The similarity to old theaters is not accidental according to the production designer Howard Cummings. This was done to emphasize that Thackery is a "showman" with a "giant ego" (*The Knick* Season 1: Under Construction – Operating Theater (Cinemax)) by making the operating room a theater where he can exhibit his talents.

The series is set during the time when people were aware of germs. Despite this knowledge, the standards for sterile surgery were not as high as they are today and the process of preparing for surgery and the surgery room reflects that. Just like in 1901, the carbolic solution is used to disinfect the hands of the doctors. Before surgery surgeons scrubbed their hands with water and soap and then dipped them in carbolic solution. One doctor even dips his beard into the acid to disinfect it before surgery. Surgical gloves were not in use in the series.

The gloves were first used during surgery by William Halsted's surgical nurse after she developed the allergy to carbolic acid. Halsted arranged for Goodyear Rubber Company to produce two pairs of fine rubber gloves, to keep her from irritating the skin on her hands. They were reusable and allowed her to keep working in the operating room. It was not until seven years later when one of Halsted's colleagues joked that "what's sauce for the gander is sauce for the goose" (Imber 114-116) and began using the gloves himself. By 1898, they became standard equipment for all the nurses but surgeons kept operating without them. Interestingly, the creators decided not to include this invention in *The Knick*, despite this probably being the most significant Halsted's invention.

In the series surgeons entered the surgery wearing their own clothes, donning only white coats which prevented them from getting blood on their clothes. This is actually more sterile than the real dress code in operating rooms a hundred years ago. Surgeons in the series always wear a clean coat to surgery. In real life surgeons often wore coats that were bloodstained from prior surgeries (Imber 18).

The operating room was an amphitheater with an operating table set in the middle. There was no barrier between the surgeon and the audience. This meant that the operating room was not sterile, as some surgeons at the time, Halsted included, did not believe that germs can circulate in the air. They believed that sterilizing their hands and equipment was enough for a sterile procedure (Imber 111).

The series accurately dramatized the anesthesia procedure of 1901. The drug used for anesthesia was ether. Prior to surgery, an ether cone is placed over the mouth of a patient and a nurse administers ether through it (Markel 193).

### **5.3. Cocaine in *The Knick***

Coca leaves have been harvested in South America for millennia. When Spanish conquistadors arrived, they disapproved of the habit, but soon discovered that the more coca the natives consumed, the harder they worked and ate less. This reputation of miracle plant soon spread to Europe and North America, but the leaves were impossible to export because they would dry or rot during the long voyage to Europe. It was not until 1860 when coca leaves were converted into coca alkaloid, which resulted in coca's implementation into beverage industry. The most famous example is Coca-Cola. In Europe, the beverage of choice was Angelo Mariani's wine, which added cocaine to Bordeaux wine. Soon cigarettes, teas, cigars, and various healing elixirs containing coca were sold in Europe and America. This was noticed even in the Vatican, and Pope Leo XIII awarded Mariani Company a special Vatican gold medal and allowed his face and name to be used when advertising his products. In the United States of America, the company *Parke, Davis and Company* advertised cocaine to doctors and patients as a solution to various problems. Cocaine was sold in pharmacies without prescriptions just like morphine, cannabis, and opium (Markel 55-56).

Individual states of the USA began restricting the drug as soon as in 1887. However, it was not until 1914 that the Congress passed the Harrison Narcotic Act which forbade the sale of opiates

and cocaine without doctor's prescription (Acker "From All Purpose Anodyne to Marker of Deviance: Physicians Attitudes Towards Opiates in the US from 1890 to 1940" 121).

*The Knick* is set at the time when cocaine was legal. The two addicts the series focuses on were both surgeons: Dr. Thackery and Dr. Christiansen. They both inject the drug into their veins prior to the surgeries. While oral and nasal consumption of the drug was more popular at the time, injecting cocaine was not unheard of. Markel states that it was rare and more dangerous, but rewarded the user with more "speedy and intense high" (Markel 102). In the second season, Thackery begins snuffing the drug, because he was regularly checked for new needle marks after return from drug rehabilitation.

*The Knick* does not explore the drug just as a recreational drug, but also as a medicine. Cocaine was regularly used in medicine at the time. As early as 1884 Sigmund Freud began experimenting with cocaine, after reading that the drug improved performance of German soldiers. When German soldiers took cocaine they marched longer than other armies, lasted without food for days and fought better (Freud and Carter 4). Freud injected cocaine into animals, human subjects and to himself. He told his friends that the drug was magical: every time he felt depressed, the use of a small dose of the drug made him feel euphoric. He also discovered that when consumed orally, the drug caused numbness in his mouth. This led him to believe that drug could be used as an anesthetic. He told about this to his friend Leopold Königstein, who was an ophthalmologist. His intern Carl Koller was first to experiment with the use of cocaine as a local anesthetic and thus began the use of cocaine in medicine (Imber 49).

As mentioned in chapter 4.1, series portrayed the use of cocaine in a similar manner. Thackery used the drug on himself so he could work harder and increase his confidence before surgery. Cocaine was also used as a local anesthetic.

Koller demonstrated the value of cocaine by using it as eye drops prior to eye surgery. Few drops of cocaine solution numbed the eye and allowed the doctor to operate on it painlessly (Karch 57). The TV dramatized similar technique in preparation for eye surgery, but in that case, the cocaine was injected into the eye with a needle. To achieve that effect a life cast of actor's head was taken and a doll of his head was created. The needle was injected into the prosthetic eye. Following

that, the scene was filmed with the real actor and shots combined (*The Knick* Season 2: Body Shop Algernon Eye Surgery (Cinemax)).

In America, the drug was distributed by the company Parke, Davis and Company which led to the drug to be referred as Uncle Parker. Thackery's mentor refers to his vial of cocaine in that way. After reading about Koller's experiments, William Halsted began experimenting with the drug. Halsted believed that by injecting cocaine into the sensory nerve, he could block pain sensation traveling to the brain through the nervous system. He began experimenting by injecting cocaine into his student's nerve endings and he discovered that "cocaine injected into a large nerve trunk on the leg would induce anesthesia everywhere below the injection" (Imber 52). The nerve block allowed doctors to operate on patients without general anesthesia. It led to Halsted's discovery of spinal block – injecting cocaine into patient's spine would produce anesthesia below the waist. The series dramatized this technique in the first episode in which Thackery successfully uses spinal block before bowel surgery. Just like Halsted in real life, he becomes a pioneer of this new technique.

The series also portrays the use of cocaine as a sexual stimulant. Dr. Thackery gets involved in a romantic relationship with a young nurse. When they are about to have sex she asks him whether it will hurt her because she is virgin. He answers that he can make it painless. He douses his penis with cocaine and they later have sex. Liquid cocaine was used as a numbing agent. In 1884 Herman Knapp experimented by placing cocaine drops on different parts of his body, including his penis and rectum, and discovered that cocaine numbed feeling when applied to genitalia (Karch 73). According to Karch cocaine is still used on genitalia "as an exercise in eroticism" (Karch 80) and that vagina and rectum absorb the drug. Thackery and his lover always use cocaine on their genitals before they have sex.

*The Knick* also dramatizes cocaine as a performance-enhancing drug for sports. The wrestler is injected with cocaine before his match. After hearing about miracles the drug did for the endurance of German army, people tried to experiment with cocaine or coca leaves as a performance enhancer for sports. In 1877 a Canadian physician gave Toronto Lacrosse team some coca leaves to chew and noticed that they played with more energy than the opposing team. For 1996 Olympics, Russian doctors designed a drug with similar physiological effects to cocaine



in hopes that they would compete better in a hot and humid environment of Atlanta, Georgia (Karch 52-53).

Eventually, regular use of the drug leads to Thackery's breakdown and he is taken to a rehabilitation center to be cured of "cocaine madness". This allows the series to explore how drug addiction was battled in 1901 and what the attitudes towards drug addicts were. Upon arrival, Thackery registers under an alias to protect his privacy. To ease his withdrawal from cocaine he is given "miraculous medication that can virtually eliminate the misery of withdrawal" – heroin. Heroin was introduced in the USA in 1898 and initially marketed as cough medicine (Acker, "Creating the American Junkie" 2). Later, it was used as a substitute for morphine and was used as a cure for morphine addiction, because it was "touted as non-habit-forming" (Courtwright 89), unlike morphine.

Treating drug addiction by injecting an addict with another substance was a common treatment for addiction in the late nineteenth century. In 1878 W.H. Bentley published a paper in which he described how he successfully treated opium addiction with cocaine. Six years later Sigmund Freud tried to treat friend's morphine addiction with cocaine. Freud's friend became addicted to both substances and developed "severe fainting spells, convulsions, insomnia, hallucinations and increasingly odd behaviors" (Markel 79). Despite this, Freud still believed that cocaine would be a good medicine for addiction and depression.

According to Karch doctors used different drugs to treat addiction because they believed that effects of cocaine "were so obviously opposite to those of morphine" (Karch 56) and vice versa. This led doctors to believe that a drug with opposite effects could heal the addiction to another drug.

This treatment proves unsuccessful for Thackery, who gets addicted to both drugs and refuses to leave the rehabilitation center. As long as he is in rehab he is provided with drugs on a regular basis so he sees no reason to leave. Seeing that the treatment made his addiction worse, one of his colleagues kidnaps him from the institution, takes him to his boat and sails it to the middle of the ocean and forces him to get clean. When sober, Thackery resolves to find a cure for drug addiction. He decides to stop treating cocaine addiction as a *need* but to start to treat it as a disease instead. He believes that if addiction is a disease, then there must be a cure.

Once returned from the rehabilitation Dr. Thackery announces to the board that he would like to research addiction and find the causes and cure for it. The board is unimpressed and does not see why addiction would justify scientific study. When Thackery says that addiction is a disease and it should be treated as any other disease a member of the board (member of Catholic Church) says that it is not a disease but a failure of personal morality and that even if it is a disease it is a disease of “indigents and lowlives”. This is an accurate portrayal of attitude most people had towards drug addicts at the time. Many believed that alcoholics and drug addicts were “helpless, morally flawed wrecks of human beings” (Markel 108) and that addiction was a moral and not a medical problem. The belief was that addiction was a vice, which was only a problem for certain type of persons, who were not morally strong as others. It was spread by companies who sold the drug and were afraid that drugs would be prohibited, and by scientists who believed in its miraculous potential in medicine (Markel 139). After some doctors began criticizing cocaine, and the doctors who were overenthusiastic in prescribing it, Freud put blame on addicts and not on the drug. He said that “people who had already fallen prey to one demon, and who, because of their weakened will-power and need for excitement, would abuse the stimulant offered to them” (Freud and Carter 73).

The opposing thought of the time was that drug addictions were a result of a “disease triggered by an underlying mental disturbance” (Kushner 76) and that it was hereditary and that the disease gets worse with every generation. This opinion was voiced by a doctor, who became an advocate of eugenics. He suggested that a proper treatment of an addict was vasectomy, which would prevent him from fathering more addicts. This is also compatible with the belief that mental illness was hereditary as explained in chapter 4.2.

The view of drug addiction as a disease did generate at the beginning of the twentieth century as portrayed in the series. Doctors like Ernest Bishop were of opinion that addicts did not seek drugs for pleasure, but to avoid symptoms of withdrawal. Doctors should keep prescribing drugs to addicts to avoid painful withdrawal (Padwa and Cunningham 87). Thackery also adopts the belief that addiction is a disease but does not just prescribe more drugs to the patient. Instead, he starts dissecting dead bodies of addicts in hope of finding the cause of addiction. He discovers that there is “nothing that can be removed or treated to cure it.” He draws the conclusion that if there is nothing in the body that causes them to become addicts then the disease must be in the brain.

This was a theory of some doctors, who believed that addiction is a result of brain disease. One of them was Norman Kerr, who believed that addiction is caused by a lesion in the brain. Autopsies did not support his theory but he was still adamant in his belief (Hardin 59-60). Just like him, Thackery is unable to find the cause of addiction in the brain.

When visiting a carnival Thackery sees hypnosis act performed on stage. A man performing an act uses hypnosis to manipulate a member of the crowd to fear a little kitten. Thackery, convinced that technique could be used for practical purposes, decides to try the technique on his patients. He first tests the technique on an ambulance driver who is a pipe smoker. However, his attempt is unsuccessful. The first time he tries it on one of the addicts in his study he is successful in using hypnosis to convince an alcoholic that whiskey is his mother's feces. After the addict is brought back from the trance, the sight of alcohol makes the man vomit. He does, however, relapse later.

According to Hartman, the use of hypnosis to treat drug addiction is rarely effective. However, he does describe a similar case to the one presented in the series. A female heroin addict was, with the use of hypnosis, manipulated to be disgusted by needles. She did not use the drug for six weeks. When she relapsed, she retched and did not have "any pleasant flash as a result of heroin" (Hartman 36) which makes the dramatization of hypnosis treatment accurate.

When Thackery has confidence issues before surgery he decides not to take cocaine, as usual, but to call his lover, who manages to bring his confidence up during their talk. Following their conversation, he performs the surgery successfully. Afterwards, talks with his lover help him cope with his addiction, and he manages to stop using drugs for a while. This was a method of Oscar Jennings presented in 1909 who believed that to cure an addict the doctor must work towards "restoring the patient's will in order to resist the craving" (Harding 61).

He suggests to his lover to speak to one of the patients in his study group. She agrees to meet with him to have a talk. She asks him about the time he first had the drink and he tells her that his experiences with alcohol began as a toddler when his mother had him suck on a whiskey-doused rag to keep him quiet.

After her death, another doctor, Dr. Edwards, continues the research in a similar way by talking to the patient about his issues. He talks to the patient who complains that he has been having

trouble sleeping because of bad dreams. In the final scene of the series, Dr. Edwards asks him to tell him about his dreams, which is the last line in the series and no doubt homage to Sigmund Freud's work *The Interpretation of Dreams*. Freud began analyzing dreams in an attempt to explain the subconscious thoughts and the series hints that Dr. Edwards will try to do the same to help his patient (Markel 175).

The drug treatments and attitude toward drug addicts were adapted accurately. The series is set in the time when drug use was just about to be looked at as a serious problem, which is not just in the domain of immigrants and minorities and people who were considered mentally weak and morally corrupt.

The series adapted the development of drug treatment somewhat accurately. The big change is that decades of development in this medical field are compressed into one season. The series simply could not adapt this accurately as the decades of development could not be fit into a coherent series. This is why they compressed decades of development into one study performed at The Knickerbocker.

#### **5.4. Placenta Previa**

One of the most important achievements of John Thackery is inventing the procedure that helps mothers with placenta previa give safe cesarean section birth. Placenta previa is a condition in which limits of the placenta are within a few centimeters of the cervical os or when the placenta covers the cervical os. It is detected in less than 1% of pregnancies. Because the placenta is blocking a normal opening for a delivery, vaginal delivery can result in severe maternal hemorrhage women. This is why women with this condition usually deliver their children by cesarean section (Faye-Petersen, Ona Marie, et al 120). Before Thackery devises a way to stop hemorrhaging, all women who suffer from this condition and their infants die during the birth.

The case of placenta previa is the first surgery dramatized. Before the surgery, surgeons set their goal – finish the procedure in 100 seconds, before the patient bleeds to death. The director uses some clever visual images to convey the idea of surgeons running out of time. The director used three visual images: the first image is the focus on a white dish in which gauzes used to clean the blood are thrown. During the surgery scene, the director cuts to the dish multiple times. It is slowly being filled with bloody gauzes, indicating that the patient is bleeding to death. The second visual image is by focusing on a hand crank that is powering blood suction machine. The

crank is being spun with increasing speed during surgery. The shots are focused both on the doctor's face and the crank spinning. And the third is focusing on jars in which the patient's blood is collected after being suctioned. Director cuts to jars multiple times. The first jar is filled to the top, then the second and finally the third. As the blood jars are filling with blood the viewer realizes the futility of the doctor's efforts. Ultimately, the patient bleeds out and the attempts of resuscitating the newborn baby are unsuccessful. After the surgery, the head surgeon commits suicide. It is revealed that this is the 12<sup>th</sup> unsuccessful attempt at previa surgery. This sets up placenta previa surgery as the most important medical problem to be solved in the first season.

In the fifth episode, another patient is brought to surgery with an extreme case of previa. Surgeons are confident they will be able to perform the procedure more quickly and thus be able to save the patient. Despite performing the procedure in record-setting 72 seconds they are unable to save the patient and her child. This time the director chose not to show the surgery, just aftermath of it. We see despondent Thackery sitting in the blood-stained operating room after another failed procedure.

A breakthrough is made when Dr. Thackery comes to the realization that problem can be solved, not by making the procedure faster, but by making the patient die slower. He attempts to accomplish that by slowing the bleeding. Previously this was attempted by putting pressure on the bleeding in the womb from the outside. However, Dr. Thackery attempts to do it from inside by modifying the Lois Antoine Champetier De Ribes balloon, which was used in the vaginal canal to speed dilation. This was a reference to a real doctor, who was the first doctor to use a balloon to help stop bleeding. This invention helped him save lives of mothers who gave premature births in the 19<sup>th</sup> century (Savchev, Illiev, et al 18). Instead of a balloon, Thackery uses basketball bladder bullet, which he inserts through the vaginal canal into the uterus and then pumps the bladder with air. The bladder expands and hardens against the bleed. After that, the weight is attached to the bladders so that the bladder puts pressure on the wound. On the suggestion of his colleague, he fills the bladder with water because the water would add more weight and would adjust better to patient's anatomy. This balloon technique is still in use today to manage blood loss during placenta previa cesarean section births (Jauniaux and Berghella 64).

The second surgery is performed and it is a complete opposite compared to the first one. There is no race against time, no blood running out of the patient. The procedure is conducted slowly,

calmly and without complications. The first procedure was a bloody affair, with the entire surgical room being dirty because of all the blood. During this surgery, we barely see any blood. The new method works perfectly and both the baby and the mother survive the procedure.

For the filming of this surgery, the director used a combination of a prosthetic pregnancy belly that was attached to the live actress and a full sized doll that was used for some surgery scenes. Inside the full sized doll, there was another small infant doll. During the surgery, the infant doll was pulled out of stomach by one of the actors. Two infant dolls were created: one of the unsuccessful birth in the first episode and an animatronic one for the successful birth in the sixth episode. The animatronic doll moved its arms and legs. Inside the prosthetic belly, there was a silicone placenta which was also pulled out during the cesarean section birth. To deliver blood to pregnancy belly, plastic tubes were used. For the first scene in which a patient bleeds to death, the director made sure that they used the same amount of blood that a pregnant woman would have inside her body (*The Knick* Season 1: Inside the Body Shop – Previa (Cinemax)).

### **5.5. Blood transfusion**

During one of the surgeries, a guest surgeon at The Knickerbocker announces that he is currently conducting research on blood. He says that there is still much to discover about how blood works and that he and his colleague Karl Landsteiner are close to proving that not everybody has the same blood, but in fact that there are three groups of blood. Karl Landsteiner was a real scientist who discovered the cells in the blood that were a basis for discovery of four blood groups. He made his discovery in 1901 which is a year in which *The Knick* is set (Keynes 34).

The visiting surgeon, Dr. Zinberg, upstaged Thackery at the medical conference prior to this announcement. Thackery decides to return the favor by discovering the solution to blood transfusions himself and upstage Dr. Zinberg.

Problem with transfusion was that during every blood transfusion the new blood began clotting immediately, killing the recipient in the process. Thackery begins the research by collecting blood samples and looking for familiar patterns under the microscope. He believes that he has found the answer in the size of red cells which differentiate between people. He quickly finds a patient who is on her deathbed and decides to attempt the blood transfusion when the size of her red cells matches with his. He opens his arm with a scalpel and accesses his vein to perform the

transfusion. After receiving his blood, the patient's pulse becomes erratic and she dies on the operating table.

Halsted found himself in the similar situation during his career. Prior to the discovery of blood groups, he was forced to perform a blood transfusion. After giving birth to a child, his sister began bleeding severely. She was "ghastly white, quite pulseless and almost unconscious" (Imber 42). Seeing that his sister was about to bleed to death, he performed a blood transfusion despite the fact that he knew the risks of blood being rejected. He was lucky that their blood matched and she survived the procedure and Halsted made medical history by performing the first emergency blood transfusion (Imber 42-43).

There are differences in methods used. Imber mentions that Halsted transfused blood by drawing from his vein with the needle and then injecting it into his sister's vein (Imber 43). Thackery on the other hand uses rubber tube to transfuse blood directly from his vein to the vein of the patient, which is accurate to the methods used at the time for blood transfusion attempts as presented in Lederer's *Flesh and Blood* which describes the procedure performed in 1906 in which surgeon had to open the donor's arm to expose the veins to perform the blood transfusion (Hollingham 32).

To shoot a scene, Clive Owen wore a skin colored sleeve. Inside that sleeve, a plastic tube was filled with blood that could be pumped out. To perform blood transfusion he cut through that sleeve and accessed that tube. On camera, this looked as if he opened his arm to access his vein. He did the same on the arm of the actress who played the role of the patient. He connected both tubes and literally performed blood transfusion with fake tubes and fake blood (Justin Raleigh interview by Geoff Berkshire).

This is an adaptation of Halsted's procedure. Just like Halsted in real life, Thackery decides to gamble with blood transfusion because he has no other choice. Despite this, there is the difference in the motivation that drove Thackery to make this gamble. In real life, the transfusion saved Halsted's sister's life. In the series, the young girl died.

The change was made because the procedure happens in the final episode of the first season. Blood transfusion surgery is the lowest point of Thackery's arc in the first season. He loses control of his addiction which leads to reckless behavior, which eventually results in him trying

the risky and untested procedure on a young girl. Young girl's death drives Thackery to a complete mental breakdown, after which he is sent to drug rehabilitation facility.

This failure remains important in the second season, during which this guilt and his lover's death prompt Thackery to perform a risky bowel surgery on himself, during which he dies.

### **5.6. Birth control in *The Knick***

In one of the subplots, *The Knick* depicts the story of poor women in New York, immigrants and prostitutes, and their problems with controlling their pregnancies. The story is told through the character of Sister Harriet, a Catholic nun, who helps at the hospital as a midwife and has some medical knowledge. Two events prompted her to offer abortions to poor women. First, an infant girl that is abandoned at her nunnery. After that, a poor immigrant woman is brought to the hospital with severe injuries after she tries to perform an abortion on herself. She dies on an operating table. Harriet decides to offer these women a safe way to terminate their pregnancies. While doing this, she is conflicted between two beliefs, providing a safe procedure that saves lives of desperate women and her religious beliefs that she is murdering innocent children. She wonders how God will judge her actions. As presented in the series, the abortion and birth control were illegal in America in 1901.

When the USA was founded, abortion was legal as long as it was performed before the quickening of the fetus (when the mother felt her child move inside her). The ambiguity of the law allowed women to seek abortions, as there was no way to prove that abortion was performed after the quickening (McBride 2). Most practitioners were not trained doctors but learned their trade through “folk medicine, or midwives and wise women” (McBride 4). The movement to criminalize abortion was led by physicians. According to McBride, part of the reason for that was to destroy competition by uneducated practitioners. Because abortion was legal, businesses who offered these services advertised in the open. And as many rich women started to seek an abortion, the business became lucrative (McBride 4). Physicians believed that by outlawing abortions they would rid themselves of competition. Through American Medical Association (AMA), they began to lobby among politicians to outlaw abortion (McBride 6). This fight included fighting midwives as well as abortionists, to drive both businesses their way (Linders 345). This would secure them the money and long-term patients (Mohr 37). Paired with financial reasons, there were also moral, health, and social issues. The doctors argued that abortion was



murder (the doctors started arguing that life begins at the conception and not when the mother feels the fetus move) and that the procedure posed a threat to women's health. They were also worried that giving women control over fertility would destroy the society that was built on the notion that the woman had a role as a "mother and caretaker of the home" (Cooke 75-77).

AMA worked together with religious organizations (such as the Committee for the Suppression of Vice, led by Anthony Comstock of New York) and successfully lobbied for Congress to pass Comstock act in 1873 "which made importation, trade, and commerce in obscene materials" (McBride 5) federal crimes. Materials and information that could be used to induce abortion were included in this law (McBride 5-6).

Harriet is arrested when the police find out about her activities and set a sting operation. She faces a prison sentence, but her lawyer says that her case could be thrown out because she was entrapped by the police. He says that he will push for the dismissal, as traps like these were set by the Society for the Suppression of Vice and often result in dismissal of charges because of entrapment.

The Society for Suppression was a real organization that acted as a lobbying group that tried to influence politicians to change birth control and abortion laws. They also organized sting operations and arrested people who helped provide abortion, contraceptives, and materials on both subjects. The organization was founded by Anthony Comstock (after whom the law outlawing abortions was named: the Comstock law), a postal inspector who made outlawing abortion his personal mission. He arrested abortionists by setting similar sting operations to the one dramatized. Between 1872 and 1880 he arrested 97 people for "selling abortifacients or indecent rubber articles, including contraceptives" (Beisel 45). He often acted as a client seeking contraceptives or abortion. After receiving the services, he would arrest the providers. While this arrests rarely resulted in convictions (unless the mother died during the procedure), and people arrested often returned to their work after the arrest, Comstock took credit for driving abortion trade in the underground as people providing those services were afraid to advertise in the open (Beisel 45-48). The most famous Comstock case was the case of Madame Restell. Restell provided abortion services for years until she was arrested by Comstock in 1898. This was not her first arrest and she was unlikely to serve time in jail. The story gained big interest by newspapers and media pressure drove her to suicide (Mohr 199). Harriet faced similar media

pressure by media that branded her as a murderer. This made it hard for her to get help because nobody wanted to be associated with her.

The law made abortion a misdemeanor that was punishable by six months to five years “at hard labor in the penitentiary” (Cooke 79) or a fine from 100 dollars to 20,000 dollars for spreading the materials (Cooke 79-80). The series exaggerated the punishment for abortion. When Harriet is eventually caught her lawyer says that she faces up to twenty years in prison. The change was likely made to make character's fate even more perilous.

Harriet was also unlucky because the judge refused to dismiss the case and refused to hear the argument because of his strong Christian beliefs. Later, he decides to dismiss the case when some of Harriet's rich clients use their influence to make him dismiss it because they are afraid that she would expose the fact that they had abortions.

The same law that prohibited abortion also prohibited any form of birth control and defined all the discussion of birth control as obscene (Gordon 12-13). Abortion prohibition was still up to the individual states, and by 1900 it was criminalized in the majority of the states. Before the lobbying by the doctors, the issue was rarely discussed as a public issue. Then, it became defined as “immoral taking of a human life” (McBride 8) and was only allowed if the mother's life was in danger. The doctors were the ones who determined whether the life of a mother was in danger.

This still allowed some women access to abortion as some doctors provided abortions. The doctors had a lot of autonomy to decide what was life-threatening and not. The word of sympathetic doctors spread among women, and they knew which doctors to visit if they needed an abortion. The abortion was a private matter between a woman and the doctor, which allowed women in the upper class some flexibility. This loophole was soon closed as antiabortion doctors worked hard to expose their sympathetic colleagues. The law changed and hospitals established committees to oversee the decision of doctors (McBride 11).

This made the position of poor women desperate as they were denied access to safe abortion. Harriet decides to provide her services to women as she judges that safe abortion is a better option than women trying to perform an abortion on them. As one character says, the second best option to terminate a pregnancy was for a woman to fall off her horse on purpose.

The medical details of how the procedures are performed in the series are not provided and the procedure is not shown on screen. The only medical information that is provided is that the procedure is called *dilation and curettage* which was an abortion technique developed in the mid-nineteenth century and was used until 1970's (Emin-Tunc 6-7).

Before they go through with the procedure one of the women asks whether there is some other remedy to avoid the procedure but she is told that there is no such thing. According to Gordon, there were different teas made from herbs that were used as such and were part of what she calls "folklore birth control" (Gordon 16). Such remedies were rarely effective and when they were, they were indirectly effective as they did not aim at fetus or uterus support system, but occasionally just irritated the body to the degree that they caused miscarriage as a side-effect.

After avoiding the prison sentence, Harriet decides to help women in a different way – by preventing unwanted pregnancies instead of terminating them. Her partner proposes that they start a business together, selling condoms and sponges to the men and women. Contraceptives are illegal but the punishment is not as severe as the punishment for providing abortions. She agrees to his proposal and tells him that they need lamb's guts for condoms and vinegar and sponges for the ladies. They start making condoms at their apartment and later sell them. They target ports for incoming sailors and brothels for prostitutes.

The series did accurately dramatize the attitude towards birth control. Just like Harriet's partner said – they were illegal, but they were more "frowned upon" and did not stir the same anger as abortions. The attitudes towards contraception were bad because they were associated with "quackery and immorality" (Furgerson 24). They were illegal and the New York state law at the turn of the century required doctor's prescription for contraceptives (Furgerson 24-25). Despite this, negative rhetoric made some doctors disassociate themselves from birth control (Furgerson 60-61). This raised the prices of birth control and denied access to poor women (Furgerson 50). These women were the ones Harriet and her partner sold their products to as they targeted poor women, prostitutes, and incoming sailors for their sales.

They manufactured the products in their apartment. To prevent the unwanted pregnancies, they provided sponges. Sponges were "the most effective contraceptive in use until the development of a rubber diaphragm" (Gordon 19). It was the most effective among *pessaries*, whose purpose

was to prevent the pregnancy (Gordon 20). But they did not help with sexually transmitted disease, for which Harriet advised the use of a condom. She recommends the ones by Goodyear which are hard to come by. Charles Goodyear invented and sold contraceptives such as “vaginal suppositories and rubber condoms” (Furgerson 50). Because they are hard to come by, she manufactures her own condoms and sells them to prostitutes.

The process of production is similar to the process described by Payne – using penis-shaped molds, a condom is manufactured into the appropriate shape. Just like in *The Knick*, these were manufactured in private apartments with concealed windows, so that neighbors would not suspect anything (Payne 21). After they were made, they smuggled them outside in vegetable crates and sold in brothels and on the docks to incoming sailors. Harriet used lamb guts which were the best material if the rubber was not available (Payne 23).

Rubber condoms were more popular. The invention of rubber vulcanization in 1839 allowed Americans wider access to rubber condoms which became cheaper and more reliable than the ones made from animals. However, condoms did not become more popular until the military campaign against sexually transmitted diseases during the WW1 increased their popularity and loosened their association with prostitution. According to MacNamara, the effectiveness of condoms at the time was comparable to the method of withdrawal (MacNamara 10).

### **5.7. Skin graft and Malaria therapy**

Female visits the hospital. She is shown from the back, her face hidden as she approaches the nurse on the reception desk. When nurse sees her in the face, we see her shocked reaction. When the camera turns to the visitor we see that she is wearing glasses with dark blue lenses and a nose cover. These nose covers were popular among the people who lost their nose and decided not to have a reconstructive surgery (Hollingham 127). Later, it is revealed that she lost her nose because of syphilis. This is one of the symptoms of this disease – the disease is spread by the bacteria which, as it progresses through the body, erode the bones in the nose. This causes the nose to collapse, making the disease public to everybody familiar with this symptom (Hollingham 122). It is also another possible reason for shock displayed by the nurse when she saw the patient.

After examining her nose, Dr. Thackery tells her that her capillaries on her nose bridge are good and skin around the edges is healthy, making the operation possible. The surgery he performs is a

skin graft, where a flap of skin from her arm is cut and transferred on her nose, covering the hole on her face. This procedure was invented by Italian surgeon Gaspare Tagliacozzi in the late 16<sup>th</sup> century. For this procedure, a surgeon cut the skin flap from the arm and attached it to the face, where the patient used to have the nose. The skin is still attached to the arm, which keeps the blood supply to the skin flap flowing and thus keeps the tissue alive (Hollingham 124).

This surgery forced the patient to keep her arm upright for weeks, while the skin tissue from her arm connected with her nose. After staying in a hospital for a while, she was released home with her arm tied to her head so that it would not move. She was told to rest until the skin flap fully attaches to her face and not to perform any vigorous movements. Her hand is tied to her head in a similar fashion to the drawing of Tagliacozzi's headgear that was used for the same purpose (Santoni-Rugiu 191).

Skin graft nose reconstruction surgery dates all the way back to medical texts from 600 BC with the doctors cutting a nose shape piece of skin from the forehead. The small part of the skin was still connected to the forehead so that tissue would stay alive and the rest flipped and attached to a place where nose previously was (Hollingham 126).

After the surgery, her nose was scarred and oddly shaped but it looked a lot better than the empty hole she had on her face before the surgery. However, she still had troubles with her disease – her headaches were getting worse, she had muscle spasms and troubles with insomnia. This prompted Thackery to start a research into curing the disease. A research from Austria showed that some patients' syphilis was suddenly improved for no reason. The only link between them was that they were suffering from various other diseases at the time. Thackery begins to experiment by attacking the bacteria of syphilis disease with bacteria of other diseases under a microscope. His experiments are unsuccessful until he accidentally leaves the bacteria under the light. The next day he notices that light's heat destroyed the bacteria. He discovers that syphilis bacteria are destroyed when the temperature of blood rises up to 107 degrees Fahrenheit (41.6 degrees Celsius). The problem with this theory is that this temperature is also high enough to endanger the life of the patient. Thackery and his colleague conclude the best course of action is to infect the syphilis patient with malaria, a disease which induces high fever and also has a dependable cure – quinine. They start their experiments by infecting one of their pigs with syphilis and then curing him with malaria.

The mention of Austria is a reference to the real scientist, Austrian psychiatrist Julius Wagner-Jauregg, who discovered the malaria fever treatment, which earned him a 1927 Nobel Prize in medicine. To this day he remains the only psychiatrist to win an award Nobel Prize for medicine (Warren 2).

Like Thackery Wagner-Jauregg's discovered this cure by accident. He was working in asylum and noticed that the psychosis, which was caused by syphilis, in one of his patients improved after recovering from disease accompanied by high fever. He began experimenting by inducing malaria fever in all his syphilis patients (de Young 123). He discovered that the therapy worked for some and that a third of the patients "formerly virtually condemned without exception for the rest of their lives" did manage to be restored to "full life" (Warren 45-50). He tried some other fever-inducing diseases (including typhoid fever) but settled on malaria because malaria produced a fever that "could quite easily be arrested by quinine" (de Young 132).

When an experiment with the pig proves to be successful, Thackery offers to try the same treatment on his patient. She refuses at first but changes her mind after she has a seizure. Seizures are one of the symptoms of the late stage of syphilis (Shmaefsky 65).

After the malaria-induced fever of 106 degrees is not enough to kill the disease, Thackery decides to use hospital's new machine to raise her fever further – a fever cabinet. The fever cabinet was the real machine that was invented for this therapy. Sometimes malaria did not raise the body temperature high enough, so doctors tried to warm the body with blankets. This method was unable to "completely eradicate the syphilitic infections" (de Young 124). This prompted the invention of fever cabinets, machines that would raise body temperatures even further. They were cabinets in which the patient's body was closed, with only their heads outside. The cabinet was then warmed with fire or electricity to raise the body temperature (de Young 129).

The treatment was successful. After the temperature was raised enough to kill syphilis cells in the blood, the patient was quickly put in the ice bath and made full recovery.

When adapting the discovery of malaria therapy the creators again adapted the discovery of invention in a similar way as it happened but set it at The Knickerbocker. In this case, similarly to blood transfusion discovery, the real scientist is referenced as the one who at first discovered this therapy. Just like in real life the discovery of the treatment is accidental.

## **5.8. Brain Surgery**

In the second season, Dr. Thackery returns from his stay at the drug rehabilitation center, determined to cure addiction. He believes that source of addiction is inside the human body and can be removed from it. After failing to find anything that causes addiction inside major organs, he determines that solution to the problem must be the human brain.

When morphine addict suffers skull injury, Thackery decides to use the opportunity to do some brain research. Because his skull is already open, he decides to use the occasion to do some research for his addiction study. While the patient is awake, he probes his brain by delivering electrical currents into his brain. His probing prompts several responses: he makes patients limbs move by probing the center for moving. He makes him laugh and cry by probing his centers for feeling.

This is similar to the experiments performed by Robert Bartholow in 1874 when a female patient whose malignant ulcer of the scalp caused a part of her skull “waste away” (Wicken 231) and exposed the brain surface. He realized that her condition was incurable and that she was dying. Like Thackery, he decided to use the opportunity to do some research. Despite being “feeble-minded” (Wicken 231), the patient gave him permission to perform experiments on her brain. Bartholow decided to perform brain stimulation experiments that were successful on animals. By stimulating her brain with electricity he compelled her to move her arms and legs just like Thackery did. Eventually, his experiments resulted in his patient crying out in distress. Despite this, Bartholow continued the experiment until patient’s lips turned blue and she suffered a five-minute convulsion before falling unconscious. After the patient regained consciousness the experiments were stopped because she felt unwell. Bartholow wanted to continue two days later, but the patient fell into a coma and died. Bartholow was criticized by the medical community for performing this experiment (Wicken 231-232).

Thackery conducts this experiment hoping to determine the source of addiction. He uses a machine, rheoscope, which can detect which part of the brain is stimulated. With it, he hopes to detect the part of the brain which is stimulated when the patient is injected with morphine. After probing different parts of the brain, he identifies the part which is stimulated by morphine. He believes that he identified the source of addiction and that removing part of the brain would remove the craving for the drug. He worries that removing that could accidentally damage

healthy part of the brain, but performs the procedure anyway. After the surgery, the patient is catatonic and does not respond to his surroundings.

*A History of Brain* by Wickens records no similar procedure. Majority of brain surgeries performed at the time were removals of brain tumors. They were not performed unless absolutely necessary, as doctors at the time understood that any brain surgery was extremely dangerous. That makes procedure depicted extremely unlikely to happen because doctors had a good idea that removing any part of a brain was a terrible idea.

The only procedures remotely similar to the one on the series were experiments by Swiss doctor Gottlieb Burckhardt who was the director of a medical asylum “housing disturbed psychotic patients” (Wickens 332). Influenced by experimental procedures performed on dogs, which produced “a more placid and less excitable animal” (Wickens 332). Hoping for a similar calming effect he performed cortical excisions on six patients “whose natural chances of recovery ‘could not be reasonably anticipated” (Wickens 332). He reported partial success in three patients, no improvement in one, and failure in two cases (one patient died from convulsions, the other committed suicide). He was criticized by the medical community and there were no similar procedures to treat mental illnesses for another fifty years when lobotomies became popular (Wickens 332).

The surgery was filmed with a combination of prosthetics and a head doll. For the shots showing actor’s face, prosthetics were used. The prosthetic was put over the top of the head and it included a top layer of the brain that was exposed after the prosthetic skin was removed. Shots which included the actor’s face were filmed from a lower angle to hide the fact that top of his head was large because of prosthetics. For shots from behind and close-up shots of the brain, a head doll was used with a prosthetic brain inside. Shots from behind were filmed from a higher angle to better expose the brain to the camera and hide the fact that a doll was used and not a real actor. Because the brain has a pulse, the prosthetic brain was designed to pulse. The special makeup designer explained that the effect of the pulse was designed by pumping air into the brain by squeezing a small airball that delivered air to the prosthetic brain (The Knick Season 2: Body Shop Brain Surgery (Cinemax)).



### **5.9. Conjoined twins separation**

The series depicts a successful separation of conjoined twins. In the late 19<sup>th</sup> century medicine was advanced enough that surgeons were confident enough to want to attempt separation surgeries. First attempts were unsuccessful because “either the patients died prematurely, or their parents or they themselves, refused for fear of the complications or because they could count on their malformation to make their living by presenting themselves in circuses” (Montadon 47). The conjoined sisters in *The Knick* make their money by performing in the carnival, where Thackery sees them for the first time. After the show, he asks their manager if he can examine them medically and the manager allows it when Thackery offers some money for a ‘private show’.

This story was inspired by the real case of Brazilian twins, Maria and Rosalina, who were successfully separated in Rio de Janeiro in 1900 by Brazilian surgeon Eduardo Chapot Prevost. There are similarities between dramatization and the case. Just like Maria and Rosalina, Zoya and Nika are conjoined at their hip. After being told that only one of them suffered from dysentery, Thackery concludes that they have separate digestive systems. He performs an x-ray examination and discovers that the only organ they share is liver. This corresponds to details of Maria and Rosalina story (Montadon 47-48).

Thackery believes that by cutting the liver in half, he can give each girl half and that each half will regenerate evenly in their separate bodies. Before they carry out the procedure on the girls, Dr. Thackery experiments by splitting the liver in half on a live dog. The same experiments were performed by Prevost to prove “that the liver healed rapidly as long as bleeding was controlled” (Montadon 48). This meant that their liver could be split in half and each half was given to each sister.

For the roles of conjoined twins, the creators of the series hired identical twins actresses and joined them at the hip with help of prosthetics. The prosthetics bound both their torsos and joined them at the hip, which made them conjoined for the purpose of filming. Because one of them was shorter, the difference in height had to be balanced by giving the shorter twin platformed shoes, so they could walk together joined at the hip without tugging each other (*The Knick* Season 2: Post Op Episode #6 (Cinemax)).

For the surgery, scene prosthetic dolls were used for the scene in which surgery was filmed. Initially, the intention was to combine the shots with dolls and real actresses for surgery scene,

but because the dolls were so well made, the director decided to use only dolls to preserve the continuity of the scene (The Knick Season 2: Post Op Episode #7 (Cinemax)).

Just like in real life, the girls were separated successfully and survived the procedure. In real life, one of the twins developed an infection and died six days after the procedure. In *The Knick*, one of the girls did get pneumonia after surgery, but they both survived the procedure and lived normally after leaving the hospital (Montadon 48).

The story was an accurate adaptation of Maria and Rosalina story. The only two differences are the age of the twins. Maria and Rosaline were seven years old when they were separated; Nika and Zoya were teenage girls. The treatment was adapted step by step. The only difference is that in the series the story has a happy end as both sisters survive the surgery.

#### **5.10. X-ray**

There is much technological advancement presented in *The Knick*. In the first episode, workers put electric lights in the hospital. In the second season, hospital acquires a truck which replaces horse carriage ambulance. However, the most important medical advancements are the acquisition of x-ray machine. In the fifth episode of the second season, a character of Thomas Edison makes an appearance. He presents his new invention at a dinner party, a phonograph which was the first device that could record and play sound. The party is organized by the main donor of the hospital and arrangements are made for Edison to send people working for him to The Knickerbocker to present the new x-ray machine. This is a historically accurate dramatization according to Lavine as Edison was involved in researching and selling x-rays business (Lavine 53). It is also accurate that he would be using his phonograph at a party as the invention was mostly used as a toy for the rich at the parties. It was not until the invention of gramophone that sound recording became widespread.

The salesperson of the x-ray in the series that presents the machine to the doctor does so with the help of a scantily dressed female assistant, which makes the presentation feel more like a performance of a magician than a sales pitch of a scientific instrument. According to Lavine, scientists of the time accompanied their demonstrations “with the language and theatrics of the stage conjuror” (Lavine 57). And in first years after its invention, the x-ray was used as a carnival attraction as much as the medical machine. Due to their popularity, people who did not work in medicine bought them and offered x-ray photographs for a fee (Lavine 57). The series

demonstrates this after the purchase of x-ray is complete with nurses using the machine for fun. As soon as the machine is purchased, they line up to use the machine. They wait excitedly as children in a carnival line for their turn on the machine.

The first one to take a photograph is a hospital administrator, who takes a picture of his skull. The salesperson gives him a plate to hold in front of his face and tells him to stay still for an hour. According to Lavine, one of the difficulties with early x-rays was that they were very time-consuming and patients had to stay still at various angles for an appropriate length of time, which varied from ten minutes to occasionally up to an hour (Lavine 80).

In the season finale, it is implied that the hospital administrator developed cancer because of his exposure to radiation. He got odd lesions on his hands and a friend asked him what was wrong with them. He said that they had felt odd for some time. His friend advised him to get an x-ray. The administrator answered that he had already had dozens of them.

This is probably a reference to the story of Clarence Dally. A glassblower in Edison's company Dally was doing research on x-rays and got cancer because of his prolonged exposure to radiation. He was the first American to die due to prolonged exposure to x-rays. Just like the character, he developed lesions on his hands. After some time his hands looked like they were scalded, so the doctors performed a skin graft. When they discovered that the lesions were cancerous they amputated some of his fingers. When cancer kept spreading they amputated his hand. Later both his arms were amputated at his elbows and when cancer kept spreading they amputated his arms at his shoulders. The amputations did not help and, eventually, cancer did lead to his death (Herzig 90). When Edison made his story public and spoke about his personal health issues that were caused by x-rays, the public was made aware of dangers of radiation (Lavine 136).

#### **5.11. Bowel (self)surgery**

The series finale dramatized Dr. Thackery performing bowel surgery on him. Because of his use of cocaine Dr. Thackery develops bowel issues. Parts of his intestines are necrotic and must be removed and healthy tissues reconnected. He decides to operate on himself to prove that a patient does not have to be under general anesthesia during surgery. He starts to believe that ether, which was used to induce anesthesia, is dangerous when his lover dies during the routine procedure because of a bad reaction to the ether.

This surgery was inspired by the story of Evan O'Neil Kane who was the first surgeon to perform an abdominal surgery on him. In 1920 he performed a surgery during which he removed his appendix. To be able to see what he was doing nurse held his head upright which allowed him to see into his abdomen and perform the procedure (Kane).

Thackery uses a mirror so he can see his stomach and opens his stomach with a scalpel and pulls his intestines out of his stomach and starts inspecting them. He starts gagging when handling his bowels but is able to keep his composure and continues the surgery despite his colleagues begging him to let them perform it. He struggles by reverse reflection in the mirror which makes the simple procedure complicated. He identifies six necrotic areas and is able to cut one before starting to cut too close to superior mesenteric. His colleagues who observe the surgery warn him but he proceeds despite the warnings and accidentally nicks abdominal aorta and bleeds to death.

This surgery was harder to film, as the actor playing the surgeon was also the patient. For other surgeries, the creators could simply use the doll. In this case, however, prosthetics had to be put on an actor. To hide his prosthetic stomach camera was set in front of the actor and below him, which hid enlarged prosthetic stomach. A blanket is put above the actor's stomach which made hiding the prosthetics easier. This was a clever use of camera angle to hide prosthetics. However, if one looks closer it is obvious that Clive Owen's torso looks bigger than in other scenes.

After the first cut is made Owen pulls rubber intestines out of his prosthetic stomach and performs the procedure. When the camera angle changes we see the surgery performed from a close up with the intestines being cut with scissors. The third angle is from far with intestines lying outside of the stomach. The final angle is from behind when the camera focuses on the mirror and shows us the angle from which Thackery is seeing the surgery. We see his stomach being filled with blood after he nicks an artery in his stomach. As his stomach is filling with blood it is obvious that he is dying and the camera focuses on his face as he realizes that he is dying and he slowly bleeds out.

### **5.12. Eugenics**

In the second season, eugenics is introduced. Eugenics is a disproved field of science that was popular at the time. We are introduced to it through the character of Dr. Everett Gallinger, a member of Thackery's surgical team. In the first episode, he loses expected promotion when the patrons of the hospital give the position to the African American surgeon. The result of this is a

personal rivalry between the two, which causes Gallinger to develop extremely racist views towards African Americans and immigrants. He expressed racist views prior to being introduced to eugenics, but, in the second season, he believes he found a scientific proof that his racist views are correct.

He first hears of eugenics at the college reunion party, when he overhears his colleagues complaining about the immigration and joins the conversation. The colleagues talk about how the nations of the world are sending their worst to America. They believe that the immigrants are responsible for “dim-witted, infirm and defective” that are seen all over the city. They mention Slavs, Italians, and Jews. However, they single out African Americans as the greatest danger and say that science proves their intellect is weaker and their character worse than that of the whites, who are threatened by rising number of minorities.

They say that it is not enough for the white people to “breed the best with the best to get the best”. They must also ensure that “the worst of our species don't get the chance to continue their line or contaminate the better one”. They see that rising birth rates of immigrants and minorities and potential mixing of the races as a danger that could lead the humanity to forfeit “potential greatness” for “mongrelization of the species.”

This was an accurate representation of eugenic beliefs. The eugenicists believed that bad and good personal characteristics were hereditary, and “that through selective breeding humans could and should direct their own evolution” (Ordovery xii). People with good qualities having children together will result in children with these same qualities and better society. Poor, disabled, minorities, and criminals should be not only discouraged from having children but also sterilized to prevent the proliferation of people with ‘bad qualities’ (Ordovery xii).

The second season of the series is the first time eugenics is introduced. The attitudes that enabled this ‘science’ to flourish, however, were casually presented in the previous season as well. They were held by people who were not familiar with eugenics. The series constantly presents the viewer attitude of rich people who believe that they are better than poor people. “The poor are just weaker than us,” says hospital's administrator in the first episode after the health inspector complains about the spread of disease among immigrants. The health inspector outright accuses

them of bringing disease with them. Rich white people complain about the rising number of immigrants in New York throughout the series.

When Dr. Thackery runs out of cocaine and breaks into the pharmacy to steal some he is arrested and brought to the police station. The hospital administrator comes to the police station to resolve the issue. A police officer says that addicts and drug dealers often rob the pharmacies to get drugs. He says that these charges cannot possibly be true since Dr. Thackery is a white man. Robbing a pharmacy to steal cocaine was supposed to be an “immigrant crime.”

In the second season, a guest from California at family dinner says that San Francisco does not have a clear high society social structure as New York, where everybody knows which families are the most prominent in society. One of the New York ladies says that living in a place where you do not know who the quality people are must be awful. One of the guests, a Hungarian nobleman, says that this is why the world needs noble men: to show people how to behave and give them someone to admire. According to Ordovery, the eugenicists’ class divisions “were, and continue to be, validated by eugenic explanation” (Ordovery 4). Rich people saw the proof in their better social standing that they were better people who were rewarded with riches because they were better. This was clear evidence that eugenics theory has merits.

The series was also accurate as portraying eugenics as a reaction to the rising number of immigrants to the USA. Eugenics was a scientific way for rich people to explain how they were better than immigrants and to justify their attempts to overturn the immigration policy that allowed so many to arrive in America (Ordovery 4). The rising immigration led to fears that “northern European stock” (Gordon 87), which had low birth rates, will be overwhelmed and replaced by immigrants who had much higher birth rates and who were moving to America in large numbers. Even the president Theodore Roosevelt warned against “race suicide” (MacNamara 3) that was being committed by Americans because of their low birth rates. He warned that if the trend does not change, a new race will take their place.

When Gallinger’s wife is attacked by immigrant children he becomes even more extreme in his views and decides to take action. His new friends propose a solution. Because the politicians do not have enough courage to be stopped by “pitying handwringers” they decide to act on their own – they begin sterilizing immigrant children to stop them from “breeding like animals”.

They begin their work in mental institutions. At a dinner party, Gallinger introduced to the director of an “idiot house” which is a “state-financed home for boys who the courts have deemed to be morons”. The problem the director has is that after the boys reach full age he is required to release them which means that these boys are free to “engender more idiots like themselves”. To solve the problem, Gallinger offers to perform sterilization procedures on these boys to stop them from having children. He visits the mental institution and performs the procedures there at night.

Citing eugenic theories, many states in America passed the laws that prevented marriages for mentally unfit and legalized sterilization for people with mental disorders to “preclude the birth of yet more defectives” (Scull 266). In 1927, these laws were challenged in the Supreme Court of America and the court ruled with 8 to 1 that there is nothing in the constitution of the USA that prevents the involuntary sterilization of American citizens citing that sterilization was better option than executing them later for committing crimes or to “let them starve for their imbecility” (Scull 266).

When Dr. Edwards, the African American doctor to whom Gallinger lost his position, discovers that Gallinger sterilized 52 boys aged between 15 and 18 years, he brings evidence of these crimes to the state’s medical board. At the hearing, Gallinger proudly confesses that he performed the procedures and states that he had the permission from the director of the mental institution. The director had state guardianship over boys, which in his mind makes the procedures legal. Gallinger also compares doubts about eugenics to skepticism that was expressed when germ theory and vaccinations were first presented to the public. He is found ‘not guilty’ and keeps his license to practice medicine in New York because the president of the hearing commission is also a believer in eugenics and agrees with his actions.

While his actions are unethical and illegal the fact that he is unpunished is probably a correct dramatization of apathy the lawmakers and public had towards mental patients. His case is similar to a case of Harry Clay Sharp, a prison physician in Jeffersonville. After studying eugenics, Sharp decided to perform vasectomies on his prisoners to prevent them from having offspring and passing their “degeneracy” (Carlson 17). He did so for six years, despite the fact that it was illegal, and was not punished for it. He even convinced the governor to pass the law that legalized these procedures (Carlson 17-20).

During the hearing, Gallinger testifies that “California and Indiana seeing the benefits of purified society are considering writing it into legislation”. This is historically accurate as Indiana became the first state that passed eugenic sterilization bill in 1907. Other states, California among them, quickly followed and accepted similar laws (Ordovery 133-134). While Indiana was the first, California was the state where most of the sterilization was performed. California accounted for a third of all the eugenic sterilizations performed in the United States of America (Stern 100-101).

After Gallinger is found ‘not guilty’, the president of commission offers him a new job – to spread the message of eugenics in Europe. He wants Gallinger to become the “traveling prophet of eugenics”. He says that there are a lot of wealthy people who would be willing to pay him a generous stipend and that he would be paid for his speeches.

Eugenics was spread mostly by being financed by rich donors who financed scientists who spread the message of eugenics. They financed teaching of eugenics at the universities and lobbied for laws that were in order with their views (limited immigration, sterilizations) (Burke and Castaneda 9, 13).

Gallinger accepts the offer and they begin their journey by traveling to Germany first, which is no doubt an allusion to Nazi regime. This is not only a clever allusion but also historically accurate as eugenics became popular in Germany at the beginning of the century. While the ideas of social Darwinism were popular even before that time, Weikart identifies early 1900’s as the time when the first books about eugenics were published in Germany (Weikart 148).

Eugenics was popular among German psychiatrists in 1920’s even before Nazis were in power. When Nazis took over Hitler passed the *Law for the Prevention of Hereditarily Diseased Offspring* which was modeled on California and Virginia laws passed in the USA (Scull "Madness in Civilization" 266). At first, the Nazi regime only sterilized mentally ill. However, approximately 400.000 people were sterilized between 1934 and 1939. In 1939 the T-4 program was launched which implemented the execution of mentally ill in Nazi Germany (Scull "Madness in Civilization" 267).

The ideas of eugenics influenced Hitler as he believed that Aryan race was biologically and morally superior and that “extermination of inferior races would rid the world of the immoral characteristics allegedly rooted in their biological fabric” (Weikart 16).



As awareness of crimes of Nazi regime “under the banner of ‘racial hygiene’” (Ramsden 858) became part of public knowledge, eugenics became associated with Nazi regime which destroyed its reputation. Eugenics scientists were denied publication, invitations to conferences, membership in professional organizations and were “to be avoided, especially in public places” (Ramsden 858).

Despite this, eugenic laws endured in America even after the World War Two. After various amendments, some of which gave patients more rights, the Indiana law was finally repealed in 1972 (Lantzer 35-37). California repealed as late as in 1979. In both cases, many legislators were shocked that sterilizations were still practiced sporadically and quickly repealed the law when they found out (Stern 111).

The series presents the rise of eugenics through the character of Dr. Gallinger, a surgeon at The Knickerbocker. Interestingly, development of his racial beliefs is parallel to the development of eugenics in society. If we use McFarlane's model of narrative functions:

- (i) The rising number of immigrants and minorities in New York / The Knickerbocker hires an African American surgeon, Dr. Algernon Edwards. This leads to:
  - (a) the backlash from the natives who fear immigrants and minorities will take their place / Gallinger worries that he will lose his position to Dr. Edwards
  - (b) backlash leads to the development of eugenics / Gallinger resents Edwards for taking his position, which exacerbates his racism and makes him susceptible to eugenics
  - (c) in the rise of crime in New York, citizens see proof that eugenicists are correct / Gallinger's wife is attacked and mugged by some immigrant children
  - (d) supporters of eugenics take action in form of sterilizations of criminals and mentally ill / Gallinger begins sterilizing children at the mental institution
  - (e) eugenics spreads to Europe / Gallinger goes to Europe to teach about eugenics

*The Knick* adapted the development of eugenics accurately and personalized the development in form of Dr. Gallinger. Just like other members of the New York high society, he expresses racist beliefs prior to being introduced to eugenics and is further radicalized after he loses his promotion to newly arrived Dr. Edwards.

The arrival of Edwards coincides with some personal tragedies in Gallinger's life. At the beginning of the series, he and his wife celebrate the birth of their new-born baby. Soon, the baby dies and Mrs. Gallinger has a nervous breakdown. Gallinger sees the arrival of Edwards as the turning point after which his professional and personal life goes incredibly wrong and blames him, and other minorities, for everything that went wrong in his life.

### **5.13. Smallpox vaccine**

The ninth episode of the second season includes a six-minute flashback segment set years in the past. Thackery is working as a doctor in Nicaragua when he is called to a small village to treat patients with yellow fever. When he arrives at the village he discovers that the villagers actually suffer from smallpox, a much deadlier disease. When Thackery complains to the soldier that he lied to him about the disease and that he is equipped to treat the wrong disease, and that he could have brought the vaccine for smallpox and solved the problem. He is told that they lied because they did not want the news of the disease to spread – this could cause for Nicaraguan economy to plummet because nobody would buy coffee beans and beef from the country. Thackery has to treat the deadly disease without proper medicines.

Smallpox was a disease caused by a virus. It was a contagious disease that was most commonly transmitted “through the respiratory route” (Finer 57). Symptoms are accurately dramatized by the series – high fever, lesions that develop on patient's skin, severe fatigue, rash, and physical collapse. The lesions are filled with puss and are extremely painful. If patients survived the disease they would develop into scabs which would fall off and leave scars behind. Before the discovery of vaccine 30% of those who got the disease died. Since the vaccine spread across the world, the disease has been eradicated (Finer 59).

Thackery is told that an American is blamed for the disease. An American businessman was using Nicaragua as a shortcut, so he would not have to ship his goods around Latin America. He paid locals with blankets and trinkets and when the disease spread they accused him of spreading the disease with his blankets. Thackery tells him that that is quite possible if blankets were used by persons with smallpox. Because of the puss from blisters would get on the blanket, blankets could remain infectious for some time. This is historically accurate and this knowledge was used by settlers in North America who deliberately gave Native Americans smallpox infected blankets

(Williams 18-19). The scene is likely allusion to those events, as the episode depicts a white outsider infecting the natives with smallpox by giving them blankets.

Thackery begins treating people by grounding arrowroot and creating the poultice out of it. He puts the bandages in the poultice and then wraps the sores on the bodies of sick people with them. He enlists the help of villagers who had already survived the disease because they were immune to it.

After helping the sick people, he then creates the vaccine for smallpox. He removes the skin sores from the recovering patients and collects them in a dish. He then grinds the sores with a stone. After that, he makes a blowpipe and uses it to blow finely ground sores into villager's noses. He tells them that this will give them mild version of the disease, from which they will recover and then become immune to it for the rest of their lives.

This is a dramatization of Chinese method of 'vaccination' from 1550, which included a method of "nasal insufflation" (Williams 60) of powdered scabs into the noses of healthy people. To avoid severe infections, patients with mild cases were selected as 'scab donors' for the procedure in hopes that the recipients would only receive a mild version of the disease. However, this was still a very dangerous method of inoculation.

Such techniques were common before the invention of vaccine and even vaccine was designed in a similar way. People noticed that people who survived smallpox were immune to the disease after that and used puss from smallpox patients to infect themselves (Finer 35). In a similar way, Edward Jenner developed the smallpox vaccine. He wondered why people living in the countryside were not affected by the disease. He was told that they developed immunity after suffering from cowpox which they contracted from cows. Cows regularly got cowpox and developed similar lesions that smallpox patients. People could get infected with cowpox and it had similar symptoms but much milder and those who survived it became immune to smallpox. He began experimenting by intentionally exposing people to cowpox and invented the first vaccine in human history (Finer 38).

## 6. CONCLUSION

The dramatization of historical characters and medicinal science in *The Knick* was usually adapted accurately. If we use McFarlane's nomenclature most of the series required the process of adaptation and not the transfer as many changes had to have been made to fit the new medium.

Most changes are related to the time in which something happened. Certain events or discoveries happened earlier or later than 1901, a year in which *The Knick* is set. But the series adapted procedures and events that were set in the same era, making this just a minor inaccuracy. For example, Dr. Henry Cotton did not begin his work in Trenton Hospital until 1907, six years after the events of the series. However, his work and his methods were dramatized accurately.

The series could not be historically accurate in that regard without making big time skips between the episodes which would make any sensible narrative or character development impossible. The timing had to be adjusted to fit the series.

Another thing that had to be changed was that accomplishments of real scientists are attributed to fictional characters in the series. Just like the timing, it would be impossible to create a cohesive television series in which every medical case happened at the different hospital and required an introduction of a new character. To solve this problem the creators of the series attributed real accomplishments to fictional characters. This gave writers freedom to adapt whichever medical cases of the era interested them the most, and attribute these accomplishments to the real characters. Sometimes, real scientists who were responsible for inventions were alluded to. When Thackery discovers malaria treatment for syphilis his colleague references the Austrian scientist, who was responsible for the discovery of this treatment in real life.

As I presented in chapter five, despite this change, the technical aspects of medicine were adapted accurately, and the process of the invention is similar to the process in real life. One thing that had to be changed significantly is how quickly certain procedures were invented. The best example is the research into various drug treatments in the second season. The series adapted various drug treatments that developed over many years into one season's plot.

The realities of writing the television series do not allow an accurate adaptation of long clinical studies that can be conducted for years. The series poked fun at this in the second season. One of the doctors from *The Knickerbocker* leaves the hospital and gets a job at another hospital. There,

he is tasked with researching a new drug – adrenaline. There, he is explained their process of clinical study which will take years to complete. The scene concludes with showing us the bewildered look on his face, as he realizes that he will spend years performing a research that would be finished in a week had he stayed at The Knickerbocker. A meta-way of creators telling their viewers that a completely accurate adaptation of medical work would be very boring to watch.

Dramatization of the surgery was accurate. The presence of Stanley Burns, medical training for actors, and the quality of prosthetic dolls resulted in accurately dramatized surgery scenes. Burns provided the creators with stories that were dramatized and made sure that surgeries were filmed in an accurate way. Medical training and prosthetics added to the authenticity of the series. Because the actors were the ones performing surgeries there were a lot of uninterrupted shots and surgeries could be performed in real time. There were no cuts to change actors with substitutes or to change angles. Medical training, visual effects, and prosthetics allowed the director to accurately dramatize gruesome and gritty nature of the 19<sup>th</sup>-century surgery.

The brain surgery was the only surgical procedure that was dramatized inaccurately, as research shows that it is extremely unlikely that an accomplished surgeon like Thackery would attempt to remove part of the brain from his patient. Otherwise, the medicine was dramatized accurately with only minor details changed during adaptations.

Despite these inaccuracies, *The Knick* has high educational value. It is not just a dramatization of how the surgery was performed in 1901 and how certain medical procedures were invented. It is a presentation of how difficult the profession was without modern technology. Medical procedures that are simple and routine today were considered extremely risky, or not yet invented in 1901. Patient's death was as likely as recovery. A surgeon could walk into the operating room, perform a successful surgery and his patient could still die. This is set up in the first minutes of the series. Following the first dramatized surgery in the series, the head of surgery commits suicide after a pregnant patient and her child die on the operating table. Afterwards, it is revealed that it was the twelfth consecutive surgery with the same result. The show focuses on how surgeons had to deal with consistent failure. John Thackery is severely depressed and needs to take cocaine to get through the day, and smoke opium to fall asleep at night.

Without modern diagnostic tools, surgeons had to rely on experimentation and their ingenuity. In one instance, two surgeons, left with no other choice, attempt an experimental surgery they have never performed before. They perform it by reading the instructions in French medicine journal while operating on the patient. *The Knick* depicts chaotic nature of the early 20<sup>th</sup>-century surgery. The direction of the series corresponds to that. Director Steven Soderbergh emphasized chaos of a surgery by moving his camera quickly and used long takes and close up shots to increase tension.

To adapt the story of William Halsted, the series runners of *The Knick* created a fictional character. Despite this, the comparison of narrative functions reveals many similarities between the character and the real person. The narrative arc of John Thackery is very similar to the youth of William Halsted. Creation of fictional character allowed the writers to attribute to Thackery accomplishments of other scientist and add some more interesting elements to his personal life. Despite creating fictional character Thackery's arc on the series is very similar to Halsted's life up until his move to Baltimore.

The character of Dr. Cotton and his methods were adapted accurately. His story is a shocking reminder of past misconceptions about mental illness treatment. The story presents shocking mistreatment of Mrs. Gallinger and presents the lack of proper mental illness treatment in the past. Mrs. Gallinger is first mutilated and then isolated because of her depression. This is one of the bizarre medical experiments depicted on the show. While the focus of the show was the great progress in medicine in the early 20<sup>th</sup> century, the series did not shy from some of the great mistakes committed by doctors in the past.

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