

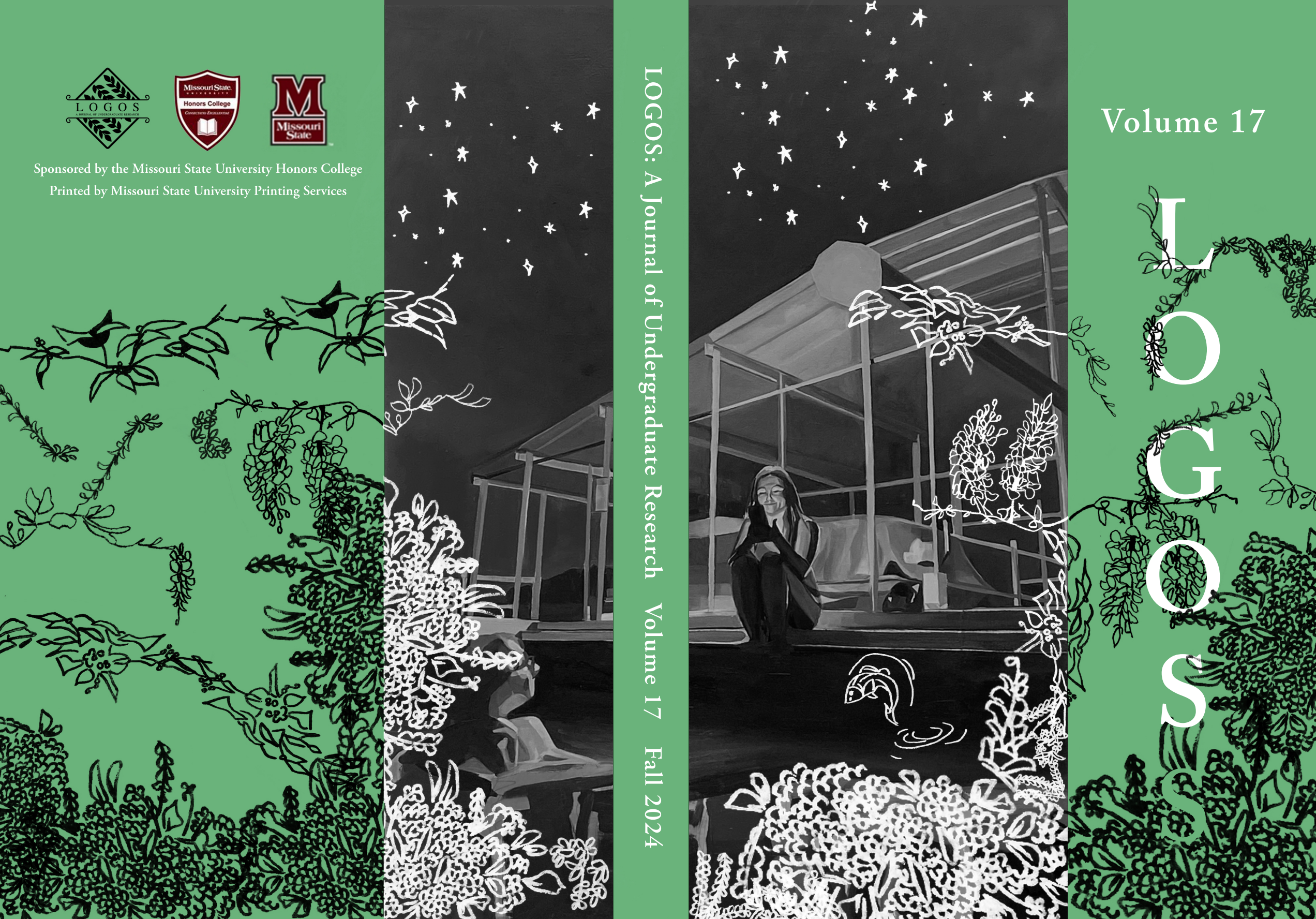


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LOGOS: A Journal of Undergraduate Research Volume 17 Fall 2024

Volume 17

# LOGOS



# LOGOS

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This cover was created with the use of Elisa Peters's painting, *Phitamin D*. Peters's painting explores the idea of nature versus technology. The cover was used to emphasize that idea by having nature take over the painting and the words. Peters and Molly Del Rossi drew the floral motif overtaking the cover. Del Rossi used Photoshop to compile the painting with the drawings, fit it for the cover, and add the necessary identifying information for *LOGOS*. Harmony Rose Vodicka, Peters, and Del Rossi all worked to finalize the design of this cover.

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# Abuelito,

## Juliana Gutiérrez Arango

---

### *Abstract*

I wrote this after a failed attempt at writing about a tree at my grandfather's nursing home; I realized that what I really needed to write about was my grandfather. He died in 2015 when his room caught on fire; due to his incessant smoking, he had an isolated room in the nursing home. He was the only victim. This was written in response to a prompt of writing a poem based on a picture. My mom had recently sent me a picture of my grandfather holding my toddler self, and it sparked a deep sense of love and grief in me that I hadn't realized I still had. I wrote this poem as a love letter to him from my present self. I remember sobbing while typing this because, before this poem I had always been afraid of letting myself picture what happened to him. It's an unimaginable tragedy, to die in a fire. Ironically, his most likely cause of death was smoke asphyxiation, as he willingly guzzled cigarette smoke in his waking hours. He was a deeply religious man, and I hope that he found his God in the afterlife and that he's looking upon me now with love and pride. The last time I saw him, he gave me a battered, yellowed copy of *The Catcher in the Rye*, and it was the only thing that was spared from the fire. It is my most prized possession. I cannot bring myself to read it.



**Juliana Gutiérrez Arango** is a storyteller from Medellín, Colombia. She is a senior in the BFA Acting Program with minors in Creative Writing (emphasis on poetry) and Classical Humanities. They plan to move to Los Angeles and work as an actor while writing and publishing stories and poetry.

Abuelito,

I see you through captured light.  
You're gazing down at me  
with such softness, your half-smile  
obscured by my big toddler head.  
Your arms around my belly.  
Your legs starting to fail you.  
Your lungs fighting desperately  
to keep you alive despite the thick  
smell of cigarettes clinging to your skin.

It was smoke, in the end.  
Isn't that funny? Maybe God saw you  
survive a pack a day and said,  
"This is one tough son of a bitch."  
Maybe He was dying to kill you  
so you two could sit in a wheat field  
in Heaven and exchange thoughts  
on *The Catcher in the Rye*.

Maybe He started the fire.

Maybe you weren't all alone  
in your shitty nursing home room  
as the inferno fed on the hundreds  
of old books you kept on wooden shelves.  
Maybe when you tried to hobble to the door  
and your legs buckled under the weight  
of your tired bones, you turned on the ground  
and saw God hiding under the bed.

I hope He made it so it didn't hurt.  
I hope the screams your neighbors heard  
were cries of exultation. I hope death is nice  
and you and God have interesting conversations.  
I hope you see the best of you in the person  
that chubby little kid you held so closely  
grew up to become. I hope you talk to God

about me with that fond look on your face,  
bright eyes downcast, half-smile soft.

I treasure the old copy of *Catcher* you gave me  
the last time I saw you, when I fell asleep  
in the car before we got to say goodbye.  
I'm sorry I doused it in cheap floral perfume  
when I got home, but even that couldn't hide  
the smoke embedded in each yellowed page.  
A decade later, I wish it still smelled like you.  
I thumb through it sometimes and run my finger  
over your scrawled annotations, then press it  
to my chest until it hurts. I'm sorry  
I still can't bring myself to read it.

# Painting the Oceans Crimson: Spanish Colonial Mercury Transportation and Its Impact on the Global Environment and Health Outcomes

**Clifford Barratt**

---

## *Abstract*

The use of mercury for silver processing and amalgamation by the Spanish colonial empire resulted in wide environmental contamination of soil and water resources. Previous research on colonial Spanish mercury contamination has centered on continental pollution at primary silver and cinnabar mining and processing sites. Recently, researchers have worked to collect data from marine archaeological sites to provide a basis for the investigation of oceanic mercury pollution. Compiling colonial archive records and crowd-sourced online data on Spanish colonial shipwrecks, I have worked to establish a framework for future analysis of marine mercury contamination and provide an impetus for further investigation. 15 shipwreck sites were identified in the analysis, containing a collective cargo of over 9,000 tons of elemental mercury. A majority of the mercury was emitted into the ocean, with variation across oceanic trophic levels. In coastal regions particularly, the impact of this pollution, combined with further historical anthropogenic mercury releases, may have substantial detrimental impacts on health outcomes and food system stability.

*Keywords:* Spanish colonialism, environmental contamination, oceanic pollution, mercury pollution, Spanish shipwrecks, global environment, global health



**Clifford Barratt** graduated from MSU in May 2024 with a degree in Economics, a minor in Sustainability, and a certificate in Agricultural Economics. He currently conducts field work for the Missouri Prairie Foundation at over 35 remnant prairie sites in the state. He has a deep interest in environmental science and ecology as well as the anthropogenic forces altering our climate and biosphere.

## INTRODUCTION

Mercury has been entangled, biologically and historically, with humanity for centuries. The vermilion robes of Pliny the Elder and the ink of the first Chinese bureaucratic scrolls shared the saturated crimson hue of cinnabar. The toxicological significance of mercury was first observed in Roman times, yet the human fixation on the element remained long after the empire crumbled. Modern and historic observations of individuals afflicted by mercury poisoning identify several neurological and physical symptoms, including weakening muscles, tingling of hands and feet, hearing loss, slurred speech, tunnel vision, a trembling walk, and abnormal behavior, such as sudden fits of laughter.<sup>1</sup> Furthermore, mercury readily crosses the placental barrier, thus increasing the risk of in-utero exposure and subsequent physical and mental developmental deformities.<sup>2 3 4</sup>

The introduction of the patio amalgamation process into industrial-scale operation throughout Spanish America in the 1550s revolutionized the demand and use of mercury. This analysis aims to examine silver processing and Spanish mercury transportation as widespread sources of mercury pollution through the use of archival, primary, and secondary sources. Even with the direct knowledge and experience to confirm the negative health impacts of mercury exposure, Spanish officials continued to escalate the magnitude of colonial mercury usage and transport over the period 1560–1820, with disastrous impacts not only during this time but potentially for many centuries to come.

## THE PATIO PROCESS OF AMALGAMATION

The 17th-century Peruvian viceroy Luis de Valasco, reflecting on the importance of mercury to the Spanish crown, wrote “If there was not mercury, nor would there be silver.”<sup>5</sup> The silver output of Spanish colonial holdings was greatly increased with the introduction of the patio amalgamation process, first developed by Bartolomeu de Medina in 1554 in Mexico, into industrial-scale operations throughout Spanish America.<sup>6</sup>

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1. Bigham, Gary, Henry, Betsy, and Bessinger, Brad. “Mercury—A Tale of Two Toxins.” *Natural Resources & Environment*, Volume 19, no. 4 (2005): 26–71.

2. Agency for Toxic Substances and Disease Registry. 1999. *Toxicological Profile for Mercury: Health effects*. Atlanta, GA: Agency for Toxic Substances and Disease Registry 29–361.

3. U.S. Environmental Protection Agency. *Mercury Study Report to Congress. Volume 1: Executive Summary*. (Washington, DC: EPA, 1997).

4. Clarkson, TW; Magos, L., “The toxicology of mercury and its chemical compounds.” *Critical Review Toxicology* 36 (2006): 609–662.

5. de Velasco L. *Relación del Sr. Virrey, D. Luis de Velasco, al Sr. Conde de Monterrey sobre el estado del Perú [in Spanish]*. In *Colección de las memorias o relaciones que escribieron los virreyes del Perú*, Volume 1 (Beltrán y Rózpide R, ed) ([translated] 1921). Madrid: Imprenta del Asilo de Huérfanos del S.C. de Jesús: 108–140.

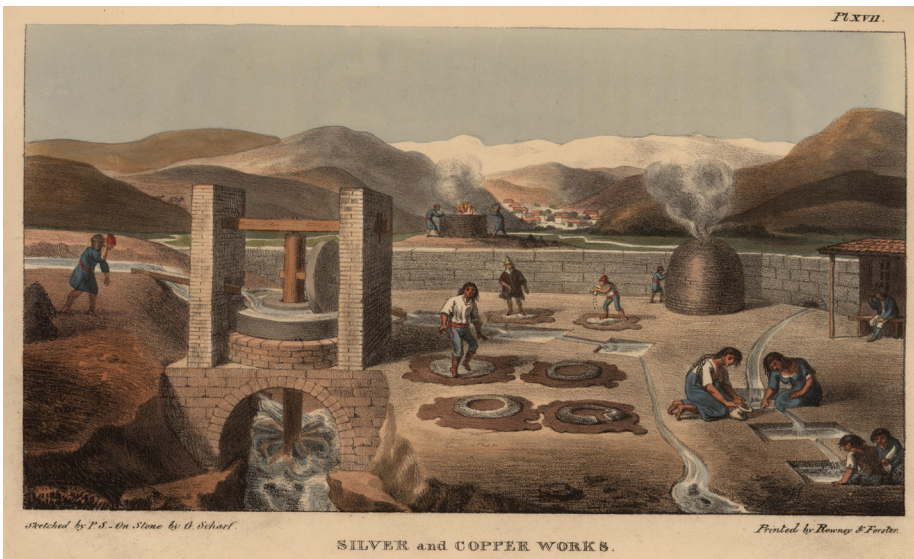
6. Brading, D.A., and Cross, Harry E., “Colonial Silver Mining: Mexico and Peru.” *The Hispanic American Historical Review* 52, no. 4 (1972): 552.

Figure 1 shows the geographic extent of Spanish colonial silver mining.



**Figure 1:** Map of Major Silver Mining Centers of Colonial South and Central America  
Source: The Map Archive.com

The silver amalgamation process began with the fine grinding of silver ore, after which the silver powder would be mixed with water, salt, mercury, and other ingredients spread out on a stone patio.<sup>7</sup> Due to the costs and scarcity of fuel, forced indigenous laborers would usually perform the next step by treading upon the mixture barefoot for a month, facilitating and accelerating the amalgamation process.<sup>8</sup> Once the amalgamation was complete, the paste was washed to separate the amalgam using a trough and subjected to further manual processing before it was placed into a mold and fired in smelters.<sup>9</sup> Figure 2 shows a visual depiction of this process. Throughout this processing, approximately 60–85 percent of the mercury employed was ultimately released as a vapor into the atmosphere while the remainder was released into local waterways.<sup>10</sup>



**Figure 2:** Depiction of the *Patio* Process in Peru

Source: *Silver and Copper Works*, 1824, John Carter Brown Library

The introduction of this process across the major silver mines of Potosí and Oruro in Peru and Guanajuato, Durango, Guadalajara, and Zacatecas in Mexico brought about enormous increases in profits. For example, in the

7. Young, Otis E. "The Spanish Tradition in Gold and Silver Mining." *Arizona and the West*, Volume 7, (1965), no. 4: 299–314.

8. ABNB ALP (*Archivo y Biblioteca Nacionales de Bolivia, Audiencia de la Plata*) Minas 15/1. 1556. *Don Rodrigo de Mendoza y Manrique, administrador y arrendatario que fue de las minas y los ingenios de don Pedro Sorez de Ulloa en el cerro y la ribera de Potosí, con el maestro de campo don Rodrigo Campuzano, hermano de doña Francisca Campuzano, viuda y heredera que fue de dicho don Pedro, sobre la liquidación de los pesos impendidos en el avío de las haciendas mencionadas durante el tiempo de su administración y arrendamiento [in Spanish]. La Plata, 5 February 1656–1669.*

9. Young, "The Spanish Tradition," 299–314.

10. Hagan, Nicole A. and Robins, Nicholas A. "Mercury Production and Use in Colonial Andean Silver Production: Emissions and Health Implications," *Environmental Health Perspect* Volume 120 (2012) pp. 627–631.



case of Potosí, output increased from 1 million pesos in 1572 (introduction of patio) to 7.5 million pesos in 1592.<sup>11</sup> The use of mercury to amalgamate silver ores in the New World sums to a total of at least 1,253,702 quintales (57,670 tons) of mercury in New Spain from 1558 to 1810, and of 1,386,950 quintales (63,800 tons) in Peru from 1571 to 1810. The total losses of mercury to the environment thus amount to at least 121,470 tons over a period of just over 250 years, an annual average of at least 486 tons per year.<sup>12</sup>

## THE IMPORTANCE OF MERCURY IN COLONIAL SPANISH SILVER MINING

Two primary mercury mines supplied the numerous silver processing endeavors throughout New Spain and the Peruvian viceroyalty: Huancavelica, Peru and Almaden, Spain. Transportation between these mines and the various silver-producing regions would be one of the Spanish crown's greatest and most persistent issues.<sup>13</sup> In the late 16th century, after the importance of the metal was established, the Spanish crown moved to establish a monopoly on the production, sale, and distribution of mercury. This control, combined with the frequent disruptions to crown supply chains, led to high prices and undependable supplies across Spanish colonies.<sup>14</sup> The Peruvian viceroy consistently struggled to supply Potosí with needed mercury due to poor contractual structures, disintegrating storage containers, and the logistical difficulty of the 1,000-mile trip through the Andes mountains to Huancavelica.<sup>15</sup> The mines of New Spain were provided with mercury almost exclusively sourced from the mine in Almaden or, in times of shortage, the mines of Idria, in modern-day Slovenia.<sup>16</sup> Mercury imports into New Spain remained consistently between 250–550 tons per year (10–20 thousand quintales) from 1570–1700 while mercury consumption in Peru, including imports, regularly exceeded 660 tons per year (30 thousand quintales).<sup>17</sup>

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11. Garner, Richard L. "Long-Term Silver Mining Trends in Spanish America: A Comparative Analysis of Peru and Mexico." *The American Historical Review* 93, (1988), no. 4: 898–935.

12. Guerrero, Saúl. "Chemistry as a tool for historical research: Identifying paths of historical mercury pollution in the Hispanic New World." *Bulletin for the History of Chemistry* 37, no. 2 (2012): 61–70.

13. Garner, "Long-Term Silver Mining Trends," 916.

14. *Ibid.*

15. Cobb, Gwendolin B. "Supply and Transportation for the Potosí Mines, 1545–1640." *The Hispanic American Historical Review* Volume 29 (1949), no. 1: 25–45.

16. Garner, "Long-Term Silver Mining Trends," 916.

17. Brading, D. A. and Cross, Harry E., "Colonial Silver Mining: Mexico and Peru." *The Hispanic American Historical Review* 52, no. 4 (1972): 545–79.

The crown, under their legal monopoly, furnished the fleets for the transportation of mercury, often commandeering ships and supplies from the *Armada de Barlovento*, the *Armada de Nueva Espana*, and the *Azogue Fleet* stationed between Spain and the New World.<sup>18</sup>

The massive increase in silver production across Spanish America resulted in enormous societal and environmental costs, borne primarily by the indigenous inhabitants of the mining regions. Between 1550 and 1800, an estimated 196,000 metric tons of mercury were released into the environment as a result of the use of the amalgamation process in Latin America.<sup>19</sup> Though the discharge of large amounts of atmospheric mercury created dispersed negative health impacts, the residents and workers of mining centers such as Potosí and Huancavelica would have experienced the highest intensity of mercury exposure and its subsequent effects. The cinnabar smelters used by the workers were poorly constructed and were often opened prematurely to reduce refining time, leading to workers' acute exposure to high mercury concentrations.<sup>20 21</sup>

The following passage describes a worker afflicted with mercury poisoning while working at Almaden, though his experience was likely universal across Spanish mercury mines:

He suddenly began to have violent spasms of the right leg. It "began to work up and down like a pile driver." The man's thigh would draw up to his abdomen with the leg flexed. Then it would kick out again so violently that his fellow workmen could not hold it still. The leg jerked back and forth rhythmically about 60 times per minute, and drugs had no effect for the first 3 days of the week that this extreme reaction lasted. By the time the spasm ended, the miner was exhausted. He had only been able to consume liquids, a little at a time, because he could not remain still long enough to swallow more.<sup>22</sup>

In Peru, labor for mining operations was provided by the *mita*, or a system of rotating forced Indian labor. Each year, thousands of Indigenous Peruvians were forced into the shafts and pits of Peru; in time, the mortality of the mines and outmigration to avoid the *mita* would deplete the population of the provinces bordering mining districts.<sup>23</sup> In Huancavelica, the mining and

18. Lang, M.F. "The Armada de Barlovento, Fleet dispatch, and the Transport of Mercury to Mexico 1637–1738" *Revista de Indias*, Volume 54, (1994), num. 202.

19. Nriagu, J.O. "Legacy of mercury pollution." [Letter] *Nature* 363(6430) (1993):589.

20. Anonymous. *Memoria sobre la mina de azogue de Huancavelica [in Spanish]*. In *Colección de memorias científicas, agrícolas é industriales publicadas en distintas épocas*, Volume 2 (*de Rivero y Ustáriz ME, ed.*) 1857. Brussels:Imprenta de H. Goemaere, 85–175.

21. Robins & Hagan, "Mercury Production and Use in Colonial Andean Silver Production."

22. Patricia A. D'Itri and Frank M. D'Itri, *Mercury Contamination: A Human Tragedy* (New York: John Wiley & Sons, 1977), 121.

23. Brown, Kendall W. "Workers' Health and Colonial Mercury Mining at Huancavelica, Peru." *The Americas* Volume 57, (2001), no. 4: 467–96.

refining of cinnabar into elemental mercury was performed using dangerously rudimentary methods, with disregard for the damage inflicted upon the forced Indian laborers.

In 1630, Buenaventura de Salinas y Córdova described the mines of Huancavelica as “a living image of death, and a black shadow of hell.”<sup>24</sup> Even Peruvian viceroy Luis de Valasco appeared concerned with the state of the miners’ health when pleading to the king for royal guidance in 1600:

These quicksilver ores, when they extract them in the mines, they give out a dust that enters itself into the Indians as they breathe and settles in the chest, of such evil quality, that it causes them a dry cough and light fever and at the end death without repair, because the doctors have it for an incurable evil.<sup>25</sup>

Despite the pleas of his conscience, de Valasco recognized the importance of the mine to the viceregal economy and royal finances and ultimately decided against the closure of the mine. In Potosí, the largest city in the world in 1650 with a population of 160,000, the impacts of mercury pollution would have been far more excessive than that of Huancavelica. In 1629, the priest Pedro de Oñate, writing from Potosí, observed how, “[W]e well know and have seen...how terrible are the effects of mercury, as only in smelting ... and treading ... many are poisoned by mercury and we see those effects among those to whom we give last rites.”<sup>26</sup> Bartolomé Arzáns de Orsúa y Vela, a chronicler of Potosí writing in the early 18th century, frequently referred to the high prevalence of birth deformities, stillbirths, and mental illness within the city.<sup>27</sup> This provides strong evidence for long-term health impacts stemming from the use of mercury in the silver amalgamation process. It is estimated that in Potosí alone roughly 39,000 metric tons of mercury vapor were released between 1574 and 1810.<sup>28</sup>

## LOSSES OF MERCURY THROUGH TRANSPORTATION

It is estimated that the total losses of mercury during transportation and storage were around 10 percent.<sup>29 30 31</sup> However, some cases present evidence of higher losses. For example, in 1607 there was an acute shortage of mercury

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24. Salinas y Córdova B. “*Memorial de las Historias del nuevo mundo Pirú* [in Spanish].” *Lima Universidad Nacional Mayor de San Marcos*, 1957.

25. de Valasco, L. *Velasco to the king*, AGI, Lima. (5 May 1600).

26. de Oñate, Pedro. “*Parecer del P. Pedro de Oñate sobre las Minas de Huancavelica 1629* [in Spanish].” In *Pareceres jurídicos en asuntos de indias (1601–1718)* (Vargas Ugarte R, ed). [translated] 1951. Lima: pp. 140–153.

27. Arzáns de Orsúa y Vela, B. *Historia de la Villa Imperial de Potosí* [in Spanish] (Hanke L, Mendoza G, eds). Providence, RI Brown University Press. 1965.

28. Robins & Hagan, “Mercury Production and Use in Colonial Andean Silver Production.”

29. Nriagu, JO “Legacy of mercury pollution.”

30. Prieto, Carlos, 1973. *Mining in the New World*. McGraw-Hill, New York.

31. Brading & Cross, 547–79.

bags and carriers were forced to use improvised program (cloth stiffened with gum) boxes, leading to a considerable risk of loss.<sup>32 33</sup> The pack trains were often attacked by raiders, battered by storms, or otherwise lost, which may have led to further undocumented cases of above-average losses.

Numerous instances of marine contamination from transportation losses have been observed within the archaeological record as seen in Figure 3. Given the high number of shipwrecks and the ongoing process of discovery and identification of past shipwrecks, this list is not comprehensive and likely understates the true scale of mercury lost at sea.

Name of Ship	Year Sunk	Mercury Cargo Emitted to Ocean (in tons)	Location (Approximate)
<i>Emanuel Point</i>	1559	418-441	Pensacola, Florida
<i>Nuestra Senora de Guadalupe</i>	1724	1,000	Sarnana Bay, Dominican Republic
<i>Conde de Tolosa</i>	1724	150	Sarnana Bay, Dominican Republic
<i>Angra C and Angra D</i>	Early 1600s	Evidence points to a large cargo, though not conclusive	Terceira, Azores archipelago, Portugal
<i>Santa Bárbara</i>	1595	Up to 160	Cadiz, Spain
<i>Concepcion</i>	1584	400	Andalusia, Spain
<i>Ascensión</i>	1588	500 (partially recovered)	Veracruz, Mexico
<i>La Esperanza</i>	1600	400	San Juan Evangelista, Mexico
<i>Saint Mary of Begonia</i>	1604	700	Veracruz, Mexico
<i>San Miguel</i>	1615	500	Gulf of Mexico
<i>Santa María de Tézanos y las Animas Navire</i>	1701	917	Veracruz, Mexico
<i>Nuestra Señora del Carmen</i>	1704	800	Cape São Vicente, Portugal
<i>El Retiro</i>	1751	600	Mujeres Island, Yucatán Peninsula, Mexico
<i>Incendio</i>	1739	1,700	Veracruz, Mexico
<i>San Pedro de Alcántara</i>	1815	1,466	Islands of Coche and Cubagua, Venezuela

**Figure 3:** Discovered Spanish Mercury-Containing Shipwrecks in the Atlantic and Caribbean (1559–1815)

Source: “Global Shipwreck Database.” Wrecksite. 2023.

Ceramic containers would have been used to carry the mercury aboard ships crossing the Atlantic from the mines of Almaden, Spain to their final destination at the port of Veracruz, in New Spain. The containers, after being filled with mercury, would be sealed with layers of cloth and wax, creating a

32. Cobb, “Supply and Transportation,” 40.

33. Dagnino y Olivera, Vicente. “*El corregimiento de Arica, 1535–1584*” ([translated] Arica, 1909): 90–91.

tight seal to prevent leakage. These wax seals, in underwater conditions, have a lifetime of only a few decades before they are compromised.<sup>34</sup>

## MODERN DEVELOPMENTS

The use of mercury in amalgamation across Central and South America greatly decreased with the exhaustion of silver and gold deposits and the introduction of the cyanide leaching process in the early 20th century.<sup>35</sup> However, skyrocketing prices for gold and silver on the global market have facilitated a “second gold rush” across many developing countries. The proportion of artisanal and small-scale mining (ASM) operations to total mining operations, derived from a geospatial analysis of known ASM operations can be seen in Figure 4. It is important to note the difficulties of accurately estimating ASM production due to the limitations of satellite imagery and the informal and concealed nature of operations in often geographically remote regions. These small-scale artisanal metal producers favor mercury amalgamation for precious metal mining due to its low cost, reliability, and simplicity. The most worrying and documented developments are those occurring in Amazonian countries, the Philippines, Indonesia, and the Dixing region in China. In these regions, mercury amalgamation is used in a majority of production, and incidences of mercury poisoning have been well-documented.<sup>36</sup> From 1989–2020, the number of people engaged in artisanal and small-scale mining (ASM) operations deep intersection with the issues of land tenure violation, environmental degradation, human rights abuses, the perpetuation of global conflict, and the encouragement of greater acts of crime and corruption.<sup>37</sup>

The losses of mercury to the environment from these activities could be astronomical, especially considering the lack of regulatory oversight and proper safety and disposal protocols for toxic compounds in these operations.<sup>38</sup> From the 1980s onward, hundreds of tons of mercury have been deposited as a direct environmental consequence of gold and silver ASM in developing countries.<sup>39</sup>

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34. Nagarajan, L. “Impact of Ship Wrecks at Sea and its Mitigation Measures,” *International Journal of ChemTech Research*, 2018, 11(03): 123–128.

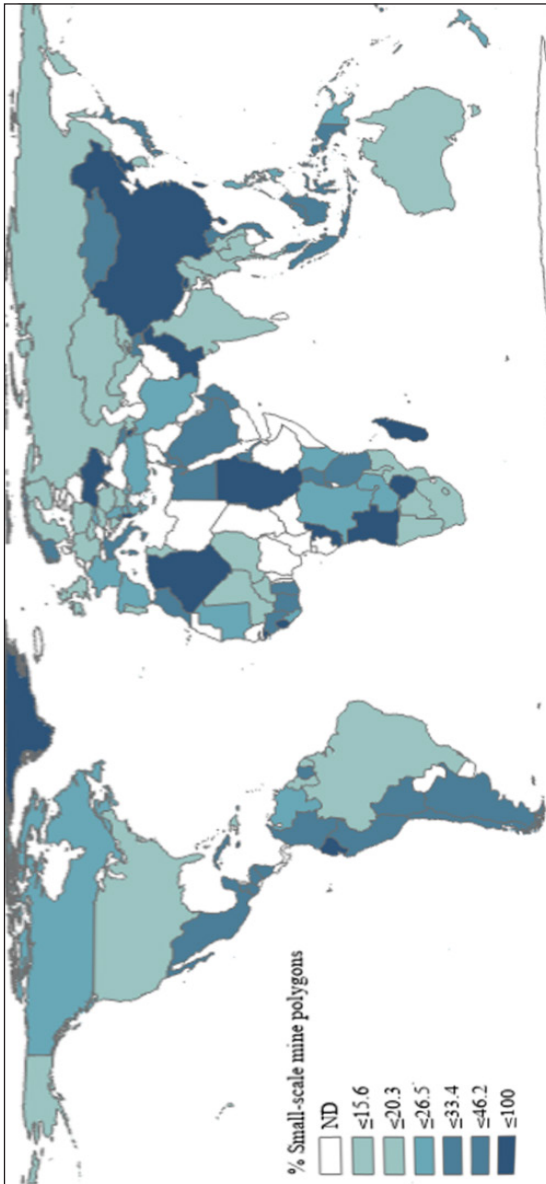
35. Lacerda, Luiz and Salomons, Wim. “Mercury from Gold and Silver Mining: A Chemical Time Bomb?” *Environmental Science*. Berlin, Germany: Springer (1998).

36. Lacerda and Salomons, “A Chemical Time Bomb?” 5.

37. USAID. “Issue Brief: Artisanal and Small-Scale Mining.” United States Agency for International Development. 2020.

38. *Ibid.*

39. Lacerda, Luiz and Salomons, Wim. “Mercury from Gold and Silver Mining: A Chemical Time Bomb?” *Environmental Science*. Berlin, Germany: Springer. (1998): 26.



**Figure 4:** Geographic Distribution of Contemporary ASM Sites Derived from High-Resolution Satellite Imaging

Source: Tang, Liang and Werner, Tim. "Global Mining Footprint Mapped from High-Resolution"

## EXTENT AND IMPACTS OF ANTHROPOGENIC MERCURY

The current extent of mercury contamination in the oceans has been greatly impacted by anthropogenic sources in both the present and the past. Oceanic mercury loading has increased by a factor of three from pre-anthropogenic levels, and loading is likely to continue to increase due to mass disturbance to the global mercury cycle, depicted in Figure 5.<sup>40</sup>

Elemental mercury is easily transformed into stable and highly toxic methylmercury by marine microorganisms.<sup>41</sup> Methylmercury typically shows long residence times in aquatic biota, and accumulates in the tissues of living organisms, becoming more concentrated as it moves up the food chain. As levels increase, notable damage can be observed in reproductive and neurological capacities across trophic levels.<sup>42</sup> Due to biomagnification, the primary cause of mercury poisoning among humans is the consumption of fish and seafood.<sup>43</sup>

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40. Lamborg, C., K. Bowman, C. Hammerschmidt, C. Gilmour, K. Munson, N. Selin, and C.-M. Tseng. 2014. "Mercury in the Anthropocene ocean." *Oceanography* 27(1): 76–87.

41. Ibid; Lacerda and Salomons, "A Chemical Time Bomb?" 65.

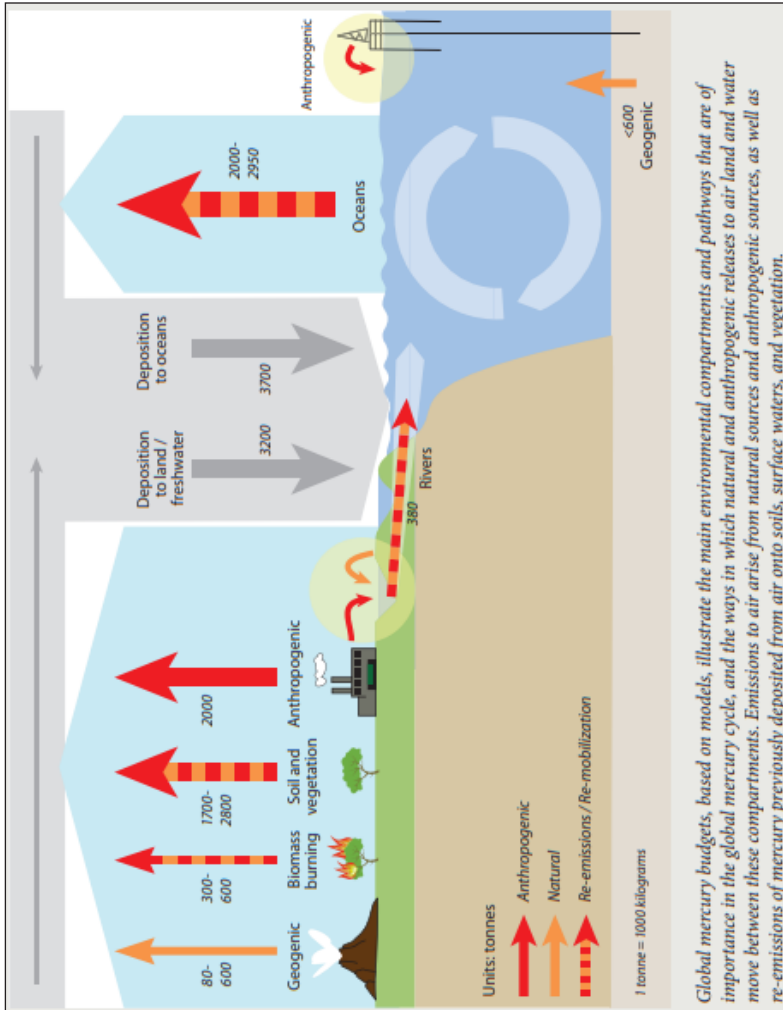
42. UNEP; Bigham; Genevieve, Wanucha. "Inside Quicksilver's Toxic Transformation," *Woods Hole Oceanographic Institution* (WHOI) Newsletter, March 7, 2013.

43. William F. Fitzgerald, Carl H. Lamborg, and Chad R. Hammerschmidt, "Marine Biogeochemical Cycling of Mercury," *Chemical Reviews* 107, no. 2 (February 2007).

44. Ibid; Lacerda and Salomons, "A Chemical Time Bomb?" 65.

45. UNEP; Bigham; Genevieve, Wanucha. "Inside Quicksilver's Toxic Transformation," *Woods Hole Oceanographic Institution* (WHOI) Newsletter, March 7, 2013.

46. William F. Fitzgerald, Carl H. Lamborg, and Chad R. Hammerschmidt, "Marine Biogeochemical Cycling of Mercury," *Chemical Reviews* 107, no. 2 (February 2007).



**Figure 5:** The Global Mercury Cycle

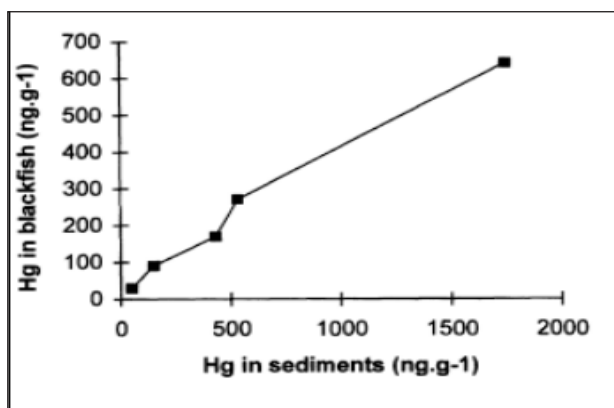
Source: United Nations Environmental Program. Global Mercury Assessment 2013: Sources, Emissions, Releases and Environmental Transport. UNEP Chemicals Branch, Geneva, Switzerland, 2013.

Mercury is incredibly persistent, cycling within the atmosphere-ocean-land system for up to 3,000 years before sequestration in deep ocean sediments.<sup>47</sup> The mining activities of colonial Spanish holdings as well as the plethora of mercury-containing shipwrecks have established “hot spots” of mercury contamination, areas with extremely high concentrations of mercury in terrestrial soil and marine sediment that maximize the potential

47. Wanucha, “Inside Quicksilver’s Toxic Transformation.”



for biotic uptake and biomagnification of methylmercury.<sup>48 49 50</sup> The release of mercury into the environment through vaporization has contributed to the present high detectable levels of background concentrations of mercury in the global atmosphere.<sup>51</sup> Researchers have coined the term “chemical time bomb” to describe the threat posed by hot spots and the widespread distribution of mercury in the global environment. Effectively, the concept deals with the limited capacity of soils and sediments to immobilize and reduce the bioavailability of pollutants.<sup>52</sup> The effect of these limitations has been observed among freshwater fish populations in Scandinavia which has continued to experience increasing mercury concentration in tissues, even though emission and deposition of mercury have been decreasing in the region for several decades.<sup>53</sup> Figures 6 and 7 demonstrate the linear relation between mercury concentration in water and sediments and the correlating mercury concentration in fish tissues.



**Figure 6:** Relationship Between Mercury (Hg) Concentration in *Gadopsis marmoratus* and in Sediments from the Lederberg River, Australia

Source: Bycroft, B. M., Cannel, D. W., and H. C. Morton. “Oxygen budget for an urban estuary.” *Australia*, 3. Marine Freshwater Reserve 33 (1982): 607–616

48. Lucerda and Salomons, “A Chemical Time Bomb?”

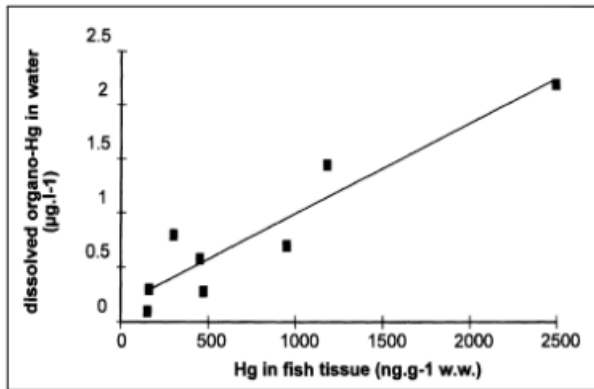
49. Vieira, Hugo C., Bordalo, Maria D., Osten, Jaime Rendón-von, Amadeu M. Soares, V. M., Abreu, Sizenando N., and Fernando Morgado. “Can a 16th Century Shipwreck Be Considered a Mercury Source in the 21st Century?—A Case Study in the Azores Archipelago (Portugal)” *Journal of Marine Science and Engineering* 11, (2023), no. 2: 276.

50. Hagan, N., Robins, N., Hsu-Kim, H., Halabi, S., Morris, M., Woodall, G. “Estimating historical atmospheric mercury concentrations from silver mining and their legacies in present-day surface soil in Potosí, Bolivia.” *Atmosphere Environmental* 45(40), (2010): 7619–7626.

51. Nriagu, JO “Legacy of mercury pollution.”

52. Lucerda and Salomons, “A Chemical Time Bomb?” VI.

53. Ibid.



**Figure 7:** Dissolved Hg Concentrations in Water and Total Hg Concentration in Fish Meat From Various Freshwater Systems in California

*Source:* Gill, G.A. and K.W. Bruland. “Mercury speciation in surface freshwater systems in California and other areas.” *Environment Science Technology*, 24 (1990): 1392–1398.

The tenacious presence of mercury in global ecological systems presents a stark issue for global health outcomes and food security in the present. Methylmercury concentrations in predatory fish and marine mammal species, including many of the species widely consumed by humans, regularly exceed guidelines for safe consumption.<sup>54</sup> The poisoning of thousands of people in southern Japan (Minimata and Niigata) in the mid-1950s as a result of ingestion of fish laden with methylmercury initiated global attention to the issue of marine contamination, though the scope of mercury contamination has only increased in the following decades.<sup>55</sup> For example, 5–10 percent of U.S. women ages 18–40 have blood levels of mercury that increase the risk of neurodevelopmental problems in their children, presumably as a result of seafood ingestion.<sup>56 57</sup>

54. Lamborg, “Mercury in the Anthropocene ocean.” 77.

55. *Ibid.*, 76.

56. Mahaffey, K.R., R.P. Clickner, and R.A. Jeffries. “Adult women’s blood mercury concentrations vary regionally in the United States: Association with patterns of fish consumption (NHANES 1999–2004).” *Environmental Health Perspectives* 117 (2009): 47–53.

57. Selin, N.E., E.M. Sunderland, C.D. Knights, and R.A. Mason. “Sources of mercury exposure for US seafood consumers: Implications for policy.” *Environmental Health Perspectives* 118 (2010): 137–143.

## CONCLUSION

The mercury released throughout the Spanish colonial period directly contributed to the “legacy” reservoirs of mercury in the ocean, atmosphere, and soils that plague modern society. Areas such as Potosí and Huancavelica still exhibit widespread mercury contamination in ambient soil and in residences constructed of adobe brick.<sup>58</sup> Around 49 percent of anthropogenic mercury has been deposited in deep-sea sediments (below 1,500m water depth), though the capacity of these sediments to absorb contemporary mercury deposition is limited by the extent of historical deposition.<sup>59</sup> Of the future mercury added to the ocean, a greater amount will thus reside in coastal waters and the ocean surface at large, maximizing the negative environmental and health impacts of the contaminant.<sup>60</sup> The prevalence of mercury-containing shipwrecks in coastal areas also serves to increase the risks posed to human settlements in these areas, particularly among those who rely upon seafood as a keystone of their diets.

The introduction of the mercury amalgamation process to refine silver in Latin America greatly expanded the revenues of the Spanish crown and facilitated the development of the modern global economy. The environmental impacts of three centuries of mercury-containing shipwrecks have yet to be fully realized, though the location of the wrecks, namely in coastal regions, maximizes the potential for mercury biomagnification and ecological damage. A continual disregard for the social and environmental costs of the *patio* process and the large-scale mercury transportation it required has resulted in vast stores of mercury dispersed across the globe, increasingly entering ecosystems and human diets to great detriment. Ultimately, the Spanish globe-spanning empire and its never-ending lust for bullion fueled the intensive use of mercury that may have doomed the world they once intended to rule.

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58. Robins and Hagan, “Mercury Production and Use in Colonial Andean Silver Production.”

59. Lamborg, “Mercury in the Anthropocene ocean.” 82.

60. Ibid. 83.

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# The “Ancient Grudge”: An Analysis of Anti-Semitism in *The Merchant of Venice*

**Victoria Campos**

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## *Abstract*

William Shakespeare’s plays continue to be produced centuries after the Elizabethan era, allowing for modern actors and directors to reimagine his works to reflect social change. But alongside his universal classics, there is one work in particular that cannot escape its historical context. *The Merchant of Venice* features a Jewish villain named Shylock who loans money to a Christian named Antonio, who agrees that if he should fail to pay Shylock back, Shylock may take a pound of Antonio’s flesh. Theatre scholars and historians debate whether or not Shylock represents Shakespeare’s humanization of the Jew, or if Shylock is a stock character made of anti-Semitic stereotypes. This essay examines the historical context, the text, and the production history of anti-Semitism within this play to highlight that, while it is impossible to know Shakespeare’s intentions, the harmful rhetoric he uses is tightly woven within this play. Modern readings of *The Merchant of Venice* cannot ignore the history of Jewish oppression, and that future productions cannot reimagine the play without this in mind.



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In the summer of 2023, the Saint Louis Shakespeare Company performed *Twelfth Night* with a predominantly queer and Latiné cast. This production highlights the charm of Shakespeare's plays; his vision can be retold in spite of his plays' historical contexts and reimagined to highlight modern ideas. But casting aside historical context does not work for all plays, especially those that are embedded in a very real, prominent, and tragic history. *The Merchant of Venice* features the Jewish merchant, Shylock, as the primary villain—whereas Christians Antonio, Bassanio, and Portia are the heroes. Theater and literary scholars debate the intentions of the Bard to determine if his characterization of Shylock is meant to be offensive, or if perhaps it was meant to bring light to Christian hypocrisy and the mistreatment of Jewish people. Though he is the villain, Shylock's motivations in the dialogue have been reinterpreted by more contemporary actors as those of a tragic antagonist—if a Christian makes a deal with him and cannot pay up, Shylock believes it is fair to take his due: the agreed upon pound of that Christian's flesh. This essay analyzes the historical context of the Jewish population in Elizabethan England, Shakespeare's rhetorical strategy, and the character of Shylock to interpret how stereotypes and hateful ideologies are used in this play, to emphasize that unlike Shakespeare's other plays, *The Merchant of Venice* cannot be unbound from its tightly woven history and anti-Semitic rhetoric.

To contextualize *The Merchant of Venice*, one must first examine the history of Jewish people in the Elizabethan era. In 1144, Jews in Norwich, England faced the first recorded *blood libel* (an accusation of partaking in ritually drinking blood), even though the Torah forbids eating or drinking any form of blood. This false accusation was one of many that led to the wrongful persecutions, executions, and eventual banishment of Jewish people from England by Edward I, making England “the first European country to expel Jews” (Holmes). Even as all investigations into these accusations proved the Jews to be innocent, it did not change any non-Jewish minds about their fellow man. Jewish people were continuously demonized and discriminated against, and these sentiments did not leave England even when it readmitted Jewish folks in 1655. Cynthia Seton-Rodgers, who conducted research on anti-Semitic literature in Early Modern Europe, notes that “a handful of Jews came to England immediately after the expulsions from Spain and Portugal,” enacted by King Ferdinand and Queen Isabella as they tried to “unite” Spain under Christianity (7). While this event, known as the Jewish Expulsion, occurred prior to Elizabeth I's reign, it is one of the most prominent examples of Jewish hatred enacted in the name of Christianity. Many Jewish people were forced to relocate to other, more “tolerant” areas—though “tolerance”

occurred less through the acceptance of Judaism in Christian spaces, and more through Jews living “under the guise of being Protestant refugees from Catholic nations” (Seton-Rodgers 9).

But Jews in England adapted to Elizabethan society through their own means and clashed with the Christian community through their “tradition of literacy and economic experience which stood in the way of aspiring Christian merchants and bureaucrats” (Berger 8). It was their intelligence that challenged the Christian majority’s idea that anyone who did not believe in Christ had rationality or intelligence. Ideas of this sort lace many anti-Semitic stereotypes. Dana Mihăilescu states that even 19th-century literature primarily uses a stock character version of the Jew, “a symbol of greed with the human element reduced to the notion of an instrument of money making ... as manipulator of political power through command of money” (202). These stereotypes were created via the Christian’s growing fears and insecurities about the Jewish people. While Christians dominated most of Europe, a lot of their beliefs and ideologies were centered around religious, and therefore moral, supremacy over other peoples. When the Jewish people held a substantial amount of influence over the economy, as previously mentioned by Berger, they “stood in the way” of the Christian idea that “the proper use of reason demonstrates the truth of Christianity” (15). Thus, Christians began to target the Jewish people with cruel and vicious stereotypes to dehumanize them. It was easier to blame life’s problems on the devil and make devils out of one’s neighbor—and if you’re a Christian, the devil is your enemy.

These stereotypes are reflected in the literature and theater of this era. D.M. Cohen, an Associate Professor of English at York University, notes that the “Jew as the Devil Incarnate conforms to a common medieval notion” that is “expressed in Chaucer and much early English drama” (56). Shakespeare is known to take inspiration from, as well as indirectly replicate, prior works of fiction and mythology to write his plays, so it is only natural that anti-Semitic ideas from prejudiced works would trickle down into what he wrote. In the 2006 Wordsworth edition of *The Merchant of Venice*, Research Professor Cedric Watts mentions in the introduction a likely inspiration for the basis of *Merchant*: a story in Giovanni Fiorentino’s collection of tales, *Il pecorone*. This tale, Watts describes, outlines the exact plot of *The Merchant of Venice*, the love story of Giannetto and the rich lady of Belmonte, in which Giannetto must take out a loan to court her, thus becoming indebted to Ansaldo, who enters a bargain with “a cunning Jew” that requires a pound of the Ansaldo’s flesh should he not pay the debt. The nameless Jewish antagonist does not accept the late attempts of payment and attempts to collect his due, but the

lady of Belmonte disguises herself as a lawyer and outwits him, and afterward, “all is happily resolved” (11–12).

Shakespeare’s changes to this narrative primarily lie in the name changes and additions; Giannetto is Bassanio, Ansaldo is Antonio, the lady of Belmonte is Portia, and the Jew is Shylock. Shakespeare also added more Jewish characters, such as Jessica, Shylock’s daughter, and gave Shylock two servants. But the main premise of this story remains the same, the most prominent detail in regard to this essay being that the villain’s only defining trait is being Jewish.

In *The Merchant of Venice*, the Jewish characters are known exclusively for their Jewish faith, as is mentioned many times throughout the play; Cohen counted the number of times Shylock is referred to by name, which is a total of seventeen times—throughout the rest, “he is called, ‘Jew’ and is referred to as, ‘the Jew’” (54). For reference, this play is five acts long, comprising eighteen scenes in total. This is no coincidence, especially with the Jewish character being named in Shakespeare’s play as opposed to the source material, one might expect that name to be used more. Cohen also points out that “calling the play’s villain by a name which generalizes him while at the same time ostensibly defining his essence is, in a sense, to depersonalize him” (55).

From Shylock’s very first introduction, he references the story of Jacob, a key figure in the Book of Genesis, a part of both the Torah and the Bible—a story Shylock assumes that both he and Antonio know, given that their religions both serve the Abrahamic God. Shylock speaks of Jacob’s bounty through his hard work, alluding to himself, but Antonio credits this bounty to God and lightly mocks Shylock for speaking figuratively. Then, Antonio warns Bassanio, saying, “The devil can cite Scripture for his purpose” (Shakespeare 1.3.94), prompted by no prior experience and instead by his prejudices. Not only does this quote impose the use of the aforementioned stereotype, but Shakespeare takes the implied and makes it literal with his word choice, cementing the idea that Antonio and Bassanio are entering a “deal with the devil.”

Shylock is by no means a warm and inviting character; from the beginning of the play he hates Antonio “for he is a Christian” (1.3.37), and while a Christian-hating Jew is another anti-Semitic stereotype—specifically that “Jews killed Jesus, murdered Christians to use their blood in rituals and loaned money with interest because of their un-Christian ways” (Frank)—this one is the most overlooked when one sees how the Christian characters treat him in this play. Shylock justifies his actions through the very real history of Jewish oppression, which makes the audience understand where he might be

coming from, even if they carry anti-Semitic prejudices themselves. Given the longstanding conflict and targeted oppression of the Jews at the hands of Christians, Shylock is not mistaken in believing that he is hated, and this fuels his own hatred for his oppressors. A pound of flesh from Antonio, with the knowledge that he will be unable to uphold his end of the bargain, is the perfect opportunity to “feed fat the ancient grudge” Shylock holds against him (1.3.42). Through being told time and time again that he is subhuman because of his Jewishness, that he is a devil, he decides to become just that. “Thou call’dst me a dog before thou hadst a cause,” he says to Antonio, who begs for mercy for not fulfilling his end of the bargain, “/ But since I am a dog, beware my fangs” (3.2.5–6).

There are also significant lines that Shakespeare gives to Shylock, words that resonate as politically progressive when looked at through a modern lens. For example, during his trial, Shylock justifies his stubbornness in retrieving his bond, no matter how cruel it may sound: “You who have among you many a purchased slave, / ... You will answer, / ‘The slaves are ours.’ So do I answer you,” (Shakespeare 4.1.90–98). There is a clever reveal in the hypocrisy of the Christians, the way they bring other human people down for dehumanization but recoil when it is done to them in return. Another prominent example is Shylock’s famous monologue, “Hath Not a Jew Eyes?” which has been interpreted by many modern actors, directors, and theatre scholars as a moment of humanization of the character. In this monologue Shylock says, “If you prick us, do we / not bleed? If you tickle us, do we not laugh? If you / poison us, do we not die? And if you wrong us, shall / we not revenge?” (3.1.57–60) These words insist that the listener understand the inherent equality between all men, especially between human beings. Shylock justifies his actions through his insistence that any man would respond the same way. When Solanio, a friend of Antonio, tells Shylock he should not follow through and take Antonio’s flesh, Shylock replies, “...if a Christian wrong a Jew, / what should his sufferance be by Christian example? / Why, revenge” (3.1.62–64). Shylock’s evil is but a reflection of the capacity of Christian cruelty. Even if one were to argue that this might be Shylock’s self-fulfilling prophecy—that enacting the very hate he receives only seals his fate—the historical context, through Shakespeare’s interpretation of the Jewish lens, shapes Shylock into a tragic villain.

These excerpts are strong examples of Shakespeare’s humanization of Shylock, that he created a dynamic character that an audience can perceive as more than a Jewish stock image. Actors who play Shylock in this day and age are more inclined to look to this monologue when seeking out Shylock’s motivations. For example, in 1879, Henry Irving was the first actor

to portray Shylock as an empathetic character, despite the criticism of this production that it was unlike how the play's text presented him (Rubenstein 8–9). Irving's interpretations as an actor are valuable to a performance, especially as they reflect the social attitudes of his time. But this is a more modern interpretation, which stands in stark contrast with Merchant's long history of anti-Semitism, especially when considering the text. One might wonder why Shakespeare bothered to name Florentino's Jewish villain if his name is only used seventeen times, why he bothered to give Shylock a daughter that would only turn Christian and be ashamed of him, and why he would have been given a backstory and justification for his deeds, only to let him fall. Cohen provides a probable theory: “[I]t is quite possible that Shakespeare didn't give a damn about Jews . . . if he did finally humanize his Jew, he did so simply to enrich his drama” (53). Shakespeare was, after all, a playwright with an audience to impress. His other plays contain their fair share of misogyny and racism, so it is fair to assume that he is not above anti-Semitism.

One must remember that this play was put on for an Elizabethan, English, Christian audience who examined the Jew as a stock character and a villain. One of Shakespeare's influences is *commedia dell'arte*, “comedy of the profession,” which includes a lot of improvised theatre with stock characters. These stock characters were archetypes that often appeared in Shakespeare's shows, as his plays often reused the same formulas. Shylock, unfortunately, is a stock character whose description matches perfectly with that of the *Vecchio* (the old man), “the old father, the greedy merchant . . . his mask was dark reddish brown and hooked-nosed” (Grewar 10–11). Shylock is father to Jessica, the greedy Merchant of Venice. Red hair and hooked noses are stereotypes of Jewish phenotypes, but present in this clown-like stock character, they are a thing to be laughed at. Hannah Rubenstein, who wrote an article about the performance history of *The Merchant of Venice*, notes that “Shylock intrinsically ties his visual status as an outsider to his Judaism. He wears a ‘Jewish gaberdine,’ a loose-fitting gown, and keeps a beard, both of which may set him apart from the rest of Venetian society” (4). His outwardly appearance in this play is to highlight his difference, and how he does not appear to belong in the Christian Venetian crowd. One might also consider that Shylock is almost always wearing red, a color that is significant to the performance history of this play. It is significant in that it has “relevance to the red hats of Venetian Jews, [and] its association with the devil, a comparison drawn throughout Merchant's text and antisemitic ideology” (7). For this reason, it is possible that Shylock's initial *commedia dell'arte* stock character presentation might also have been the *Pantalone*, who wears red and

a large, hooked nose. *The Merchant of Venice* depicts Shylock as unforgiving, greedy, blood-thirsty, and despite the empathetic modern lens, this is how he was initially presented.

The characters of this play all have similar ideas about Shylock as a character—all have collectively agreed that he is an enemy to them, a man who is greedy, conniving, and all-around evil. Lancelet, a clown and servant to Shylock, refers to him only as “The Jew,” quite literally calling him “the very devil/incarnation” behind his back (2.2.24–25), emphasizing the stereotype previously mentioned. Even his daughter, Jessica, runs away behind her father’s back to be with Lorenzo, a Christian man, and converts to Christianity rather than be Jewish, and is ashamed to be her father’s daughter, saying “But though I am a daughter to his blood, / I am not to his manners” (2.3.18–19). Jessica casts off her Jewishness as she escapes, correlating her Jewishness to being flawed.

The characters Portia, Bassanio, and Antonio primarily refer to him as “the Jew,” to his face. During the court scene in Act 4, Scene 1, near the end of the play, Portia disguised as a lawyer and the Duke of Venice (acting as judge) are well aware of Shylock’s name, but rarely refer to him by it. Even when Portia wins the case and frees Antonio of the bond—freeing him of a certain death through the pound of flesh that he owed Shylock—she insists that Shylock is not able to take the money offered for his bond and leave the court with any semblance of dignity. “Down, therefore,” Portia says, “and beg the mercy of the Duke” (4.1.361), putting him “in his place” by having him lower himself before the law. In most narratives, it feels good to see the villain crumble, but here it is a mockery of a Jewish man, enhanced by the stereotypes that he embodies. Portia and the court force him to convert to Christianity as part of his sentence, stripping him of his key identifying feature in the play. Shylock’s fall is not that of a tragic villain that the audience pities, but a target of humiliation and shame.

William Shakespeare was a very talented writer, but one must call to attention the blatant anti-Semitism that this play perpetuates. The stereotypes he uses as objects of laughter are both influenced by and fueling hateful ideologies. This play, Cohen mentions, showcases that when the Jew is “no longer a dog to be controlled by beating and kicking, he has become an untamable wolf . . . the Jew must be kept down. Once he is up, his instinct is to kill and ravage” (57). These sentiments are the same that influenced Hitler and the Nazis, leading to the tragedy of the Holocaust. Stereotypes can be ignored by a media-critical eye, but the portrayal and consumption of them lead to real-life consequences.

One must not argue that this play cannot be reclaimed, especially by the Jewish community. Modern interpretations of this play exist, much with Jewish people speaking through Shylock's pain—Henry Irving, previously mentioned, is a prominent example of this. But this play's text and performance history should not be disregarded, either. *The Merchant of Venice* is a perfect example of how stereotypes and propaganda function and can be used as a tool to train future audiences in media literacy. It is in the discussion of these stereotypes and prejudices that viewers can both acknowledge the historical significance and the cultural harm of this play. Anti-Semitism cannot be erased from history, and previous narratives must not be forgotten, lest someone try and write them again. Shakespeare's *The Merchant of Venice* will continue to be performed, so its viewers must be mindful of who is telling the story.



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# Poets Can Lie: Female Experience in Ai Ogawa's Dramatic Monologue

Molly Del Rossi

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## *Abstract*

Ai Ogawa's poetry is written in the form of a dramatic monologue. Her poetry differs in style from other female poets of her time. This paper uses archival material from the Berg Collection at the New York Public Library to compare Ai's feminist poetry with poetry by Sylvia Plath. The comparison reveals that Ai's poems about womanhood are written from the perspective of others, even men, while Plath addresses womanhood using a female voice, frequently her own. Though both poets effectively display the struggles of womanhood, Ai's ability to take on another voice strengthens the poems' accessibility and effect due to its broadening of the feminist confessional scope. This comparison is not to erase one poet's sensational abilities from the other, but to show how the world of poetry can be opened or shifted even on common topics. The idea is that poets can lie, like playwrights or fiction authors, to create a new environment for poetry to thrive. Ai claimed throughout her career that her poems were not a trove of personal treasure, but a commentary on society and humans' treatment of each other. Through the Berg Collection, I was able to analyze poems that were never officially published in Ai's lifetime.



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“The woman calls. I don’t answer,” Ai Ogawa begins her poem, “The Expectant Father”:

She reaches for me, but I move away. I frown, pulling the covers to look at her ... I bring my face down where the child’s head should be and press hard. I feel pain, she is pulling my hair ... I wait for her to cry and go into the kitchen. I fix a scotch and sit down at the table. In six months, it is coming, in six months, and I have no weapon against it.  
(Ai 27)

Ai Ogawa uses the dramatic monologue form to author common themes that exist within feminist confessionalism poetry. Themes such as sexual assault, pregnancy, and self-harm, are a few of the subject matters central to this confessionalism era of the mid-20th century. However, Ai expands beyond a female, first-person narrative, infrequently employing “I” or “me” as it is to be her: the poet, Ai Ogawa. Unlike her female poet predecessors such as Sylvia Plath or Anne Sexton, who were liberated by writing their personal struggles without overt disguise, Ai embodies unique characters from different backgrounds in her monologues; these characters consist of individuals of different races, sexes, ethnicities, ages, and statuses from her own. A challenging form for poetry, but Ai tackles these characters and subjects by viewing herself as an actor, someone who uses other voices to share an important message. Often, when writing about the strife of womanhood, Ai will write from the perspective of a man observing these issues, as seen in the excerpt from “The Expectant Father” above. She expands on the nature of the world and its danger to women by occupying a voice who does not know this experience firsthand. As a female poet, her adoption of a man’s voice in “The Expectant Father” leaves a breadcrumb trail of what the woman is feeling as her partner denies her comfort and excitement in her pregnancy—he notices her crave his attention, he feels her pain as he presses on her womb, he knows she will cry alone in the kitchen. Without speaking as the pregnant woman, a woman reading this poem can gauge the thoughts and feelings of the subject without Ai explicitly saying, “I am pregnant. I am unloved. I fear my future with this man and our child.” Her ability to describe womanhood and its dangers, such as the abuse in the poem above, while not writing from the perspective of a woman at all is what makes her work transformative in the genre of poetry and the subgenre of feminist confessionalism. As a woman reading her work, the subtleties of female suffering in Ai’s poems invite new and engaging analysis when observing how her work emerges from other female poets of the mid-20th century, and how they compare narratively. Ai Ogawa expands the possibilities of analyzing

womanhood through poetry by adopting unique roles to tell necessary stories of living as a woman and the adversity inherently tied to the female form.

## DRAMATIC MONOLOGUE HISTORICAL IMPLICATIONS

Ai Ogawa's primary form of published poetry is the dramatic monologue. To understand her adoption of this style and its efficacy, it is important to examine the basic form of the dramatic monologue. The Oxford Dictionary defines the style as "a poem in the form of a speech or narrative by an imagined person, in which the speaker inadvertently reveals aspects of their character while describing a particular situation or series of events." ("Dramatic Monologue") The form has been present since the Victorian Period, the most prevalent voices being those of Alfred Lord Tennyson and Robert Browning. Dramatic monologue differs from lyrical poetry in that, according to Ralph W. Rader's 1976 article in *Critical Inquiry*, the reader is no longer working outside in to understand the message of the poet but is instead working inside out. "Outside in" can be viewed as analyzing a poem by the poet's personal statements, whether literal or metaphorical. Typical lyrical poetry reveals what the poet thinks about themselves or the world around them because they are writing from their perspective, not someone else's, i.e. a fictional character. "Inside out" analysis requires discovering what the poet is saying about themselves, though they are writing from the perspective of a character. By entrenching oneself into the speaker's voice, vision, and other senses in the poem, the reader is gaining insight into what the poet is revealing about themselves *through* the message the narrative voice is presenting to its auditor, or listener (Rader 135). For example, a lyrical poem, "I" being me, may express feeling morally grey and uninspired, with robust metaphors to emphasize these inauspicious emotions. In a dramatic monologue, the "I" is no longer myself but could be a father speaking to his child about a previous suicide attempt—the morally grey and uninspired feelings are still present without being attached to the poet's real life. I created this set of examples to clarify the difference between lyrical and dramatic monologue language indicators:

*Gray, like clouded  
smoke, I bury myself  
beneath a grave expectation*  
(Del Rossi 2022)

VS

*Son, you bear my own face,  
my eyes stare me right back  
the same grave expectation*

In both short poems, it is clear what emotions are present: sadness, high expectations for oneself, and disappointment. However, the first poem uses first person to describe the poet's feelings: a personal sense that *I* have metaphorically buried myself due to a lack of success. In the second poem, I adopted a character completely different from who I am. Instead of being a 20-something woman struggling with feeling disappointed in herself, I am now writing as an older man, a father with a son, to be the catalyst for this *same* feeling of disappointment. Again, the emotions are still present even if the voices are different. As scholar Glennis Byron reminds us, the dramatic monologue is complicated for the reader because the reader is often intent on connecting the poem with the poet. Even if the poem is completely isolated from the poet's perspective, i.e., they have altered their gender or social status, the reader still has difficulty separating the poet's "I" from the narrator's "I." Dramatic monologue, according to Byron, is nearly fiction. Poetry readers often believe fiction to be far from it, for poetry is commonly seen as the vulnerable, the confession of the deepest parts of oneself, and the honest. However, poetry is still creative writing, still able to fictionalize whether the reader wishes to manifest a parasocial connection to the poet or not—poets can still lie.

Where Browning is seen within the history of dramatic monologue as expressing his soul through characters (Bergman 1980), like his famous partner of the Duchess, Ai Ogawa adds to the tradition of dramatic monologue by disconnecting herself from her written characters, significantly her first poetry collection *Cruelty* (1973). Ai adopted dramatic monologue as her primary style when she was a senior in college (Ai, *The Pedestal Magazine Interview with Ai*, online ed.) and continued throughout her eight published collections. In a handwritten transcript of a seemingly unpublished interview conducted in the late 1970s or later, Ai says her "grand reason" for writing the 1973 collection was to show people how badly they treat one another (Ai holograph interview notes, Berg Collection). Ai handwrites this interview on teal-colored paper, its resting place is the Henry W. and Albert A. Berg Collection of English and American Literature located in the New York Public Library. Unfortunately, this interview is not anywhere online, so it is to be assumed it was either published once and lost to time, or Ai was interviewed in front of an audience, such as speaking at a university or something of that nature. It can be determined that this interview was conducted after 1979 because she talks about her collection *Killing Floor* (1979). That information aside, Ai expresses her purpose for using dramatic monologue as her primary form of poetry was to embody the lives of all kinds of people to show how humans treat one another. She does not claim

that she writes of how people have treated *her* like some readers of dramatic monologue poems might typically think. She emphasizes that she does not disguise her experiences through dramatic monologue: in a 2003 interview with *Pedestal Magazine*, she says “Often, when people review my work, they don’t see that separation. They think they’re just masks for me ... They’re not supposed to be masks, anyway ... If I were a playwright, no one would have a problem with it, but since it’s poetry, people think the poems are all about me” (Ai, The Pedestal Magazine Interview with Ai). She differs from other practitioners of dramatic monologue in that she forthrightly expresses that she is not hiding pieces of herself within her works. Again, I emphasize the idea that poets, too, can lie. Lying isn’t a privilege held only by novelists or playwrights. Ai makes this observation in the quote from the Pedestal interview: if she were any other kind of writer, readers wouldn’t accuse her of writing about herself when she writes as a character. In the written interview from the Berg Archive, she writes on the same blue paper, “I used to preface my readings with a statement that I hadn’t been pregnant and had never had an abortion—because people tended to believe all those things that happened in *Cruelty* happened to me. That seems pretty naïve,” (Ai holograph interview notes, Berg Collection). She is, of course, writing about her poem, “Abortion,” from *Cruelty* (1973):

Coming home, I find you still in bed,  
 but when I pull back the blanket,  
 I see your stomach is flat as an iron.  
 You’ve done it, as you warned me you would  
 and left the fetus wrapped in wax paper  
 for me to look at. My son.  
 Woman, loving you no matter what you do,  
 what can I say, except that I’ve heard  
 the poor have no children, just small people  
 and there is room only for one man in this house.  
 (2)

This is another example of Ai’s use of a male’s perspective to describe a female experience. Why must Ai be the woman who has had the abortion? Why can she not write as an observer of a woman who has had an abortion? If a man wrote a poem from the perspective of a woman who has just had an abortion, would it be assumed that he had an abortion? His partner did? She challenges this notion that the expulsion of one’s history and personal reckonings must be used to make poetry. As the reader can see, she “lies” by writing about an abortion she did not have. Does this change the

effectiveness of the work? I argue no. Writing as a man whose partner has had an abortion does not dispute the nature of the abortion itself, as well as the class implications that she makes in the final two lines of the poem (“the poor have no children, just small people / and there is room only for one man in this house” [Ai 2]). Ai effectively authored a visceral scenario that can be tied to womanhood without having it be her personal experience. This is the power of the dramatic monologue.

## HOW AI ALTERS FEMINIST CONFSSIONALISM WITH DRAMATIC MONOLOGUE

Ai’s first poetry collection appeared in 1973, following the surge of confessionalism from the 1950s through the 1970s. In *Cruelty* (1973), I believe she compounded confessionalism with dramatic monologue; she employed the confessional style that is direct, colloquial, and blunt while broadening the methodology of feminist confession by writing as people who were not her. The focus of this analysis will be on how she explores the common themes of feminist confessionalism, most notably, sexuality and violence towards women, without needing to write from her personal, singular experience as a woman. Instead, by widening the vein of who is “allowed” to speak on women’s experiences and politics, Ai can discuss these issues without the isolation created by overtly personal experiences. The desire to dive into Ai’s personal life dissipates leaving the fictionalized poem to speak for itself. Confessional writers like Plath and Sexton gained attention because of their vulnerability and detailed experiences. They wrote of the grand nature of women by drawing from personal experiences and using a personal voice. However, I argue that Ai creates work just as impactful without having to feed into an isolated persona.

When asked how she compares to other female poets, Ai said, “A lot of women’s poetry, after *Cruelty* came out, approached the theme of trouble between men and women in terms of hatred, I think, or ‘giving it to the man’ in the same way that men had given it to women and I never wrote from that point of view” (Ai holograph interview notes, Berg Collection). I think this quote can be coupled with another quote from the Berg archive to fully understand her desire to write from all perspectives, as she continues to tell a woman’s story: “If they’re [Ai’s characters] anything, they’re taken from the unconscious. If I feel anything, it’s that I’m irrevocably tied to the lives of all people, in and out of time” (Ai holograph interview notes, Berg Collection). As mentioned previously, Ai often writes through the lens of a man. Poems such as “The Rapist,” “Abortion,” “The Woman Who Knew Too Much,”



and “The Expectant Father” are all works from her first two collections that narrate the trials of being a woman, but in none of them does a female voice speak. I do not believe this is a tactic utilized by Ai to silence women or denounce other feminist confessionalists, but is a tactic used to refresh the scene of feminist poetry and ultimately change how a reader may consume the knowledge of female experiences. Her expression—she is connected to all kinds of people—permits the reader to be roused by the experiences she is creating because she is not taking sides on a personal issue, but instead telling stories that encompass human nature. Her craft is not an exorcism of personal woes, but a nod toward recognizing how we treat one another by confronting humankind’s cruelty. Her literature makes it obvious that women experience the violent hand of humankind’s cruelty.

Scholar Karen Kilcup argues that Ai transforms her feminine voice into a masculine one, thus altering the feminist lens. She writes in her essay “Dialogue of the Self: toward the theory of (re)reading Ai,” “Ai speaks in drag: often cloaked in a male persona, she assumes the power and ultimately the relative detachment of the masculine poet ... Her poems describe and inscribe the dualities of patriarchal culture and literature, often beginning with the duality of gender” (Kilcup 8). This detachment is what makes Ai stand out among her contemporaries. Kilcup further states that women readers are seen as a silent, self-alienated Other, only capable of confirming power in poetry through “self-evacuation” (Kilcup 8). “Self-evacuation” is an appropriate term for what became expected of female confessional poets.

To be received by an audience as credible and noteworthy in the field, it seemed women had to fillet themselves through a stream of consciousness to be desirable. Confessionalism, first seen as some therapeutic release for the mentally ill poet, quickly altered to addressing the world outside of the self, while still using the personal experience as a silhouette. Daniela Moldoveanu states in her essay “Sylvia Plath’s War Metaphors or How Female Confessional Poetry Changed Public Perception of Women’s Personal Identity,”

Sylvia Plath places herself at the core of the poem as a generative and osmotic ego (“I am a center of an atrocity / What pains, what sorrows must I be mothering?” – *Three Women*), virtually swallowing all external elements only to bring them into poetry already digested, transfigured so that her “paper” personality overcomes the “real” one in terms of credibility and importance.

(Moldoveanu 186)

As explained by Moldoveanu, Plath used her personal stories to speak of her environment to a larger degree. Plath valued the strength of women,

finding some of their strength to be from the core of female fragility and anxiety (Moldoveanu 187). This is where the separation begins to occur between confessionalists, Ai Ogawa and Sylvia Plath. Female fragility and self-loathing are counteracted in Ai's commentary on society. She changes the angle; I argue that Ai writes womanhood without the sense of hatred for oneself, as shared by Plath. This does not delegitimize Plath's power as a poet or her relatability to readers, but it does alter the lens of feminism; Ai does not saddle women with the blame of being a woman, whereas Plath has claimed "Being born a woman is my awful tragedy ... to have my whole circle of action, thought and feeling rigidly circumscribed by my inescapable femininity." (Plath and Kukil 77) Not only is this an implication of the sign of the times, but by comparing the two poets, we begin to see how Ai can shift the narrative and open the perspective. We do not cry as the woman in the kitchen, but rather, we watch her cry through the eyes of her uncaring husband. How do we feel when occupying this position? Ai does not tell us how the woman feels. Instead, the answer is revealed through the voluntary misunderstanding of womanhood as conducted by men, as well as the negative societal effects that women will experience, whether it be a lack of autonomy within politics, single motherhood, sexual abuse, etc. We watch as she cries alone in the kitchen.

## AI OGAWA AND SYLVIA PLATH'S POEM ANALYSES

I will be comparing how Ai writes of rape versus how Plath writes of rape. Ai's poem "The Rapist," a typed draft found in the Berg collection containing *Killing Floor* notes circa the 1970s, is from the perspective of a male rapist. It is a wonder why she did not publish this in the *Killing Floor* collection, but it is a great opponent to Plath's "The Jailer," published in 1970, about the domestic rape Plath experiences. Readers of Plath have come to understand that she often wrote about her ex-husband, Ted Hughes, after he left their marriage to pursue another woman. Her resentment towards her husband, the jailer holding her captive and abusing her, is present through Plath's aggressive and condemning language.

### "The Rapist"

I'm one hair in every woman's head.  
 Sister, it's your turn.  
 Sister, ear of unpicked corn.  
 Inside your green husk  
 are kernels of fire that crackle  
 when they touch my tongue.

I strip away the last bit of husk.  
Bra, panties:  
forget-me-nots on the floor,  
I may come back sometime to stay.  
(Ai typescript poetry drafts, Berg Collection)

**Stanzas 2, 4, 8, and 9 of “The Jailer”**

(2) I have been drugged and raped.  
Seven hours knocked out of my right mind  
Into a black sack  
Where I relax, foetus or cat,  
Lever of his wet dreams.

(4) O little gimlets—  
What holes this papery day is already full of!  
He has been burning me with cigarettes,  
Pretending I am a negress with pink paws.  
I am myself. That is not enough.

(8) I imagine him  
Impotent as distant thunder,  
In whose shadow I have eaten my ghost ration.  
I wish him dead or away.  
That, it seems, is the impossibility.

(9) That being free. What would the dark  
Do without fevers to eat?  
What would the light  
Do without eyes to knife, what would he  
Do, do, do without me?  
(Plath 1970)

Ai’s dramatic monologue poem makes women inanimate—an ear of corn, a kernel, and finally an empty husk. The male narrator is written as a creature close to being omniscient; he is attached to every woman, living as a follicle in their scalp. I argue that this poem theorizes the inevitability of sexual assault that women will experience. Whether it is a personal experience, your mother experienced it, you heard it on the news, or you read it in a history book—rape is a plague fallen upon the female population for millennia. The narrator claims his act as a duty: “Sister, it’s your turn” (Ai line 2) reads that this action was bound to happen, whether now or later. The language of this poem has a penetrative nature, the woman’s body is something to be stripped and discarded after he has had his fill of her. However, the person the narrator is speaking to cannot be absolved of his presence—not only does the act of

rape live with a person physically and psychologically, but the rapist makes the threat that he may come back to stay. It is not a question, but a looming expectation that the woman he has just assaulted, arguably the larger scale of the female population, will be forced to live with his presence when he returns. I believe this is a metaphor for the psychological damage that comes with being a victim of sexual assault; it is tedious and time-consuming work to recover from an intimate, violent, and violating act.

Plath's poem reads differently than Ai's. Where Ai uses a man's voice to showcase rape's violent violation, Plath uses the female voice of the victim. Where Ai's character can embody all rapists, the title making him a general oppressor, Plath's story involves herself awaiting another return from her jailer. There are similarities in looming return, presented by both poets. Plath conjures up visceral imagery of being drugged and burned with cigarettes, leading the reader to believe that these are memories she is expelling on a page. We do not know if Plath is writing of her husband, in particular. However, we do know that Plath writes from the position of a woman, trapped. She expresses, through "The Jailer," that she is held captive and abused by a man, whether that be entirely metaphorical or if it has realistic implications as well. The difference between Plath's expression of rape and Ai's expression of rape is that Ai removes the possibility of looking from a woman's eye, speaking from a woman's mouth; the reader can sense the eeriness and fear without personal expression from the victim. Moreover, Ai's dramatic monologue from the perspective of a male rapist describes women as nothing more than a body. We know this is a dramatic monologue because Ai is taking a position as a character outside of herself, whereas Plath could be employing metaphor to comment on not only the societal treatment of women, but her own suffering in her relationship. Where Plath paints the picture of emotional turmoil, Ai's narrator cannot recognize a woman outside of her sexual worth. This creates a broader understanding of rape due to its general address toward women, forcing the reader to look at it objectively instead of with an empathetic recollection. To Ai's narrator, we are all "sister" (Ai lines 2 and 3), but to Plath, she is herself—she exists as a woman experiencing pain due to her partner's animalistic and tortuous actions toward her, reiterating her assumption that she "is not enough" (Plath line 20).

Ai's narrator's attachment to all women makes her poem more generally accessible to readers. The description of his actions and apathy toward his victim does not require specific detail for it to be understood. His being "the one hair in every woman's head" (Ai line 1) is exactly that—it can be assumed that all women, especially after puberty, have experienced the innate nature of being seen as male property, personally or socially. The generality that exists

in “The Rapist” does not diminish the emotional intensity of Plath’s “The Jailer,” but it does create broader ground for a reader to connect to. I argue a man could read this and understand the violence placed upon women’s bodies easily, again emphasizing Ai’s goal to reveal the cruel nature of how humans victimize one another.

Both poems are effective in showing how rape lives with women. Where the rapist in Ai’s poem may come back to haunt the victim, Plath admits her connection to her rapist in the final lines. She asks, what would he do without me? The difference, however, is Plath has isolated her experience of sexual violence to one person. The emotions of fear, tension, sadness, and the loss of one’s sexual autonomy are present in both poems, but Ai’s dramatic monologue remains effective in general accessibility to a reader. I believe it is important for both stories to be told, and it appears the authors have different goals. Ai’s goal is to synopsize human behavior and its capability of performing monstrous acts on innocent women. Plath’s goal is to detail her personal experiences relative to monstrous acts toward women.

**CONCLUSION: “I AM TEMPTED TO SAY—I’M LIKE GOD. I’M EVERYWHERE.”** (AI HOLOGRAPH INTERVIEW NOTES, BERG COLLECTION)

Ai Ogawa’s use of dramatic monologue as her primary form of poetry effectively broadens the scope of feminist confessional poetry. Creating worlds and characters that subscribe to the issues of womanhood without writing from a self-focused narrative allows her poetry to be accessible to a general audience. Comparing Ai and Plath opens the discussion: as writers, why are they admired? Plath is admired because of her vulnerability and disturbing language. She is enigmatic in how the reader reads her work and has more questions: Who is she writing about? Who is her husband? Who were her children? Who was her father? Unfortunately, at a certain point, her negative life experiences became her legacy, casting a shadow over her works on womanhood. Ai Ogawa is revered because she writes to analyze the human form through a feminist lens. Her need to embody voices outside her own, becoming “God,” is not to shelter her past or her truths—it is to open the realm of possibilities as to who can speak about womanhood and why. Her frequent employment of a male voice forces the reader to understand women from the outside in. Poets, too, can lie and Ai Ogawa invents a multitude of lives in her work to make the reader reflect on how they treat themselves and others, especially women.

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# *The Bear* and Burke: A Comic Frame for Inevitable Conflict

Jessi Jansen

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## *Abstract*

The reach and accolades achieved by the FX series, *The Bear*, demonstrate its cultural resonance for anxious and divided times. Kenneth Burke's models for rhetorical analysis reveal the layers of symbolic action and meaning that make the show successful. Burke's guilt-purification-redemption cycle, in particular, illustrates the unavoidable nature of both hierarchy and conflict, and it aids in understanding the message and significance of a particular scene—the meaning created for and by its audience. By grappling with themes of anxiety, masculinity, and competitive, destructive conflict, *The Bear* viscerally communicates the very present relevance of Burke's ideas. The show joins his recommendation for a shift in perspective from a tragic frame to a comic one. This perspective shift has the potential to alter engagement with conflict.

*Keywords:* *The Bear*, Kenneth Burke, rhetorical analysis, masculinity, familial conflict, tragedy, comedy, symbolic language, symbolic action



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## **THE BEAR AND BURKE: A COMIC FRAME FOR INEVITABLE CONFLICT**

A recent episode of the television series, *The Bear*, included a scene with rhetorical resonance worth closer examination. Literary theorist Kenneth Burke proposed models for just such critical analysis of *any* form of symbol use because he saw the use of symbols (language) as the defining characteristic of humankind. For Burke, using symbols is an action, whether that act is performed in person, on paper, or produced to fill a screen. His notion of dramatism presents a framework for investigating the motive behind symbolic action, by revealing how various aspects of the speaker and context interrelate with the action performed. Burke's thoughts on identification and persuasion, inevitable hierarchies, and the guilt-redemption cycles they foster, also provide ample opportunities for application to this moving scene and the larger series. How might a look at motives and guilt inform an understanding or evaluation of the speech acts depicted? What meaning might a Burkean analysis of this scene reveal about this piece of fiction and its real-world social relevance? The following examination demonstrates that Burke's thoughts are not only useful as an analytical approach but that his conclusions about conflict reverberate through the rhetoric of *The Bear*.

### **ARTIFACT**

*The Bear* is an FX television series, created by Christopher Storer, that premiered on Hulu in June 2022 (FX Networks, 2023). Its second season aired in 2023, and the show achieved wide reach—reportedly the most-watched show in the U.S. across all viewing platforms during the week of June 29, 2023, and the second-most-watched show during the previous week (Griffith, 2023; Gruenwedel, 2023, Jun. 30 & Jun. 27). In fact, season 2 of *The Bear* is FX's most-watched debut ever on Hulu (Echebiri, 2023). The series has also received overwhelming critical success. Its first season was nominated for 13 Emmy awards (Moreau & Schneider, 2023; Television Academy, 2023). It was also named one of the ten best programs of the year by the American Film Institute (Lewis, 2022). The website Rotten Tomatoes hosts a collection of 92 reviews of the series, yielding an impressive 99 percent approval rating (Fandango, 2023). Several actors have been honored for their stellar performances, winning a Critics' Choice award (Nordyke, 2023), a Golden Globe (Chuba & Lewis, 2022), and a Screen Actors' Guild award (Lang & Shafer, 2023), among many other nominations. Particularly notable for a discussion of rhetoric is that the series has also been recognized for its writing by the Writers' Guild of America (WGAW, 2023); and even

more specifically, Christopher Storer was awarded for outstanding directing for the very episode to be discussed (Buchanan, 2024).

The show relates the story of a young, successful fine-dining chef, Carmy Berzatto, whose brother's suicide forces his return from the Michelin-star world of New York to his Chicago home, where he is to take over the gritty family sandwich shop. In the first season, the audience is transported back and forth between these two starkly contrasting restaurant worlds and bears witness as Carmy tries to implement a formal fine-dining kitchen system ("Yes, Chef.") with a staff that is largely not classically trained and very resistant to change.

"Fishes," episode six of the second season, is a flashback to an incendiary family holiday meal that took place before the death of Carmy's brother. It depicts their alcoholic mother becoming increasingly unhinged as she prepares the "Feast of Seven Fishes," an Italian Christmas Eve tradition (Culinary Institute, 2022).

## APPROACH

Central to Kenneth Burke's understanding of humanity is his characterization of the use of symbols as action (Scheibel, 1999). An *act* is performed in the naming and defining of objects and situations, as it is an act to use these symbols to interpret meaning (Burke, 1966). Burke's model of symbolic action, known as dramatism, stems from his observation that symbol use, no matter the form, is always contingent upon the underlying motives of the communicator (Burke, 1969; Bizzell, et al., 2020). Essentially, because language is action, all language hinges on motivation. Burke's (1969) pentad provides a methodology for interpreting artifacts of any kind through the principles of, Act, Scene, Agent, Agency, and Purpose. These individual aspects—the symbols, the current and historical context, the symbol-user, the method of delivery, and the motive—are not isolated but play upon each other in complex ratios of focus, which determine and confine the scope of acceptable action within a set of circumstances (Burke, 1969). The interplay of these forces reveals a layer of meaning that exists beneath any symbolic act.

Burke's definition of humans as symbol creators and users—as symbolic actors—illustrates his understanding of language as the fundamental divide between nature and humankind. Essentially, nature can be only what it is. However, symbols allow the opportunity to question what is not. This man-made tool thus creates "the negative" and separates us from purely natural conditions. (Burke, 1961, p. 16). However, the existence of the negative also contains within it an opposite possibility of perfection and presents the

question of what should be. Thus, the invention of symbols simultaneously constructs moral commandments, value judgments, and stratified social order (Burke, 1961). Language itself calls forth the hierarchies that order understanding and action, and it builds the systems we inhabit. According to Burke, the very act of naming implies how to see and act toward the thing named (Mackey-Kallis & Hahn, 1994).

At the same time that language separates humanity from nature, it also divides humanity into groups. Language builds hierarchy, which is the source of guilt (Adams, 2020). It produces conditions for perpetual tension, as there is always discomfort with one's place in the hierarchy (Burke, 1966). By introducing perfection, language also dooms us to guilt for the impossibility of attaining it. It reveals the inability to live up to its moral dictates. In fact, the experience of guilt is not predicated on committing any actual crime or sin, but instead, is caused by comparison to others or a notion of self-perfection (Adams, 2020). Therefore, inescapable hierarchies *necessarily* create the conditions for the "guilt-purification-redemption cycle" because humans are incapable of fulfilling the social contract (Scheibel, 1999, p. 170; Adams, 2020). The drama of symbolic action ensues when people perceive this failure, or when they consciously reject the impositions thrust on them by the hierarchy of social order, choosing to operate outside of established norms. Either scenario creates guilt that must be purged (Samra, 1998). In Burke's conception, conflict is cyclical and certain. It is an unavoidable aspect of human experience because language prescribes it. In short, language creates order, order creates guilt, and the human condition is the constant struggle for individual and communal redemption.

While symbolic action is the cause of this universal human affliction, it also provides the only cure. According to Burke (1961), guilt is primarily relieved through either mortification (self-sacrifice) or "victimage" (scapegoating); although there may be other means of transcendence (Adams, 2020). Mortification entails moral cleansing through self-inflicted suffering; however, victimage involves the transfer of guilt to another, who can be punished on behalf of an offender or a social group (Mackey-Kallis & Hahn, 1994). Burke (1965) even noted a possible *preference* for scapegoating: "Is it possible that rituals of victimage are the 'natural' means for affirming the principle of social cohesion above the principle of social division?" (p. 286). The sacrifice of a scapegoat might be preferred for the opportunity to avoid the personal pain of mortification. Yet, deeper than that, it can be seen as an act that binds community. Through division of an outside other, an internal connection is established and strengthened. "According to Burke, we seek unity because there is division among us ... however, it is through sowing

discord—creating victims—that we reap harmony” (Mackey-Kallis & Hahn, 1994, p. 6). In this way, the creation and punishment of scapegoats provide both guilt-release and community unification.

The methods of guilt purification can vary. Precisely because symbolic sacrifice is necessary, it is important to note that victimage can be achieved in different ways. True to Burke’s conception of human *drama*, he describes victimage in terms of comedy and tragedy. These frames inform how people view and treat those with whom they disagree or those who have committed a social wrong. A tragic frame dictates an antagonistic perspective. It is a purely competitive stance, which casts violators and scapegoats as enemies (Burke, 1969). “In adopting a tragic worldview, individuals see those in opposition as evil entities that must be vanquished at all cost, like monstrous villains in tragic theatre” (Foy, 2012, p. 96). Instead, Burke (1969) suggested that comedy provides a more humane form of victimage. This is a lens that does not obscure one’s own shortcomings and mistakes through the vilification of others. It requires self-reflection and the assumption that our opponents are misinformed, not inherently evil (Foy, 2012). The comedic frame provides recognition that forgiveness must be given because all need it—no one can be taken too seriously when everyone is a joke. As a form of victimage, it accomplishes redemptive sacrifice, but it does so without contempt. This frame presents a view of conflict itself as natural and potentially productive.

A Burkean analytical approach is appropriate for interpretation of the subject artifact for several reasons. First, Burke thought all forms of language use can be critically examined as motivated symbolic action. In fact, Burke viewed the arts (poetics) as a subset of rhetoric, noting that both literature and art have a forensic function in society (Bizzell, et al., 2020). Second, Burke was often interested in social relations and communities. Burke’s concept of hierarchy, as a force that creates social order and delineates positions of power, is foundational to all territorial disputes over “turf,” whether physical or metaphorical (Tonn et al., 1993, p. 167). This concept can illuminate family dynamics within the subject scene. A family is, after all, a hierarchical system. Finally, Burke’s tragic and comic frames also provide valuable insight for understanding a stunning, if momentary, transformation that was achieved during the scene, and the reflection this casts for its audience.

## ANALYSIS

The scene begins with the family seated around the dinner table, awaiting Carmy's mother, but soon becomes a competition between two men to display dominance—a turf war for the apex of the family system hierarchy. They take turns tearing each other down to alter the balance of power, each attempting to protect their own esteem, which illustrates that their acts are performed for the “benefit” of the group. These displays would be less necessary outside the presence of their captive audience—those family members made complicit in the exchange by the inability to meaningfully intervene.

The first “sin” against the social order was made by the boyfriend of Carmy's mother, the matriarch of the assembled family. He made a joke when someone inquired about the “Feast of the Seven Fishes” tradition. This was seen as an affront, perhaps a kind of sacrilege, by Carmy's brother, Michael, the eldest son (whose future suicide will prompt Carmy's return to Chicago). From his seat at the head of the table, “Mikey” interrupts both with words and by throwing his fork at the man's head.

This was certainly a violation of social norms, as the boyfriend was quick to note with his assertion that “you don't throw forks at people. It's a rule!” In a Burkean context, this is an appeal to the rest of the table to make Michael “legalistically” worthy of sacrifice—to convict him of violating a law that governs social interaction (Foy, 2012, p. 96). Michael responds by requesting to “borrow” someone else's fork, which he again hurls at the boyfriend along with the statement: “Here's the thing. You see, I can throw forks, because this is *our* father's house.” By requesting the fork rather than taking it, Michael seeks to reassert his place in the hierarchy through the acquiescence of another within the family; and invoking his father is a reminder for all present of where the lines of authority should be drawn. The animosity between the two only intensifies, despite hollow pleas from around the table, delivered with the resignation of their futility.

In a moment of silent standoff, Carmy's mother enters the scene, disrupting the social order anew with her presence. She asserts a different kind of dominance, one of fragility—but the kind of powerful fragility that forces all around her to tread carefully, so as not to disturb a decidedly unsteady equilibrium. The social fabric, a fictional example of Burke's scene or context, is altered not only by her presence but her ignorance of what had just transpired. In response to her question about what she had missed, Michael directed a peripheral family member to offer a prayer.

This is an order that cannot be refused and a different assertion of power, which again legitimizes Michael's place in the hierarchy.

However, this command also serves as the identification of a scapegoat for the sins of all present. Burke would note that, although Michael and the boyfriend are the aggressors, the guilt of the violation and the need for redemption apply to all. All participated, albeit with varying degrees of volition, in the previous display of verbal and physical violence, and all were exposed to guilt of the violations of order. In fact, the bystanders' inaction might be viewed as the scenic element of Burke's pentad overtaking the agency of the characters. For instance, a focus on scene reduces an agent's action to motion, rather than motive. It is a plea to evade responsibility, to view the action as instinctual rather than intentional (Burke, 1969). Thus, the family members caught in the middle of the dramatic exchange might explain the failure to intervene as determined by their prescribed roles in the family system, their actions constrained by the context of the situation (Tonn et al., 1993). Regardless, they all experienced the guilt of numerous transgressions.

Michael's choice of a scapegoat is not arbitrary. Stevie, visiting from New York, presents a stark contrast to Michael's aggressive masculinity. The Berzattos have suggested he is gay despite his long-term relationship with their cousin, Michelle. Although the duty of saying the prayer under these circumstances is accepted only reluctantly (action forced by scene), it is accepted by the offered scapegoat; and the performance is only made more spellbinding because it is delivered under some level of duress. The power of his words is evident and transformative. Stevie's prayer (actually not a prayer at all) is an address to the family, not to a deity. Here, this outsider, who certainly embodies a *fish*-out-of-water contrast to the Berzattos, is commanded to lead the ritual. The incongruity of the demand and the ceremonial, reverent nature of the required speech only reinforces the scapegoat imagery. The task, once accepted, is not simply to fulfill the epideictic function required, but to diminish the intensity of the previous verbal violence. That he succeeded for a time was a triumph.

The success of this fictional speech is its capacity to draw attention away from Burke's tragic frame, so apparent in the previous turf dispute, and to pull a comic frame into focus. Stevie starts with: "Hey! It's great ... that we're all here together. And ... no one's really, very physically sick." This comedic awkwardness certainly broke the tension. Later, when, in the middle of his prayer, without looking at Michael, he asks, "Is he still holding the fork?" he points out the comic absurdity of the fictional context.

However, while humorous, these examples are an appeal for identification, rather than a frame switch.

It is later in his prayer that exemplifies Burke's comic frame, beginning with his recognition that "maybe we eat too much. We definitely drink too much, and we say too much without listening." First, choosing to use "we" provides an example of accountability and self-reflection that does not exist in a tragic frame. It is a reminder that all the imperfect clowns in this circus need forgiveness. Second, the appeal for listening is important. True listening requires abandonment of tragedy's scorn for some level of respect. It makes room for a view of self and others as multi-dimensional—flawed but not evil.

The prayer also plays on a communal theme by professing gratitude for being welcomed to the Berzatto home, invoking the age-old mandate of hospitality. In this way, perhaps Stevie disrupts the guilt-redemption cycle before his own sacrifice. Perhaps, through an invitation for identification with the whole of humanity, his prayer achieves persuasion and a momentary transcendence of hierarchy entirely. He reminds the family, "we only get to do this tonight one time." A focus on the fleeting nature of time is a call to mindfully exist in a shared present. It is a reminder of the sacred within the otherwise secular address:

You guys have been so kind to me. I'm so grateful that you make space for me at this table and make time for me at the holidays. May God bless us and keep us safe in the new year, and please give Michael the strength not to throw that fork. Amen.

The eloquence of this act is stunning and transformative. Unfortunately, even when the sacrifice is successful, Burke reaffirms that the inevitable nature of hierarchy means the release of guilt is only ever temporary. In this scene, the spell is broken all too soon, when Carmy's mother follows the prayer with a wine-fueled emotional breakdown. As it turns out, she identifies the ultimate scapegoat within the scene: Carmy and Michael's sister, the sweet Natalie "Sugar" Berzatto. Natalie commits the "sin" of inquiring whether her clearly unhinged mother is alright, thus becoming the target of the matriarch's rage. The truce that had been conjured by the prayer evaporates, and the family erupts anew. The question she posed to her mother was motivated by sincere, and perhaps warranted, concern. However, it had been asked too many times. Regardless of her intentions, Natalie was faulted by all for disrupting the delicate balance that kept quiet her mother's rage. In response, her mother leaves the room, only to bring the scene to an end with her surprise re-entrance, which she makes by driving through the living room wall. Whether

this is intentional or accidental seems beside the point. The dinner, a product of hours of labor, a symbol of tradition, a celebratory event, and a meal meant to unify as much as satisfy, is left uneaten.

To be clear, however, the communication acts of the characters only serve as fictional examples of Burke's ideas as they have been discussed in the retelling of this scene. I argue it is because these scripted interactions align with Burke's observations, that they feel authentic and believable to viewers. While the interpersonal interactions can illustrate the dimensions of the dramatic pentad, the characters themselves are not the ones exercising agency in terms of the present rhetorical analysis. Instead, the symbolic act is the scene itself—the way *The Bear's* audience is asked to view and identify with those characters to derive meaning.

The *agent* of this act would be the show's creator and episode director, Christopher Storer, whose *agency*, exercised through narrative and cinematic devices of television, is both empowered and restrained by the medium. The *scenic* aspect of the artifact relates to the cultural context that surrounds the show—the social landscape it exists within and shapes by its existence. This context is always historical, political, and hierarchical because it is a dialogue between the fictional world and the one its viewers inhabit. In this sense, it is particularly noteworthy that the show has been so widely viewed and critically lauded, evidence of its success at capturing something that resonates in this moment.

Finally, Burke would emphasize that no symbolic action is performed without motive. Beyond the achievements of entertainment, profit, and awards, there must be *purpose* behind telling these specific stories, presenting these particular characters, and delivering these distinct lines. The characters are quite literally and intentionally framed for the audience—perspectives, and judgments forced by the camera lens. The show is a product of thousands of scripting and directorial choices, each motivated to direct audience attention and guide understanding of a message.

Burke prompts us to consider that motivation and intended meaning, as revealed by the way the audience is asked to view and judge the characters on screen. He would ask what this scene and series have to say to and about the culture that surrounds them. What consciousness or tools of engagement does this symbolic act provide its viewers? Burke's discussion of guilt-purification-redemption cycles leads to another question. What is the audience guilty of that *The Bear* works to resolve through this piece of fiction? First, through its spotlight on addiction, anxiety, and hegemonic masculinity, the show illuminates the collective guilt of the culture we inhabit to adequately face these issues. However, I argue that the prayer in this scene



reveals a more fundamental sin: the predilection for a tragic orientation to conflict, which underlies and intertwines with these social ills we fail to solve. By asking its audience to confront the violence and trauma of the tragic perspective, *The Bear* advocates for a comic-frame shift. It suggests its viewers reject binary understanding for nuance and demonization for humility.

First, the show is largely a reflection of anxiety. The “Fishes” episode itself is a flashback explanation of a panic attack Carmy experiences in *The Bear*’s present timeline. Throughout the episode, the audience is made to identify with his desire for validation and affection and to wince with him at the cruelty on display. We see anxiety take root in the fertile soil of family tragedy and how it reaches across time and contexts. For instance, anxiety is visceral in many aspects of the larger series. It is portrayed in the deafening storm of a kitchen during restaurant rushes, and in the (sometimes) quieter chaos of navigating interpersonal relationships. Anxiety runs through the show, as present and tangible on the screen as the actors. The pacing, cinematography, and soundscapes all reinforce an undercurrent of collective anxiety understood by a post-pandemic audience.

Second, *The Bear* explores the guilt and anxiety that is both inspired and stifled by traditional views of masculinity. By openly depicting Carmy’s emotional scars, the show implicitly complicates a hegemonic definition of manhood, which would silence these struggles behind stoicism. However, this scene also makes the concept of masculinity quite explicit. Michael embodies an orientation of dominance in sharp contrast to Carmy’s vulnerability and Stevie’s perceived softness. In the dinner table show-down, Michael’s hierarchical alpha-male aggression is exhibited in numerous ways, among them the labeling of his mother’s boyfriend “a pussy” for flinching. He subordinates Stevie as well, who even noted in the prayer: “I’m not gay like you guys asked a lot.” This focus on masculinity in the scene is telling, because a binary definition of manhood and the traditional veneration of dominance foster a view of conflict as purely competitive, antagonistic, and zero-sum. This view paints conflict as combat. It is the creation of enemies and villains through the focus of a tragic frame.

This view of conflict is not Michael’s alone, just as his fictional gender enactment is not performed in a vacuum but the product of social expectations. The guilt of tragedy belongs to the audience as much as to Michael—more so, in fact. The characters in *The Bear* are merely projections of the real-world hierarchies and divisions we have constructed and upheld through our own symbolic actions. The confrontations and violence in this scene, and the orientation to the conflict they expose, only reflect the landscape we inhabit. This landscape has unequivocally become more

polarized over the last several decades (Carnahan et al., 2022; Lu & Lee, 2019). Burke's observations about the power of victimage to create group unity are reinforced by researchers who have explored group dynamics through social identity theory (Fan et al., 2022; Jennings, 2019; Kim et al., 2018) and intergroup threat theory (Lin & Haridakis, 2022; Riles et al., 2020). They illustrate that groups, like hierarchies, are inevitable, but because people derive meaning and aspects of personal identity from group membership, biases toward in-groups and against out-groups are a natural consequence of the need for a positive self-image. Their findings mirror Burke's ideas, that through the division of outside others, internal cohesion is established and strengthened. Burke would also note that divergent priorities and ideologies make tension inescapable, but viewing opponents as threats (through a tragic frame) removes incentive for interaction and cooperation. This sets the stage for affective polarization, a situation in which group biases solidify into hatred and impact the way we engage with people, information, and ultimately, conflict (Carnahan, et al., 2022; Jennings, 2019).

While the series does not address politics or polarization specifically, the turf war depicted in the scene certainly mirrors the partisan tribalism that defines this cultural moment. Just as the fictional guilt of the scene's confrontations was experienced by all present, *The Bear's* audience understands its own real-world failure to reshape the affect-charged landscape we inhabit. We recognize the communal failure to engage with conflict more productively. The intensification of rhetorical violence and dehumanization in our political arena is a violation of norms and a collective sin that seethes under the surface of lives that used to feel much less political. To what degree are we implicated in the normalization of animosity and contempt that threatens the disintegration of our social fabric and institutions? This scene demonstrates that a view of conflict as purely competitive, whether inspired by masculine dominance or inter-group animosity, is not only a tragic frame but a dysfunctional one.

However, this is not the only view available, as Stevie's prayer reminds us, with the line: "Bears are aggressive, but they're kind. They're sensitive." This scripting, an obvious reference to the Berzatto family, offers permission for kindness and sensitivity to coexist with masculinity. It can be seen as another plea to turn away from vitriol and tragedy. The would-be scapegoat closes his speech with his own explanation of the Feast of Seven Fishes: "Tonight we're going to eat seven fishes. Which is absurd. But we have to take extra time to do it. We have to chew more. *Listen* more." Listening might be the beginning of a comic-frame shift for conflict. Listening is an act of acknowledgment, which affirms the humanity of the speaker. It is the antithesis of contempt

and vilification. Listening's stance of curiosity is fundamental to grappling with the impact of hierarchical definitions and healing emotional wounds. This is a quiet kind of power. In the only part of the speech that can be seen as a prayer, Stevie asks God to "give Michael the strength not to throw that fork." This request calls for an alternative understanding of strength, one that does not rely on dominance. It trades aggression for reflection. The prayer's eloquence is its illustration of this type of power: visceral but not violent. It achieves a fictional redemption for the characters, reveals the motivation and meaning of this scene as a symbolic act, and asks its audience to confront the communal guilt of our cultural default for tragic victimage.

## IMPLICATIONS

A Burkean analysis of this scene reveals its rhetorical significance: the societal transgressions it reflects for *The Bear's* viewers. The tools Burke provides illuminate the human drama of symbol use, and his observations of social dynamics and structures, of guilt and inevitable conflict, reverberate through the series. The contemplation of guilt could not have more relevance to this scene about a family holiday meal. Guilt, as if part of the actual definition of "family," is always attached to even the best familial relationships. It is part of the contract and often intensified by the desire for holiday perfection.

Applying the work of Kenneth Burke to *The Bear* shows both the inevitability and the momentary transcendence of hierarchy. While conflict is unavoidable, built into humanity's use of symbols, methods for engagement can vary, just as a symbolic sacrifice can be achieved with or without contempt. This show asks its audience to gaze at violence and to experience anxiety, cruelty, dominance, and destructive conflict. However, it does so to remind us of our participation, our guilt, and our choice in perception. It exposes division and dysfunction to remind us of connection. The prayer in this scene holds up a comic frame. This frame asks viewers to reexamine the notion of conflict and to recognize the collective fault of tragedy. This frame directs viewers to listen—to create understanding instead of villains. On this point, it seems *The Bear* and Burke agree.

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# From Pirate Physicians to Physician Assistants: An Exploration of Emergency Medicine on the High Seas

**Michaela Lucas**

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## *Abstract*

Using over sixty primary sources and thirty figures, this piece submerses readers into the thrilling world of roguish barber surgeons and pirates, set in the broader medical landscape of the 17th and 18th centuries. Place yourself in the shoes of the sea-faring barber-surgeon apprentice, and learn directly from the words of history's most famous pirates and barber-surgeons about both the treatment of traumatic injuries and the hardships of life on board. Opening with a historical backdrop, the first several sections provide vivid descriptions about life and medicine in this golden age of piracy and privateering. The history and varying experiences of the barber-surgeon are elaborated, with added comparisons drawn to modern practitioners. The adventures of several buccaneer-surgeons are recounted, followed by explicit, exciting, and humorous explanations of surgery and medicine during the golden age of piracy. These sections entail full coverage of the treatment of everything from syphilis and scurvy to bullet wounds, bites, burns, and of course—amputation. Throughout the entire work, ties to modern procedures will be made, sure to foster a great appreciation of medical advancement. The final sections of this article will expand on medical advances from the age of sail and onward, focusing on the milestone discoveries that have led us to where we are now in the field. The piece will conclude with a discussion on the history of the physician assistant, the position's importance, and its intimate ties to the now-antiquated barber-surgeon. I would like to acknowledge the aid and inspiration provided to me by Distinguished Professor Dr. John F. Chuchiak.

*Keywords:* Piracy, the golden age of piracy, surgery, sailing, modern surgical methods, historical surgical methods, medicine at sea, physician assistant history



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We have embraced a profession, wherein the least error is of consequence, since the life or death of the patient under our care is immediately concerned. Therefore, let us diligently apply ourselves to the performance of our duty, not forgetting, that we are answer-able to God and Men, for the errors we commit through ignorance, when it is in our own power to be instructed.<sup>1</sup>

## INTRODUCTION

Above is the writing of a 17th-century French sworn surgeon, senior master, eldest surgeon and demonstrator of anatomy by the name of Henry-Francois Le Dran. It was translated in 1740 by a man named J. Sparrow into the first English edition of *Observations in Surgery* directed towards “all young students in surgery.” It is clear to see that despite the great advances that have been made in science, medicine, and technology since the 17th century, the heart of why medical personnel devote themselves so wholly to their practice remains at a steady beat. Regardless of what position in the medical field a person decides to pursue, they have the imperative responsibility to care for their patients to the absolute best of their abilities and beyond through continual instruction, practice, and education.

Similar to the “young students in surgery” from centuries ago, many students today also practice this responsibility as their clinical skills are developed toward desired medical positions, such as that of the physician assistant. The physician assistant, particularly one who specializes in trauma and critical care, may find this paper to be of special interest. Throughout this paper, the author will uncover comprehensive depths regarding 17th to mid-18th century understandings of health, precise methods of emergency and general medicine, surgery, and the use of prosthetics aboard ships that commonly endured combat. This includes pirate, privateering, and naval vessels, which all possess the unique combination of inherently high risk for traumatic injury alongside drastically decreased availability of supplies and surgical/medical expertise. Following these fascinating sections, culminating in the practice of amputation, medical advances from the age of sail and onward will be discussed, with particular focus on prosthetics and the development of general medical understanding as history progresses towards modernity—bridging the gap between past and present.

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1. Henry-François Le Dran and John Sparrow. *Observations in Surgery: Containing One Hundred and Fifteen Different Cases. With Particular Remarks on Each for the Improvement of Young Students.* Written Originally in French by Henry-François Le Dran of the Academy of Arts Sworn Surgeon at Paris Senior Master of That Company Eldest Surgeon and Demonstrator of Anatomy at the Hospital La Charite. London: Printed Looking-Glass on London-Bridge for J. Hodges, 1740. VI.

Throughout this paper, the author will highlight interesting connections between past and present practices, including similarities experienced by both patients and providers throughout time. This work will conclude with the presentation and defense of the theory that the modern occupation of “Physician Assistant” largely owes its existence to the unique historical circumstances experienced during the golden age of piracy, which necessitated the legitimization of the barber-surgeon as a profession, and the continuation of similar roles in medicine.

Before diving into this specialized topic of sea-surgeries, barber-surgeons, and their connection to the modern physician assistant, it is necessary to understand basic preliminary information such as historical context, terminology, and what it meant to be a sailor and a barber surgeon during what was called “the Golden Age of Piracy.” To provide the most accurate, interesting, and thorough information possible, a multitude of references, such as the *Observations in Surgery* referenced to above, have been used, giving the barber-surgeons an authentic voice of their own. Use has also been made of many secondary sources from various reputable and historically significant journals including the *British Medical Journal*, *Archives of Physical Medicine and Rehabilitation*, and *Naval Medicine in the Ages of Elizabeth and James*.

## SETTING THE SCENE: DEFINING HISTORICAL CONTEXT, COMMON TERMS, AND CREW ORGANIZATION

### *Freebooter, Filibuster, Pirate, or Privateer? Unraveling Common Terminology*

The so-called golden age of piracy, also referred to as the “age of sail,” debatably saw its height between the years of 1650 and the 1720s. The use of the term “golden age” became systematic with the writings of American philosopher and historian John Fiske, who wrote, “At no other time in the world’s history has the business of piracy thriven so greatly as in the seventeenth century and first part of the eighteenth. Its golden age may be said to have extended from about 1650 to about 1720.”<sup>2</sup> Although the picture that may come to mind of men involved in the “golden age of piracy” might look like something out of Disney’s children’s movie *Peter Pan*, not all of these men were actually “pirates” in the literal definition of the term—and surprisingly to some, not many of them sported the famous eye patches, hook-hands, and peg legs that our western world commonly

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2. John Fiske. “Chapter XVI: The Golden Age of Pirates.” Essay. In *Old Virginia and Her Neighbors*, Boston and New York: Houghton, Mifflin and Company, 1900, 339.

imagines them as having. In fact, there are many myths about piracy budding from various romanticized media sources that would be interesting to dispel in this paper, but it is outside of the topic at hand. However, despite the falsities of exaggerated myths, many men at sea did have the misfortune of accruing ghastly injuries during naval battles such as loss of eye or limb, and amputations were relatively common.

As mentioned above, the occupation of “pirate” was not the only applicable term for the rough men who made their living at sea. Outside of the criminal pirates and their often opposing mariners serving royal navies, there were several other types of maritime fighting men worth mentioning. Terms used to describe them include freebooters, buccaneers, filibusters, corsairs, or privateers. The latter term on this list, privateer, refers to a sort of “legal pirate,” which was often a gray area in actuality. For instance, examining the career of the famous English “seadog,”<sup>3</sup> Sir Francis Drake reveals that despite being a titled privateer, he was motivated mainly by personal gain and the undoubtable excitement of plunder.<sup>4</sup>



**Figure 1:** Letter of marque given to French captain Antoine Bollo, granted on February 27, 1809.

Source: *Letter of Marque*, 1809, Dalhousie Libraries Digital Exhibits, available from <https://digitalexhibits.library.dal.ca/items/show/719>.

3. The term “Seadog,” once used in a derogatory fashion to describe seasoned sailors with an unsavory character, gained popularity instead as a description of brave sailors defending England during the latter decades of the Tudor age.

4. See Robert J. Antony “Pirates of the West- Document 2: Francis Drake on the Pacific Coast of America, 1579.” Essay. In *Pirates in the Age of Sail a Norton Casebook in History*, 61–64. New York: W.W. Norton & Company, 2007. This document contains testimonies from two men who had separately been captured by Sir Francis Drake during his expeditions on the pacific coast, which are helpful in assessing Drake’s perhaps questionable motives and character during his exploits under Queen Elizabeth I.

Unlike the autonomous pirate, a privateer was an agent of his crown or country and carried with him a letter of marque as seen in Figure 1. This was an essential governmental license stating that the carrier maintains the legal right to attack and steal from those hailing from countries currently at war with his government. If a privateer was captured, having this document ready at hand often meant the difference between becoming a prisoner of war or a dead man. Unfortunately for Captain John Oxenham, the first English pirate to sail the Pacific, this lesson was learned the hard way when he was executed in 1580 by the Spanish for having stated “my sword is my license!” during questioning after capture in Lima, Peru.<sup>5</sup> The last four terms listed above are all synonyms for the word pirate, with freebooter being derived from the Dutch word *vrijbouter*, a compound word meaning “free” and “booty.” The terms buccaneer and corsair are both French in origin and can refer to either privateers or pirates. The first three decades of the golden age were dominated by the buccaneers, who preyed on the Spanish main<sup>6</sup>, whereas the corsairs hunted ships and ports in the Mediterranean. The term filibuster referred to pirates who also roamed Caribbean waters, stemming from a combination of Dutch originated word “freebooter” and Spanish word *filibusteros*, which both mean pirate.<sup>7</sup>

It is imperative to emphasize that the main difference between a pirate and a privateer stemmed from their motivation. The only objective of a pirate was to plunder whoever was weak and misfortunate enough to cross his path for the sole purpose of padding his own purse and pockets. A pirate is an outlaw not affiliated with any crown or country who will steal from anyone, including ships hailing from his own country. While a privateer often certainly hoped to gain wealth from his endeavors, his main objective was to serve as an agent of the country he was a citizen of, and would only attack vessels from warring lands. Or at least, he was supposed to.

### ***Historical Context and Hierarchy at Sea***

Now that the above distinctions have been made, a discussion on the relevant historical context, ship organization, and common crew hierarchy is appropriate. Many factors led to the social, political, and economic environment that made way for the age of sail. These began with the discovery of the vast riches within the native empires of the Americas. Christopher Columbus was the first to make contact, followed by expeditions

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5. See John F. Chuchiak, as reproduced in “Theme 11-Part 1–Sir Francis Drake & Rise of English Privateering & Theme 11-Part 2–Later English Privateers–The Sea Dogs.” *History of Piracy in the Americas*. Lecture, n.d. Accessed November 2023.

6. The Spanish main refers to the Pacific and Caribbean coastlines of Central America.

7. See Douglass Harper. “Freebooter (n).” *Etymology*. Accessed November 23, 2023. <https://www.etymonline.com/word/freebooters>.

led by Hernan Cortez and Francisco Pizarro of Spain. Each of these men and their parties successively pillaged more and more treasure from these lands. These “treasures” came in many forms including exotic animals, materials, gemstones, and tribal Caribbean natives such as the Tiano and Arawak gathered against their will. However, the vast majority of material claimed in the name of colonization was in precious metals such as silver and gold, which were at the time in low supply across Europe. With each return, heavily laden with egregious amounts of wealth truly unimaginable in previous times, they dazzled their kingdom. Not only did they amaze their own king, but jealousy was also ignited in nearby countries such as England, who wanted their own fair share of the new world’s treasure. Conflict arose between Spain and these other countries, and piracy began to see its rise as irresistible collections of monies and materials were shipped back and forth along routes of the Spanish treasure fleets. This violence and looting was famously encouraged by Queen Elizabeth I, who used privateering efforts as a way to harm Spain.<sup>8</sup>

Tensions reached their boiling point during the Anglo-Spanish War. Unfortunately for England and the countries it collided with, wartime would continue into the Anglo-French war, three separate English civil wars, and the Anglo-Dutch war. However, it was actually the eventual peace between these countries that contributed most to the rise in outright piracy. Thousands of young men previously employed in British navies and as legal privateers suddenly found themselves with nothing to do. This, combined with global inflation, made for a very unsavory living situation on land. Many young men saw a life at sea as a pirate, privateer, or some combination of the two depending on the political conditions, as an attractive alternative. This lifestyle offered freedom and adventure, the possibility of glory, and acquisition of valuable newfound knowledge and skills in addition to much needed money. For the laid-off privateers mentioned, piracy was a chance to continue in the only lifestyle and livelihood familiar to them. Life aboard a pirate ship also offered an appealing chance to experience democracy and benefit from equal shares regardless of one’s class or color. Effects from judicial leniency in dealing with pirates were also at play. As stated by Poier, “While from abroad the activity of pirates was perceived just as criminal and harmful for commerce, for those who were facing piracy on an everyday basis—governors, merchants, and people in the colonies—collaboration with pirates was, most of the time, a fruitful deal.”<sup>9</sup> Piracy became difficult

8. For this reason, Queen Elizabeth earned the epithet of “The Pirate Queen.” See Susan Ronalds. *The Pirate Queen: Queen Elizabeth I, Her Pirate Adventurers, and the Dawn of the Empire*. 1st ed. New York, NY: Harper Collins Publishers, 2007.

9. See Salvatore, Poier. “Hostis Humani Generis. History of a Multi-Faceted Word.” *Darkmatter Pirates & Piracy*, no. 5 (2009): 39–52.

to eradicate when it benefited the colonies belonging to the world powers who were the only ones capable of collaborating to destroy it. Thus, the culture and lifestyle of piracy continued to flourish, as it became increasingly organized and independently recognized by society until the era's conclusion when the risks of piracy began to outweigh the rewards.

Whether a ship belonged to pirates or privateers, smooth sailing, in both the literal and metaphorical sense, necessitated organization on board. This organization was hierarchical in nature, with the lowest rank that of a slave or cabin boy, also called a "page." Apprentices were young men who had not yet mastered any sailing abilities and were learning the tricks of the trade. Apprentices were similar to pages and slaves in that they completed much of the unwanted labor onboard such as climbing the yard to furl sails, serving as lookouts and powder monkeys, keeping watch, or loading and unloading heavy cargo.<sup>10</sup> After enough experience and reaching the age of 20, apprentices could become sailors who served to handle the steering and rigging of the ship, or were assigned to many other diverse jobs based on experience. Gunners were expert sailors who specialized in artillery. They were responsible for understanding the very complex weaponry on board, how and when to use the various types, how to catch and correct malfunctions, and of course, operating the cannons during battle. Pilots, also called sailing masters, were indispensable, often incredibly experienced sailors to which the duty of navigation was entrusted. If this man failed, it was unlikely that the ship would ever make it back to its home harbor. Other labors on board included caulkers, carpenters, cooks, tailors, divers, sailmakers, smiths, musicians, hunters, and more. The list of servicemen can become quite lengthy when one considers that a ship undertaking long voyages effectively needs to operate as a self-sufficient society at sea. English explorer and pirate William Dampier wrote in his famous journal in 1697, *A New Voyage Round the World*, "For there was scarce any useful trade but some or other of us understood it. We had sawyers, carpenters, joiners, brick-makers, bricklayers, shoemakers, tailors, etc."<sup>11</sup>

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10. See Wilhelm Handberg, "Jobs Aboard a Pirate Ship". YouTube. *Gold and Gunpowder*, 2023. Accessed November 23, 2023. This in-depth video is exceptionally well made and goes into detail about many of the various jobs aboard a ship that are mentioned here as well as many other positions, including the cooper, linguist, striker, and landsmen.

11. William Dampier, Albert Gray, and Percy G Adams. 1968. *A New Voyage Round the World*. New York: Dover Publications. This source is an autobiography published in 1697 detailing incredible adventures during his circumnavigation, with particular celebration over explorations of Australia.



*Figure 2:* A Marooned Pirate.

*Source:* Pyle, Howard; Johnson, Merle De Vore (ed) (1921) “Buccaneers and Marooners of the Spanish Main” in Howard Pyle’s *Book of Pirates: “Fiction, Fact & Fancy Concerning the Buccaneers & Marooners of the Spani Main,”* New York, United States. <https://digitalexhibits.library.dal.ca/items/>

The general lead of the ship and crew was undertaken by the officers and captain on board. Absolute command during battle was left to the captain, who was typically elected in a democratic manner and always subject to mutiny of his crew and marooning if he was ill-mannered or uncooperative.<sup>12</sup> Captains typically carried out their objectives in conjunction with heir crew rather than as a tyrannical leader.

Demonstrations of this type of egalitarian leadership are widespread. A pertinent example can be found within European surgeon Alexander Exquemelin’s 17th-century journals, detailing his experience on board a buccaneering vessel. He states, “The captain is allowed no better fare than the meanest on board.” He also states, “The buccaneers resolve by common vote where they shall cruise ... When a ship has been captured, the men decide whether the captain should keep it or not. Everything taken must be shared among them all, without any man enjoying a penny more than his fair share.”<sup>13</sup> It is clear to see here that the idea of an authoritarian captain is in many cases another media myth. Relating this back to the modern medical world, just as our primary physicians, surgeons, and occasionally physician assistants, may serve as the “captains” of healthcare during critical situations,

12. See Rachel Rolnick. “Five Ways Pirate Ships Functioned as a True Democracy.” *History News Network*. Last modified March 1, 2015. Note that while it is commonly thought that walking the plank was the most typical pirate death sentence, this is not the case. Instead, poorly mannered pirates who violated codes of conduct would be “marooned” on an island, left only with a small amount of water and a pistol loaded with one “mercy” bullet.

13. Alexander O. Exquemelin, Alexis Brown, and Jack Beeching. *The Buccaneers of America*. Mineola, NY: Dover Publications, 2000, 71. If a true action-adventure story is desired by the reader, this book is recommended. It is a remarkable eyewitness account of the bold and many times unsettling feats executed by various buccaneer raiders such as Capt. Henry Morgan throughout Caribbean settlements in search of treasure. Fascinating details of the French presence in Hispaniola as well as features of flora, fauna, and native inhabitants are also included.

they are unable to perform their duties without the collaboration of the “crew” including dedicated nurses, technicians, imaging specialists, and many more.

Concluding the topic of paramount roles on board, the boatswain was the disciplinary head of the crew and ensured that orders were carried out effectively and efficiently. His symbols were fitting—the whistle and the whip. The quartermaster served as a liaison of sorts between the crew and the officers, conveying and addressing issues as they arose, and maintaining the civil order necessary to stay afloat. Lastly, we address the position of most importance to the current exploration—the exceptional role of barber-surgeons.

## **BUCCANEER AND BARBER SURGEONS: EXAMPLES OF THE ERA, ROLES ON LAND VS. AT SEA, AND SURGEONS TO BE**

### *Notable Buccaneer Surgeons of the Era*

Just as carpenters were expected to be capable of fixing any part of the vessel in virtually any environmental condition, barber-surgeons were likewise expected to be capable of repairing any part or system of the human body regardless of the chaotic, unclean, understocked, or dangerous surroundings. The job of a skilled barber-surgeon was an undeniably essential role to fill before any voyage could be undertaken. The navigation, defense, and upkeep of the ship at sea was an unrelenting and arduous task. If the health of the crew or command became compromised, so too would the vessel and its safe return to port. It was not uncommon for pirates, particularly those of the 1700s, to actually press-gang barber-surgeons into service if there arose a need. Despite occasionally being forced into service, these men received favorable treatment and pay. They were rewarded for their skills by enjoying a status of high regard and the best standards of living as could be expected once aboard. The following quote, spoken by the Advocate General during a case involving the trial of surgeon John Kencate, a man press-ganged into working under accused Captain Charles Harris, speaks well to the pirates’ general attitudes concerning their medicine men. “The doctor being ador’d among ‘em as the pirates God, for in him they chiefly confide for their cure and life...”<sup>14</sup> Also mentioned in this case is the fact that Kencate was “inform’d on board that he was a forc’d man; and that he never signed the articles as he heard of...”<sup>15</sup> In order to promote a shared attitude of avoiding

14. George Francis Dow, and John Henry Edmonds. “Charles Harris, Hanged at Newport.” Essay. In *The Pirates of the New England Coast, 1663–1730...*, 2nd ed. Salem, Mass.: The Marine Research Society, 1923, 303. This source includes detailed information from many official documents of the time as well as accounts of the exploits of infamous pirates such as William Kidd, George Lowther, Charles Harris, Ned Low, and many others.

15. *Ibid.*



capture at all costs, most compulsory crew members forced aboard were subsequently required to sign the articles of agreement, thereby declaring themselves a pirate subject to hang if caught. However, this was not the case for most doctors, as no one wanted the man in which they “confide for their cure and life” to be disagreeable towards them in a time of need.

There were also several instances of men who were pirates or privateers themselves who voluntarily chose to serve as the medical expert aboard their ships. Two such men were Alexander Exquemelin and Lionel Wafer. Unfortunately, neither of them proved to be reliable narrators in their recollection of surgical or medical matters, focusing more on documenting the activities of others rather than their own and leaving much to be desired about their likely dramatic experiences as acting physician during these expeditions. However, their stories provide us valuable information about some of the flora and fauna that the men encountered, tales of native peoples and their herbal remedies, illnesses and injuries common to the Caribbean area, and of course a little bit of information regarding how these men finagled themselves into such adventures as surgeons—regardless of if they were truly qualified or not.

Lionel Wafer was a Welsh explorer and surgeon who published *A New Voyage and Description of the Isthmus of America* in 1695, in which he details his adventures on, and the inhabitants of, the Isthmus of Darien in Panama—an experience necessitated by an injury acquired on board. This injury is one of many that could, and would, occur on board a pirate ship rife with artillery, gunpowder, and unruly armed men that had to be addressed by ship surgeons such as Wafer himself. Wafer recalls,

I was sitting on the ground near one of our men, who was drying of gun powder, in a silver plate: but not managing it as he should, it blew up and scorched my knee to the degree that the bone was left bare, the flesh being torn away, and my thigh burnt for a great way above it.<sup>16</sup>

It is unfortunate for everyone involved when the surgeon is the one to become injured. Wafer did his best to “apply to it immediately such remedies as [he] had in [his] knapsack” but was ultimately forced to stay behind his company. In doing so, he gained the opportunity to integrate himself into and learn from the Kuna natives, who “in a manner ador’d [him].”<sup>17</sup> These natives also helped to alleviate the pain of his injury by applying an herbal poultice to the wound until it had healed in about “twenty days.”<sup>18</sup>

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16. See Lionel Wafer. *A New Voyage and Description of the Isthmus of America: Giving an Account of the Author's Abode There...*, United Kingdom: James Knapton, 1704, 36.

17. *Ibid.*, 55.

18. *Ibid.*, 39.

One particularly interesting story recalled in his journal was how he was celebrated by the Kunas for sharing with them a more efficient bloodletting technique, returning the favor for healing his own wound. This is interesting because it shows that bloodletting, while today known to be rather counterproductive to good health, was once a very common cross-cultural (and apparently cross-continental) practice. Wafer first tells us about the Kuna method, which involves one unfortunate patient sitting naked atop a river stone while being shot at “as fast as he can” by one with a small bow, “not missing any part,” as pictured to the right. Wafer goes on to say that “if by chance they hit a vein which is full of wind and the blood spurts out a little, they will leap and skip about . . . by way of rejoicing and triumph.” One of the Chief’s wives was in need of this treatment, and Wafer demonstrated that one could simply make a small incision directly to a vein with a lancet instead, thereby greatly easing the process. The procedure went without issue and the woman’s fever subsided, making Wafer a hero among their people. He tells that he “was taken up into a Hammock, and carried on Men’s shoulders, [Chief] Lacenta himself making a speech in my praise, and commending me as much superior to any of their doctors. Thus I was carried from plantation to plantation, and lived in great splendor and repute, administering both physick [medicine] and phlebotomy [bloodletting] to those that wanted.”<sup>19</sup>

Another noteworthy buccaneer surgeon, Alexander Exquemelin, was a writer and surgeon of debatable European origin, born in 1645. He is well known for writing detailed accounts of his time buccaneering, most notably with the band of Henry Morgan in the sacking of Panama City. He had the misfortune of serving as an indentured servant to the French West India Company in 1666 and was later sent to Tortuga where his pirating adventures began. Here he was sold again, but this time his master was a barber-surgeon who took kindly to him, trained him, and subsequently released him for a fair price. Upon release, he remarked and thus explained his pirating origin, “When I was free once more, I was like Adam when he was first created. I had nothing at all, and therefore resolved to join the privateers or buccaneers, with whom I stayed until the year 1670, accompanying them on their various voyages and taking part in many important raids...”<sup>20</sup>

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19. Ibid.

20. Alexander O. Exquemelin, *The Buccaneers of America*. 15.



**Figure 3:** Indigenous method of bloodletting. Illustration by John Savage, in *Voyage de Guillaume Dampier aux terres australes, à la Nouvelle Hollande, &c. avec le voyage de Lionel Wafer*. Amsterdam, 1705, 150.  
Source: Internet Archive.

It is supposed that Exquemelin served as the barber surgeon during these exploits with Morgan, but unfortunately, he included even less information about his experience and medical observations as a surgeon than did Wafer. He focused instead on the details of his travels and the horrendous acts of violence and cruelty that the bands he sailed with would carry out against any poor soul suspected of possessing wealth. There are several supposed reasons for this, one of which assumes that he simply may not have had interest in documenting activities that he might have considered routine and thus trivial, therefore unworthy of noting. Another theory is that he may well have simply been trying to shape the style of his travel book to what was best appreciated by the public at the time. After all, he was a pirate, and thus he loved a good profit.

Without further detail from Exquemelin or Wafer, we must turn to other sources to discover the specifics of what it meant to be a surgeon of the time, both on land and at sea.



**Figure 4:** Dutch Title Page of *Exquemelin's Journal*, 1678 Edition. *Source:* Pirate Narratives and the Colonial Atlantic, Scientific Figure on ResearchGate, Figure 343596286.

### ***Two Classes of Doctors: Physicians and Surgeons***

While there has always been a need for medical experts, there developed a separation between those distinguished gentlemen who studied at expensive formal universities and treated ailments of the internal bodily systems with medicines from those who performed procedures on the external systems more akin to manual labor, such as pulling teeth, amputations, and other unsavory and typically unsanitary “treatments.” Barber-surgeons were the latter, not permitted by law to prescribe medicine and less revered than their more educated counterparts. However, for the majority of the population, it was the barber-surgeon who was the face of medical treatment rather than the physician, who held to treating only those who could afford it, i.e. nobility and other elite members of society. Therefore, the surgeon physician ratio was exceptionally skewed, with numbers dipping as low as eight physicians per 90 surgeons during the 15th century in Europe. According to German medical historian Erwin Ackerknecht, “Even in Paris, where, due to the presence of the university, the number of university-trained doctors was particularly high,

they were always outnumbered by the apprentice-trained practitioners.”<sup>21</sup> Over the centuries, this ratio began to even out, but today we are beginning to again see a rise in primary care being conducted by physician assistants and nurse practitioners in place of physicians with doctoral degrees, particularly in rural and other underserved areas. In fact, just over 50 percent of primary care providers now fall into these categories, while only 48.8 percent of primary care providers are physicians. The trend is expected to continue in this direction, with the ratio of physicians to physician assistants decreasing from 6:1 in 2019 to 4.7:1 projected in 2029.<sup>22</sup>

Focusing back on the medical environment in the 16th century and onward, there were several reasons for this overabundance of barber-surgeons, or lack thereof physicians, depending on perception. Firstly, the price of attending medical school was, and has always been, tremendously high, so much so that it is necessary to offset it with an extremely profitable income. This class of income could only be found within the upper echelon of “court and castle” society. Thus, while physicians of this era may have observed, diagnosed, or prescribed medicines to less affluent patients, many of them had developed the sense that actually performing the gruesome surgeries or other messy procedures was beneath them, and hence the practice of physically servicing the population’s ailments was left to those who were most skilled in the art of precisely handling sharp blades—the barbers.

### ***Becoming a Barber-Surgeon***

In the year 1540, King Henry VIII of England declared that the guilds of barbers and surgeons were to be merged, and so the profession was officially born.<sup>23</sup> To become a land-based barber-surgeon, a young man would apply to the trade guild and pursue work as an apprentice, as referenced above in Ackerknecht’s work. Typically, one would seek out a barber surgeon in the community and offer to serve as an assistant, responsible for menial tasks such as preparing bandages and medicines, cleaning surgical equipment, and changing dressing on wounds, much like a certified nurse assistant or patient care technician does today. Of course, he would also serve as a barber in the modern sense we are familiar with, cutting and shaving hair.<sup>24</sup>

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21. Erwin H. Ackerknecht. “From Barber-Surgeon to Modern Doctor” *Bulletin of the History of Medicine* 58, no. 4 (Winter 1984): 545–553.

22. See Bhavneet Walia, Banga Harshdeep, and David A Larsen. “Increased Reliance on Physician Assistants: An Access-Quality Tradeoff?” *Journal of Market Access & Health Policy*. U.S. National Library of Medicine, January 24, 2022. Last modified January 24, 2022.

23. Anusha Pillay. “The Barber-Surgeons: Their History over the Centuries” *Hektoen International - An online medical humanities journal*, August 11, 2023.

24. For those wondering why men did not opt to shave themselves, see Adam Perkins, “The History of Straight Razors.” *Invisible Edge*, April 5, 2023, on the history of the straight razor. Not only was this instrument foreboding to handle but was also incredibly expensive at the time. Most men had neither the time, money, nor courage to shave themselves.



**Figure 5:** The Barber's Pole. Still seen outside of some barber shops today, they were originally used as "squeezing sticks" to promote vasodilation in bloodletting procedures and to symbolize such services offered inside.

*Source:* Paul Brennan.

"Barbershop Pole," *https://www.publicdomainpictures.net*. Bobek Ltd., n.d.

Honing this skill not only helped him to master the art of careful control of a blade, but was also important to practice due to the low volume of traumatic injuries during times of peace. As he gained experience and the trust of his master, he would be allowed to assist in surgical operations. This apprenticeship was to last seven years—enough time to learn how to carry out an exceptionally wide range of procedures such as wound care, suturing lacerations, reducing fractured and dislocated bones, lancing infections, embalming, amputations, trepanation,<sup>25</sup> and treatment of venereal diseases. They were expected to be able to treat just about any condition that walked, or was carried into, their shop. The expectations imposed upon emergency primary care providers have not changed significantly throughout the centuries. Just as the antiquated barber-surgeon had to be prepared for nearly any medical situation, so too does the modern emergency room provider.

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25. "Trepanation" refers to a particularly unpleasant treatment thought to relieve one of evil spirits inflicting troubles of the mind. Several intimidating tools were used to bore a hole into the patient's skull and the wound could either be left open or, in some cases, a silver coin would be sutured in place of the bone, thought to draw out the spirits.

Sea surgeons such as Wafer or Exquemelin on the other hand often found shortcuts to acquiring their status as a surgeon, made possible by the high demand of surgeons needed aboard and situations that necessitated early licensing. For example, we know that Lionel gained experience “in service of the surgeon of the ship” on multiple journeys when he was young, both during his very first voyage in 1677 aboard the *Great Ann* of London bound for Indonesia and through a second voyage to the West Indies in 1679.<sup>26</sup> In a subsequent trip Wafer recalls a previous failed attempt at raiding Arica, a town of Peru, under the leadership of Captain Bartholomew Sharp. During this raid he received an instant field promotion despite not yet having completed his full apprenticeship. He tells, “we lost a great number of our men, and every one of our surgeons were kill’d beside myself, who was then left to guard the canoas.”<sup>27</sup>

While Wafer’s promotion was borne out of necessity, Exquemelin appears to have set out on his own accord and simply taken advantage of the opportunities at sea to hurry his training, a strategy not too uncommon at the time. Bennion tells us, “Apprentices often ran away to sea and posed as surgeons to the authorities whose only concern was to assure the crew there was a surgeon on board.”<sup>28</sup> Further, writings from British Naval Administrator Josiah Burchett support this, stating that “many of the Chirurgeons, but more especially their Mates . . . are not altogether so well qualify’d as they ought to be.”<sup>29</sup> Nevertheless, an underqualified surgeon was largely preferred over no surgeon at all, in which case the carpenter was often the man looked to for carrying out the gruesome job of amputations and other similar procedures.<sup>30</sup>

Albeit disadvantageous for the patients they treated, this method of “early application” for service at sea not only commonly provided young men with a shortcut to elevating their status and salary, but also a spectacular environment for one to quickly learn about the treatment of traumatic injuries and spread of disease. On land, there were always staggered times of peace, where the incidence of injuries requiring immediate medical attention was less consistent. On board, one could never know what the day or night might hold.

To conclude this topic, a sea-surgeon’s educational experience is summarized neatly in a 1922 edition of the *British Medical Journal*, which

26. Lionel Wafer, *A New Voyage and Description of the Isthmus of America*, 33–34.

27. *Ibid.*, 185.

28. Elisabeth Bennion. Essay. In *Antique Medical Instruments*, London: Sotheby’s publ., 198, 155.

29. Josiah Burchett, To the Reader, *Memoirs of Transactions at Sea During the War with France: Beginning in 1688, and ending in 1697* Burchett Esq; United Kingdom: John Nutt, 1703.

30. See Charles Johnson, “Captain John Philips and His Crew.” Essay. In *A General History of the Robberies & Murders of the Most Notorious Pirates*, Guilford, CT: Lyons Press, 2010, 293, for a true account of such a story, among many other amazingly true tales.

states, “The surgeons of the buccaneers probably worked by rule of thumb and gained their knowledge not from books, but from their master’s and on their own hardly won experience.”<sup>31</sup> When it came to mastering tasks such as holding a man down to slice and saw off a limb, dig out a bullet, or drill a hole into his skull, books could only convey so much. It was not only the physical task and tools involved that must be learned through experience but also the control of one’s emotional response to the agony of his patients, among other foul sights, sounds, and smells. The job of a sea-surgeon, or any barber-surgeon of this time for that matter, was certainly not for the faint of heart.

### ***Key Differences Between Land and Sea-Based Barber Surgeons***

As aforementioned, the demand of sea-surgeons made way for alternate methods of gaining fast title and experience not quite possible for those on land. While both breeds of barbers certainly spent time cutting hair, if it was a sleek new style or a close shave you wanted, you could expect to find the finest service on land. However, if record-speed removal of a lead bullet from your leg was what was required, the sea-surgeon will likely have more experience. Due to the chaotic nature of life aboard a ship, “one needed to learn a set of rules and procedures that would allow quick diagnosis and treatment. The simpler the rules and therapies, and the more certain the outcome, the better.”<sup>32</sup> This source about naval medical history also states,

Since few had much experience working under the supervision of a more practiced person, surgeons needed to learn as quickly as possible the basic rules about what to do when confronted with a particular problem, not the fine art of exercising medical judgment ... [they] sometimes had a more ‘practical’ orientation towards medicine than their civilian counterparts: they little needed to impress their captive patients with their reasoning while they had to get on with their burdensome job as simply as possible.<sup>33</sup>

Another notable difference between the barber-surgeons operating at sea versus on land is that those on board had an incredible amount of freedom in their practice, not subject to the scrutiny of anyone other than their crew and captain in most cases. This contrasted with surgeons on land that regularly had to answer to the ever-peering eyes of the company guild.<sup>34</sup> Far removed from his country and superiors, the sea-surgeon would have the utmost medical authority on board, and could freely diagnose, prescribe medicines,

31. *The British Medical Journal* 2, no. 3217 (August 26, 1922): 397–098. Accessed October 21, 2023.

32. Harold J. Cook, “Practical Medicine and the British Armed Forces After the ‘Glorious Revolution,’” *Medical History*, 1990, 15.

33. *Ibid.*

34. See John J. Keevil, *Medicine and the Navy, 1200–1900*, Volume II-1640–1714, Edinburgh and London: E. & S. Livingstone, 1957, 100.



and treat other such illness that, on land, were solely reserved for physicians of the time. This is because finding a physician willing to serve aboard was extremely rare—even among ships of the English royal navy—so the surgeons that either volunteered or were captured to serve were often called “doctor”<sup>35</sup> and left alone in their practice. They had the responsibility to perform not only their traditional duties but also that of both the physician and the apothecary<sup>36</sup> as well.

Despite several advantages mentioned above, one cannot ignore the reasons that physicians actively avoided service at sea. Sea surgeons were just as likely to succumb to the dangers of living on board a vessel with very cramped quarters, and often contaminated food and water, as their patients were. Even aboard the largest ships, the illustrious Spanish galleons, spaces were “so encumbered inside with chambers, chests, and other things that the men have nowhere to put themselves...”<sup>37</sup> It seems that regardless of the ship—although it was more likely to find superior food and facilities on board a pirating vessel rather than a state-owned privateering one—captains, passengers, surgeons, and all walks of life found themselves at mercy to the same hardships at sea. Other eye-opening passenger statements about the conditions on board these vessels include, “soon the sea made us understand that it was not a place fit for human beings, all fell seasick like dead men, and nothing in the world could make us move from one place.”<sup>38</sup> As to the meals “most of the food consisted of rotten meat, wormy bread, and fetid and poisonous other concoctions ... I preferred not to eat for the first week...”<sup>39</sup>

One can imagine the difficulties encountered in simply finding a place to sleep on board, let alone sufficient space to treat or operate on the sick and wounded. Whether voluntary or press-ganged into service, a pirates’ lifespan was around two years due to the likelihood of succumbing to injury, illness, or execution.<sup>40</sup> As famously quoted by Captain Bartholomew Roberts, also known as “Black Bart,” “a merry life and a short one shall be my motto.”<sup>41</sup> So,

35. The use of this term is significant because on land, the title of “doctor” was extremely distinguished. Barber-surgeons were not afforded this honorific, belonging only to the learned men who would not take kindly to being called anything less than, or witnessing a practitioner of a lesser status being referred to in this way.

36. Apothecaries were the third, and often questionable, entity in the triad of 17th-century medical providers. They served as pharmacies do today, sourcing and dispensing medication to those who have been given a prescription by a physician.

37. Quote from Spanish General Don Juan Artiaga, describing his experience on board in 1590. See John F. Chuchiak, as reproduced in “Theme 9—Outbound Voyage of the Treasure Fleet. History of Piracy in the Americas. Lecture, n.d.

38. Ibid, quote from an anonymous passenger in 1592 and the words of a Spanish noble woman regarding her experience of the food provided.

39. Ibid.

40. Rebecca Simon “It Cannot Be Helped: On Facing Death as Calmly as a Pirate: Psyche Ideas.” Edited by Sam Dresser. *Psyche*, April 21, 2022.

41. The full quote includes usage of the phrase “all hazard is ... only a sower [sour] look or two at choking,” in reference to the fact that when hanged, the cause of death was not by a broken neck, but instead by strangulation. The ropes used were shorter than standard, ensuring that public execution of the pirates was a slow and torturous display.

in all we can see that though sea and land based barber-surgeons may have had similar duties, the environment and frequency in which these duties were carried out could vary quite significantly, as well as the realistic educational requirements to serve. Sea surgeons more often than not lacked the space, sanitation, and supplies that those working on land were accustomed to having.

Similar to the comparison of these hardened sea-surgeons versus their land-based counterparts, the experience of a modern physician assistant practicing in a rural environment can vary significantly from one practicing in an urban setting. Firstly, it is an unfortunate reality that rural health care clinics face more challenges in providing for their patients as “the lack of proper healthcare infrastructure, human resources, equipment, and funding can reduce the quality of care.”<sup>42</sup> Secondly, just as the barber-surgeons at sea were often faced with challenges that they had to tackle alone, so too are the physician assistants and nurse practitioners striving to supplement deficits in rural health care.

It is known that “rural physician assistants report a broader scope of practice, more autonomy, and less access to physician supervision than urban PAs.”<sup>43</sup> This difference in management is most notable in the emergency department, where increased PA employment is not necessarily accompanied by increased physician supervision. A survey compiling hundreds of responses from PAs practicing in emergency departments across 44 U.S. states unveiled that, “compared to urban PAs, rural PAs more frequently managed cardiac arrest, stroke, multisystem trauma, active labor, and critically ill children,” as well as more likely performing emergent procedures such as intubation and thoracostomy, which is the placement of a flexible tube in the pleural space for purposes of drainage, lung re-expansion, and medication delivery. Notably it was also found that, 38 percent of rural PAs reported never having a physician present in the ED, which is in stark contrast to the corresponding figure for urban PAs—0 percent.<sup>44</sup> This means that more often than not, rural PAs, just like the sea-surgeons of the past, are often held responsible for covering a wider scope of practice within a more challenging environment than those operating in an urban setting.

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42. Mike Szczesny, “The Challenges of Providing Healthcare in Rural Areas.” *MedCity News*. Last modified October 7, 2023. <https://medcitynews.com/2023/10/the-challenges-of-providing-healthcare-in-rural-areas/>.

43. Brandon T. Sawyer, and Adit A. Ginde. “Scope of Practice and Autonomy of Physician Assistants in Rural versus Urban Emergency Departments.” *Academic Emergency Medicine* 21, no. 5 (May 19, 2014): 520–525. <https://onlinelibrary.wiley.com/doi/full/10.1111/acem.12367>.

44. *Ibid.*

## SURGERY AND MEDICINE AT SEA: COMMON CAUSE OF INJURY, INFECTION, AND ILLNESS

### *The Surgeon's Den and His Medicines*

The use of the word “den” in this heading is intentional. It was mentioned in the previous paragraphs that it could be vexing to find a place aboard to treat one’s patients, particularly during fierce storms or battle, when surgeons were often needed most. This place, at least according to references from the late 18th-century British Navy, was typically located in the orlop deck<sup>45</sup>, which was rear of lower decks below the waterline, thereby shielding those inside from cannon fire. These tiny rooms were often laid with sand or sawdust to prevent the surgeon from slipping in blood, and were called by the French, *Fosse aux lion*, translating to “the lion’s den.” The English preferred a less thrilling name, simply calling it the cockpit.<sup>46</sup> Though this room may have a name and standard location, it was often less than satisfactory for surgeons attempting to operate within it. Scottish sea surgeon Robert Young, working aboard a ship in the British Royal Navy, voices his opinion on the facilities available.

[T]he storeroom for his lime juice and the surgeon’s necessities was usually far too small, and that ‘for making up and keeping at hand a regular formula of extemporaneous medicines, for having everything he may want ready of access, his instruments, lint, needles, his lotions, dressings, pills’ he has no convenience whatsoever ... [T]he surgeon has every necessary article for his practice, but [he has] not conveniences for applying them with facility to use.<sup>47</sup>

Regardless of what little space was available, what can be understood from Young’s writing is that the keeping of the surgeon’s supplies was highly prioritized. Pirates such as the infamous Blackbeard, less commonly known as Edward Teach, were known to steal not only surgeons themselves but also their instruments and medicine chests, which were extremely valuable and difficult to come by. In fact, obtaining these supplies was of such great importance to Blackbeard that in the May of 1718, to the government of province in Charlestown Harbor, he “made [his] demands, threatening, that

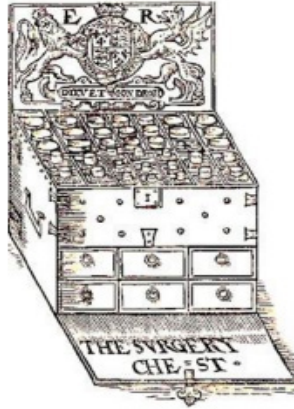
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45. For more information about ship anatomy, refer to Tobias Gibson, “Ship’s FAQ.” *Pirate Ship FAQ*, Sailing Ship Sizes and Anatomy, Diagrams, Decks, September 4, 2022.

46. John Moyle, *Chirurgus Marinus: or the Sea-Chirurgion*. 2nd ed. London: The British Library, 1702, 48. Unlike some others of the period, this book makes for pleasurable reading and contains first hand information on the duties of a surgeon at sea, methods of preparing for battle and management of the many traumatic injuries resulting from them, as well as discussion on the day-to-day ailments a surgeon commonly encounters. It is an instruction manual “to junior chirurgic practitioners, who design to serve at sea in this employ [occupation].”

47. Robert Young’s Journal, 1797–1798, quoted by Kevin Brown, “Poxed and Scurvied: The story of sickness and health at sea,” *Annapolis, MD: Naval Institute Press*, 2011, 92.

if they did not send immediately the chest of medicines, and let the pyrate-ambassadors return, without offering any violence to their persons, they would murder all their prisoners, send up their heads to the Governor, and set the ships they had taken on Fire.”<sup>48</sup> The governor complied, and “with the necessity sent aboard a chest valued at between 300 and 400 pounds...”<sup>49</sup> In today’s currency, 300–400 pounds would be valued in USD between \$83,619.33 and \$111,492.44.<sup>50</sup> It is no wonder why its successful obtention took such a great threat.



**Figure 6:** The Medicine Chest from William Clowes’s *A Profitable and Necessary Booke of Observations*, 140 (1637).  
Source: Wellcome Collection.

Further, during the trial of Blackbeard’s men, Scottish and Maritime History researcher Dr. Eric J. Graham tells of what a sailmaker who refused to carry a pistol recalled about his experience with the captain preceding Teach.

[Captain] Davis pressed him so hard to take it that the pistol went off, shooting a hole through Dr. Murray’s valuable medicine chest and breaking a number of bottles inside. For that he was brought to the mast and flogged within an inch of his life.<sup>51</sup>

48. Charles Johnson, “The Life of Captain Teach.” *A General History of the Robberies & Murders of the Most Notorious Pirates*, 44.

49. Ibid.

50. See Eric W. Nye, “Pounds Sterling to Dollars: Historical Conversion of Currency.” Currency Converter, Pounds Sterling to Dollars, 1264 to Present (Java). <https://www.uwo.edu/numimage/currency.htm>. Available on this interactive spreadsheet is a very thorough historical and mathematical explanation of how this conversion system was derived.

51. Eric J. Graham “Seawolves: Pirates & the Scots,” Edinburgh: Birlinn, 2005, 117.

It is also recorded that in 1628 “the crew of the HMS Rainbow actually deserted from the ship because it had become known that the medicine chest was empty.”<sup>52</sup> Today, much is known about the contents of the medicine chests, due to the work of John Woodall, appointed by the East India Trading Company in 1612 to the position of Surgeon General for the purpose of standardizing medical care at sea.<sup>53</sup> In fulfilling his duty to the company he made two great contributions: one of which being the writing of England’s first sea surgeon handbook, *The Surgeon’s Mate*, and the second being the subsequent standardization of medicine chests to be supplied as described in his book.



**Figure 7:** A medicine chest diagram. John Woodall, *The Surgeon’s Mate*. Discovering...“ye method and order of ye surgeons chest, ye use of instruments, the vertues [virtues] and operations of ye medicines, with ye exact cures...” 73.

Source: Wellcome Collection.

Woodall’s work not only categorizes each of 160 distinct medications and their use but also their designated location in the multi-layered chest, as seen in the image above. Medications of the time were typically categorized as either simple or compound, with simple medications being derived directly from one natural element or another, and compound medications resulting from careful mixture and preparation by apothecaries. Most of the medications described in this chest are compound, which had longer preservation rates, but some simple medications would be gathered at various stops along the way. New herbal remedies were also occasionally discovered when interacting with native peoples, as was the case with Lionel Wafer in the

52. R. S. Allison, “Chirurgion: Look to the Wounded.” *Journal of The Royal Naval Medical Service* 76, no. 1 (1990): 15–24. <https://doi.org/10.1136/jrnms-76-15>.

53. Kevin Brown, “Poxed and Scurvied: The story of sickness and health at sea,” 36.

healing of his burn wound.<sup>54</sup> Overall these medications came in many forms, including syrups, powders, salts, gums, lozenges, and even jellies. Many of these medicines were kept in square-bottomed glass jars,<sup>55</sup> specially crafted to be more resistant to breaking during a tumultuous voyage. The medicines were used to treat both bodily damage and disease, and although anesthetics were not common, Woodall's chest does include a limited amount of very expensive early-form opiates such as laudanum and diacodium.<sup>56</sup> While the medicine chest may have been said by many to hold within it the key to life and death itself, there were also several other notable objects in any suitable sea-surgeons' possession, and specific arrangements of his quarters. Moyle describes,

In merchant-men the chyrurgeons place is usually in the Cable teer [tier] between decks, but in Men of War 'tis in the hold abaft [behind] the mast, between that and the bulk-head of the cockpit from side to side. In this place you must have two chests to set your wounded men on to dress them. And at the corner of the platform you are to place two vessels, one with water to wash hands in between each operation, and to wet your dismembering bladders in, and for other services; and the other to throw amputated limbs into till you have opportunity to heave them overboard.<sup>57</sup>

This description not only allows the reader to further visualize the organization of the surgical chamber, but also the frequency at which traumatic injuries necessitated amputation onboard, considering that there were vessels designated to hold what was later to become chum in the water, no doubt making a “man overboard” situation all the more dangerous for those unfortunate enough to teeter off the edge of a careening ship.

### ***Causes of Illness, Infection, and Injury: What Surgeons Commonly Witnessed***

It is of no surprise to learn that on board a seafaring vessel of the time, cleanliness was not a top priority for most crew members. Thus, unfortunately for the ship's surgeon, a host of relentless factors worked against his every effort to keep them healthy. First was the lack of bathing and personal hygiene—causal agents of rampant viral, parasitic, and bacterial

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54. See “Drug Production in the Seventeenth Century.” *National Parks Service*, February 26, 2015. <https://www.nps.gov/jame/learn/historyculture/drug-production-in-the-seventeenth-century.htm>.

55. John Moyle, “The Eighth Direction, Concerning the preserving of Medicines good when they are at sea,” *Chirurgus Marinus: or the Sea-Chirurgion*, 41.

56. No longer used today due to inherent risks of addiction and overdose, these powerful painkillers were derived from mixtures of poppies and sugar. Opium was known even in this time period to be dangerous. Diacodium would be administered first, followed by laudanum only if necessary. As a result, most patients were considered fortunate to receive “a spoonful of cordials” (alcohol) as a means of subduing the pain they experienced when under the surgeon's knife—or sawblade.

57. John Moyle, *Chirurgus Marinus: or the Sea-Chirurgion*, 1693, 48.

infections. Second, the unavoidably cramped and contaminated environment made treatment nearly impossible. Third, the often-questionable supply of food and water.

Today we recognize regular bathing as a staple of good health, keeping at bay not only unpleasant odors but also many types of endemic external conditions such as bacterial infection. Unfortunately bathing was not a common activity and was enjoyed, even by the elites of society, at most only a few times per year.<sup>58</sup> Those at sea who did partake in bathing typically did so for a steep price at small establishments on shore, often with infused herbs as a special treatment when sick.<sup>59</sup> At sea, however, bathing was almost entirely unheard of and, at best, consisted of a brief swim, as any water on board was reserved for drinking; survival was prioritized over smell.

Despite the inevitable congealment of many weeks' or months' worth of dirt, sweat, and grime, sailors had extremely limited options when it came not only to washing themselves, but also to washing their clothes. The technique was the same as bathing. Dirty laundry was dunked into the seawater and hung to dry. If this did not do the trick, one could change their clothes from an extremely limited supply within their sea chest, or as many pirates did, simply steal a new set of clothes and hope they fit. If a man did not have these options, he would remain in his original set of clothes, whether damp or dry, and wait for the next opportunity to change. This mixture of humid, hot, and dirty skin made for a bacterial paradise, and many men at sea were commonly stricken with such infections. Woodall writes,

Another cause of disease to the ordinarie sort of poore men, is want of fresh apparel to shift them with, which indeed amongst poore Sailers, especially a sort of them that are carelesse and lazie of disposition is too frequent, partly also by the not keeping their apparel sweete and dry, and the not clensing and keeping their Cabins sweete, this also ingendreth and increaseth infection.<sup>60</sup>

Although fresh water was reserved in large casks for drinking, it was not always so “fresh,” hence why so many pirates preferred to drink liquor instead.<sup>61</sup> Water was collected from land sources and rain when possible,

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58. For example, King Louis XIV was known to have only bathed twice in his life. See Hadley Meares. “Naked Cooks, Excrement, Rats: The Secretly Disgusting History of Royal Palaces.” *History.com*, July 30, 2019, for more on the hygiene, or lack thereof, within esteemed royal courts. Apparently, there was more to owning multiple estates than simply exercising one’s marvelous wealth. Royalty of the time—and their entire household—often moved from estate to estate to escape the annually accumulating excrement. Thus, while a ship was certainly filthy, the conditions on land weren’t exactly clean either.

59. William Dampier. “The Women of Santa Hellena.” *A New Voyage Round the World*, Oxford University: J. Knapton, 1699, 548. These special baths were thought to aid in treating scurvy.

60. John Woodall. “The Causes of the Scurvie.” *The Surgeon’s Mate or Military & Domestique Surgery...*, London: printed by John Legate, for Nicholas Bourne, and are to be sold at his shop at the south entrance of the Royall Exchange, 1655, 162.

61. See Anna Claybourne, Essay. In *Pirate Secrets Revealed*, 16. Mankato, MN: Capstone Press, 2010.

which was not as often as a man aboard may have hoped. Many died from heat exhaustion, dehydration, or cholera from putrid water. Delirious and dehydrated men turned to desperate sources such as drinking their own urine and salt water. Such was the unfortunate case of Captain Bartholomew Roberts and his men during their long journey from Africa to South America. Johnson states,

They continued on their course, and came to an allowance of one single mouthful of water for twenty-four hours; many of them drank their urine, or sea water, which, instead of allaying, gave them an inextinguishable thirst that killed them.<sup>62</sup>

While serving aboard *The Hope of Rotterdam* during a 17th-century whaling expedition, surgeon Johann Dietz describes the state of the crew's water cask as "containing water that was often stinking and full of little worms, for the general drinking."<sup>63</sup> This water, "full of little worms," often led not only to suffering the "flux" (diarrhea), but also of what is now called dracunculiasis, or, "the guinea worm disease."<sup>64</sup> This parasitic infection is caused by drinking water containing fleas that are infected with guinea worm larvae. Over the course of about a year the worm grows inside the body until eventually making its way out, typically exiting from a lower limb. Once discovered to be underneath the surface of the skin, carefully extracting the worm was the job of the surgeon. Merchant captain Alexander Hamilton describes these worms as being "no thicker than the treble string of a violin, and I have seen of them, after they have been pulled out, about two foot and a half long."<sup>65</sup> This is just one of many parasitic infections that surgeons faced during long voyages. Other challenges included infestations of intestinal worms, bedbugs, fleas, lice, mosquitoes, weevils,<sup>66</sup> and maggots. As a final note on the dismal state of cleanliness, Dietz further describes his particular frustrations with the infestation of disease-laden "vermin," the rats.

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62. Charles Johnson, "The Life of Captain Roberts," *A General History of the Robberies & Murders of the Most Notorious Pirates*, 169.

63. Johann Dietz, and Bernard Miall, *Master Johann Dietz: Surgeon in the Army of the Great Elector and Barber to the Royal Court*, London: Allen & Unwin, 1923, 128.

64. See Sandy Cairncross, Ralph Muller, and Nevio Zagaria, "Dracunculiasis (Guinea Worm Disease) and the Eradication Initiative." *Clinical microbiology reviews*, April 2002, for more on this condition.

65. Alexander Hamilton, *British Sea-Captain Alexander Hamilton's A New Account of the East Indies*, 17th-18th Century, Lewiston, NY: Edwin Mellen Press, 1727, 49-50.

66. Mark Kehoe. "Parasites and Their Treatment" *The Pirate Surgeon's Journal: Golden age of piracy Parasites and their treatment*, 5. Visit this page to learn about the many types of parasitic infections and their management by the surgeon.



I had more than enough to do already, what with tending the ship's crew, patching my clothes and washing my linen; doing, in short, what one must do for himself if he wishes to keep himself free from vermin, which are terribly numerous and are always running up the masts.<sup>67</sup>

If a pirate was fortunate enough to escape the fate of succumbing to parasitic infections or other illness from foul food and water, his next obstacle was avoiding venereal disease, which ran rampant at the time. Pirates were not known to be wise with their earnings—most spending it all on gambling, drinking, and harlotry. If the symptoms of diseases such as pthiriasis, syphilis, and gonorrhea were not enough to deter men from their sexual iniquities, perhaps the treatment thereof was. Using a metal syringe as seen in Figure 8, a mercury solution would be injected into the urethra. This treatment was more detrimental than anything else, and some sources<sup>68</sup> even suggest that the erratic behavior of the pirates could have been attributed either to altered mental status resulting from various fevers and infections, or the common use of mercury, a toxic heavy metal, to treat them. Historically, mercury has been used to treat an incredible variety of ailments, including not only syphilis but also leprosy, mood disorders, constipation, parasites, facial paralysis, influenza and many more. Mercury's popularity as an elixir of sorts stems from its diuretic and cholagogue<sup>69</sup> properties. Mercury, when prescribed in toxic doses, induces excessive salivation and biliary secretion resulting in black stools. Both of these functions were thought to aid in evacuating problematic humors, thereby ridding the body of the substances causing the ailment.<sup>70</sup>

It would not be proper to conclude a discussion on the most common illnesses that sea surgeons combated without including the disease “estimated by shipowners and government to cause a 50 percent death rate for sailors on any major voyage—scurvy.”<sup>71</sup> Award-winning non-fiction author Stephen R. Brown also notes in his publication on this terrible disease that “historians have conservatively estimated that more than two million sailors perished from scurvy during the age of sail.”<sup>72</sup>

67. Surgeon Johann Dietz, *Surgeon in the Army of the Great Elector and Barber to the Royal Court*, 1923, 129.

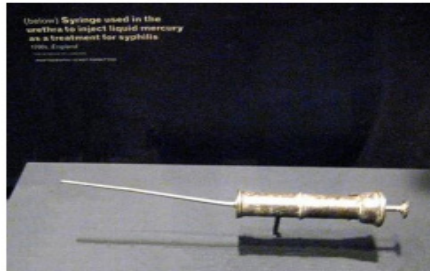
68. See John Frith “Syphilis – Its Early History and Treatment until Penicillin and the Debate on Its Origins.” *Journal of Military and Veteran's Health* 20, no. 4 (December 1, 2012): 49–58. <https://doi.org/https://doi-ds.org/doi/10.2021-47955651/JMVH> Volume 20 No 4.

69. A cholagogue is an agent that stimulates the flow of bile from the gallbladder into the duodenum, which is the beginning of the small intestinal tract. Once in the intestines, bile aids in both the digestion and absorption of fats and vitamins from food, while also helping to remove waste products such as bilirubin, a potentially toxic byproduct of red blood cell degeneration.

70. Meiling Zhao, Yi Li, and Zhang Wang. “Mercury and Mercury-Containing Preparations: History of Use, Clinical Applications, Pharmacology, Toxicology, and Pharmacokinetics in Traditional Chinese Medicine.” *Frontiers in Pharmacology*. U.S. National Library of Medicine, March 2, 2022. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8924441/>.

71. Stephen Brown, “Scurvy: How a Surgeon, a Mariner, and a Gentleman Solved the Greatest Medical Mystery of the Age of Sail”, *UK: History Press*, 2021, 3.

72. *Ibid*, 34.



**Figure 8:** A urethral syringe on display at the Smithsonian Museum.

Source: Mark C. Kehoe, “Venereal Disease.” *The Pirate Surgeon’s Journal: Golden age of piracy*, 5.

Because scurvy is a highly preventable disease we know today to be the result of a diet low in vitamin C, we are not as familiar as we used to be regarding the utter horrors awaiting those inflicted with the condition. Thus, the following quote written by an unknown sea-surgeon in the 16th century is enlightening regarding the severity of the disease.

It rotted all my gums, which gave out black and putrid blood. My thighs and lower legs were black and gangrenous, and I was forced to use my knife each day to cut into the flesh in order to release this black and foul blood. I also used my knife on my gums, which were livid and growing over my teeth. When I had cut away this dead flesh and caused much black blood to flow, I rinsed my mouth and teeth with my urine, rubbing them very hard ... And the unfortunate thing was that I could not eat, desiring more to swallow than to chew. Many of our people died of it every day, and we saw bodies thrown into the sea constantly, three or four at a time.<sup>73</sup>

William Hutchinson, an English mariner, privateer, author, and inventor of the time goes on to say,

I pined away to a weak, helpless condition; with my teeth all loose, and my upper and lower gums swelled and clotted together like a jelly, and they bled to that degree, that I was obliged to lie with my mouth hanging over the side of my hammock, to let the blood run out, and keep it from clotting so as to choak me...<sup>74</sup>

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<sup>73</sup>. Mark Kehoe “Scurvy Treatment” *The Pirate Surgeon’s Journal: Golden age of piracy treatment of scurvy*, 1. Anonymous journal of a 16th-century sea-surgeon.

<sup>74</sup>. William Hutchinson, *A Treatise on Practical Seamanship*, Liverpool: Printed by Cowburne and sold for the author at all the principal seaports, 1777, 278.



**Figure 9:** Watercolor illustrations of scurvy symptom by Henry W. Mahon, a ship surgeon on the *Barrosa*, a British convict ship, 1841.

Source: The Science History Institute.

Most medical reference books of the time period make great mention of scurvy and various hypotheses as to what causes it. Woodall accurately theorizes in his section, “Of the Scurvy called in Latin *Scorbutum*” that scurvy is a “disease of the spleene,”<sup>75</sup> and similar to other surgeons of the time such as Moyle, the cause was related to “gross obstructions caused by vicious diet and sometimes from a too plentiful feeding on flesh or fish.”<sup>76</sup> Moyle also writes that he “never knew any man in a ship to get the scurvy, who had good wine ... and green trade, and fruits, that are seized with this temper.”<sup>77</sup> In 1705 another man, William Funnell, who was one of just 18 men to successfully circumnavigate the globe with William Dampier, wrote in his journal that “this place [the Cape of Good Hope] produces ... abundance of garden-fruit, which is very refreshing to those that arrive here sick of the scurvy.”<sup>78</sup> Though the scientific search for the cause and cure of scurvy would not be complete until the works of James Lind<sup>79</sup> were published in 1772, more than four decades after the end of the golden age of piracy, it is clear to see that the surgeons of the time were onto something and that their efforts

75. John Woodall, “The Causes of the Scurvie.” *The Surgeon's Mate or Military & Domestique Surgery*. 161.

76. John Moyle, “Chap. XXXIV, Scorbutum; Or, The Scury, with its Symptomates,” *Chirurgus Marinus: or the Sea-Chirurgion*, 180.

77. *Ibid.*

78. William Funnell, *A Voyage Round the World Containing an Account of Captain Dampier's Expedition into the South-Seas in the Ship St. George in the Years 1703 and 1704*, Amsterdam: N. Israel, 1969, 293–294.

79. See James Lind, S. Crowder, D. Wilson, G. Nicholls, T. Cadell, T. Becket, George Pearce, and W. Woodfall. *A treatise on the scurvy: In three parts: Containing an inquiry into the nature, causes and cure of that disease, together with a critical and chronological view of what has been published on the subject*. London: Printed for S. Crowder, D. Wilson and G. Nicholls, T. Cadell, T. Becket and Co., G. Pearch and W. Woodfall, 1772, for more information about how James Lind, a Scottish physician, laid out a foundation for future clinical and methodological studies in medicine.

to treat the disease, though not entirely correct, should not go unappreciated.

Modern research on this archaic disease has revealed more specifically that the signs and symptoms of scurvy are caused by three main factors, all resulting from the severe lack of ascorbic acid, better known as vitamin C. The first factor is an inability of the body to form osteoid, which comprises the bone matrix. This leads to microscopic fractures and subperiosteal hemorrhages at the ends of long bones.<sup>80</sup> The second factor is impaired fatty acid and glycogen metabolism, which decreases energy production required for cellular functioning. Third, responsible for perhaps the most attention-catching symptom, excessive “black blood,” is caused by defective collagen synthesis. When collagen structure, which comprises around 30 percent of the body’s protein, is affected, severe issues manifest in the skin, muscle, and bones. These issues include excessive bruising and cutaneous bleeding, hemorrhaging into the gums, and the loss of teeth<sup>81</sup>—nearly all of which are mentioned in the excerpts above.

Lastly, in addition to caring for the men’s internal ailments, surgeons were also responsible for treating their external wounds, which could be acquired in a multitude of ways. Most of these ghastly injuries occurred during battle and would result in a line of men waiting for their lifesaving, yet surely agonizing, time in “the lion’s den” below deck. Common traumatic injuries included lacerations from cutlasses, dussacks, smallswords, raipers, and naval dirks,<sup>82</sup> penetration from lead bullets, broken bones and dislocated joints from cudgels and falling spars<sup>83</sup>, burns from various fires, grenades, and gunpowder ignition, or even the unlikely direct hit from a cannonball. However, the most common cause of injury was not any of those previously listed. Rather, it was the hellish, high-speed cloud of razor-sharp splinters of wood and metal resulting from cannon balls<sup>84</sup> hitting the ship that often caused the crew the most bodily damage. Although from a later period, Edward Cutbush, known today as the father of American naval medicine, speaks on the detrimental effects of cannon ball splinters.

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80. Andrew Kirby, “Hypovitaminosis C (Scurvy): Radiology Reference Article.” *Radiopaedia*, May 8, 2024. <https://radiopaedia.org/articles/hypovitaminosis-c-scurvy-1?lang=us>.

81. Luke Maxfield, “Vitamin C Deficiency.” *StatPearls [Internet]*. U.S. National Library of Medicine, November 12, 2023. <https://www.ncbi.nlm.nih.gov/books/NBK493187>.

82. Craig Johnson “What Types of Swords Did Pirates Use?” *Arms & Armor*, August 12, 2022. <https://www.arms-n-armor.com/blogs/news/what-type-of-swords-did-pirates-use...> For more information about the various kinds of swords that pirates commonly brandished.

83. The word “spars” refer to the heavy wooden beams and masts supporting the rigging of a sailing vessel, each weighing many tons and thus capable of immeasurable damage when toppled.

84. Cannon balls came in several shapes and sizes, each meant to inflict a specific form of damage to the enemy. Shots ranged in weight between 9 and 42lbs, and there were even specially made bar and chain shots designed to inflict maximum damage to the ships’ aforementioned spars and sails. The maximum range that the 42lb cannonballs could be successfully shot was 1,066 meters.

Although I have noticed the general appearance of wounds from musket or pistol balls, yet these are not so dreadful in their effects, as those from cannon shot and splinters; which are by far the most common on-board ships of war.<sup>85</sup>

## A SURGEON'S SKILLSET: TECHNIQUES, TOOLS, AND TREATMENTS FOR TRAUMATIC INJURIES

Before detailing various treatment methods, it is necessary to first become familiar with the foundation of medical understanding during this time period. Without the scientific leaps and bounds of modern research and technology enjoyed by today's health professionals, the providers of yesterday were obliged to rely chiefly on cause-and-effect observations. This led to many inaccurate assumptions about health and healing, most of which were rooted in an ancient theory called "humoralism." Humoralism is a bygone medical system that divides the body into four "humors," each of which must be balanced in order to maintain proper health. The concept of humors became prominent long before the age of sail, suggested by modern historians to have originated with ancient Egyptian medicine and by the writings of ancient Greek medical theorist Alcmaeon of Croton.<sup>86</sup>

The idea was also systematically applied to medicine by Hippocrates, the "father of medicine" who lived during the Greek classical period. His work suggested that the humors were essential bodily fluids—blood, phlegm, yellow bile, and black bile. A 1923 edition of Hippocrates' *Nature of Man*<sup>87</sup> explains the basis of the humors' importance in health as follows.

Health is primarily that state in which these constituent substances are in the correct proportion to each other, both in strength and quantity, and are well mixed. Pain occurs when one of the substances presents either a deficiency or an excess, or is separated in the body and not mixed with others. The body depends heavily on the four humors because their balanced combination helps to keep people in good health.<sup>88</sup>

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85. Edward Cutbush, and Benjamin Rush. *Observations on the means of preserving the health of soldiers and sailors; and on the duties of the Medical Department of the Army and Navy; with remarks on hospitals and their internal arrangement*, Philadelphia: Printed for Thomas Dobson, by Fry & Cammerer, prtrs., 1808, 235.

86. Karl Sudhoff, and Fielding H. Garrison "Essays in the History of Medicine," New York, NY: Medical Life Press, 1926, 88.

87. Hippocrates, and Edward Theodore Withington. *Nature of man. regimen in health. Humours. aphorisms. regimen 1-3. Dreams. Heracleitus: On the universe*. Translated by William Henry Samuel Jones. Portsmouth, NH: W. Heinemann, 1923.

88. Ibid as reproduced from the W. Heinemann 1923 publication by Edward Withington & William Jones.



**Figure 10:** A 16th-century German illustration of the four humors: Flegmat (phlegm), Sanguin (blood), Coleric (yellow bile) and Melanc (black bile), divided between male and female.

Source: <https://neuwritesd.org/2014/05/01/humor-mel/>.

This was the ultimate reasoning behind now-questionable treatments such as bloodletting. Again, quoting Hippocrates, it was believed at the time that “diseases due to repletion are cured by evacuation, and those due to evacuation are cured by repletion...”<sup>89</sup> It may come as a surprise, but there are some therapies developed for the purpose of balancing the humors that are still in use today, such as cupping and sweating therapy. Both of these techniques were applied in various situations to either relieve a patient of their bad humors, or to “derivate” the humors, meaning to move them from one area, such as an infected wound, to another. Cupping therapy was done in a similar manner to what we know today, with a circular glass cup heated and then applied to the desired, and extremely variable, location on the patient’s skin. If the skin was first scarified<sup>90</sup> (making of many shallow incisions) as was done in “wet cupping,” the method could be used as an alternative to bloodletting for patients who displayed contraindications for standard phlebotomy (bloodletting).

89. Ibid.

90. Who said that an 18th-century scarification procedure couldn’t be fun? French surgeon and anatomist Dionis explains, “They make these punctures in what shape they please, ranging them next one another; some of them represent the true lover’s knot, others a heart, and others the cyphers of their mistresses names, conform to the desire of the person cupped.” See Pierre Dionis, “The Tenth Demonstration.” In *A Course of Chirurgical Operations, demonstrated in the Royal Garden at Paris ...* Translated from the Paris Edition, 2nd ed., London: J. Tonson, 1773, 473, for more on scarification and cupping practices.

Both cupping and sweating had a wide variety of uses, from treating gunshot and gangrenous wounds to burns, tumors, fevers, and even syphilis, of course along with the aforementioned urethral mercury injection.<sup>91</sup> These combined techniques resulted in excessive loss of fluids, thereby thought to release the ill humors plaguing the patient. Sweating therapy could be accomplished either by the use of medicines such as sudorifics and diaphoretics<sup>92</sup>, special foods, or simply by placing a patient near to a fire. The latter method was not employed at sea for obvious reasons. One additional option, at least when ashore, was to follow suit of William Dampier and bury a patient in hot sand. Dampier experimented by doing this to himself, being “very sick of dropsi [dropsy] ... I was laid and covered all but my head in the hot sand ... and I do believe it did me much good, for I grew well soon after.”<sup>93</sup> Surgeon John Moyle was a champion for sweating therapy, listing in his book over twenty different circumstances in which sweating a patient was advisable. These include conditions such as pain and deafness in the ears, cramp and stiffness of sinews, problems of the throat, wounds of the joints and nervous parts, skull fracture, near-drowning, and even toothaches.<sup>94</sup> Within *The Surgeon’s Mate*, speaking on the treatment of rheumatism, “or parts taken with lamenss [lameness,]” Moyle instructs,

Make way with your patient to the hot-house, and there let him be sweat and rub’d to purpose, and let the parts be cup’t, and let good quantity of blood be drawn by cupping, and do not this only once, but twice; or thrice if occasion be, for this hath been known to cure many.... ’tis reasonable that cups applied ... is more effectual than taking out of veins by phlebotomy.<sup>95</sup>

Other methods for “inanition” or evacuation of “troublesome humors,” as referred to by Ambroise Parè, include “universal” treatments “which expel superfluous humors from the whole body such as purging, vomiting, transpiration, sweats, [and] phlebotomy.”<sup>96</sup> Not included in this quote, but most certainly used in the correction of a patient’s supposedly imbalanced humors, were fontanels, which were the purposeful creation of a wound and subsequent insertion of a foreign object into it to act as a “counter irritant”

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91. See J. G. O’Shea. “Journal of the Royal Society of Medicine.” “Two Minutes with Venus, Two Years with Mercury” - *Mercury as an Antisyphilitic Chemotherapeutic Agent* 83 (June 1990): 392–395, for more information about the reasons behind mercury’s popularity as a catch-all medication during this time period.

92. Robert James, “Chap. vi. of Alexipharmics.” In *Pharmacopoeia Universalis*, London: J. Hodges, 1747, 163–167.

93. William Dampier, *A New Voyage*, 270.

94. John Moyle, *The Sea-Chirurgion*, in respective order of conditions listed; 243–4, 72–3, 238, 42, 113, 99, and 76.

95. *Ibid.*, 221.

96. Ambroise Parè, Thomas Johnson, and George Baker, “Chap. XVII. of Repletion, and Inanition, or Emptiness.” *The Workes of That Famous Chirurgion*, London: Richard Cotes and Willi: Du-Gard, and are to be sold by John Clarke, 1649, 28.

servicing to induce infection. This may seem completely illogical at first glance, but the misunderstood theory of “laudable pus as an inviolate rule of wound healing” had been established for several centuries, thus wound drainage was considered to be a “necessary process of healing.”<sup>97</sup>

Fontanels were created using a variety of menacing tools, including cauterizing irons, caustic chemicals, scissors, knives, and forceps. As with many procedures of the time, the creation of a fontanel was not a pleasant experience for the patient. There were two main types of fontanels: setons and issues. Their difference was in the type of counter-irritant used, with setons using string to agitate the surrounding tissue and issues relying on a small, round object such as a pea or seed to keep the wound open. The making of a fontanel was not considered to be a chore requiring much skill, but the exact placement thereof certainly was. French royal surgeon Jacques Guillemeau suggests in his work, *The Frenche Chirurgerye*, that a fontanel could be set “in all partes of the bodye, wherone might be applied, whe[n] onlye the agility, or actione of the parte can not ther through be hindered or hurte.”<sup>98</sup> Therefore it can be assumed that fontanels were able to be placed anywhere on the body that would not cause undue discomfort. However, not every surgeon was so considerate—17th-century surgeon and physician James Cooke thought to place a seton “in Scrotum, for Hernia aquosa.”<sup>99</sup>

Thankfully for some patients, there were cases where the fontanel did not have to be separately created. Similar to the note about trepanation the process of drilling a hole into the skull being used as a method to release one’s evil spirits, some wounds were often purposely left open, to “give vent” to any noxious humor. Medicine of the time was clearly more concerned with making a way for negative elements to come out of the body, and had not yet considered how they may have gotten in. No doubt to the relief of many patients, common use of fontanels fell out of custom within the next century, being that there were too many instances of complication, particularly when done with cauterizing irons. Even Woodall, a fontanel advocate, reluctantly admits that the “use of them in many cures is now forborne by reason the terror thereof to the patient is great.”<sup>100</sup>

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97. As reproduced in David Mackenzie, “The History of Sutures.” *Medical History* 17, no. 2 (April 1, 1973): 161–2. <https://doi.org/10.1017/s0025727300018469>.

98. Jacques Guillemeau, “What a Cauterye Is, & of the Kindes, & Differences Therof. Chap. 1.” *The Frenche Chirurgerye*, Dortmund, Germany: Isaac Canin, 1598, 39.

99. James Cooke, *Mellificium Chirurgiae: Or, The Marrow of Chirurgery*, 4th ed. London: T. Hodgkin, for William Marshall, 1685, 142.

100. John Woodall, *The Surgeons Mate*, 7.



However, the seton still finds its place in medicine today, an example being its use in the management of postoperative anal fistulotomies, remaining for several weeks and thus allowing the wound to heal while promoting drainage.<sup>101</sup>



**Figure 11:** Seton creation in the neck, from 34 of *Opera Quae Extant Omnia*, by William Fabry, 1682. Illustration by Marchionis Badensis.  
Source: Google Books Images.

Overall, regardless of what type of unfortunate condition had befallen a patient, re-establishment of humoral balance was at the forefront of the sea-surgeon's mind. As such, when presented with men who were bleeding profusely from various traumatic wounds, one of the first and most important duties of the surgeon still holds today—stop the bleed. As mentioned in the previous section, many types of traumatic injuries were common on board. The following pages will serve to explain, using the words of the famous surgeons themselves, the management of such injuries and the types of instruments typically involved.

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101. James M. Nottingham and Rebecca M. Rentea. *Anal Fistulotomy*. ncbi.nlm.nih.gov, August 8, 2023. <https://www.ncbi.nlm.nih.gov/books/NBK555998/>.

## ***Bullet and Splinter Wounds***

To be a proper pirate one must plunder. Plundering involves taking another's goods by force, with said force often taking the form of great physical violence enacted against one's fellow man by blades, artillery, and firearms. In a scene that would surely be cinema worthy, the true tale recalled in *Dow & Edmonds' Pirates of the New England Coast*, provides light to the scale of gunshot injuries resulting from two ships engaging each other "as fast as the weapons could be reloaded,"<sup>102</sup> in a fight over much-needed supplies.

Thomas Johnston was shot in the jaw resulting in several bones being removed. David Lander was shot through one of his arms and John Siccadam was shot in both of his legs. Eleazer Buck "had seven holes shot through his arms," while Richard Griffen was "shot in the ear in the fight ... the bullet coming out through an eye which he lost."<sup>103</sup>



**Figure 12:** Battle on Board.

Source: Lewis, J. Patrick (2006) "The Battle of Ocracoke Inlet II" in *Blackbeard: The Pirate King*, Washington, D.C., United States: National Geographic  
ISBN: 0-7922-5585-2.

Gunshot wounds often caused particular grievance to sea-surgeons, with Woodall advising that "wounds made by gunshots are always compound, never simple."<sup>104</sup> Treatment of such wounds, before being disproved by Paré in an accidental experiment, used to begin with "commands to cauterize them [the wounds] with the oyle of Elders scalding hot ... knowing that such a thing might bring to the patient great paine." "Paine" aside, the supposed

102. George Francis Dow, John Henry Edmonds, and Ernest H. Pentecost. *The pirates of the New England coast, 1630-1730*, New York: Dover Publications, 1996, 70–71.

103. Ibid.

104. John Woodall, *The Surgeon's Mate*, 94.

reasoning behind this was that surgeons of previous centuries mistook the skin's discoloration around a bullet wound as a reaction to poison the scalding oil was meant to both draw the poison out and simultaneously cauterize the wound.

Fortunately for the last several patients on his rounds, Parè inadvertently discovered a much more humane and effective treatment when he ran out of oil and was forced to try a new technique—application of egg yolks, rose oil, and turpentine—instead.<sup>105</sup> He states that he had trouble sleeping that night for fear that he had done his patients harm in failing to follow through with the cauterization technique. Upon the morning, he made a great discovery that the men who had not been cauterized “felt little paine, and their wounds without inflammation or tumour [swelling], having rested reasonably well in the night,” and the others who did receive the burning oil to be “feverish, with great paine and tumour about the edges of their wounds.” Parè concludes, “Then I resolved with my selfe never so cruelly, to burne poore men wounded with gunshot.”<sup>106</sup>

If cauterization was no longer the standard method, then what was? To answer this question we turn back to the instructions found in Moyle's *The Sea Chirurgion*. Like Woodall, he warns that a gunshot wound is “very dangerous” and that “the pain more intolerable than that of other wounds.” After placing the patient in the position he was in when he received the shot, “or else you will not find the bullet,” as advised by Moyle,

Here two intentions immediately offer; to stop the bleeding, and extract the loose bodies. Make a strong ligature [tie a tourniquet] above the joint to restrain blood from flowing into the wound while you extract the shot of pieces of bones. Then you are to make a probation and find the shot, and with your terebellum, or other instrument, extract it...and if any shattered pieces of bones can be got out, 'tis better done now whilst the man is hot, than it will be afterward ... make probation with your long probe; and if the shot be almost through ... cut it out on the contrary side...but if it is not almost through, but deep in, extract it with your terebellum; or if it is but a little way in, you may also get it out with forceps. Tent [leave open] the wound that the digested matter [pus] may, when it becomes abundant, have room to breathe itself out; this is kinder yet for the wound, than to keep it too close pent in.<sup>107</sup>

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105. Ambroise Parè, *The Workes of that Famous Chirurgion*, 676.

106. *Ibid.*

107. John Moyle, *The Sea-Chirurgion*, 73–77.



**Figure 13:** Instruments used in the removal of bullets, from 38 of *The Chyrurgeons Storehouse*, the terebellum under label VII.

Source: Wellcome Collection.

After the bullet had been properly extracted, the surgeon was to regularly inject warm tinctures (medicines) and dress it, managing any humoral complications that come about, such as fever. As to the “terebellum” mentioned, this was a special combination tool that simultaneously served as a probe, dilator, and bullet extractor via a small screw. The ability to screw into the bullet was possible due to the fact that smelting of lead shot before the 1900s did not include the addition of antimony, a lead hardener.<sup>108</sup> Thus the bullets were soft enough to be penetrated by the screw and removed. Despite its popularity, especially in removing bullets lodged firmly into bone or other challenging structures, the terebellum did not receive the highest recommendation. There were many tools used in the probing for, and removal of, bullets, as shown in Figure 13. Yet, despite these tools, if the wound allowed, multiple surgeons including Parè stayed fast in their belief that “the index finger is the best probe.”<sup>109</sup>

Due to the circumstances that created them, treating a lone gunshot wound was a rare occurrence for the sea-surgeon. Thus, to answer the question of triage, the process was performed in fashion not so different to that of the modern emergency room. Those with the most severe, life-

108. Lieut. James Forsyth. “Some Hints on Sporting Matters,” *The Sporting Rifle and Its Projectiles*, London: Smith, Elder and Company, 1867, 174.

109. Ambroise Parè, *The Workes of that Famous Chirurgeon*, 316.

threatening wounds were treated first, as determined by the provider. Those whose lives were not in immediate danger were constrained to endure the pain, control the bleeding as best as could be done, and wait.

### *Animal Bites and Sting Wounds*

While there were not many animals on board a pirate ship aside from rats, which were a problem of their own,<sup>110</sup> all breeds of sailors were wary of both the ravenous creatures that lurked in the waters below and the venomous snakes, spiders, and scorpions found on land when stops had to be made. There is even an instance of a seal attack; Rodgers describing in his journal that the large animal “seiz’d a stout Dutchman ... and bit him to the bone in several places, in one of his arms and legs.”<sup>111</sup> Venom aside, likely the most menacing creatures that pirates and sailors had to face were crocodiles, alligators, and sharks, all three known to stalk ships, lurking below in wait for a fresh meal dumped (or fallen) overboard. A merchant of the Dutch West India Company, William Bosman, warns in his journal,

Sharks will seize upon any man if he should be swimming in the water, so that in some places men, as they have been swimming for recreation, have had their legs bitten off and also have been carried quite away and never seen more, so that great heed must be taken to them when anyone is swimming where any of these fish are. If any person fall over-board he is infallibly dead, unless (which very seldom happens) none of these fish are near, or he is immediately helped up.<sup>112</sup>

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110. “I ... found the Palm of his hand and fingers gnawed by rats. They had eaten through the oiled cloths, and had gnawed his hand more, if he had not wakened by the trickling of his blood” These are the disturbing words of surgeon Richard Wiseman, *Of Wounds, Severall Chirurgicall Treatises*, 1676. 437 regarding one of the many problems that enduring an abundance of rats aboard created.

111. Woodes Rogers, G. E. Manwaring, and F. R. Hist. *A Cruising Voyage Round the World*, London, Toronto, Melbourne & Sydney: Cassell and Company L, n.d. First published in 1712. Reprinted in The Seafarers’ Library, 1928, 82.

112. William Bosman, *A New and Accurate Description of the Coast of Guinea*, 1705.



**Figure 14:** Sailor facing “jaws of death.” from *Chatterbox Illustrated Magazine*, published 1894.  
 Source: iStock, ID 488243454.

Obviously, there is nothing a surgeon can do if a man has “been carried quite away,” and discussion on the treatment of mangled limbs will be included in the later section, “Sutures & Lacerations,” found below. However, in the case of venomous bites, there were a few steps to be taken after symptoms such as “vehement pain, livid color, [the wound] suddenly becoming black ... heat over the whole body, trembling, delirium, [and] fainting”<sup>113</sup> appeared. Returning again to the discussion of humors, Parè explains that the goal in treating envenomated wounds is to make leave the “virulent and venenate humor” with the cure “speedily bee used without anie delaie to the bites and stings ... which may be all means disperse the poison...”<sup>114</sup> Prioritization and speed in treatment of envenomation today remains congruent with these statements. The current World Health Organization states, “health facilities should treat all snakebite cases as emergencies and give priority to assessing these patients and instituting treatment without delay.”<sup>115</sup>

There were several methods of the “cure,” with the last mentioned being in the author’s opinion by far the most interesting. Firstly, Cooke suggests that curing “consists chiefly in drawing out the venom, by Cups”<sup>116</sup> Pierre Dionis on the other hand prefers blistering, the method of purposely burning a patient in order to bring forth a blister that when cut, supposedly released ill humors.<sup>117</sup> Parè appears to favor both methods, stating in his work that “it

113. Ambroise Parè, *The Workes of that Famous Chirurgion*, 510.

114. Ibid.

115. Ibrahim Socé Fall. “Control of Neglected Tropical Diseases.” *World Health Organization*, 2024. <https://www.who.int/teams/control-of-neglected-tropical-diseases/snakebite-envenoming/treatment>.

116. James Cooke, *Mellificium Chirurgiae*, 11.

117. Pierre Dionis, *A Course of Chirurgical Operations*, 477.

is most convenient, if the part affected will permit, to applie large cupping-glasses with much flame and horns,”<sup>118</sup> and that “nothing is so forcible to disperse and retund [weaken] the venom, as the impression of cauteries . . . for a hot iron works more effectually and speedily, and causeth and ulcer which will remain open for a longer time.”<sup>119</sup> So much for resolving himself to never so cruelly “burne poore men.”

As for the more interesting route of treatment, Parè again shows his aptitude for diverse cures. He was also supportive of surgeon Stephen Bradwell’s writings, which advises another person to suck venom out of a wound—a myth that still persists today. Fascinatingly, both writers suggest that rather than having another person complete this task,<sup>120</sup> one can always use a chicken’s cloaca instead. Intrigued? Here’s how it was done. First, salt was rubbed on the poor bird’s behind, “that they may gape wider,” and then the bird’s beak would be held shut, “giving him breath but now and then, onely to keepe him alive.”<sup>121</sup> Then the cloaca would be rubbed on the wound, “for this it is though the poison drawn forth, and passeth into the bird by the fundament [anus].” Bradwell continues, “If one die, take another, and so continue until one of the creatures outlive the labour. Then may you bee sure the venom is cleane drawne out.”<sup>122</sup>

Surprisingly, there is evidence of this strange method persisting up to the 20th century. Described in the 1928 *Indian Medical Gazette*, a medical officer found himself short of antivenom and relied instead on the chicken method.

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118. Ambroise Parè, *The Workes of that Famous Chirurgion*, 511. Here, “flame and horn” respectively refer to the high temperature of the inside of the cup, and horn simply to the fact that the cups themselves were often made from those of an animal such as a cow.

119. *Ibid.*

120. Interestingly, there are no period references that denote the surgeon himself as the one who would suck out the venom, and each author makes special note to instruct that the one doing the sucking must have a clean mouth, “free of ulcers.” This hints that they may have had reservations about the safety of such a procedure, hence why the chicken may have come into play.

121. Ambroise Parè, *The Workes of that Famous Chirurgion*, 511. Note that although called a “he,” this bird was undoubtedly female. One of the requirements for the technique to work is that the bird must be able to lay eggs.

122. Stephen Bradwell, “Chapter VII: The General Method of Preventing, and Curing All Venemous Stings and Birings.” Essay. In *Helps for Suddain Accidents Endangering Life*, London: Thomas Purfoot, for T. S.; sold by Henry Overton, 1633, 43. This book is essentially a 17th-century first aid guide, complete with many fascinating cases and designed “by which for those that live farre from physitions [physicians] or chirurgions [surgeons] may happily preserve the life of a poore friend or neighbour.”

While the patient may have survived, the unfortunate fate of the chickens and scope of the procedure is stated below.

The first few chickens dropped down dead within a few minutes. From the 42nd chicken onwards, the patient stated he could distinctly feel the aspirating action of the chickens. In all 74 chickens died, 12 more were half-dead but recovered in about six hours, and the last 6 chickens lose consciousness but recovered speedily; in all 96 chickens were used ... patients are usually cured if the treatment is begun early enough.<sup>123</sup>

It is unclear, aside from the “aspirating action” vaguely mentioned above, how this method came to be accepted in medicine. Its popularity and widespread use hints at some possible truth behind the treatment and gives rise to further curiosities. These curiosities may be further investigated by additional readings<sup>124</sup> about the subject of chicken anatomy, particularly focusing on aviary respiration and the cloaca, also referred to as the “vent.”

### ***Accidental Burns and Cauterization***

Forasmuch as it often happens, that in close fights at sea men are some times burnt by gun-powder by their enemies, and by various accidents amongst themselves; I shall therefore deliver to you the most plain way of curing them. For, however people cry, it's nothing to cure a burn ... whether they are burnt by gun-powder or any other way, their cure is much alike.<sup>125</sup>

As stated in the quote above, despite the cause or the century, the cure of a burn “is much alike,” even in today’s world. We have known about the various degrees of a burn since the writings of the German “Father of Surgery” William Fabry in the early 17th century, and Moyle even refers to the use of aloe as an ointment to be applied.<sup>126</sup> The main difference in our perception of burns versus those of our piratical ancestors is that we know that the blistering of a burn is a protective measure enacted by the body, comprised of ultrafiltrate of the plasma, a fluid rich in various proteins such as immunoglobulins, cytokines, and prostaglandins that promote healing,<sup>127</sup>

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123. K. V. Kubab, “An Indigenous Treatment for Snake-Bite.” *The Indian Medical Gazette*. U.S. National Library of Medicine, August 1928. Last modified August 1928. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5235677/?page=1>.

124. See Jacquie Jacob, and Tony Pescatore. “Avian Respiratory System.” *University of Kentucky College of Agriculture, Food, and Environment*. Cooperative Extension Service, November 2013. <https://www2.ca.uky.edu/agcomm/pubs/ASC/ASC200/ASC200.pdf>; and Bell, Donald D. “Anatomy of the Chicken.” *Commercial Chicken Meat and Egg Production*, 41–58. 5th ed. Boston, New York: Springer Science+Business Media, LLC, 2002, for more information on this topic.

125. Richard Wiseman, *Of Wounds, Severall Chirurgicall Treatises...* 440

126. John Moyle, *The Sea-Chirurgion*, 13.

127. See Saurabh Gupta et al. “Role of Burn Blister Fluid in Wound Healing.” *Journal of Cutaneous and Aesthetic Surgery*, 2021, for more information about the natural purposes of a blister, and why one should not rush to “cut them.”



rather than the collection of bad humors run rampant in the absence of recently seared away good humors. In his section “Sheweth the cure of burns and scalds,” Moyle instructs the surgeon, “you have at first here a two-fold scope; that is, to mitigate the pain and fetch out the burning.” This was done by the repeated anointing of cooling ointments and oils onto the burn and “as blisters arise, cut them” to release the bad humors. Moyle further advises, “now in all your burns or scalds; you must not bind your dressings hard, but only embrocate, and spread on fine linen, and apply it loosely.”<sup>128</sup>

Turning now to intentional burns, the concept of cautery as a treatment came about with the writing of Hippocrates, who suggested using the method to treat everything from burning away hernias to opening abscesses.<sup>129</sup> However, due to its inherent brutality and “the terror thereof to the patient,”<sup>130</sup> cautery slowly fell out of favor as more humane methods such as “ligature” or the tying of tourniquets, invented by Ambroise Parè, rose in its place. It seems that one’s experience with cauterization as a patient depended greatly on the urgency of the operation, and the general empathy of the surgeon. For example, Moyle instructs that in the cure of rotten and hollow teeth that one should “heat the small end of your probe red hot, and so applying it to the hollow of the tooth to burn or sear the nerve...”<sup>131</sup> Meanwhile Hugh Ryder, a naval physician who was recognized as being in favor of a more enlightened method, was distraught at being given no option other than cautery in the emergent amputation of a ship boy’s thigh. He explains he was “forced to make use of cauterizing irons, by reason of the largeness of the vessels, from whence otherwise I might have exhausted in a few minutes his whole mass of blood, and life to have been exhausted.”<sup>132</sup> Overall, the general rule of thumb when it came to cautery was testified by Parè, “that which may bee done gently without fire, is much more commended than otherwise.”<sup>133</sup>

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128. John Moyle, *The Sea-Chirurgion*, 140.

129. Hippocrates, and Thomas Coar. *The Aphorisms*, New York: Gryphon Editions, 1994, 139.

130. John Woodall, *The Surgeons Mate*, 10.

131. John Moyle, *The Sea-Chirurgion*, 243. The full quote includes the usage of “potential cautery,” which was chemical cauterization, thought to be less frightening to the patient than hot irons...until they experienced it.

132. Hugh Ryder, *New practical observations in surgery: containing divers remarkable cases and cures*. 2nd ed. London: printed for James Partridge, stationer to his Royal Highness Prince George of Denmark at the Post-house between Charing-Cross, and White-hall, 1685, 57.

133. Ambroise Parè, *The Workes of that Famous Chirurgion*, 7.



**Figure 15:** Cauterizing tools from 448 of *The Works of that Famous Chirurgeon*, Ambroise Parè.

Source: Wellcome Collection.

### ***Fractures and Dislocations***

Strains, dislocations, and fractures were all common experiences amongst men who made their living aboard cramped, constantly-careening, and chaotic ships. The surgeon on board had to be prepared to deal with just about every imaginable variation—and complication—of these injuries. In his work’s introduction, Moyle states,

Would you take upon the office of a Sea-Chirurgion, then ‘tis meet you should rightly understand two things. First, how to fit yourself with proper medicines, instruments, and necessaries for that imploy. And secondly, how to perform your duty in your calling ... consider what accidents and distempers do most commonly happen ... to men at sea...<sup>134</sup>

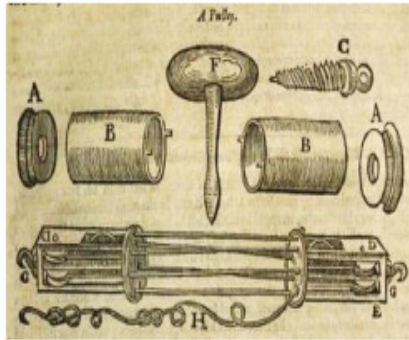
As Moyle progresses through his list, “wounds, contusions, and fractures” are at its forefront. As further testimony to Moyle’s reasoning, Hugh Ryder, the physician mentioned above who was forced to cauterize a ship boy, details another unfortunate soul on board the *Royal James* who “fell down from the foreyard upon a piece of ordnance on the forecastle ... [ensuing] a fracture of the left clavicle, dislocation of the shoulder, and a compound fracture of the leg ... the bones of the leg coming through his stockings.”<sup>135</sup> Beginning with strains and moving forward in severity to fractures, this section will discuss the treatment of the above injuries, focusing mostly on the words of Ambroise Parè, who invented one of the most popular extension devices used by many surgeons in the reduction of dislocated joints or resetting of broken

134. John Moyle, *The Sea-Chirurgion*, 1. 1693.

135. Hugh Ryder, *New practical observations in surgery*, 10–11.

bones, called the pulley, illustrated above. Moyle describes the pulley as being “the best instrument to use”<sup>136</sup> in the case when force of the hand is not enough to extend and reposition the bone back into its rightful place.

Parè defines dislocations as being “a departure or falling out of the head of a bone from its proper cavity, into an accustomed place besides nature, hindering voluntary motion.”<sup>137</sup> He further classifies dislocations as either perfect or imperfect, whereby in “complete and perfect” dislocations, the bone “wholly falls out of its cavity,” and in the unperfect, “[the bone] is only lightly moved ... wherefore we only call them subluxations or strains.”<sup>138</sup>



**Figure 16:** Illustration of the pulley and its storage compartment, from 383 of *The Workes of That Famous Chirurgion*, Ambroise Parè.

Source: Wellcome Collection.

He goes on to suggest that there are three main causes of these sorts of injuries. These causes are internal, external, and hereditary, although the hereditary cause is not of importance in this section. External causes are easy to imagine and include torture such as the rack or strappado<sup>139</sup> as well as “fals from high” and “bruising and heavie blowes.”<sup>140</sup> The source of internal cause is traced back to humor theory. Surgeons of the time believed that a joint which gave way did so due to “excrementitious humors and flatulencies [gases], which, settling into the joints with great force and plenty, do so make slippery, soften, and relax the ligaments...”<sup>141</sup>

136. John Moyle, *The Sea-Chirurgion*, 103

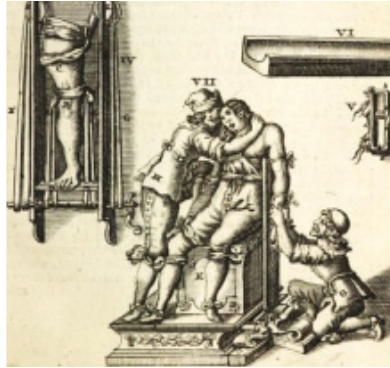
137. Ambroise Parè, *The Workes of that Famous Chirurgion*, 379.

138. *Ibid.*, 380.

139. The rack and strappado were both torturing devices used during the Spanish inquisition designed to dislocate limbs. The rack was known to pull the femurs out of their sockets, while the strappado the shoulders. To give illustration to what the strappado looked like, image being hung by your wrists and dropped ... with your hands tied behind your back.

140. Ambroise Parè, *The Workes of that Famous Chirurgion*, 380.

141. *Ibid.*



**Figure 17:** Various methods of reducing dislocated joints, from 51 of *The Chyrurgeons Storehouse*, Johannes Scuttetus.

Source: Wellcome Collection.

As discussed in an earlier section, Lionel Wafer did not provide his audience with much medical information. Interestingly however, he did speak of a cure that the Kuna natives he spent time amongst in Panama used “very successfully” on muscle strains and other contusions the application of hermit crab oil.<sup>142</sup> In fact, there are several accounts where a topical ointment of some kind or another was used in treating these lesser injuries, along with idleness and resting of the joint on a soft, elevated surface such as a pillow.<sup>143</sup> For management of the more severe injuries such as complete dislocations and fractures, Parè designed a five-step treatment plan.

The first is, of holding [the bones]; the second, of drawing or extending [the bones]; the third, of forcing in [the head of the dislocated bone]; the fourth, of placing in convenient figure and site [fortifying the joint with braces, bandages, and medicines]; the fifth, of correcting the concomitant, or following symptomes [administering post-operative care].<sup>144</sup>

Regarding the third direction, Parè recommends “that the affected joint be wrapped about with stoups [pieces of cloth made warm with hot water or medicines] and clothes, or compresses.”<sup>145</sup> Parè was referring to a splint, which has been a part of limb wound management since Hippocrates, who described splints “to be smooth, even, and rounded at the extremities;

142. Lionel Wafer, *A New Voyage and Description of the Isthmus of America...*115.

143. John Moyle, *The Sea-Chirurgion*, 61.

144. Ambroise Parè, *The Workes of that Famous Chirurgeon*, 379. 1649.

145. *Ibid*, 383.

somewhat less all along than the upper bandaging, and thickest at the part to which the fracture inclines.”<sup>146</sup>

Humors aside, this is essentially the same procedure still carried out today in emergency rooms upon successful reduction of a joint, complete with a further suggestion from Parè that “if the arm be dislocated, it shall be carried bound up in a scarf: if the thigh, knee, leg, or foot be luxated, they shall be fitly laid in a bed.”<sup>147</sup> Another potentially familiar statement for those who have worked in an emergency department is Moyle’s preparatory procedure for patients presenting with a confirmed fracture. Modern trauma shears make this job much easier than it was in this time period, confined to the use of rudimentary scissors or a knife, “Let his clothes be immediately ript off, and seeing how the case stands, give him immediately a cordial dram, to revive his spirits.”<sup>148</sup> Parè does not make any significant distinctions between the management of fractures as opposed to dislocations, because treatment of both involve the five steps listed above and have similar complications and post-operative directions. The only difference would be in the chance of a compound fracture<sup>149</sup>, where the bone is protruding from the skin and bleeding would need to be managed. Lastly, Parè gives a comprehensive description of how the surgeon is to know when a fracture or dislocation has been properly treated.

You may know the bone is set ... if the paine be asswaged [decreased]; to wit, the fibres of the muscles and the other parts being restored to their formed site, and all compression ... being taken away; if, to your feeling ... the surface of the member remaine smooth and equall: and lastly, if the broken or dislocated member compares with its opposite in the composure of the joynts, as the knees and ancles [ankles] answer justly and equally in length and thickness.<sup>150</sup>

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146. Hippocrates. *On Surgery*, Edited by T.E. Page, E. Capps, W.H.D. Rouse, L.A. Post, and E. H. Warmington. Translated by E.T Withington. Volume III. Cambridge, Massachusetts: William Heinemann LTD, 1959. First printed in 1928. Reprinted in 1944, 1948, and 1959. Part of the Loeb Classical Library, founded by James Loeb, LL. D, 72–73.

147. Ambroise Parè, *The Workes of that Famous Chirurgion*, 382.

148. John Moyle, *The Sea-Chirurgion*, 43. Here, “cordial dram” refers to a small portion of invigorating liquid intended for medicinal purposes, with “dram” specifically meaning a unit of apothecaries weight up to 1/8th ounce, according to the Merriam-Webster dictionary. This could have been whiskey, or some other medicinal cocktail. 1693.

149. A compound fracture, also called an open fracture, is one where the fragmented bone has protruded out from the skin. A closed or “simple” fracture on the other hand does not involve breakage of the skin, and is usually associated with fewer complications.

150. Ambroise Parè, *The Workes of that Famous Chirurgion*, 291. 1649.

## *Digit and Eye Wounds*

Similar to the section above, there were a multitude of ways that a man could injure his fingers or toes on board, ranging from fractures, “four several waies dislocated,”<sup>151</sup> spontaneous amputation, and of course, when a digit “happens to be quast to peeces, bone and all.”<sup>152</sup> Traumatic eye injuries were most commonly the result of gun shots and splinters when a cannonball found its mark. However, despite (or perhaps because of) the commonality of these injuries, there are few reports of these types of wounds at sea. Examples we do have are more general, such as when Captain James Kelly wrote a letter to his wife describing the insatiable greed of the soldiers that had taken his ship, “...insomuch that if a man had a ring on his finger, they would bite the whole finger off.”<sup>153</sup> There is also the tale of the notorious Captain Edward Low, who “happening to be displeased ... ordered lighted matches to be ty’d between the mens fingers, which burnt all the flesh off the bones...”<sup>154</sup> It may be a disappointment to some, but there are no direct records of pirates wearing eyepatches, and although it was likely they may have covered a missing eye with a cloth as to not horrify common people when on land, they had little reason to be concerned with their appearances on board.<sup>155</sup>



**Figure 18:** An adjustable eye speculum, from 291 of *The Works of That Famous Chirurgion* by Ambroise Parè. Source: Wellcome Collection.

151. Ibid, 389.

152. John Moyle, *The Sea-Chirurgion*, 95.

153. E. T. Fox, “James Kelly on Two Decades at Sea.” *Pirates in Their Own Words: Eye-Witness Accounts of the “Golden Age” of Piracy, 1690–1728*, Lulu Press inc., 2014, 44.

154. Charles Johnson, *A General History of the Robberies & Murders of the Most Notorious Pirates*, 276.

155. Turn to Parè, 576 for a detailed explanation as to what sorts of artificial eyes were made during this time. There is reason that pirates did not wear them—they were very expensive—most made from silver, gold, or crystal.

There were several types of treatments for the fingers, toes, and eyes, depending on their condition. In the words of German military surgeon Matthias Purmann, these wounds “tho’ often slighted, require a diligent and experienced chirurgian”<sup>156</sup> mainly due to their fragility.<sup>157</sup> This inherent fragility, along with the delicacy of the procedure and the fact that ships were in a constant state of movement, meant that sea-surgeons did not typically operate on the eyes. If a foreign body was the problem, the eyes would be washed with water, the inside of the eyelids examined, and an attempt made to remove the irritant if it could be seen.

Woodall states that eye wounds are “dangerous by reason of their affinity [to the brain] ...so that they are for the most part full of bitter paine, causing losse of sight.”<sup>158</sup> Patients suffering afflictions of the eye where foreign body removal was not possible were most often subjected to bleeding “plentifully in the saphlick [cephalic] vein,” and given emetic purges.<sup>159</sup> As a final note on this topic, there is one, and only one, unusual sea-surgeon named Lorenz Heister, who thought to bleed the veins of the eye itself, using scissors or a lancet. In reflection of this particularly unbased and unpleasant procedure, he states,

I must indeed confess, that after having performed this operation myself on several patients ... I could not possibly prevail on them to have it repeated, and it was with the greatest difficulty that they were persuaded to it at all; some being deterred from it by fear of losing their eye-sight, and others upon the account of the great pain which it must necessarily inflict on this tender organ.<sup>160</sup>

Of the fingers and toes, “inward corruption” (infection) was common, and to cure these malignant boils Moyle suggests the application of topical medications to both cause suppuration (pus formation), thereby releasing the foul humors responsible, as well as to soothe the “violent heat and anguish.”<sup>161</sup> If a digit had been fractured or dislocated, the same extension and reduction technique still in use today was described in Pare’s writing, *Of the Fractures of a Hand*, complete with dressing of a splint, and roller

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156. Matthias Purmannus. *Chirurgia Curiosa: Or, The Newest and most Curious Observations and Operations in the Whole Art of Chirurgery*, Edited by Dr. Solingen, Conrade Foachin Sprengell, and M. Phyfiodidactus. London: Printed for D. Browne at the Black Swan, R. Smith at the Angel and Bible, and T. Browne at the Green Dragon, 1706, 183–184.

157. Ibid., 308. Even trimming one’s nails was considered to be a dangerous operation, ironic in light of the amputations these surgeons performed. Yet, Purmannus warns in his writings about those “who were both snatch’d away by painful and miserable deaths, which happened by the paring of their Nails.”

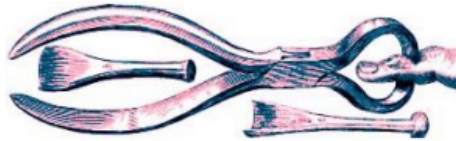
158. John Woodall, *The Surgeon’s Mate*, 138.

159. John Moyle, *The Experienced Chirurgion*, 1703, 246.

160. Lorenz Heister *A General System of Surgery in Three Parts*. Edited by C. Davis and R. Manby. London: W. Innys, C. Davis, J. Clark, R. Manby, and J. Whiston, Original from: the Complutense University of Madrid Digitized: January 20, 2011, Language: English Author: Lorenz Heister Editors: C. Davis (Londres), Manby. R. (Londres), 1750, 378.

161. John Moyle, *The Experienced Chirurgion*, 1703, 55–56.

bandaging, the injured finger “tyed or bound to [its] neighbours.”<sup>162</sup> Regarding distal amputations, Dionis states that a surgeon’s “first intention... must be the preservation of the hand and fingers, and never to cut them off, unless when there is not any hopes left of preventing their mortification...”<sup>163</sup> When amputation was deemed necessary, it could be done with one of three tools; the mallet and chisel, the saw, or the nippers, shown in Figure 19. Following separation of the digit, Moyle instructs application of “a small pellet of dry lint ... to the end of the bone, and another pledgit [compressive bandage] armed with pulv Galen [a coagulative powder].”<sup>164</sup> If a digit was spontaneously amputated, the surgeon would simply clean and bandage the wound in the normal post-operative procedure.



**Figure 19:** The nippers, and chisel (mallet not shown) used for digit amputation, from 412 of *The Surgeon’s Mate*.  
Source: Wellcome Collection.

### ***Sutures and Lacerations***

Captain Low ... received [a] stoke upon his underjaw, which laid the teeth bare; upon this the surgeon was called, who immediately stitched up the wound, but Low finding fault with the operation, the surgeon being tolerably drunk, as it was customary for everybody to be, struck Low such a blow with his fist, that broke out all the stitches, and then bid him sew up his chops himself and be damned, so that Low made a very pitiful figure for some time after.<sup>165</sup>

In many ways, the methods for rejoining skin torn by cutlass, sword, animal bites, whips, or other causes of laceration have always been the same. As put by Dionis, the surgeon’s role is in partnership with nature, as “she would labor in vain on a wound, if his industry did not reduce [adjoin] the parts to such a state as is reparable by ... her [wisdom].”<sup>166</sup> Although many of the strategies, tools, and even types of stitching techniques used by surgeons of the past can still be seen in hospitals today, the cases in which suturing may

<sup>162</sup> Ambroise Parè, *The Workes of that Famous Chirurgion*, 371.

<sup>163</sup> Pierre Dionis, *A Course of Chirurgical Operations*, 398.

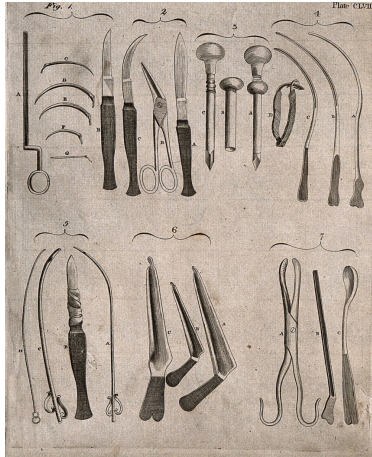
<sup>164</sup> John Moyle, *The Sea-Chirurgion*, 39.

<sup>165</sup> Charles Johnson, “The Life of Captain Low,” in *A General History of the Robberies & Murders of the Most Notorious Pirates*, 272.

<sup>166</sup> *Ibid.*, 38.



have been employed were very different. Surgeons during this time blamed many problems on imbalanced bodily humors, and thus thought it both appropriate and necessary to leave many wounds open to allow drainage of these substances, going so far as to even create new wounds to make way for this process, as discussed in an earlier section on fontanels.



**Figure 20:** A 1771 etching of surgical Instruments including lancets, sutures, needles, and scissors. Four types of suture needles are displayed. Place of publication and publisher unidentified.

Source: Wellcome Collection ID 568375i.

The basic technique of suturing has yet to significantly change throughout the centuries, aside from the modern application of sterile techniques and numbing injections such as lidocaine, epinephrine, and tetracaine prior to suturing. In preparation for stitching, a surgeon needed to have ready his clean and sharpened tools as well as a flat, well lit, and even impossible. Before the suturing would begin, the wound had to first be cleansed “of all clots of blood, and other exotic bodies,”<sup>167</sup> as is still done today. Additionally, if deemed necessary, a tourniquet would be tied or the wound cauterized beforehand, to ensure visibility to the surgeon and management of patient blood loss. Stitches were to be put in at even increments, with recommendations from Parè to make them about a finger’s breadth apart, “tak[ing] hold of too much nor too little flesh with your needle, for too little will not hold, and too much causeth pain and inflammation.”<sup>168</sup> Although

167. Ibid, 41.

168. Ambroise Parè, *The Workes of that Famous Chirurgion*, 41.

it may be commonly thought that these operations were carried out in hasty and imprecise ways, Woodall warns surgeons that when suturing, “beware you draw not the orifice awry, oblique or deformed, but that you have great respect to the true beauty and former comeliness [appearance] of the wounded part.”<sup>169</sup>

Dionis explains that there are three different types of sutures, invented by “the ancients.” These include incarnative, restraining, and conservative sutures. Incarnative were designed to bring together the edges of the wound so that they could “incarn,” meaning to develop flesh and reunite. These were the most commonly used sutures. Restraining sutures were used to stop bleeding, as done during some amputations, and conservative sutures were used in the closure of very large and deeply penetrating wounds.<sup>170</sup> Regarding the types of thread used, surgeons employed a variety of materials as they were available but preferred those made from linen, wool, or silk that had been waxed “that it may not rot but hold the better.”<sup>171</sup> As displayed above in Figure 21, there were also multiple types of suturing needles, each utilized in different circumstances where a particular shape was advantageous for minimizing tissue trauma and maximizing wound healing. Today, providers still use a variety of materials, many of which are very similar to those used so long ago.<sup>172</sup> Modern practitioners also still generally employ the same technique advised by several barber-surgeons including Parè, which was to begin suturing in the middle of the wound, proceeding outwards towards each end.<sup>173</sup> Suturing in this manner allows the provider to more easily manage the wound and preserve natural symmetry.

Yet another interesting similarity is in the use of adhesives. Today, a special type of skin glue called “Dermabond” is a popular option used to repair minor lacerations. In the 18th century, Purmann noted,

[The] glue that the Joyners [wood joiners] use [is] an excellent thing in the cure of wounds ... and therefore when they chance to cut themselves, instaid of a plaister, they apply a segmentum or shaving spread with glue, tye it on, and let it lie till it has healed the wound...<sup>174</sup>

169. John Woodall, *The Surgeon's Mate*, 26.

170. Pierre Dionis, *A Course of Chirurgical Operations*, 38.

171. *Ibid.*, 38.

172. See Miriam Byrne, and Al Aly. “The Surgical Suture.” *Aesthetic Surgery Journal* 39, no. 2 (April 2019): S67–S72. Accessed July 25, 2024. [https://academic.oup.com/asj/article/39/Supplement\\_2/S67/5377467](https://academic.oup.com/asj/article/39/Supplement_2/S67/5377467), for more information on modern suturing materials.

173. Ambroise Parè, *The Workes of that Famous Chirurgion*, 255.

174. Matthias Gottfried Purmann, *Chirurgia Curiosa: Or, The Newest and most Curious Observations and Operations in the Whole Art of Chirurgery*, 111. “Plaisters” (plasters) refer to various poultices, made from just about any natural material there is depending on the type of injury, that were applied to a wound and left to dry, acting as a sort of natural band-aid.

Sea-surgeons did not employ this method; however, and perhaps it was for the best, as completely sealing a likely contaminated wound would be an infectious disaster. In this way, the notion of “foul humors” requiring room to escape actually led to effective treatment. Owing to careful aseptic technique and proper wound irrigation prior to procedure, today the instance of surgical site infections (SSIs) are from 1–3 percent, and if they do develop, they can be treated with modern antibiotics—an underappreciated luxury not available to the 17th-century patient or physician.<sup>175</sup>

One final and interesting method of suturing during this time was dry suturing, which combined the idea of traditional sutures with that of adhesives. For wounds of the face, or other areas where scarring was actively avoided, surgeons would glue a piece of specially-cut leather or cloth to the skin around the wound, and then suture the two pieces of material together. This would draw the lips of the wound together without the use of sutures on the skin, thus also saving the patient further discomfort. Dionis states, “this suture is very easily performed, but it is solely proper to be apply’d to superficial wounds.”<sup>176</sup> Woodall is not a fan of this method, avidly stating “I will not stand to teach the drie stitch here, for it is not proper at sea, it fits the land better.” His reasoning appears to be rooted in a realistic approach to providing emergency care on board. At sea, materials are limited, cloth of any kind is rarely able to be kept dry or clean, and there is no reason to devote valuable time towards making most wounds “pretty.” He does, however, promote his own similar method for repairing wounds of the face. Woodall suggests “binding the lippes of the wound together [with bandages] with also a sure natural balme.”<sup>177</sup> This method is remarkably similar to a modern Nexcare™ product called the Steri-Strip, used often in the dressing of superficial wounds today.

After sutures were in place, the areas were bandaged and made as immobile as possible, lest the surgeon have to start the process over again. In amputations, sutures were commonly used to assist in the creation of a clean stump. When a limb was amputated, the skin was typically cut to be longer than the end of the stump to create a natural wound cover. Woodall advises to “stitch the skin through on the outside and just over the other side ... and draw the said threds so close as you think convenient, the better stop and choake the great veynes and arteries, then tye them fast.”<sup>178</sup> The process of limb amputation was a fascinating one, and will be explored below.

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175. “Surgical Site Infections.” *Johns Hopkins Medicine*. The John Hopkins University, November 22, 2019. Last modified November 22, 2019. Accessed July 25, 2024. <https://www.hopkinsmedicine.org/health/conditions-and-diseases/surgical-site-infections>.

176. Pierre Dionis, *A Course of Chirurgical Operations*, 43–44.

177. John Woodall, *The Surgeon’s Mate*, 137.

178. *Ibid.*, 173.

## *Tourniquets and Amputations*

In the midst of a small and stinking hold, dimly lit and tightly packed with groaning men, stands the bloody and battered surgeon. Having sharpened both his tools and his resolve, he knows the agony he is about to inflict is of absolute necessity, being the only defense left against otherwise certain death. Yet, “none can help trembling and sharing a part of the misfortune with the poor patient, who is resolv’d to the fatal necessity of being depriv’d of one of his parts of his body for his whole life.”<sup>179</sup> This sentiment, stated by Pierre Dionis and held by nearly every surgeon of the time, conveys the seriousness that limb amputation was regarded with, despite its unfortunate commonality.

More often than not, the difference between the skilled and unskilled surgeon was found not in his knowledge of medicines or disease, but in his ability to remove a limb in as little time as possible. Aside from the important difference of modern, and much underappreciated, anesthetics, the process of limb removal today differs significantly in only one regard—speed. Maritime history author Tony Harrison comments “A competent surgeon of the time would complete [an amputation] in considerably less than two minutes...the quicker these operations were completed the better chance of a full recovery for the patient.”<sup>180</sup>

Moyle emphasizes the hesitation one should employ before deciding to subject a patient to this procedure,

Howbeit if you think it possible to be healed, it will redound more to your credit to save it [a limb] on then take it off: ‘Tis true indeed, he is a good surgeon who can take off a limb dexterously; but he is a better one that can save and heal it.<sup>181</sup>

Additionally, Dionis recommends that a surgeon “is not to undertake it [the amputation] before he is back’d with advice of some of his brethren, and that he may not render himself a one responsible for the consequences of it...”<sup>182</sup> This was a form of medical malpractice insurance, which is still used today and humorously referred to as “CYA.” Just as we require patients in healthcare facilities today to sign medical release forms where they are briefed on the procedure and its likely outcomes before “consenting to treat,” the 18th-century patient was also to be thoroughly informed about the morbidity of the situation and its expected outcomes.

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179. Pierre Dionis, *A Course of Chirurgical Operations*, 403.

180. Tony Harrison, *Nelson and his Navy Surgery in the Royal Navy*, the Historical Maritime Society, as reproduced in Mark Kehoe, “Amputation During the Golden Age of Piracy, Page 1.” *The Pirate Surgeon’s Journal: Golden age of piracy* Accessed December 8, 2023.

181. John Moyle, *The Sea-Chirurgion*, 50–51. 1693.

182. Pierre Dionis, *A Course of Chirurgical Operations*, 403.

Woodall advises,

If you be constrained to use your Saw, let first your Patient be well informed of the eminent danger of death by the use thereof; proscribe him no certainty of life, and let the worke bee done with his owne free will, and request; and not otherwise. Let him prepare his soule as a ready sacrifice to the Lord by earnest praier, craving mercie and help from the Almighty, and that heartily.<sup>183</sup>

There were several situations that gave cause for amputation. One being necrotic gangrene infections, another, the shattering or crushing injuries where the limb is unsalvageable, and the final being “carries,” describing progressive decomposition of a bone. Today this condition is called osteonecrosis (death: *necrosis*, of the bone: *osteo*), or avascular necrosis, and is caused by the lack of blood flow to the bone, either from trauma, disease, or idiopathic causes.<sup>184</sup> If one of these causes arose, it was of utmost importance that “as cruel as it is thought to be ... in order to preserve the patients life, which cannot be done by any other method” to operate as soon as conditions allow, “for [if] it be deyaled or neglected but a very short time, it certainly gives the patient a summons to his grave.”<sup>185</sup>

An additional reason to operate without delay is that the only available anesthetic was the body’s natural adrenaline, although its mechanism was not entirely understood at the time. Moyle states that amputation is “...better done now in time of fight whilst the blood is hot, and there is strength; then afterward when the fever or other ill symptoms are come on.”<sup>186</sup> Due to this fact, it was important to have the surgeon’s tools and work area well prepared, so that “nothing may be wanting,” particularly before battle when high volumes of amputation were expected. The surgeon was to lay out all tools, pictured in Figure 21, which included a curved dismembering knife, the catlin knife, bone saw, forceps, curved and large needles, scalpels, and button cautery “as neere as [he] can hidden from the eyes of the patient”<sup>187</sup> Also to be laid out were the many types of bandages used, including the “turniket,”<sup>188</sup> “thick pledgets, cross cloths and rowlers.”<sup>189</sup> Additional dressings included “buttons of tow some foure or five, wet ... in the strong restrictive”<sup>190</sup> which

183. John Woodall, *The Surgeon’s Mate*, 172. 1655.

184. See “Osteonecrosis.” National Institute of Arthritis and Musculoskeletal and Skin Diseases, July 27, 2023, <https://www.niams.nih.gov/health-topics/osteonecrosis> for more on this interesting condition.

185. Matthias Purmann, *Churgia Curiosa*, 209.

186. John Moyle, *The Sea-Chirurgion*, 48.

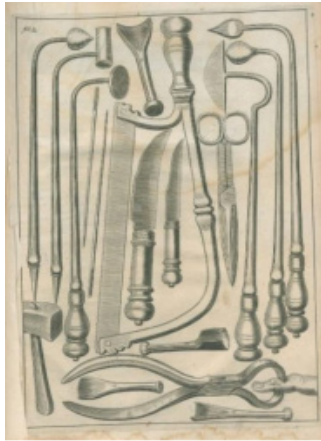
187. John Woodall, *The Surgeon’s Mate*, 173.

188. John Atkins, “Of Amputations and Wounds.” In *The Navy-Surgeon; or, Practical System of Surgery. with a Dissertation on Cold and Hot Mineral Springs; and Physical Observations on the Coast of Guiney ...*, London: Henry Woodgate and Samuel Brooks, 1758, 124. Atkins was the first surgeon to call this device by its name known today.

189. *Ibid.*, 118. “Pledgets” were a type of compressive bandage, and “rowlers” were bandages that were rolled on, similar to what is used in wound dressing today.

190. John Woodall, *The Surgeon’s Mate*, 172–173.

would be pressed onto the abscised ends of the exposed veins and arteries, working to stop excessive bleeding just as hemostatic wound dressings do today.



**Figure 21:** Instruments of amputation, from 412 of *The Surgeon's Mate*. The bone saw is pictured in the middle, inside it is the dismembering knife (left) and catlin knife (right). Three types of button cautery are shown on the left, with large needles between them and the bone saw.

Source: Wellcome Collection.

Contrary to popular belief, those subject to amputation were not graced with a state of drunkenness to assist in alleviating their pain. When one considers the unpredictable responses of excessive alcohol intake, including the potential for increased aggression, the idea behind limiting its consumption before the operation becomes more reasonable. Thus, surgeons preferred their already-writhing patients to be sober (and maybe not so much in a fighting mood). It should also be noted that there was a medical advantage—alcohol is an agent that both raises blood pressure and decreases its viscosity, which is counterproductive in efforts to prevent massive hemorrhage. If alcohol was given before a procedure, it was typically for the purpose of calming the distraught patient, which is about all “half a glass of wine”<sup>191</sup> can hope to do. The final part of procedure preparation was

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191. Pierre Dionis, *A Course of Chirurgical Operations*, 411.

recruiting at least three assistants. One was to aid in restraining the patient, another to hold the proximal limb and “draweth up the skin and muscular flesh.”<sup>192</sup> The final assistant was there to hold steady the limb below the amputation site. At last, the patient was to be “set ... down on your [surgeon’s] chest with the limb you intend to amputate along the chest... the part that is to be taken off [hanging]over the end of the chest”<sup>193</sup> and of course, securely held down.

The site of amputation and thus stump creation was chosen based on the function of the limb. If the arm was to be amputated, as much of it would be preserved as possible. If the leg, the standard and most comfortable place for the prosthetic was “some four inches below [the knee] ... for a long stump were but troublesome.”<sup>194</sup> Atkins also states that a similar distance is “most commodious for a wooden leg.”<sup>195</sup> After applying a tourniquet or some other form of compressive ties several inches above the desired amputation site, the surgeon was to “with [his] dismembering knife, take two large slashes round the part ... and let one meet the other, as evenly as possible.”<sup>196</sup> This could also be done in one stroke, which lessened the chance of misaligning the cut. Then with the catling knife, a flap of skin long enough to cover the would-be stump was cut out, along with the vessels and periosteum from around the bone. The flesh would then pulled back by an assistant to expose the bone, or bones, in the case of lower arm and leg amputations.<sup>197</sup> Then, “we draw the saw gently (an interesting use of this adjective) till we find it dented in; when we find it in the body of the bone ... divided at as few strokes as possible, taking heed in the division ... lest the bones should splinter.”<sup>198</sup> After the limb has been severed, the challenging part of the procedure began managing blood loss. Dionis states, “the taking off a limb is not the most difficult task, a butcher might have done that; but ‘tis not easy for the operator to master blood...”<sup>199</sup>

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192. Ibid.

193. John Moyle, *The Sea-Chirurgion*, 48.

194. John Woodall, *The Surgeon’s Mate*, 175.

195. John Atkins, *The Navy Surgeon*, 130.

196. John Moyle, *The Sea-Chirurgion*, 52

197. This was referred to as “the Single flap method,” and is still used in some amputation procedures today.

198. Pierre Dionis, *A Course of Chirurgical Operations*, 412 & John Atkins, *The Navy Surgeon*...125.

199. Pierre Dionis, *A Course of Chirurgical Operations*, 408.



**Figure 22:** Amputation of a leg, with the extended “single skin flap method” and a curved suture shown, from 350–351 in *A General System of Surgery in Three Parts*.

Source: Wellcome Collection.

There were several methods to prevent massive hemorrhage of the patient following this gruesome endeavor. Parè was an early proponent of cauterization, however noting that if the hot iron were placed in an “insensible part,” such as an exposed internal organ, it would be “the cause of convulsion, fever, yea oft time of death.”<sup>200</sup> Somewhat less abrasive methods included application of astringent or styptic (clotting) medications to stop the bleed, along with “delegation of the artery.”<sup>201</sup> Delegation was the art of tying off problematic spurting vessels, which, as put by surgeon James Handley, was “a very sure and secure way, if you have the time; but in a sea-fight, attended with great confusion and a multitude of business, and where you must operate by candle-light; a ligation of the vessels is not so practicable, and takes up too much time.”<sup>202</sup> Thus, most sea surgeons typically relied on a method of “cross-stitching,” which tightly secured previously mentioned “buttons of tow” (absorbent circular bandages) saturated in coagulants, onto the arteries, providing both a chemical and physical mode of stopping blood flow.<sup>203</sup>

Regardless of the method employed, one can imagine the difficulties in controlling loss of blood during a procedure (such as an amputation) that

200. Ambroise Parè, *The Workes of that Famous Chirurgion*, 7.

201. John Atkins, *The Navy Surgeon*, 118.

202. James Handley, *Colloquia chyrrurgica: or, the whole art of surgery epitomiz'd and made easie*, according to modern practice, 3rd ed. London: Printed for A. Bettesworth, 1721, 141.

203. *Ibid.* Additionally, note that the cauterization method was not easily employed on board. The only source of heat would have been in the cook room, and carrying a pot of hot coals around a wooden ship was frowned upon for obvious reasons.



involves bisecting multiple large vessels simultaneously. It was for this reason, as well as the challenges in utilizing heat sources at sea, that Parè invented the “crow’s beak,” pictured in Figure 23. This simple yet ingenious vessel clamp was the first of its kind, and the predecessor of today’s modern hemostat. Using these clamps, multiple arteries could be held tightly shut while others were stitched closed. Following vessel closure, the flap of skin would be loosely stitched over the wound, “so ... by nature’s assistance, the wound may be the more easily agglutinated [glued together, by the formation of new skin].”<sup>204</sup> This single flap method is still used during amputations in operating rooms today, albeit more advanced. The main distinction is the inclusion of healthy muscle along with skin in flap creation, allowing for “fasciocutaneous flaps with robust blood supply.”<sup>205</sup> Senior surgeons in plastic, reconstructive, orthopedic, and trauma surgery state “it is important to consider the role that the soft tissue will have once a prosthetic is fitted, and plan to make coverage in areas of pressure robust, pliable yet stable and protective of bony prominences” while also noting that “guillotine amputations and blunt dissection should be avoided.”<sup>206</sup> Thus, while the single flap method may have been developed for the purpose of simply closing the wound, it has evolved into an integral part of post-operative limb functioning.



**Figure 23:** A “crows beak” vessel clamp from 588 of *The Workes of that Famous Chirurgeon*, Ambroise Parè, ancestor of the modern hemostat pictured above. Source: Wikimedia Commons (top), Wellcome Collection (bottom).

204. Ambroise Parè, *The Workes of that Famous Chirurgeon*, 150.

205. See Tim Nobet, Beth Lineham, Jay Wiper, and Paul Harwood. “Amputation in Trauma—How to Achieve a Good Result from Lower Extremity Amputation Irrespective of the Level.” *Amputations: From Injury to Rehabilitation* 5, no. 1 (February 6, 2019): 69–78, for more on modern amputation. Viewer discretion advised, as article contains figures of graphic medical procedures.

206. *Ibid.*

Following flap closure, an animal bladder “furnished with astringent powders,”<sup>207</sup> was laid over the wound. These bladders served as fluid containers and were kept moist with wine, likely the most sanitary liquid on board. Lastly, the stump was bandaged with many different types of rolls, plasters, and bolsters,<sup>208</sup> until the wound was deemed by the surgeon to be secure. The limb operated on was then elevated, with Parè, Woodall, and Moyle all suggesting to do so with pillows, a luxury commodity not likely found on most ships. Despite his soft suggestion, Moyle describes essentially tossing amputation patients aside after their operation, saying about the patient, “Let him be laid as far to the further part of your platform as possible that some there may be room for others. For in some fights I have had my platform so full, as that I have not well known how to dispose of more.”<sup>209</sup> Although written in a latter era, one incredible excerpt serves to vividly describe firsthand the sheer chaos that Moyle so composedly describes in his statement above. Throughout this section, treatment of various injuries have been described in a rather pragmatic manner. Contrarily, the following account from a young sailor during the war of 1812 paints a more lucid picture of what was witnessed when stepping aboard a ship engaged in the ferocity of battle—when a surgeon’s unforgiving duty was of the utmost importance.

I heard the shot strike the sides of our ship; the whole scene grew indescribably confused and horrible; it was like some awfully tremendous thunder-storm, whose deafening roar is attended by incessant streaks of lightning, carrying death in every flash and strewing the ground with the victims ... the scene was rendered more horrible than that, by the presence of torrents of blood which dyed our decks. Pursuing my way to the ward room, I necessarily passed through the steerage, which was strewn with wounded: it was a sad spectacle, made more appalling by the groans and cries, which rent the air. Some were groaning, others were swearing most bitterly, a few more praying, while those last arrived were begging most piteously to have their wounds dressed next. The surgeon and his mate were smeared with blood from head to foot: they looked more like butchers than doctors. Having so many patients, they had once shifted their quarters from the cockpit to the steerage; they now removed to the wardroom, and the long table, round which the officers had sat over many a feast, was soon covered with bleeding forms of maimed and mutilated seamen.<sup>210</sup>

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207. Pierre Dionis, *A Course of Chirurgical Operations*, 413.

208. *Ibid.*

209. John Moyle, *The Sea-Chirurgion*, 55. 1693.

210. Samuel Leech and Michael J. Crawford. *A voice from the main deck: Being a record of the Thirty Years' adventures of Samuel Leech*, Annapolis (Md.): Naval Institute Press, 1999. Originally published 1843, 82 & 91.

After the surgeons, “smeared with blood from head to foot,” were finished with their gruesome procedures, the final step in carrying out an amputation was delegated to the carpenters. Dionis explains,

When the Chirurgion has been forc'd to cut off a leg or an arm to save the life of a wounded patient, although he be perfectly cured, he is yet unable to go, by the loss of the part which was necessary to the performance of that function: 'tis not then enough for a Chirurgion to have drawn him out of the grave, he must by his Industry add an organ in composition and use like the former.<sup>211</sup>

This introduces the topic of prosthetics. While it cannot be explored exhaustively here, important contributions, including prosthetic developments, will be examined in the following section.

## MEDICAL ADVANCES FROM THE AGE OF SAIL AND ONWARD: ANALGESICS, PROSTHETICS, AND INFLUENTIAL MEDICS

### *Development of Prosthesis in the 17th and 18th Centuries to Present*

It may come as a disappointment to some, but it appears that the classic pirate costume, sporting prosthetics such as peg legs and hook-hands, may be more myth than truth. In fact, the only true record of a *pirate* with a “peg leg” is from Captain Charles Johnson’s famous book, *A General History of the Robberies & Murders of the Most Notorious Pirates*, where in his account of Captain Edward England, a man is described in passing as “a fellow with a terrible pair of whiskers, and a wooden leg, being stuck round with pistols...”<sup>212</sup> The myth of the hook-hand is theorized to have developed from a privateer that sailed with Sir Francis Drake by the name of Christopher Newport, who, after an accident whereby his right hand was “strooken off,” he was from then on referred to as “Christopher Newport of the one hand.” Some sources<sup>213</sup> suggest that “he may have had a hook for a right arm after that incident.” Supposedly, this story is part of what inspired J.M. Barrie’s Captain Hook from *Peter Pan*, the story where many children were introduced to perhaps their first villainous, treasure-loving pirate.

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211. Pierre Dionis, *A Course of Chirurgical Operations*, 416. 1773.

212. Charles Johnson, *A general History of the Robberies & Murders of the Most Notorious Pirates*, 84.

213. Dorothy Southard Wolfe, *Jamestown Colony*. Accessed December 11, 2023. <https://jamestowncolony1609.blogspot.com/>. This is a genealogic webpage with sources gathered from the W Filson Historical Society Library and Muhlenberg County Free Public Library, such as *Virginia Immigrants and Adventurers, 1607–1635*, by Martha W. McCartney, published by the genealogical pub co., in 2017.



**Figure 24:** While real pirates did not fulfill our pop culture perceptions, they certainly had their own flair. Blackbeard was known to strike lighted matches under his hat “... that imagination cannot form an idea of a fury, from hell, to look more frightful.”

Source: Nick Gowman Cartoons & Illustrations, 2024 (left). “Three Centuries after his Beheading, a Kinder, Gentler Blackbeard Emerges” *Smithsonian Magazine*, Northwind picture Archives, 2018 (right).

Despite the lack of direct evidence, we know from statements made by surgeons such as Pierre Dionis that prosthetics, at least of the lower extremities, were considered not only ornamental, but “necessary”<sup>214</sup> and that wooden legs were common in amputees. Dionis states, “Everyone knows how a wooden leg ought to be made...”<sup>215</sup> Although a countless number of improvements have been made to prosthetics over the past several hundred years, beginning from simple pieces of wood and leather and evolving into the incredibly complex biotechnology that we can provide amputees with today, the prosthetic that a 17th-century patient may have been fitted with was not as rudimentary as we tend to imagine. The field of prosthetics was greatly forwarded by Ambroise Parè, who, as we have seen, contributed much to the field of surgery and medicine. Today he is credited as the father of modern amputation and prosthetics. According to the Nyam History of Medicine and Public Health, even his above-the-knee prosthetic “had properties still used today a locking knee and suspension harness.”<sup>216</sup> Before his contributions, the prosthetics of antiquity were rather crude and

214. Pierre Dionis, *A Course of Chirurgical Operations*, 416, & Parè, *The Workes of that Famous Chirurgion*, 585.

215. Pierre Dionis, *Ibid.*

216. Johanna Goldberg, “On Parè and Prosthetics.” *Books, Health and History*-The New York Academy of Medicine Library Blog. Last modified December 18, 2014. Accessed July 20, 2024. <https://nyamcenterforhistory.org/2014/12/19/on-pare-and-prosthetics>.

cumbersome, with limited mobility and lacking an appropriate artistic touch. Dionis, who was influenced by Parè, recognized that a proper prosthetic limb should serve not only for “decencie and comliness thereof,” but to be “profitable for the necessitie of the bodie.”<sup>217</sup> Both men thus aimed to design prosthetics not only to save their patients’ appearance, but more importantly to comfortably function in a way as similar to their original biological purpose as possible. Regarding a prosthetic leg, Dionis states,

...it ought to be proportioned to the size of the other leg, it’s upper part is to be hollow, to comprehend the lower part of the Thigh; that it must have Ribbons or Tapes to tie and fasten it to the Thigh; that it must be provided with a small Cushion at the Place where the Knee lies, that the Part may not be hurt by the Hardness of the Wood, which is not to be brittle, but firm and strong for the Security of the Wearer.<sup>218</sup>



**Figure 25:** A more complex artificial leg “of iron,” with its multiple layers shown, from 587 of *The Workes of that Famous Chirurgion*, Ambroise Parè. Source: Wellcome Collection.

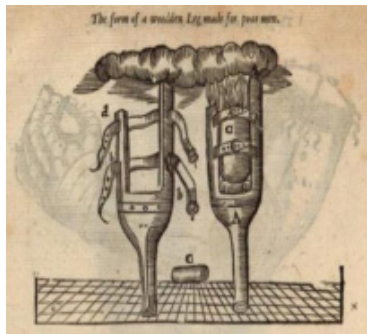
An accomplished anatomist, Parè was known to have crafted some of the most advanced prosthetics of the time, with images of these rather complex devices shown to the left and below. The only caveat is that, like the gold and silver artificial eyes previously referenced in Footnote 155, these were very expensive, and so there came to be a rather large difference in the quality of prosthetics “for poor men,” as compared to those worn by the nobility who

217. Parè, *The Workes of that Famous Chirurgion*, 585.

218. Pierre Dionis, *A Course of Chirurgial Operations*, 416. 1773.

could afford the steep prices associated with more advanced pieces. Even today, “more basic prosthetics can cost around \$5000, while more advanced, computerized prosthetics may reach \$70,000.”<sup>219</sup> Importantly, while coverage may vary, most insurance plans do not cover the cost of prosthetics, so unfortunately the price predicament for amputees seeking a proper prosthetic has not appeared to change much from the age of pirates and pilgrims to today. Perhaps in reference to Parè’s *Le Petit Lorrain*, or some other device, Dionis makes the following observation.

One of the Honorary Academicians of the Academy of Sciences, presented an artificial Arm made of Tin, and fill’d with several Springs, by means of which he promised, that being fasten’d to the Stump, the Patient might lead a Horse, Write, and perform the same Functions as with the natural Hand: He assures us that the sole Motion of the Stump set the Springs at work, and would make the Patient move the Fist and Fingers as he pleased. This Machine was not perfected when ‘twas presented to the Academy: If it answers his Promises, the maim’d Persons cannot pay him a sufficient Tribute of Praises.<sup>220</sup>



**Figure 26:** A “wooden leg for poor men,” from 588 of *The Workes of that Famous Chirurgion, Ambroise Parè*.

Source: Wellcome Collection.

219. Ann Rouge. “Prosthetic Leg Costs, Types, and What You Need to Know.” *Expert prosthetics & orthotics services in USA*, August 4, 2023. <https://www.lawall.com/>.

220. Pierre Dionis, *A Course of Chirurgical Operations*, 417. 1773.



**Figure 27:** A surprisingly complex mechanism for a prosthetic hand, called *Le Petit Lorrain*, from 916 of *Les Oeuvres d'Ambroise Paré*, 1633 edition.

Source: *On Parè and Prosthetics*, by Johanna Goldberg. Courtesy of the New York Academy of Medicine Library.

Moving forward in time towards the end of the 17th century, in 1696 Dutch surgeon Pieter Adriaanszoon Verduyn described in his work *Dissertatio epistolaris de nova atruum decurtandorum ratione*,<sup>221</sup> a revolutionary new below-the-knee prosthetic that allowed the knee to continue functioning as a proper hinge-joint. Progressing along the time continuum into the mid-to-late 19th century, leaps and bounds were made in prosthetics as their need unfortunately rose with men wounded from wars such as the Napoleonic wars in Europe or the later Civil War of America. One of these great leaps was the “Anglesey leg,” patented in 1805 by James Potts in London.<sup>222</sup> This leg was made with several types of durable materials but also designed with wearer comfort and stability in mind. The shaft and socket of the leg was wooden, the knee joint steel, and most astonishingly, the ankle joint was articulated via artificial tendons that coupled knee and foot flexion, making the act of walking much more fluid than in previous designs. Later, in 1862

<sup>221</sup> This title roughly translates from Latin into “a dissertation of letters on a new method of limb shortening,” meaning amputation.

<sup>222</sup> Vanessa Warne, “Artificial Leg.” *Victorian Review* 34, no. 1 (Spring 2008): 29–33. <https://doi.org/10.1353/vcr.2008.0020>.

physician and inventor Douglass Bly made further improvement to this design, producing a new prosthetic leg sporting a “ball and socket ankle,” comprised of ivory and rubber, for increasing mobility and comfort.<sup>223</sup>

Further tributes to prosthetic advances were thoroughly discussed in a 1906 publication by George Marks which serves to explain the lapses in prosthetics current to the time, and suggests improvements that allow the wearer to live “as if he had never been deprived of nature’s extremities.”<sup>224</sup>

Here the following comment is made regarding a bilateral amputee wearing two prosthetic legs, “He retains his balance with no perceptible effort or awkwardness ... It never occurs to anyone that his lower extremities are not real, and his actions never betray that fact.”<sup>225</sup>



**Figure 28:** Complimentary depictions showcasing the versatility of early-20th century prosthesis at work, from 109 of *Manual of Artificial Limbs*, 1906.  
 Source: Internet Archive.

Today, prosthetic limb technology is incredibly complex, owing to innovative combinations of advanced robotics, computer microprocessors, and hydraulics, as well as the use of new materials like carbon fiber rather than wood, iron, or steel. We must recognize however that we would not be where we are today in the vast field of healthcare, or any field for that matter, if not for the efforts and endeavors of those who came before us, even when those (often questionable) efforts are arcane or barbaric in the mind of a modern reader.

223. Donald D. Bly, *A New and Important Invention*, Rochester: Press of Curtis, Butts & Co., 1862, 1–2.

224. George E. Marks, *Manual of artificial limbs: Artificial toes, feet, legs, fingers, hands, arms, for amputations and deformities, appliances for excisions, fractures, and other disabilities of lower and upper extremities ... An exhaustive exposition of prosthesis*, New York: A.A. Marks, 1906, 108–109.

225. *Ibid.*



### ***General Medical Advancements in the 16th and 17th Centuries to Present***

Though the age of tooth-worms, trepanning, and treating gunshot wounds with boiling oil may not appear at first glance to be far progressed in medical understanding, one must remember that regardless of the timeline, each point in history is one of advancement due to our continual drive to learn. It can be all but assured that in 100 years, some of the practices we so firmly believe in now will be obsolete in place of better ones. To this point, the physicians, apothecaries, and surgeons of the 16th and 17th centuries were quite progressive when compared to the witch doctors of our ancient past who relied on superstition and incantations to cure all ills.

The basis of a more rationalistic approach to medicine is considered by many to be within the Hippocratic Corpus, a product of the classical Greek period. It was in these writings that many of the surgeons and physicians mentioned in this paper founded their basis of medical understanding, emphasizing the importance of clinical observation and examination, ethical medical practice, and scientific inquiry—the bedrock of progressive healthcare. The first true steps into laudable medical knowledge were taken in 1543 by Andreas Vesalius,<sup>226</sup> who, in bravely going against the church's regulations, conducted secret dissections on human cadavers in search of a better understanding of the body's form and many functions. Throughout history, most religious leaders across the globe strictly forbade the dissection of human bodies after death, which is likely why accurate anatomical understanding took so long to achieve. His new discoveries contested the previously unquestioned works of Galen,<sup>227</sup> a Greek physician and philosopher who conducted most of his anatomical and physiological research on apes. Vesalius' well-illustrated medical manual was titled, *The Fabric of the Human Body*, becoming a guide which surgeons such as John Moyle and Ambroise Paré likely studied.

Inspired by Vesalius' work on the valves in the veins, English physician William Harvey<sup>228</sup> introduced the revolutionary theory of venous circulation and conducted studies on the circulatory system as a whole. These studies helped lead to our current understanding of the functions of the heart, veins, arteries, and capillary systems. Similarly, in 1661 philosopher and chemist

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226. Fabio Zampieri, Mohamed ElMaghawry, Alberto Zanatta, and Gaetano Thiene. "Andreas Vesalius: Celebrating 500 Years of Dissecting Nature." *Global cardiology science & practice*, December 22, 2015. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4762440/>.

227. Donald L Wasson, "Galen." *World History Encyclopedia*, December 10, 2023. <https://www.worldhistory.org/Galen/>.

228. Domenico Ribatti, "William Harvey and the Discovery of the Circulation of the Blood." *Journal of angiogenesis research*, September 21, 2009. <https://www.ncbi.nlm.nih.gov/pmc/articles/>

Robert Boyle of Ireland authored a book called *The Sceptical Chymist*,<sup>229</sup> in which he was the first to describe the notion of the human body taking in some important substance from the air during inhalation. It was by his name that “Boyle’s Law,”<sup>230</sup> a mechanism by which the respiratory system operates, was termed. Richard Lower<sup>231</sup>, an understudy of Harvey, built on the ideas of both Harvey and Boyle, establishing the role of the lungs in the “admixture of air” to the blood. He understood arterial oxygenation and was the first to experiment with blood transfusions, successfully in dogs and even in transfusing the blood of a sheep into a human, which although interesting, likely led to anaphylactic shock.

Bridging the gap between the 17th and 18th centuries, esteemed physician, and notably successful pirate, Thomas Dover made several significant contributions. Despite these, it cannot be ignored that Dover became known as “Dr. Quicksilver” on account of his extremely generous use of mercury as a therapeutic agent. Of course, prescribing mercury during this time was not unheard of, as it’s toxicity wouldn’t be discovered until the late 19th century.<sup>232</sup> What was unheard of was his outrageous dosage quantities. In his book, *The Ancient Physician’s Legacy* to his country, Dover describes the “proper” prescription for one suffering from “The Iliac Passion,” which is appendicitis, according to the Journal of the Royal College of Physicians in London.<sup>233</sup> Dover states, “You need go no further for the cure of this fatal disease, than to take a pound, or a pound and half of crude mercury.”<sup>234</sup> As to the positive contributions Dover made, he was an early proponent of inoculation, and he was vociferously opposed to questionable treatments such as purging and blistering. His opposition helped dispel ineffective quack remedies such as ingesting powdered goat gallstones and syrup of snails.<sup>235</sup> However, perhaps his most important and ingenious contribution was in the administration of analgesics, whereby he recommended a dose of ipecac<sup>236</sup>

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229. Robert Boyle, *The Sceptical Chymist, or, Chymico-physical doubts & Paradoxes, touching the Spagyrist’s principles commonly call’d hypostatical, as they are wont to be propos’d and defended by the generality of alchymists. Whereunto is praemis’d part of another discourse relating to the same subject.* London: Printed by J. Cadwell for J. Crooke, 1661.

230. Boyle’s law describes the inversely proportional relationship between the pressure and volume of a gas, so long as temperature remains constant. In the body, as the volume of the thoracic cavity decreases during exhalation, the pressure in the lungs increases, and vice versa. This gives the physiology of ventilation a mechanical advantage in energy conservation.

231. Arthur J. Donovan, “Richard Lower, M.D., Physician and Surgeon (1631–1691).” *World Journal of Surgery*, September 28, 2004. <https://pubmed.ncbi.nlm.nih.gov/15593472/>.

232. Ishihara Nobuo, “History of Ignorance of Methylmercury Toxicity and Intoxication in Japan in Relation to Minamata Disease.” *Nihon Eiseigaku Zasshi. Japanese Journal of Hygiene*, 2014. <https://pubmed.ncbi.nlm.nih.gov/244765971/>.

233. Bary E. Monk, “Thomas Dover, Physician and Pirate.” *Journal of the Royal College of the Physicians of London* 16, no. 1 (January 1982): 60–61.

234. Thomas Dover, *The ancient physician’s legacy to his country, being what he has collected himself in forty-nine years practice.* London: Printed for the author, 1733. [https://archive.org/details/bim\\_eighteenth-century\\_the-ancient-physicians-\\_dover-thomas\\_1733](https://archive.org/details/bim_eighteenth-century_the-ancient-physicians-_dover-thomas_1733).

235. Ibid.

236. Thomas Benzoni and Joshua Gibson. “Ipecac - Statpearls - NCBI Bookshelf - National Center For ...” [www.ncbi.nlm.nih.gov, January 21, 2023. https://www.ncbi.nlm.nih.gov/books/NBK448075/](https://www.ncbi.nlm.nih.gov/books/NBK448075/).

along with the opiate, so that if overdose occurred the patient would vomit and thereby avoid certain death. This medication, called “Dover’s powders” allowed for more extensive surgeries to occur with increased confidence for both the patient and the provider. These powders were used for over 200 years in medicine, only recently discontinued due to its inferiority to activated charcoal, which does not cause vomiting in most patients but instead binds the toxin and proceeds through the digestive tract as normal, exiting via the bowels.

Other noteworthy contributions up through the present include Dutch Antoni Van Leeuwenhoek, called the father of microbiology, who introduced to medicine the field of studying bacteria and other microorganisms in their relation to health. Additionally, Robert Hooke, an assistant to Boyle, also published *Micrographia* in 1665, further describing the “animalcules” that Leeuwenhoek discovered. Italian physiologist Santorio Santorio was a pioneer investigator of metabolism during the mid-17th century, and although the title “father of kinesiology” is owed to Aristotle, Italian mathematician Giovanni Alfonso Borelli did much to further this field, and was thus dubbed a similar title, “father of biomechanics.” Renè Laënnec invented the stethoscope, which he called the cylindre, and examined the peculiar sounds now audible from the heart and lungs. In 1776 the critical practice of vaccination was introduced by Edward Jenner<sup>237</sup> and the final blow to humor theory was struck by Rudolf Virchow, who, with his 1858 publication *Die Cellularpathologie*, first assigned the cell as the center of all pathological change. Since 1846 we have had William T. G. Morton<sup>238</sup> to thank for modern anesthesia, opening new routes for more complex surgeries and saving many patients from excruciating pain. John Hunter founded surgical pathology and his brother, William Hunter, obstetrics. Hunter was one of the first men to enter into the field and largely do away with midwifery, instead approaching childbirth from a more scientifically grounded view than had past practices.<sup>239</sup>

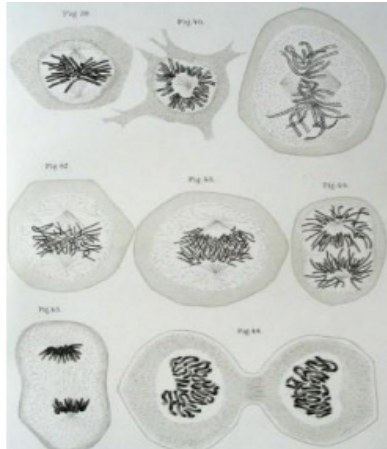
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237. Although Edward Jenner is credited with developing the first vaccine, eradicating the scourge of smallpox from the country, it should be noted that in doing so he drew upon letters authored by Lady Mary Wortley Montagu, English writer and poet, who observed and recorded the practice of inoculation being carried out by matriarchs in Turkey during annual fall gatherings. See Thomas Hager, “How a Daring Woman Brought Smallpox Inoculation to England.” *Time*, March 5, 2019. <https://time.com/5542895/mary-montagu-smallpox/> for more on the life of this interesting woman.

238. Daniel H. Robinson and Alexander H Toledo. “Historical Development of Modern Anesthesia.” *Journal of investigative surgery: the official journal of the Academy of Surgical Research*, June 2012. <https://pubmed.ncbi.nlm.nih.gov/22583009>.

239. Philip Rhodes, Douglass James Guthrie, Robert G. Richardson, E. Ashworth Underwood, and William A. R. Thomson. “History of Medicine.” *Encyclopædia Britannica*, December 5, 2023. <https://www.britannica.com/science/history-of-medicine>. This is a neatly organized, thorough historical article that would be a fantastic place to start for the curious reader. In detailed, separate pages, history is covered from the times of Ancient Babylon to the present.

As early as 1875, German biologist Walther Flemming was exploring cytogenetics, uncovering the process of cellular division and cellular structures jointly with esteemed embryologist, cytologist, and marine biologist Edouard Van Beneden.<sup>240</sup>



**Figure 29:** Hand-drawn illustrations of mitosis in salamander cells, from: p.435, “Tafel. III b. fig. 39–46” in *Zellsubstanz, Kern and Zelltheilung* (Cell Substance, nucleus, and cell division) by Walther Flemming in 1882.

Source: Google Books Images.

Lastly, the knowledge of CPR (cardiopulmonary resuscitation) is credited to William Kouwenhoven, who lived from 1886 to 1957 and discovered the technique unintentionally during his research on defibrillation of the heart.<sup>241</sup> In concluding formal recognition of these chief contributors, it is important to note that societal standing played a large part in their ability to fully realize their creative and intellectual potential, and ultimately share their knowledge with the world. As so, there are many contributors unnamed to history who greatly expanded the wealth of modern medical knowledge that we all benefit from, in every facet of the field.

Regardless of the source, well known or not, each discovery has played a critical role in unraveling the mysteries of medicine and the human body, one-by-one laying the foundation for future understanding and

240. Neidhard Paweletz, “Walther Flemming: Pioneer of Mitosis Research.” *Nature Reviews Molecular Cell Biology* 2, no. 1 (2001): 72–75. <https://doi.org/10.1038/35048077>.

241. Raymond Hurt, “Modern Cardiopulmonary Resuscitation--Not so New after All.” *Journal of the Royal Society of Medicine*, July 2005. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1168923>.

application. Likewise, it is commonly understood that each type of health care professional will find themselves reliant on another at some point in their career often times at many points. Most experienced professionals will agree that when it comes to providing the best possible care, a team approach is always best. Without the anesthesiologist, the surgeon would be at a loss. Without the cardiologist, the respiratory therapist would be stranded. Lacking a physical therapist, the orthopedist's work may not be tangibly helpful. An obstetrician may be challenged without the endocrinologist, and a dietitian may often need to collaborate with the gastroenterologist. It has been said that "it takes a village to raise a child," and it appears that likewise, "it takes a village" of devoted medical personnel to ensure that a struggling patient receives the absolute best care for their finest chance at full recovery from illness or injury and to enjoy a healthy, long-lasting life.

Similarly, nurses, nurse assistants, physicians, physician assistants, phlebotomists, pharmacists, medical technicians, and all manner of those devoting themselves wholly to their patients must work together to achieve the best outcomes. Of those listed, physician assistants are of special interest to this paper, and it is the author's great hope that to this point several parallels may already be envisioned between the barber-surgeon carrying out his Hippocratic duty on board a hectic ship and that of a modern physician assistant, particularly one battered by the utter chaos of a modern emergency department. Yet, like the surgeon in the cockpit, they are determined to treat each and every unexpected patient to the best of his or her ability.

## FROM THE HIGH SEAS TO HOSPITALS: THE HISTORY OF THE PHYSICIAN ASSISTANT, WITH SPECIAL REGARD TO TRAUMA AND CRITICAL CARE

### *The Need for Assistance*

As we have seen throughout this paper, physicians, regardless of the century, have always operated as the lead of a collaborative healthcare team, and have never been able to address the needs of their communities alone. From the barber-surgeons of the 16th century to today,<sup>242</sup> physicians have always had "assistants," with their need particularly highlighted during times of high patient volume, such as during and after wars. In the times of the sea-surgeon, every warring vessel needed a medical expert on board for the safety and security of the crew. This was the reason that young and relatively

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242. See Harold Ellis, "The Company of Barbers and Surgeons." Edited by Ian Burn. *Journal of the Royal Society of Medicine* 94, no. 10 (2001): 548-49. <https://doi.org/10.1177/014107680109401022>. It wasn't until 1745 that the English guild of Barber-surgeons finally segregated into strictly surgery or salons. Incredibly, the English guild of barbers still exists today. Visit their website at <https://barberscompany.org/> to learn more.

inexperienced barber-surgeons were pushed so quickly into the world of medicine, as opposed to fulfilling a nearly decade-long apprenticeship. Fast forward several hundred years into American hospitals in World War I and we see a similar situation, minus the wooden boats. “No longer did the European surgeon have to waste his best years in apprenticeship before seating himself in his master’s chair. Suddenly, young surgeons in the armed forces began confronting problems that would have daunted their elders.”<sup>243</sup>

High patient volume also occurs as a result of acute disease outbreaks, such as the recent COVID-19 pandemic. Acute disease outbreaks may make headliner news, but the “silent killers” comprise an overwhelming wave of chronic disease steadily plaguing our nation. Currently, the top three leading causes of death in America are heart disease, cancer, and unintentional injury.<sup>244</sup> Thus far unintentional (traumatic) injury has been the focus of this paper, but there are several critical facts to be aware of regarding heart disease and cancer prevalence. Firstly, nearly half of Americans have at least one of three key risk factors for heart disease,<sup>245</sup> secondly, over 73 percent of American adults over the age of 20 are obese or overweight,<sup>246</sup> and thirdly, according to data from the National Cancer Institute, nearly 40 percent of American men and women will be diagnosed with some form of cancer during their lifetime.<sup>247</sup> This is the unfortunate reality that our country is facing. No longer is our biggest adversary in health an external threat, but instead it is an “inward corruption,” to quote sea-surgeon John Moyle. While unhealthy habits are not the sole causes of heart disease and cancers, they are certainly contributors. So long as these habits continue, so too will the negative trend in this direction, generating a continually increasing need for healthcare professionals to combat it. Additionally, it is obvious that the aging process is correlated with an increase in healthcare needs. As such, the demands on the healthcare system will continue rising to accommodate the aging baby boomer generation which comprises over 20 percent of the population.<sup>248</sup>

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243. Robert G. Richardson, on World War I, “The History of Medicine.” *Encyclopedia Britannica*, December 5, 2023. <https://www.britannica.com/science/history-of-medicine>.

244. Robert N. Anderson, Jodi A. Cisewski, and Farida B. Ahmad. “Provisional Mortality Data - United States, 2022.” Centers for Disease Control and Prevention, May 4, 2023. <https://www.cdc.gov/mmwr/volumes/72/wr/mm7218a3.htm>.

245. U.S. Department of Health & Human Services. “Know Your Risk for Heart Disease.” Centers for Disease Control and Prevention, March 21, 2023. [https://www.cdc.gov/heartdisease/risk\\_factors.htm](https://www.cdc.gov/heartdisease/risk_factors.htm).

246. U.S. Department of Health & Human Services. “FastStats - Overweight Prevalence.” Centers for Disease Control and Prevention, January 5, 2023. [https://www.cdc.gov/nchs/fastats/obesity\\_overweight.htm](https://www.cdc.gov/nchs/fastats/obesity_overweight.htm).

247. U.S. Department of Health and Human Services. *Cancer Statistics*. National Cancer Institute, September 25, 2020. <https://www.cancer.gov/about-cancer/understanding/statistics>.

248. Veera Korhonen, “U.S. Population Share by Generation 2022.” *Statista*, August 29, 2023. <https://www.statista.com/statistics/296974/us-population-share-by-generation/>.

The final leading factor increasing the need for physician assistance is population geography. As patients become increasingly geographically dispersed—whether seen in the rural, chronically underserved areas of modern America, or the thousands of ships sailing the 17th-century Atlantic—there are not enough physicians to possibly attend to the needs of a such a delocalized patient base. Just as with surgeons and barber-surgeons in the days of piracy, the ratio of physicians to physician assistants is beginning to once again tip towards the latter, reflecting an increasing reliance on PAs performing primary care. According to the *Journal of Rural Health*, 50 percent of PAs now serve in primary care across the country, and are “more likely than doctors to practice in rural areas and with underserved populations.” Notably, this journal also estimates that “PA/NPs could provide care for 50–90 percent of patients presenting to primary care.”<sup>249</sup> Furthering this point, according to the U.S. Department of Labor, “employment of physician assistants is projected to grow 27 percent from 2022 to 2032, much faster than the average for all occupations.”<sup>250</sup> While this is an encouraging figure to prospective PAs, there is rising concern for the consequences of ever-growing responsibilities despite limited to no changes in educational requirements. Currently, most PA programs range from two to three years to complete. This historically steady figure may see an increase as more PAs are turned to as primary care providers, and their scope of practice broadens.

### ***History of the Physician Assistant***

As aforementioned, the demands placed on the healthcare system become particularly strained during times of war. The first tangible connection between barber surgeons and the modern occupation of physician assistants came about in the 17th century. Feldshers, known then as field surgeons or barber-surgeons, served in the armies of the first Russian Tsar and Emperor Peter the Great, during prolonged wars against the Ottoman and Swedish Empires.<sup>251</sup> Feldshers continue to practice in modern Russia as “PA prototypes,”<sup>252</sup> who provide primary, preventative, and maternity care services. Moving forward in history and returning to the topic of medicine at sea, America’s first naval wars necessitated further medical “hands on deck.” John Wall signed aboard the *U.S. Frigate Constellation* on June 1st, 1798,

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249. Christine M. Everett, Jessica R. Schumacher, Alexandra Wright, and Maureen A. Smith. “Physician Assistants and Nurse Practitioners as a Usual Source of Care.” *The Journal of Rural Health* 25, no. 4 (September 2009): 407–414. Accessed July 25, 2024. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2794129/>.

250. U.S. Department of Labor, “Physician Assistants: Occupational Outlook Handbook.” U.S. Bureau of Labor Statistics, April 17, 2024. <https://www.bls.gov/ooh/healthcare/physician-assistants>.

251. “1650–1956: Historic Precedents.” *Physician Assistant History Society*. Last modified October 31, 2023. Accessed August 6, 2024. <https://pahx.org/period01/>.

252. Ramer, Samuel C. “The Russian Feldsher.” *JAAPA* 31, no. 11 (November 2018): 1–6. Accessed August 6, 2024. <https://pubmed.ncbi.nlm.nih.gov/30358685/>.

and served as the first “loblolly boy,”<sup>253</sup> an official title described in the U.S. Naval Regulations of 1814 as “the Surgeon’s faithful attendant . . . under his direction . . .”<sup>254</sup> Later in the 1800s, the term “loblolly boy” was changed to “surgeon’s steward,” and eventually evolved into “Hospital Corpsman.”<sup>255</sup> In 1863, at Fort Riley, Kansas, Captain John Hoff organized the “first company of ‘medic’ instruction” for Hospital Corps members, and by the first decade of the 20th century, the Flexner Report was released.<sup>256</sup>

The Flexner Report was a product of the changing American mindset, grounded in the Scientific revolution of the 20th century. The American Medical Association (AMA), founded in 1847, made clear its primary intention—to improve medical education.<sup>257</sup> This was the central seed of transition from an apprenticeship model to the science-based and institutionalized educational model we see today. AMA, in collaboration with the Carnegie Foundation, hoped to produce moving evidence to induce change in medical education. Thus Abraham Flexner, an educational theorist, was hired to evaluate over 150 institutions of medical education in the U.S. and Canada. Flexner’s report thoroughly criticized the current state of medical licensing, going so far as to say that “many of them [doctors], gotten through advertising, would make better farmers.”<sup>258</sup> The changes that followed this report were substantial. Among the chief affects were increased professional accountability, standardization of medical training, and overall solidification of the idea that students of medicine were now accountable to understand the vast amount of newly discovered information regarding health and medicine. No longer would it be possible for a practitioner of any kind, unaware of the ever-expanding advances in health science, to rely on past experience, personal opinion, and subjective ideas to treat patients. This initially led to a decreased amount of practicing healthcare professionals, as the number of medical schools plummeted from 155 at the time of the report to 76 following its release in 1910.<sup>259</sup> However, this trend soon reversed as more students were willing to take up a heavier load in order to better serve their communities.

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253. The term “loblolly” was in reference to the daily ration of porridge that crewmembers in the sick bay received. Accordingly, it was the “loblolly boy” who provided these rations.

254. Roy A. Monsteller, *John Wall*. The United States Navy Memorial, n.d. Accessed August 6, 2024. <https://navylog.navy Memorial.org/wall-john-11>.

255. “Historic Precedents.” *Physician Assistant History Society*®. (n251).

256. Ibid.

257. Claire Johnson and Bart Green. “100 Years after the Flexner Report.” *Journal of Chiropractic Education* 24, no. 2 (October 1, 2010): 145–152. Accessed August 6, 2024. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2967338/>.

258. Ibid, and Abraham Flexner. “Chapter III: The Actual Basis of Medical Education.” Essay. In *Medical Education in the United States and Canada: A Report to the Carnegie Foundation for the Advancement of Teaching*, p. 37. Bulletin Number Four ed. 437 Madison Avenue, New York City, New York: The Carnegie Foundation, 1910.

259. Ibid.



Four years after the Flexner report, the first world war is theorized to have catalyzed medical specialization and exacerbated the need for vast numbers of healthcare personnel. This jumpstarted many young students in their careers, just as wars during the golden age of piracy did for barber-surgeon apprentices such as the young Lionel Wafer. However, it was the second world war that officially brought us the physician assistant. As a result of WWII and concurrent scientific advancement, modern battlefield medicine was born and “instances of death, deformity, and loss of limb were reduced to levels previously unattainable.”<sup>260</sup> Just as there has been with every other war, the subsequent patient demands often outweigh providers’ availabilities. However, military man and physician, Dr. Eugene A. Stead, had a plan—the three-year physician fast-track. By holding classroom lectures in the morning and clinical practice in the afternoons and evenings, Stead became increasingly confident in the ability of determined young students to quickly pick up on the knowledge required to serve patients in need, and his own ability to put together a curriculum to do just that. In 1965, as the Chairman of the Duke University Department of Medicine, he officially employed a further condensed 24-month program, and the very first Physician Assistant program was initiated. Rural practitioner Roger Wells, experienced PA-C, recipient of the National Rural Health Association’s President’s award, and “clinical champion” at the Federal Office of Rural Health Policy explains in a 2018 interview,

The first physician assistants were medics who had served in the military. They had advanced training and wanted to utilize those skills, and a physician assistant role was a great way for them to fill a growing need for primary care... what happened in rural America is that many physicians were quickly overwhelmed and needed someone to assist them, rather than bringing on another physician, they looked to PAs for help with daily tasks such as screening tests, help with an emergency call, or assistance during surgeries. The job of the PA was mainly to function as an assistant to the doctor. Now it’s more of a partnership or team practice, with PAs performing many of the same functions as a doctor and taking on more responsibilities.<sup>261</sup>

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260. Robert G. Richardson, “History of Medicine.” *Encyclopædia Britannica*, December 5, 2023. <https://www.britannica.com/science/history-of-medicine>.

261. Chandra Martin, “Reimagining the Role of Physician Assistants,” *NRHA, National Rural Health Association*, December 21, 2018. <https://www.ruralhealth.us/blogs/ruralhealthvoices/december-2018/reimagining-the-role-of-physician-assistants>. Roger Wells, 30-year rural practice PA-C.



**Figure 30:** Dr. Stead with Grady Hospital Medical Staff, 1943.

*Source:* Duke University Medical Center Archives, Barton Haynes Collection, catalog number SIC00007.

### ***Concluding Comparisons***

As Roger Wells put it, the role of a physician assistant in healthcare today is more akin to a partnership with the physician than one purely based on supporting activities. This is the direction that healthcare appears to be moving in, and is not unique to our time period. Just as roles in medicine due to a lack of surgeons willing or able to set to sea, modern PAs are stepping up to fill in the gaps where physicians are unable, such as reaching the 60 million citizens, or the 1 in 5 Americans, that live in rural areas.<sup>262</sup> Referring to both rural America and warring ships that cruised the 17th-century Atlantic, these isolated environments entail vast duties for the medical provider.

Focusing on emergency care, the EMPA<sup>263</sup> scope of practice includes, but is not limited to, taking patient histories, performing physical and medical screening examinations, ordering medications and interpreting diagnostic tests, as well as instructing, counseling, and referring patients. Of particular importance to this point in the paper—PAs also order and perform diagnostic and therapeutic procedures, which are strikingly similar to those carried out by the barber surgeons. This list includes, but is not limited to, reducing fractures and dislocations, lancing and draining abscesses, suturing lacerations, basic wound care, cast and splint application, debridement of burns and abrasions, foreign body removal, immobilization techniques, intravenous and intraosseous needle placement, paracentesis, bladder catheter placement and management, anti-parasitic treatments, administration of medications and injections ... the list goes on. There is not an item on that

262. America Counts Staff. "One in Five Americans Live in Rural Areas." *Census.Gov*. Last modified October 8, 2021. Accessed August 6, 2024. [https://www.census.gov/library/stories/2017/08/rural\\_america.html](https://www.census.gov/library/stories/2017/08/rural_america.html).

263. EMPA is an acronym referring to "Emergency Medicine Physician Assistant," one of many specialized branches PA graduates can pursue.

list that cannot be found within the list of duties expected of modern EMPA.

Although treatments and techniques to combat illness and injury are always changing, the illnesses and injuries themselves remain similar throughout history, as do the personnel that assist the sick and injured. Whether referred to as a barber-surgeon, feldsher, surgeon's steward, or physician assistant, the roles that these professionals have fulfilled over time are undeniably linked, evolving from one generation into the next, along with the science of health care itself.

Whether it's a pirate captain smiling down upon a freshly looted pile of silver and gold, or a wealthy CEO admiring a profitable rise in the stock market, both are of the same flesh and blood, and susceptible to the same injuries requiring medical care—whether in the form of a roguish barber-surgeon working diligently in the cockpit of a swaying ship, or an experienced and capable PA engaged in the trenches and tumult of today's modern ER. The medical team has been, and always will be, vital to society both literally and metaphorically. No single provider can bear the weight of this extraordinary duty alone, which is why we in healthcare must make it a common goal to continually work, learn, and grow together for the betterment of ourselves, our patients, and our practice. To conclude in words of John Woodall, "...and so not omitting the continuance of my good affection to all my brethren ... I commend you to the tuition of the most highest, resting still yours in brotherly affection."<sup>264</sup>

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264. John Woodall, *The Surgeon's Mate*, section not paginated. The full quote includes use of the phrase, "Æsculapius professed surgeons," which refers to Asclepius, the Greek god of medicine on which they swore oaths. His serpent-entwined symbol, the Staff of Aesculapius, is still frequently portrayed in medicine today. 1693.

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# The Success of Hillsong Global: An Analysis of Hillsong Church through the Lens of Weberian Charisma

**Addison McCarty**

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## *Abstract*

Hillsong Church is a remarkable testament to the power of charismatic leadership within religious organizations. Understanding the interplay between charismatic leadership and organizational growth is paramount for religious organizations. This essay examines the intriguing success story of Hillsong Church through the lens of Weberian Charisma, analyzing the fundamental elements that contribute to its charismatic leadership and unparalleled organizational expansion. By examining Hillsong's journey, valuable insights can be gained into the dynamics of charismatic leadership and its profound impact on the evolution of religious institutions. The research provided shows real-life examples of charismatic authority in churches, providing valuable insights into the dynamics of charismatic leadership and its profound impact on the evolution of religious institutions.

*Keywords:* Hillsong Church, Weberian Charisma, religious leadership, religious organization, Max Weber



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Max Weber made significant contributions to understanding religion and its relationship with society. He established three distinct concepts of religious authority: charismatic, traditional, and legal. Charismatic authority stems from the charismatic qualities of a leader, granting them influence and power over others. Weber's theory of charisma helps provide a framework for understanding the nature of leadership within religious institutions and can help explain religious authority. Although many churches have experienced large growth due to the charismatic qualities of their leadership, Hillsong Church is a congregation that is known on a global scale for the growth they experienced from 1983 to 2017 due to the charisma of their pastoral leadership.

## **WEBERIAN CHARISMA**

Max Weber, a prominent sociologist in the 1920s, made significant contributions to understanding religion and its intricate relationship with society. Although his work was not exclusively centered on religion, his influence on the subject was undeniable. One of his key contributions was the establishment of three distinct concepts of religious authority: charismatic, traditional, and legal authority. Traditional authority is any authority that holds its legitimacy through the sanctity of tradition, much like that of a monarchy. It is authority that is passed down. Legal authority is any authority that has legitimacy through laws that have been enacted, similar to the structure of the United States government. This essay will primarily delve into Weber's beliefs concerning charismatic authority.

To comprehend Weber's perspective on charismatic authority, first, it is essential to grasp his definition of charisma. In Weber's conceptualization, charisma represents a unique and exceptional quality certain individuals possess that sets them apart from ordinary people. According to Martin Riesebrodt's research on Weber and his *Theory of Charisma*, "charisma is a general term which simply refers to any belief in extraordinary, superhuman powers residing in people or objects" (Riesebrodt, 1999, p. 12). Charismatic authority, therefore, stems from the charismatic qualities of a leader, granting them influence and power over others. This form of authority is not based on the traditional norms of piety, history, and calling, or the legal systems of offices and formal responsibilities; instead, it emerges from personal magnetism, extraordinary abilities, or divine connections of the individual in question.

Weber's exploration of charismatic authority involves examining leadership dynamics and their impact on society. Charismatic leaders possess an innate



ability to inspire and captivate their followers, often leading movements, religious sects, or social change. The charisma that such leaders possess is often viewed as a disruptive, potentially revolutionary catalyst in human history, symbolizing the boundless creativity and influence of human initiative and imagination—in certain contexts, it possesses the capability to reshape rigid social constructs (Riesebrodt, 1999, p. 12). Furthermore, Weber highlighted the transient nature of charismatic authority. Charismatic authority is inherently unstable, unlike legal or traditional authority, which can be institutionalized and passed through generations. It relies heavily on the leader's ability to maintain their charismatic appeal. Once the leader loses charismatic qualities or fails to sustain the fervor of their followers, this form of authority can quickly dissipate.

Weberian charisma has significant application and relevance when studying religion—especially considering the recent increase in “Charismatic Christian” denominations. His theory of charisma helps provide a framework for understanding the nature of leadership within religious institutions. It also can help explain religious authority, especially in religions where the leaders are chosen based on special qualities, insights, or connections with the divine. According to Lehmijoki-Gardener, “charismatic power is at times a matter of magnetism of a personal sort, but often the leader’s inspired preaching and social relevance is attributed to [a] visionary, supernatural power.” The research she has provided shows real-life examples of charismatic authority in churches (Lehmijoki-Gardner, 2014, p. 437). Once charisma and charismatic authority are understood, the construct can shed light on specific case studies.

## **HILLSONG CHURCH: AN OVERVIEW**

Hillsong Church, originally known as the Sydney Christian Life Centre, traces its origins to 1977 when it was founded by Frank Houston (Stone, 2023). Houston, an Assemblies of God minister from New Zealand, relocated to Sydney to establish a new church after several unsuccessful attempts at church planting in his home country (The Secrets of Hillsong). Many theories have been offered as to why Frank Houston was not a successful church planter in New Zealand, but the most common and accepted belief is that he had been accused and outed (but never pressed with any criminal charges) as a pedophile (Press, 2022). In this view, due to the unstable nature of the charismatic authority Frank was trying to claim, being accused of pedophilia cost him his platform and he abandoned his efforts in New Zealand.

Despite the accusations made against him, Frank was successful in planting churches in Australia and became the founding pastor of Sydney Christian Life Centre. In 1983, Frank's son Brian Houston and his wife Bobbie established a second location of the church, the Hills Christian Life Centre (CLC). This expansion marked a significant turning point for what would become known as Hillsong.

During the 1980s and 1990s, Hills CLC experienced remarkable growth, primarily due to the influx of young worshippers drawn to its unique style of worship. The church's vibrant atmosphere and contemporary approach resonated strongly with young adults, propelling its rapid growth. In 1992, Hills CLC took a bold step by planting its first international church, the London Christian Life Centre, signaling the beginning of its global expansion.

The Hills CLC faced a pivotal moment in 1999 when it merged with Sydney CLC, a decision made after Brian Houston learned of Frank Houston being accused of pedophilia, sexual harassment, and assault. Following this decision, Brian, now the sole ministerial leader of both locations, spearheaded a rebranding initiative, leading to the establishment of Hillsong Church.

Hillsong Church swiftly ascended to prominence within the global marketplace, a fact substantiated by the latest data available from Hillsong's website, showcasing its extensive reach with congregations spanning 27 countries worldwide (Hillsong Church, 2023). Researcher Gerardo Marti emphasizes the church's expansive vision, stating, "Hillsong church always had a global ambition" (Marti, 2017, p. 279). However, as explored in the revealing docuseries *The Secrets of Hillsong*, the church's mission became muddled over time. The documentary's religious historian, Kristin Kobes Du Mez, exposes this nebulosity, stating, "There was so much murkiness in the mission that the original goals of the church somehow got lost. The goal of this church from the very outset was to reach as many people as possible, and in their desire to grow, they never stopped to think if they should" (Smith, 2023; *The Secrets of Hillsong*, 2023).

The launch of Hillsong NYC in October 2010 marked a significant geographical threshold and indicated the commencement of obvious strides in charisma within Hillsong Church. The appointment of Carl Lentz as the location pastor at Hillsong NYC reflected the church's keen understanding of the pivotal role charismatic leadership plays in fostering connections and resonating with a diverse audience. This strategic move laid the groundwork for a new chapter in Hillsong's global influence.

As the charismatic aura of Hillsong's leaders continued to captivate followers, the organization's influence expanded, reinforcing its status as a beacon of spiritual inspiration across the global landscape.

## WEBERIAN CHARISMA IN HILLSONG CHURCH

During the "Golden Age of Hillsong," (2000–2015) a period marked by extraordinary growth and influence, the leadership team had two clear, prominent figures—Brian Houston and Carl Lentz. Their association traces back to Lentz's time at Hillsong College, an institution established by Hillsong Church. Houston and Lentz's connection originated through Houston's son Joel, with whom Lentz quickly became friends. Brian Houston and Lentz have both been lauded for extraordinary charisma and exceptional oratory skills. Eventually, Lentz's ability to translate complex biblical concepts into relatable, colloquial terms—along with his humor, vulnerability, and unparalleled generosity—contributed to his rise to celebrity-like status (Smith, 2023).

Within Hillsong Church's leadership, compelling instances underscore Brian Houston's undeniable status as a charismatic leader. In late 2019, despite facing the accusations of having covered up his father's crimes (he has since been acquitted), Houston approached adversity not as a hindrance but as an opportunity to display his resilience and fortitude (The Associated Press, 2023). This resilience aligns with Max Weber's assertion that "The charismatic leader gains and maintains authority solely by proving his strength in life" (Weber & Eisenstadt, 1968, p. 22). Houston's response to his challenges was a testament to his charismatic leadership style, which he would have self-described as charismatic authority.

A striking illustration of Brian Houston's understanding of his power on the global stage was his decision to engage with political figures, notably demonstrated when he traveled to the United States to meet with then President, Donald Trump. This move, as observed by author David Smith, epitomized a broader realization that transcended religious confines. Smith states, "If you are going to make it big on a global scale, you also have to make it big within political America" (Smith, 2023). Houston's proactive engagement in political circles during that period illustrated his astuteness in expanding Hillsong's influence not only within religious spheres but also across the broader socio-political spectrum. Smith further reflects on Houston's actions, noting that "[Houston] was certainly making inroads at that point in time" (Smith).

In the intricate web of leadership decisions within Hillsong Church, it is conceivable that when Brian Houston was appointing pastors for their global locations, he might have been discreetly assessing potential successors for his eventual retirement. Within Hillsong's operational framework, the sole authority to designate a successor resides with the incumbent leader, a consistent trait observed among charismatic Christian megachurches. Max Weber astutely notes that a route to amassing charismatic authority lies in "the designation on the part of the original charismatic leader of his successor" (Weber & Eisenstadt, 1968, p. 55). Weber's perceptive observations, made five decades before the global expansion of Hillsong Church, remarkably predicted the patterns of succession when charismatic organizations need to replace leadership at the highest levels.

Weber further posits that another avenue through which individuals attain charismatic authority is "heredity" (Weber & Eisenstadt, 1968, p. 56). This notion finds resonance in the fact that shortly after graduating from Hillsong College, Brian Houston's son ascended to a prominent leadership role at Hillsong NYC, implying an inheritance or transmission of influence and authority within the familial lineage.

In scrutinizing the organizational framework of Hillsong Church, striking parallels emerge, aligning with Max Weber's assessment of charismatic authority. Weber contends, "There is no system of formal rules, or abstract legal principles and hence no process of judicial decision oriented to them... formally concrete judgments are newly created from case to case and are originally regarded as divine judgments and revelations" (Weber & Eisenstadt, 1968, p. 51). This aligns with Hillsong's approach to addressing allegations concerning staff and volunteer misconduct. The handling of disciplinary actions is individually tailored, with judgments emanating solely from those vested with authority directly from Brian Houston, on a case-by-case basis.

Continuing Weber's analysis, he suggests that "for charisma to transition into a permanent structural routine, it is necessary that its anti-economic character should be altered. It must be adapted to some form of fiscal organization to provide for the needs of the group" (Weber & Eisenstadt, 1968, p. 60). This assertion supports the observations made by researcher Elizabeth Miller, who notes, "These megachurches operate in much the same way that large businesses operate—they have warehouse-like buildings, large numbers of highly trained staff, large capital, and investments, and an eye for exploring new markets, locally and internationally" (Miller, 2016a).

While acknowledging the congruence between certain practices within Hillsong and Max Weber's theory of charisma, it is equally important to

recognize disparities where alignment is absent. A distinct contrast emerges in Hillsong's approach to leveraging contributions, diverging from Weber's notion that charismatic authority opposes exploiting grace for financial gain (Weber & Eisenstadt, 1968, p. 52). Hillsong's alignment with the prosperity gospel stands in contrast, advocating that generous giving brings divine blessings. This ideology transforms congregants' offerings into capital investments, fueling the church's financial stability and growth. Hillsong Australia Annual Report 2021, 2021 reveals insightful financial details from the 11-campus location in Australia, indicating that 77 percent of its revenue is derived from donations, while 9 percent stems from capital gains. Although these percentages might seem modest in isolation, the scale becomes evident when considering Hillsong Australia generates a staggering \$87.75 million annually (Hillsong Australia Annual Report 2021, 2021). Furthermore, the report highlights a surplus of approximately \$35 million yearly, underscoring substantial investments made for future capital gains, symbolizing a strategic financial approach to securing the church's fiscal prowess and sustainability. While differing from Weber's perspective on financial exploitation within charismatic authority, this financial strategy highlights Hillsong's effective utilization of contributions for long-term financial resilience and growth.

Secondly, Max Weber asserts that within charismatic organizations, "there is no hierarchy" (Weber & Eisenstadt, 1968, p. 50). Within Hillsong's organization, the hierarchy is clear. The highest-ranking official in the Hillsong organizational structure is the Lead Global Pastor who oversees the Sydney location. Organizationally subservient to the Lead Global Pastor are all other location pastors. Weber further delineates that charismatic organizations oppose rational ones, particularly bureaucratic and traditional authority, a stance that is at odds with Hillsong's bureaucratic structure (Weber & Eisenstadt, 1968, p. 51). This clear hierarchy and bureaucratic structure have led to the routinization of charisma. Weber says that as you integrate the charismatic authority into a more rigid structure, in this case, the bureaucratic structure of the church, the authority held is now traditional or in some cases legal, no longer based solely on the charismatic nature of the leader.

## **CHARISMATIC RITUALS AND PRACTICES IN HILLSONG**

Hillsong's published worship music acts as a gateway for many, enticing them into the vast expanse of this church community. The connection to their music becomes a conduit to worship, evoking profound emotional responses that individuals yearn to repeat. Max Weber says that the purpose

of ritual is to evoke a religious mood, a feat Hillsong Church accomplishes remarkably through its worship and sermons. Within Hillsong's worship practices lies the potential for fostering a heightened sense of charismatic authority within the church's structure. Researcher Gerardo Marti astutely observes that "Hillsong provides an opportunity to enact an embodied and emotional participation in worship, one that is as physically involved as it is compelling and cathartic" (Marti, 2017, p. 378). Expanding on this, Marti delves deeper into the impact of worship gatherings, noting they create an immersive atmosphere in contemporary worship that resonates widely. He emphasizes that the worship experience aligns with larger trends in churchgoers globally, reflecting on the "Charimatization of worship," occurring across various congregations (p. 383).

In analyzing Hillsong's sermon style, Marti emphasizes the synchronization between the event-driven nature of their worship and the event-centric essence of their salvation message (p. 379). Marti is specifically referring to these as events in two separate ways. The event-driven nature of worship directly comments on how the worship is very structured and has a production level like that of a concert. The event-centric essence of their salvation is similar to the concept of being "born again," where there is one specific moment when you know that you are saved. This synchronization underscores the immediacy and personal relevance emphasized within Hillsong's sermons, encouraging immediate responses and actionable steps in one's spiritual journey.

Furthermore, in the broader context of megachurches, researchers highlight the influential role of preaching and the personal charisma of the church leader and their spouse, often referred to as "the first lady." Lehmijoki-Gardner observes that within charismatic communities, "this leadership duo acts as the adhesive that binds the congregation together, inspiring active participation in worship and uniting individuals in their collective pursuit to honor God" (Lehmijoki-Gardner, 2014, p. 439). When looking through the staff profiles of all campus pastors, one could see they are almost all couples. It is often a husband-and-wife duo. Thus, reinforcing this concept of "the first lady" whose job it is to relate to and preach to the women of the congregation. These rituals ultimately reinforce the charismatic authority granted to the leaders of the Hillsong Church.

Hillsong College, an educational cornerstone established by Hillsong Church, echoes a profound commitment articulated in its mission statement: "Our goal is to grow healthy leaders in all areas of life and ministry" (Hillsong College, n.d.). This institution is a vital breeding ground for the emergence of adept and spiritually grounded leaders, particularly within

the Hillsong community. A considerable cohort of emerging leaders within the church's ranks have honed their ministry skills and cultivated their faith foundations at Hillsong College. Offering a structured academic curriculum, the institution provides aspiring ministers with associate degrees in ministry, followed by bachelor's degrees in ministry and theology. Through these programs, Hillsong College imparts theological education and instills the ethos and practices integral to the Hillsong movement, notably encompassing the nuances of charismatic leadership.

Drawing from Max Weber's insights, the college's role becomes apparent as it embodies Weber's proposition regarding acquiring charismatic authority. Weber asserts that individuals gain charismatic authority through "designation on the part of the original charismatic leader of his own successor and his recognition on the part of the followers" (Weber & Eisenstadt, 1968, p. 55). In line with this, Hillsong College serves as a platform for preparing and nurturing the organization's next generation of charismatic leaders. By equipping individuals with theological knowledge and the principles and practices emblematic of Hillsong's charismatic leadership, the college plays a pivotal role in perpetuating the charisma essential to Hillsong's identity and continued growth.

The curriculum at Hillsong College focuses on theological education and emphasizes the practical aspects of ministry and leadership within the context of Hillsong's values and ethos, including the inerrancy of the bible, the importance of repentance, and the belief that "Lord Jesus Christ is coming back again as He promised" (Hillsong, Fact Sheet, 2023). By offering an environment that fosters growth in both personal and ministerial capacities, the college aims to develop leaders who can navigate the complexities of ministry while embodying the charismatic qualities vital to Hillsong's leadership framework. Through a blend of academic rigor and immersive training, Hillsong College stands as a pivotal institution shaping the trajectory of future leaders within the church, cementing its place as a breeding ground for charismatic leadership deeply rooted in the Hillsong ethos.

## **CHALLENGES AND CRITICISMS**

Within the landscape of charismatic authority at Hillsong Church, criticism looms large. Morehouse & Lemon's research examines the aftermath of crises within Hillsong, shedding light on Lentz's portrayal as an entity revered by and within his community. The researchers observe, "Numerous media articles described Lentz as a celebrity pastor and an object of devotion

because of whom he knows, his social media following, and his public persona” (Morehouse & Lemon, 2023, p. 6). However, Lentz’s fame became infamy when he was dismissed from his role as Lead Pastor for “moral failures” in cheating on his wife. Morehouse and Lemon underscore that instead of his religious and professional achievements, media coverage of this event focused on Lentz’s celebrity associations. This emphasis, devoid of acknowledgment of Lentz’s accomplishments within his religious or professional realm, solidified his public image as a figure associated primarily with celebrities (Morehouse & Lemon, 2023, p. 6).

## **INSIGHTS ON HILLSONG**

Studying Hillsong Church through the lens of charismatic authority provides insight into the factors behind Brian Houston’s remarkable success. Delving into the nuances of charisma and its pervasive influence across every facet of Hillsong’s activities—be it worship services, missions, or concerts—facilitates a deeper analysis of the profound impact wielded by the institution. This exploration allows for a closer examination of how Hillsong’s charismatic leaders, notably Brian Houston, effectively galvanized a global community beyond Pentecostal congregations. This enables us to grasp the intricacies of their charismatic appeal and how Hillsong transcended denominational boundaries and resonated profoundly with a diverse audience within contemporary Christian circles. Understanding the role of charismatic authority within Hillsong elucidates the underpinnings of their widespread influence, providing invaluable insight into the mechanisms that propelled Brian Houston’s success and the church’s unparalleled impact on the broader Christian landscape.



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# “I Hate My Dead Grandpa,” “Millinery if We Were Married,” and “We All Have Shit Going On”

**Amanda Parrack**

## *Abstracts*

### *I Hate My Dead Grandpa*

I wrote this poem in response to a traumatic experience I had, during an eighteen-hour drive to my brother’s wedding in Montana. My mother brought up how my grandpa wouldn’t allow anyone in our family to marry a person of color. However, at the time, I was in a relationship with a person of color and the conversation continued to get worse. This experience changed my perspective on my family completely. I always knew that if I had brought home a girl, there may be problems, but I never would have thought dating someone who is Black would ever be one. Turns out I was wrong.

### *Millinery if We Were Married*

I wrote this poem in response to an unrequited love that I had experienced during my studies for my undergraduate degree. This poem sets up the imagery of sitting across from this person at the library while imagining a fairytale future where everything works out. This poem alludes to various reasons why the relationship didn’t work out due to the other person’s hyper-fixations on germs. I created this imaginary world, where everything is clean, and perfect with a cute hat shop as if in a Disney movie; however, at the end of the poem the reader is pulled back into reality. The reality being that there could never be anything more in the relationship due to a “table.”

### *We All Have Shit Going On*

I wrote this poem mainly because I realized that we all have various forms of trauma from this existence we call “life.” I realized that we all are dealing with our own problems in our own little worlds, and I think that is something important to keep in mind.



**Amanda Parrack** is first-generation student and is a Creative Writing major with a minor in Spanish. She plans to further her education by attending graduate school soon after graduation. Her current passions include working as a writing consultant in the Bear CLAW and spending her free time reading books.

## I HATE MY DEAD GRANDPA

“If your grandpa was still alive,  
and you had married a *person of color*,  
he wouldn’t go to your wedding.”

I’m in the car to Montana.  
18 hours alone with my parents  
and my mother ponders on the topic  
of my romantic life.  
She’s learned my first love is Black,  
and even now writing this seems cruel.  
It’s 2023  
and my White family  
can’t get over how I slept with him.

My brother is getting married,  
a perfect example of a White Midwestern family.  
*you can’t say those things MOM you can’t say those things*  
Everything changed when they saw a photo of him  
and it was clear he did not fit the family expectations.

I run into the gas station when I have a chance  
and stand in the stall  
silent the rest of the drive  
except for only crying  
my parents reassure me that I have misunderstood.  
Or that I am just tired.

I cry I cry I cry  
I cry oh god I cry  
I cry I cry my god

—in the hotel afterward,  
all alone.

## MILLINERY IF WE WERE MARRIED

I'm sitting across from you at the library  
as I am daydreaming—

Look at our grey hairs and dented lines.  
Because of the old hat shop we made,  
we never wonder if God invented rape.  
Every morning we awake embraced  
with fresh minty breath beside the  
yogurt parfaits we consume, never empty or broken.  
Come inside of me and you'll find  
come and me, darling  
without barriers.  
Just an old married couple,  
with never a worry of germs or washed hands,  
never a worry if the cups are covered,  
or if there are flies around.  
Hats by the hillside with two cats  
just for a second,  
wouldn't that be a fine Disney?

—but truthfully,  
there's a table between us.

## WE ALL HAVE SHIT GOING ON

My mother tore her stitches doing laundry.  
My mother cut her finger prepping the carrots.

My father lost his left pinky woodworking.  
My father almost lost his tongue jumping from a tree as a kid.

My brother was almost killed by suffocation at age three.  
My other brother shit his pants in third grade.

My sanity lost its tracks at age nine.  
My Paxil prescription came ten years later.

My life is my life.  
And yours is yours.

# Phitamin D

**Elisa Peters**

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## *Abstract*

*Phitamin D* is a 36" x 48" oil painting on canvas that explores the relationship developed from the prompt: nature versus technology. After having spent time with friends at Table Rock Lake over the summer of 2023, I looked back at my camera roll with newfound inspiration. The name, Phitamin D, combines the words "vitamin" and "phone," examining the absence of the nutrient and its replacement. I started thinking about the relationship between peoples' connectedness with nature and that of smartphones, a recent technology that has advanced our lives as humans. Even when in nature, our phones disconnect us from the present, consequently disconnecting us from our surroundings and each other. In terms of composition, I started with an acrylic underpainting of fluorescent yellows and blues, colors that enhance the contrast between the earthy tones of the oil paint. Perhaps this creates a sense of radioactivity beneath the surface of the lake. I left the figure in the foreground more abstract to direct the painting's focus to the subject looking at her phone. Another feature of this work that may draw the viewers' attention and might leave them puzzled, is the perspective from beyond the dock, a position that would place the viewer in the water. This perspective questions the photographer's moment of disconnect as they decide to interact with technology to capture the present moment. Overall, I hope any viewers of this painting embrace the ambiguity of the questions that it may pique, examining their own relationship with nature and technology.



*Elisa Peters* is a current senior at Missouri State University pursuing a BFA in Art/Painting and both Spanish and Latin American, Hispanic, and Caribbean minors. She hopes to enroll in an MFA painting program after graduation and continue producing work for her portfolio. Elisa aims to work as a practicing artist as long as she can and then possibly pursue teaching.





# Strategic Control and Methods of Transportation in the Late Postclassic Aztec Empire

**Kaitlyn Pluff**

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## *Abstract*

This paper examines the methods of transportation utilized by the Aztec people, including their road system, canoes, and causeways. The research specifically focuses on transportation in the Late Postclassic Period (1325–1521 CE), which is characterized by the height of Aztec hegemony over the Valley of Mexico prior to the Spanish conquest of the region. In addition to facilitating transportation and organizing the Aztec Empire in a manner that maintained their regional dominance, these innovations in transportation also served as key factors in the empire's defense, particularly against the Spanish invasion. Incorporating evidence from primary accounts of Spaniards and Aztecs from the Florentine Codex, this research demonstrates the vital role of Aztec transportation methods in sustaining both strategic and defensive control of the empire. It argues that the layout of a dendritic road system, as utilized by the Aztecs, strategically connects all provinces directly to the Aztec capital, facilitating trade and tribute collection centered in Tenochtitlan. Furthermore, the lack of connections between provinces serves to defend the empire by making it difficult for people from different provinces to coordinate an uprising. As an empire with an island capital, the Aztecs' dugout canoes and causeways were also essential to efficient travel, trade, and defense within the Valley of Mexico's lake system.

*Keywords:* Aztec Empire, Late Postclassic Period, hegemonic empire, dendritic road system, tributary provinces, trade routes, dugout canoes, causeways, strategic defense, *La Noche Triste*



**Kaitlyn Pluff** is a recent graduate of Missouri State University with a degree in Secondary History Education and a certificate in Ancient Worlds. She plans to begin her teaching career in St. Louis in the fall of 2024. In the future, she hopes to further her education with a master's degree.

Upon entering the city of Tenochtitlan, Spanish conquistador Bernal Díaz del Castillo reported that:

Some of our soldiers even asked whether the things that we saw were not a dream. It is not to be wondered at that I here write it down in this manner, for there is so much to think over that I do not know how to describe it, seeing things as we did that had never been heard of or seen before, not even dreamed about.<sup>1</sup>

Having only encountered traditionally structured indigenous cities thus far, the Spaniards were amazed by the grandeur, architecture, and organization of the Aztec capital. Referred to as the “Venice of the New World” by Hernán Cortés,<sup>2</sup> Tenochtitlan was exceptional due to its methods of transportation within the city, as well as its interconnectivity within the greater Aztec Empire. The Aztecs’ use of strategically designed roads, dugout canoes, and causeways effectively facilitated trade, travel, and defense in the Valley of Mexico.

In the Late Postclassic Period (1325–1521 CE), the Aztec Empire was the dominant economic and political power in the Valley of Mexico. As a hegemonic empire, the Aztecs’ control of their provinces was rooted in political, economic, and cultural influence rather than direct control of the provinces, as with territorial empires. Even without direct provincial control, many conquered tribes within the empire resented their Aztec rulers, causing many indigenous people, particularly from the cities of Tlaxcala and Cempoala, to later ally with the Spanish during the Conquest.<sup>3</sup> To preserve their regional hegemony, the Aztecs of the Triple Alliance utilized unique administrative techniques. The Aztecs relied on their strategic transportation system to communicate and reinforce their power in the region, which “allowed the perpetuation of the empire in the absence of a standing army.”<sup>4</sup>

To maintain control of their vast empire, the Aztecs carefully constructed a strategic road system that connected provinces directly to administrative centers. According to Robert Santley, the Aztec road network followed a dendritic central-place model, an organization in which “vertical linkages between nodes predominate, and there is little articulation between centers of equivalent rank.”<sup>5</sup> Under this system, few roads connected individual

1. Bernal Díaz del Castillo, “Arrival in the Splendid City of Tenochtitlan,” in *The History of the Conquest of New Spain* by Bernal Díaz del Castillo, ed. David Carrasco (Albuquerque: University of New Mexico Press, 2008).

2. Murray Alexandria Biar, “Navigation Paths and Urbanism in the Basin of Mexico Before the Conquest,” *Ancient Mesoamerica* 34, no. 1 (2021): 1, <https://doi.org/10.1017/S0956536121000328>.

3. John F. Chuchiak, IV., “Theme 8—Hernán Cortés & The Conquest of the Aztecs,” Missouri State University, 8 Mar. 2021, lecture.

4. Ross Hassig, Trade, Tribute, and Transportation: *The Sixteenth-Century Political Economy of the Valley of Mexico* (Norman: University of Oklahoma Press, 1985), 102.

5. Robert S. Santley, “The Structure of the Aztec Transport Network,” in *Ancient Road Networks and Settlement Hierarchies in the New World*, ed. Charles D. Trombold (New York: Cambridge University Press, 1991), 199.

provinces of the empire, while most roads were designed to lead to the urban centers of Tenochtitlan and Texcoco.<sup>6</sup> As illustrated in Figure 1, The lack of lateral connections between smaller Mexican vassals was intended to discourage cooperation between provinces in conspiracies and rebellions.<sup>7</sup> Furthermore, the one-way flow of tribute goods from the provinces to Tenochtitlan also communicated Aztec dominance to conquered peoples in the region.<sup>8</sup> This center-out dendritic network, combined with the unidirectional nature of the tributary system to Tenochtitlan, thereby effectively enforced Aztec hegemony in both physical and symbolic dimensions.



**Figure 1:** Map of the Aztec Roadway Network in the Basin of Mexico.

Source: Santley, Robert S. *Ancient Road Networks and Settlement Hierarchies in the New World*. Edited by Charles D. Trombold, 202. New York: Cambridge University Press, 1991.

By their dendritically organized roads, the Aztecs were able to maintain their regional hegemony by extracting tribute routinely and efficiently from their tributary provinces. Primarily utilized for their economic value,

6. Santley, 208.

7. John F. Chuchiak, IV., "Lesson 4: Part 2—Aztec Warfare and Imperial Expansion," Missouri State University, 8 Feb. 2021, lecture.

8. Hassig, 149.

tributary provinces were generally located in the interior of the empire and served to provide a steady flow of tribute to administrative centers.<sup>9</sup> The composition of imperial tribute demands varied by province according to factors such as consumer demand in administrative centers and regional specialization.<sup>10</sup> Although types of tribute ranged from quetzal feathers to slaves,<sup>11</sup> the most commonly demanded tribute item were cotton textiles, which were made by Aztec women throughout the empire.<sup>12</sup> Responsible for the delivery of these goods to the capital, Aztec merchants utilized the road system to navigate the region and collect tribute. After acquiring tribute from conquered provinces, merchants returned to Tenochtitlan and presented the items to the emperor, who then distributed the tribute among the city's inhabitants.<sup>13</sup> The Aztec road system was also essential to the bilateral exchange of goods throughout the empire in regular trade. In an area without wheeled vehicles or draft animals, the *pochteca* merchant class predominantly relied on *tlamemes*, a hereditary group of porters who carried goods from town to town in a relay fashion, to transport goods within trade networks.<sup>14</sup>

In addition to facilitating trade and tribute collection, Aztec roads also served various defensive purposes. Commonly located in the outermost reaches of the Aztec Empire, strategic provinces were established to protect the peoples, resources, and trade routes of the empire from hostile neighbors.<sup>15</sup> Fortresses or garrisons were sometimes created along the borders of these provinces to insulate the innermost provinces and serve as a buffer zone.<sup>16</sup> In areas without fortresses or garrisons, the Aztec road network allowed the army to quickly travel to strategic provinces when under attack.<sup>17</sup> Furthermore, the road system was also used by disguised merchants, who served as spies for the *Tlatoani*, or emperor, in surrounding areas. According to the Florentine Codex, these spies altered their appearance to match the locals, thereby camouflaging themselves to collect information.<sup>18</sup> Through their travels and trade, disguised merchants interacted with neighboring peoples, both within the empire's control and outside of it, to investigate the military capabilities of enemy groups and uncover conspiracies in potentially

9. Michael E. Smith and Frances F. Berdan, "Archaeology and the Aztec Empire," *World Archaeology* 23, no. 3 (1992): 356, <http://www.jstor.org/stable/124768>.

10. Frances F. Berdan, "On the Fringes of Empire: Aztec Tributary Provinces on the Imperial Frontier," *Revista Española de Antropología Americana* 37, no. 2 (2007): 122, <https://revistas.ucm.es/index.php/REAA/article/view/REAA0707220119A/23098>.

11. Bernardino de Sahagún, "Book Nine—The Merchants," in *General History of the Things of New Spain: Florentine Codex*, trans. Charles E. Dibble and Arthur J. O. Anderson (Santa Fe, NM: School of American Research, 1959), <https://hdl.handle.net/2027/mdp.39015012402973>, 17–18.

12. Michael E. Smith, "Life in the Provinces of the Aztec Empire," *Scientific American* 277, no. 3 (1997): 80, <http://www.jstor.org/stable/24995914>.

13. Sahagún, 19.

14. Hassig, 145.

15. Smith and Berdan, 356.

16. Smith and Berdan, 356.

17. Santley, 203.

18. Sahagún, 21.

rebellious areas.<sup>19</sup> Therefore, Aztec trade routes also functioned as a means of reconnaissance for the *Tlatoani*.

Centered around the Valley of Mexico's lake system, the Aztec Empire was also connected by lacustrine trade routes. Historical anthropologist Ross Hassig attributed much of the Aztecs' political and economic control to their location in this lake system, claiming that the five interconnected lakes in the region granted the Aztecs "immediate access to an economic hinterland much larger than that available to other Mesoamerican cities."<sup>20</sup> With many of their provinces located along these lakes, the Aztecs needed methods of water transportation to maximize their administrative and economic power. To navigate long distances in the lake system, the Aztecs utilized various types of dugout canoes, as depicted by Sahagún in Figure 2. Carved from a single log and propelled by paddles or poles, these canoes varied in size according to their purpose, with smaller canoes designed for personal use and larger canoes designed for military use.<sup>21</sup> Due to the scarcity of archaeological evidence of Aztec canoes, it is difficult to determine the exact dimensions of these watercraft, but pictorial representations in Aztec codices suggest that the largest dugout canoes had a carrying capacity of up to twenty passengers.<sup>22</sup> Unique to the Aztecs, these dugout canoes had a simple yet effective design that augmented their maneuverability, speed, and efficiency for trade, everyday use, and warfare.<sup>23</sup>

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19. Chuchiak, "Lesson 4: Part 2—Aztec Warfare and Imperial Expansion."

20. Hassig, 66.

21. Alexandria Biar, "Prehispanic Dugout Canoes in Mexico: A Typology Based on a Multidisciplinary Approach," *Journal of Maritime Archaeology* 12, no. 3 (2017): 247-248, <https://doi.org/10.1007/s11457-017-9188-5>.

22. K.C. Smith, "Island and Mainland Seafaring," *INA Quarterly* 13, no. 2 (1986): 11. <https://nauticalarch.org/ina-quarterly/ina-quarterly-13-2-summer-1986/>.

23. Biar, "Prehispanic Dugout Canoes in Mexico: A Typology Based on a Multidisciplinary Approach," 243.



**Figure 2:** Aztec Canoes.

Source: Sahagún, Bernardino de.

*General History of the Things of  
New Spain: The Florentine Codex.*

“Book II: The Ceremonies.” 1577.

[https://www.loc.gov/resource/gdcvdl.](https://www.loc.gov/resource/gdcvdl)

[wdl\\_10613/?sp=90&st=image](https://www.loc.gov/resource/gdcvdl/wdl_10613/?sp=90&st=image), 90.

Trade within the lake system was documented by Bernal Díaz del Castillo in his *Historia Verdadera de la Conquista de la Nueva España*, in which he described “a great multitude of canoes, some coming with supplies of food and others returning loaded with cargoes of merchandise.”<sup>24</sup> Serving as transition areas from aquatic to terrestrial environments, the shores of the lake system were lined with piers where goods and travelers were loaded and unloaded, thus facilitating trade in the empire.<sup>25</sup> Moreover, trade by canoe was forty times more efficient at transporting bulk than trade by foot with *tlamemes*.<sup>26</sup> In the Valley of Mexico, where “geography conspires against the fluidity of exchange,”<sup>27</sup> water transportation was therefore essential to increasing the interconnectivity of Aztec provinces and ensuring the continuity of regional trade routes.

Within the city of Tenochtitlan itself, inhabitants needed to utilize watercraft in their navigation of the city. In his description of the insular capital, Toribio Motolinía described the layout of Tenochtitlan:

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24. Díaz del Castillo, “Arrival in the Splendid City of Tenochtitlan,” 176.

25. Biar, “Navigation Paths and Urbanism in the Basin of Mexico Before the Conquest,” 3.

26. Hassig, 66.

27. Biar, “Navigation Paths and Urbanism in the Basin of Mexico Before the Conquest,” 1.

Mexico was very strong and well-ordered because it had some wide water streets and other streets of houses ... on the sidewalk of the houses, an alley or narrow street passed or went through the middle, which came out of the doors of the houses. Along the streets of water there were many bridges that crossed from one part to another ... In Mexico there were many acallis or boats for household service, and many other merchants who came to the city with supplies, and all the surrounding towns are full of boats that never stop going in and out of the city.<sup>28</sup>

Because of the many waterways and canals that dominated the city, residents needed to use either water transport or bridges to pass between houses and various parts of Tenochtitlan.<sup>29</sup> While the upper and middle classes of Aztec society likely had their own canoes, some lower-class commoners used rafts to travel instead.<sup>30</sup> Created with wood or reeds from the marshy areas of the city, rafts were used to carry passengers and goods short distances.<sup>31</sup> Regardless of the type of watercraft used, however, aquatic transportation was an essential part of everyday life in Tenochtitlan.

In addition to everyday transportation, dugout canoes were also an important aspect of Tenochtitlan's defense system. For instance, when the Spaniards and their indigenous allies attempted to escape the city on *La Noche Triste*, Aztec warriors were able to surround them in canoes and on land as they fled. From canoes, the Aztecs were able to quickly meet the Spaniards and attack them within close proximity. Reflecting on the events of that night in his second letter to King Charles V of Spain, Cortés wrote, "Before we had arrived at the second [bridge] an immense multitude of enemy assailed us, fighting in every direction, both by land and water."<sup>32</sup> Monopolization of water transportation therefore significantly advantaged the Aztecs during this battle in terms of speed and efficiency, enabling them to kill all but 129 Spaniards and about 500 of their indigenous allies.<sup>33</sup>

On *La Noche Triste*, the Spaniards were also disadvantaged by the Aztec causeways, which was another Aztec innovation in transportation that served defensive purposes.

28. Toribio Motolinía, *Historia De Los Indios De La Nueva España: Escrita a Medios Del Siglo XVI*, trans. Daniel Sánchez García (Barcelona: Herederos de J. Gili, 1914), [https://babel.hathitrust.org/cgi/pt?id=txu.05917301856\\_4190&view=1up&seq=7](https://babel.hathitrust.org/cgi/pt?id=txu.05917301856_4190&view=1up&seq=7), 191.

29. Díaz del Castillo, "Arrival in the Splendid City of Tenochtitlan," 176.

30. Biar, "Prehispanic Dugout Canoes in Mexico: A Typology Based on a Multidisciplinary Approach," 253–254.

31. Biar, "Prehispanic Dugout Canoes in Mexico: A Typology Based on a Multidisciplinary Approach," 253.

32. Hernán Cortés, "Cortés on *La Noche Triste* or the Night of Sorrows," in *Cartas y Relaciones de Hernán Cortés al Emperador Carlos V*, ed. Pascual de Gayangos (Paris: A. Chaix, 1866), <https://www.historians.org/teaching-and-learning/teaching-resources-for-historians/teaching-and-learning-in-the-digital-age/the-history-of-the-americas/the-conquest-of-mexico/letters-from-hernan-cortes/cortes-on-la-noche-triste-or-the-night-of-sorrows>.

33. Chuchiak, "Theme 8—Hernan Cortes & The Conquest of the Aztecs."



As demonstrated by Hernán Cortés' map of the city in Figure 3, Tenochtitlan's insular location made it accessible on foot only by causeways from Iztapalapa, Tlacopan, and Tepeyec.<sup>34</sup>



**Figure 3:** Tenochtitlan

Source: Cortés, Hernán. *Second Letter of Hernán Cortés*. Nuremberg: Friedrich Peypus, 1524. <https://www.loc.gov/item/2021667098/>.

Tenochtitlan was, of course, also accessible by canoe, but the Spaniards initially lacked the naval technology to reach the city in this manner, so the causeways were their primary means of transportation. Built by corvée laborers, Aztec causeways were “large earthen construction[s] with a masonry veneer” that connected Tenochtitlan to major cities on the mainland.<sup>35</sup> The causeways of Tenochtitlan functioned as raised roads over the lake, with several wide bridges built into each for canoes to pass beneath them.<sup>36</sup> Cortés ominously noted that these bridges could be raised or removed to obstruct access to the city,<sup>37</sup> foreshadowing their eventual struggle to escape the city on *La Noche Triste*.

While Hernán Cortés was fighting Panfilo de Narváez at the coast, Pedro de Alvarado, who was left in charge of Tenochtitlan, “sallied out from his quarters with all the soldiers Cortés had left with him, and ... fell on their chieftains and caciques who were dancing and celebrating a feast in honor of their idols Huichilobos and Tezcatēpuca.”<sup>38</sup> Known as the Massacre in the Great Temple, this event resulted in the death of thousands of Aztec elites

34. Hernán Cortés, “Tenochtitlan, 1524,” map, *Second Letter of Hernán Cortés* (Nuremberg: Friedrich Peypus, 1524), <https://www.loc.gov/item/2021667098/>.

35. Hassig, 203.

36. Díaz del Castillo, “Arrival in the Splendid City of Tenochtitlan,” 176.

37. Hernán Cortés, “Cortés’s Account of the City of Mexico,” in *The Library of Original Sources*, 2nd ed., ed. Oliver J. Thatcher (New York: University Research Extension, 1907), <https://archive.org/search.php?query=external-id+niuser%3A%22urn%3Aoclc%3Arecord%3A1048296986%22,318>.

38. Bernal Díaz del Castillo, “Cortés’s Struggle with Narváez,” in *The History of the Conquest of New Spain* by Bernal Díaz del Castillo, ed. David Carrasco (Albuquerque: University of New Mexico Press, 2008).

and exacerbated tensions between the Spanish and residents of Tenochtitlan.<sup>39</sup> This, along with the death of Moctezuma II, triggered Aztec resistance to the Spanish presence in Tenochtitlan and trapped them in the city.<sup>40</sup> Despite the Spaniards' many military advantages, including firearms, horses, chainmail, and steel weapons,<sup>41</sup> the strategic organization of Tenochtitlan and the military prowess of the Aztecs made the Conquest a nearly insurmountable task.

Running low on food and gunpowder, the Spaniards decided to flee Tenochtitlan the night of June 30, 1520, an event they later deemed *La Noche Triste*, or the Night of Sorrows, due to the extensive losses sustained by the Spanish forces and their indigenous allies. Attempting to abscond the city center, the Spaniards discovered that the Aztecs had raised or destroyed several of the bridges in the causeways, thereby preventing their escape.<sup>42</sup> To make matters worse, the causeways' position in Lake Texcoco and their proximity to houses in the city granted the Aztecs easy access to their escape route, allowing them to launch a quick attack by land and water against the retreating Spaniards. Reflecting on their escape, Díaz del Castillo wrote, "As we went along the causeway, charging the Mexican squadrons, on one side of us was water and on the other azoteas [the flat roofs of the houses], and the lake was full of canoes so that we could do nothing."<sup>43</sup> Due to the defensive genius of Aztec causeways, very few Spaniards escaped Tenochtitlan that night, with many having to swim<sup>44</sup> or cross over the "dead bodies, horses, and boxes with which that passage at the bridge was choked"<sup>45</sup> to reach the mainland.

Following their flight from Tenochtitlan on *La Noche Triste*, the Spanish forces were devastated, requiring nearly a year to recuperate and launch another assault on the capital.<sup>46</sup> By this time, a large portion of the Aztec population had succumbed to the Spaniards' strongest ally: smallpox. With an estimated loss of 40 percent of their population to smallpox or illness-related famine, the Aztec forces were greatly weakened when the Spanish returned to besiege Tenochtitlan in 1521.<sup>47</sup> However, even when weakened by disease, the Aztec military managed to hold off the Spaniards for an impressive 97 days before the city was taken.<sup>48</sup> The ability of the Aztecs to

39. Chuchiak, "Theme 8—Hernan Cortes & The Conquest of the Aztecs."

40. Chuchiak, "Theme 8—Hernan Cortes & The Conquest of the Aztecs."

41. Chuchiak, "Theme 8—Hernan Cortes & The Conquest of the Aztecs."

42. Bernal Díaz del Castillo, "Spanish Defeat and the *Noche Triste*," in *The History of the Conquest of New Spain* by Bernal Díaz del Castillo, ed. David Carrasco (Albuquerque: University of New Mexico Press, 2008).

43. Díaz del Castillo, "Spanish Defeat and the *Noche Triste*," 228–229.

44. Cortés, "Cortés on *La Noche Triste* or the Night of Sorrows."

45. Díaz del Castillo, "Spanish Defeat and the *Noche Triste*," 230.

46. Chuchiak, "Theme 8—Hernan Cortes & The Conquest of the Aztecs."

47. Samuel M. Wilson, "Moctezuma's Revenge," *Natural History* 132, no. 4 (2024): 15.

48. Chuchiak, "Theme 8—Hernan Cortes & The Conquest of the Aztecs."

resist the advances of the conquistadors for such an extended period serves as a testament to the strength and spirit of the Mexica and their defensive capabilities. Considering the massive Spanish defeat on *La Noche Triste*, it is unlikely that the Spaniards could have completed the Conquest without the extensive demographic collapse associated with smallpox.<sup>49</sup> Aided by their strategically designed transportation system and methods, the Aztecs proved to be a formidable foe during the European Conquest of the so-called “New World.” Although used for everyday purposes, Aztec roads, dugout canoes, and causeways also proved to be incredibly effective in defense of the empire. Overall, the Aztecs of the Late Postclassic Period were true innovators in transportation, specifically designing their transportation system to facilitate trade and travel, as well as defend their empire against internal and external enemies.

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49. Wilson, 15.

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# La identidad transgénero durante la dictadura franquista y la transición en España

**Elizabeth Raines**

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## *Abstract*

This text examines the treatment and experiences of transgender and other gender-nonconforming individuals in Spain during the end of the Franco dictatorship and the subsequent democratic transition roughly between 1970 and 1983. The United Nations' binary definition of gender equality used for the Sustainable Development Goal Five, "to end all forms of discrimination against all women and girls everywhere" ("Goal 5 | Targets and Indicators"). However, women and girls are not the only groups who face discrimination for their gender. In these efforts, I shed light on the complexity of gender identity, the strength of the early Spanish trans community, and the negligence of trans issues that cannot be ignored or repeated in modern society. The discrimination faced by transgender and gender nonconforming individuals in this period presents clear examples of how gender equality cannot simply be achieved when gender is viewed through a cisgender lens. Coming into power in 1936, Francisco Franco instated a fascist government in Spain lasting until he died in 1975. Under his rule, trans people were accused of being "social dangers" and were often imprisoned or even killed under the *Ley de Vagos y Maleantes* (Law of Vagrants and Criminals) and the law that replaced it, the *Ley sobre Peligrosidad y Rehabilitación Social* (Law on Social Danger and Rehabilitation). As the dictatorship ended, trans individuals began to work towards removing these discriminatory laws and gaining acceptance in their country, motivated by the changing cultural tides of the Movida Madrileña at the beginning of the transition to democracy. Their efforts first paid off with the repeal of the *Ley sobre Peligrosidad y Rehabilitación Social* in 1978. Spain is now one of the most progressive countries regarding trans rights.

*Keywords:* 20th-century Spain, transgenderism, gender, Franco dictatorship, trans acceptance, progressivism



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España se ha esforzado mucho por hacer del país un lugar seguro para todos sus ciudadanos, incluidas las personas transgénero. Desde la transición a la democracia, España ha adoptado numerosas protecciones y reconocimientos legales para despatologizar y apoyar a sus ciudadanos trans. Con la promulgación de la ley trans en 2023, entre otras leyes progresistas de años anteriores, el país se ha convertido en una de las naciones más acogedoras para las personas trans en el mundo (Noriega). Sólo en 2023, unos 5,000 españoles cambiaron su sexo registral al Registro Civil; casi cuatro veces más que en 2022 (Ondarra). Sin embargo, son estadísticas muy recientes. En el siglo pasado, España era un país muy diferente que utilizaba sus leyes para criminalizar a las personas trans en vez de protegerlas. La exploración del pasado del país con respecto al tratamiento de las personas trans arroja luz sobre un pasado que ha justificado la creación de estas nuevas leyes. La comprensión del pasado es clave para evitar errores anteriores, y es un paso vital para lograr una sociedad más justa para todas las personas de cualquier género o sexo.

Para satisfacer las necesidades de personas trans, es importante comprender la distinción entre sexo biológico y género. El sexo biológico, que viene determinado generalmente por los cromosomas y órganos de una persona, no equivale al género, que es un constructo social que puede incluir el nombre de una persona, sus pronombres, la forma de vestir y hablar, y mucho más. Antonio Delgado Núñez y J. Alfredo Pazmiño Huapaya explican que, “La transexualidad ... responde a la identificación de un determinado género, independientemente del sexo biológico. Esto es lo que se denomina como Identidad de Género” (3). Sin embargo, la Organización de las Naciones Unidas no tienen en cuenta esta distinción en su definición de la igualdad de género.

Aunque la Organización de las Naciones Unidas (ONU) incluye la igualdad de género entre sus objetivos de desarrollo sostenible (ODS), no reconoce la complejidad de la identidad de género. En el sitio web de los ODS de la ONU se describe la igualdad de género como un derecho humano fundamental que es esencial “para construir un mundo pacífico, próspero y sostenible” (“Igualdad de Género y empoderamiento de la mujer”). Como se indica en el sitio web, se han conseguido grandes avances en las últimas décadas, pero todavía existe una gran brecha entre el tratamiento de hombres y mujeres. Las mujeres se enfrentan a mayores índices de violencia sexual o física y matrimonio infantil, insuficiente protección jurídica, leyes discriminatorias y menos o desiguales oportunidades económicas. Para lograr este objetivo, la ONU ha definido algunas metas del objetivo, por ejemplo, poner fin a la discriminación de género, la violencia y otras prácticas que



crean desigualdad y fomentar un mundo que protege a las mujeres, su salud y su bienestar. Pero estos objetivos no reconocen que la igualdad de género es más amplia que simplemente la igualdad entre hombres y mujeres. No solamente existen dos sexos biológicos porque existen personas intersexuales, por eso no tiene sentido presumir que solamente hay dos géneros también (Nieto 14). La verdadera igualdad de género incluye las personas intersexuales y las personas transgénero que enfrentan muchas de las mismas dificultades que las mujeres y desafíos diferentes también.

La verdadera igualdad de género requiere que todos los géneros estén en igualdad de condiciones y tengan las mismas oportunidades. Gran parte de la atención se centra en lograr la igualdad de los derechos para las mujeres, ya que es el grupo más numeroso que se encuentra en desventaja en una sociedad heteronormativa y patriarcal, pero más allá de las mujeres, las personas de género no-normativas también se encuentran en desventaja. La ONU incluye la eliminación de la mutilación genital femenina en la meta 5.3 del objetivo 5 (“Goal 5 | Targets and Indicators”), pero no reconoce la mutilación de los niños intersexuales para que se asemejen más a un cuerpo masculino o femenino. En cambio, este asunto sólo se menciona en una página singular sobre personas intersexuales del sitio web de la ONU para los derechos humanos (“Personas Intersexuales | Ohchr”). Adicionalmente, muchos individuos trans sienten la necesidad de esconder su identidad como persona trans para ser tratados con igualdad y evitar la marginación, porque si comparten su identidad o no pueden esconderla, a menudo sufren represalias (Encabo y Martín Lozano). Muchas mujeres trans han experimentado la exclusión social tanto por hombres como por mujeres biológicos porque no son aceptadas como parte de ninguno de los dos grupos, sino que se les clasifica en una categoría aparte (Delgado Núñez y Pazmiño Huapaya 6–7). Las mujeres trans también son mujeres, pero como no nacieron mujeres, a menudo son marginadas. Pero las mujeres trans y personas transfemeninas corren un mayor riesgo de ser asesinadas. En 2023, se reportó el asesinato de 321 personas trans o de género no-normativas en todo el mundo, 94 por ciento de las cuales eran mujeres trans o personas transfemeninas (“Trans Murder Monitoring, 2023”). Es evidente que estos problemas todavía existen hoy en día y tienen su origen en viejos estigmas y estereotipos. Es imperativo construir una sociedad igualitaria, más justa, sin discriminación y apoyada por un gobierno que reconozca a sus ciudadanos como son y respeten sus deseos y planes de vida que tienen.

El gobierno español ha tomado muchas medidas para apoyar a sus ciudadanos trans, pero estos esfuerzos sólo han sido posibles gracias a escuchar a esos mismos ciudadanos durante décadas de activismo. Una

mirada retrospectiva a los años 70 y 80 muestra una actitud muy diferente hacia la comunidad trans. En esa época, no sólo las personas trans eran menos visibles, sino que la terminología utilizada para hablar de las personas y los asuntos trans era muy diferente. Gran parte de la terminología utilizada actualmente en relación con la identidad de género es relativamente nueva. Según las psiquiatras Cristina Polo Usaola y Daniel Olivares Zarco, la noción general de una identidad de género que no coincide con el sexo biológico de una persona no fue muy conocida hasta el último siglo, ya que el término transexualismo no se introdujo como distinción del travestismo hasta 1950 (288). Por ello, la mayoría de los casos de personas que no seguían el género asignado en España hasta los años sesenta y ochenta se llamaban travestis y los ejemplos más destacables solían ser artistas que se vestían como el otro género como bailarines como Luis Valencia (Mira 126–127; “Dance Recital by Luis Valencia”). En aquella época, casi todas las conductas no heteronormativas se consideraban un tipo de homosexualidad, y la transexualidad no se diferenció como fenómeno propio hasta el inicio de la despatologización de la homosexualidad en los años setenta y ochenta del siglo pasado (Polo Usaola y Olivares Zarco 290).

Respecto al uso del término transexual, la activista política e investigadora Raquel Platero explica que, en España, hay menos distinción entre los vocablos transexual y transgénero y pueden utilizarse prácticamente indistintamente. Sin embargo, debido a la influencia anglosajona y latinoamericana, todavía se entiende una distinción entre los dos términos, en que transexual se refiere más a alguien operado y transgénero a alguien no operado. Recientemente ha surgido el término trans para evitar la especificación entre los dos términos (“The Narratives of Transgender Rights” 598).

En su libro, *Transexualidad, intersexualidad y dualidad de género*, José Antonio Nieto sugiere que, en cuanto a la realización de la identidad de género, hay tantas maneras de hacerlo como personas en esta tierra, pero a veces la manera de realizarlo no se alinea suficientemente con lo que la sociedad espera para el género asignado a una persona (134). Como tales, las personas que deciden no alinearse con esa expectativa social y optan por no identificarse completamente con el género que se les asignó al nacer pueden llamarse trans, independientemente de si están operadas o no. Según esta definición, los travestis (una palabra que se utiliza muy frecuentemente al fin de la dictadura franquista y durante la Transición) también pueden considerarse bajo el término general “trans,” aunque no totalmente, ya que los travestis a menudo se sienten cómodos con su sexo asignado.

Durante los años setenta y los principios de los años ochenta, se utilizaba el término travesti operado para referirse a alguien que se había sometido a cirugía de afirmación de género y ese término se puede considerar como el precursor al término transexual hoy en día (Guasch y Mas). También hay que tener en cuenta que durante los años setenta, el término travesti podía ser el único que existía o se consideraba aceptable en España para referirse a alguien que se vestía como el sexo opuesto, independientemente de su identidad de género, por lo que el término se utilizaba con mucha más libertad que ahora que “transexual” y “transgénero” se utilizan y entienden ampliamente (Nieto 239–241). Al difuminar las fronteras entre varón y hembra, el travestismo y su conexión con la homosexualidad crearon el enemigo perfecto para el régimen franquista que exaltaba al hombre fuerte y masculino y se aprovechaba de la mujer delicada y fértil.

Por desafiar las normas hegemónicas de género, la transexualidad “amenazaba” al régimen franquista que a su vez se convirtió en una amenaza para las personas trans. El activista trans Moisès Martínez propone que el gobierno, la sociedad y la cultura deciden que, en función de lo que los médicos determinen en cuanto a los genitales de un bebé (lo que se denomina como el sexo), ese niño tiene que actuar, presentarse y ser de una determinada manera dentro del marco del género asociado a ese sexo (113). Esto se acentuó bajo el gobierno fascista de Franco, que no luchaba por la igualdad de género, sino que imponía roles de género estrictos y discriminatorios. Los hombres debían ser “hiper-masculinos” y las mujeres “hiper-femeninas,” y quienes no se encajaban en esos modelos eran despreciados y a menudo criminalizados (Wackerfuss 1121). Así, los travestis que vestían y actuaban como los del sexo opuesto sobresalían en este marco impuesto.

Como describe Gema Pérez-Sánchez en “Franco’s Spain, Queer Nation?” la homosexualidad y la transexualidad se consideraban una amenaza a algunas metas de la dictadura por no adherirse al sexo biológico. La dictadura puso un gran énfasis en los roles de género hegemónicos de hombres fuertes y mujeres serviles. Esta normativa cumplió varias funciones para el régimen franquista. Primero, se alineaba mejor con los valores fascistas y católicos y; segundo, ayudaba a reforzar la típica familia nuclear que era importante para asegurar futuras generaciones de ciudadanos (idealmente a favor del régimen) para reforzar el país. Para lograrlo, se utilizaron diversos métodos para mantener este marco durante la dictadura que incluyeron la imposición de roles de género estrictos a través de la criminalización y/o estigmatización de cualquier comportamiento “femenino” en los hombres y cualquier comportamiento “masculino” en las mujeres (370). Además de la publicación de revistas para mujeres que se centraban en cómo ser mejor esposa y madre, existió una

censura increíblemente estricta y un plan de estudios en la escuela católica muy distinto para los niños en comparación con el de las niñas (369). Los niños estudiaban ciencias y matemáticas y practicaban deportes, mientras que las niñas estudiaban destrezas domésticas como la costura, la cocina, el cuidado de los niños y la calistenia como parte de la educación física, todo “...para la capacitación como futuras madres de familia” (Cruz Sayavera 37).

A través de leyes extremadamente discriminatorias, el gobierno franquista criminalizó a las personas trans por su simple existencia en un intento de imponer aún más los roles de género hegemónicos. En 1954, la Ley de Vagos y Maleantes, originalmente implementada en 1933, se modificó para criminalizar la homosexualidad (que en esa época incluía el travestismo y transexualismo). Bajo esta ley, cualquier actividad que se opusiera a las ideologías del régimen podría considerarse “escándalo público” (Mira 297). Según Delgado Núñez y Pazmiño Huapaya, “La Ley de Vagos y Maleantes persiguió durante muchos años a lesbianas, gais y trans, torturando a muchos y desapareciendo a unos cuantos, esta es una parte de la historia de España que queda por escribir al igual que el goce pleno de igualdad de las personas trans que son sistemáticamente discriminadas en todos los niveles” (4).

Para reforzar aún más las expectativas del régimen sobre los ciudadanos españoles la Ley de Vagos y Maleantes se reemplazó con la Ley sobre Peligrosidad y Rehabilitación Social en 1970. Esta ley controlaba lo que parecía “malo” para la sociedad franquista, incluyendo homosexuales y transexuales, que fueron condenados hasta que dejaron de considerarse un peligro (Pérez-Sánchez 372). Estas dos leyes no sólo criminalizaban cualquier comportamiento homosexual, sino que también eran métodos para mantener a la población española bajo el control del régimen franquista. Alberto Mira describe este fenómeno en su libro, *De Sodoma a Chueca: una historia cultural de la homosexualidad en España en el siglo XX*, diciendo que “...la homofobia siempre ha sido una herramienta de cohesión social” (374). Aprovechando que la homosexualidad, el travestismo y la transexualidad se consideraban históricamente un trastorno o enfermedad mental (Polo Usaola y Olivares Zarco 290), el régimen creó una división entre ciudadanos “buenos” y “justos” y maleantes “peligrosos” y “pervertidos.”

Como consecuencia de estas represalias, si las personas homosexuales o transexuales no ocultaban su identidad, eran encarceladas o incluso asesinadas. Era impensable someterse a una operación de reafirmación de género, vestirse y actuarse de acuerdo con la propia identidad de género o declararse abiertamente trans bajo estas leyes. La Ley de Peligrosidad y Rehabilitación Social no fue derogada hasta 1978 pero la ley no dejó de aplicarse hasta 1981 y las operaciones de cambio de sexo no se despenalizaron

hasta 1983 con la aprobación de la Ley Orgánica de Reforma Urgente y Parcial del Código Penal (Mira 327; Polo Usaola y Olivares Zarco 287). Con la aprobación de la Ley de Identidad de Género en 2007, fue el primer año cuando una persona pudo cambiar su nombre y sexo en el documento nacional de identidad y en el Registro Civil solamente con un diagnóstico de disforia de género y dos años de tratamiento médico sin la necesidad de cirugía o la declaración de un juez, medidas aún demasiado restrictivas para muchas personas (Agencias).

Todos esos tratamientos o procedimientos quirúrgicos y/u hormonales de reasignación o afirmación de género y cambios registrales para realizar la propia identidad no eran disponibles ni legales durante toda la dictadura y tampoco por años y décadas después del fin de la dictadura en 1975. Sin embargo, con el fin de la dictadura, cayó el telón de ese régimen que impuso ideologías machistas, homofóbicas y discriminatorias y los tiempos empezaron a cambiar. Con el nombramiento de Juan Carlos I como Rey de España ese año, el país entró en lo que se conoce como la Transición a la democracia; a pesar de su elección como sucesor al régimen franquista, el Rey no tenía ganas de continuar las políticas franquistas (Castelló 72). La transición también conllevó un fenómeno llamado la Movida Madrileña que fue un periodo de descubrimiento de nuevas libertades y una oportunidad para rebelarse contra la severidad de la dictadura en una España posfranquista. Fue una época de exploración de la identidad española a través del arte y la autoexpresión que parecía frívola y hedonista que marcó las cambiantes mareas políticas (Pérez-Sánchez 396–397).

Gozando las nuevas libertades de la posmodernidad española, el movimiento gay floreció. Como consecuencia de sentirse más seguros, hubo un aumento de travestismo y el movimiento gay ganó mucha visibilidad en esa época. Mira propone que, “durante la Transición, los travestis empiezan a adquirir voz propia, a hablar de su experiencia, a describir el mundo desde su perspectiva” (416–417). Sin embargo, el fantasma de la dictadura aún perdura y todavía hay mucho trabajo pendiente con respecto a los derechos de las personas trans.

Todavía quedan vestigios de las políticas homofóbicas de la dictadura fascista. Según Mira, entre 1975 y 1979 hubo 181 personas procesadas por la Ley de Peligrosidad y Rehabilitación Social (327). Sin embargo, grupos homosexuales, transexuales y feministas fueron importantes en esa época, trabajando arduamente para lograr el cambio y la justicia social para grupos que no tuvieron voz durante las últimas tres décadas. Tras años de organización en secreto, en 1975 se formó el Front d’Alliberament Gai de Catalunya (FAGC), el primer grupo que luchó por los derechos de las

personas homosexuales y las personas trans después de la dictadura (Mira 497). Adicionalmente, los grupos de mujeres travestis lucharon por la derogación de la Ley de Peligrosidad y Rehabilitación Social participando en una manifestación por los derechos de homosexuales el 28 de junio, 1977 y en la primera marcha del orgullo el 25 de junio de 1978 en Madrid (Platero Méndez, “Transexualidad y agenda política” 109). Las cirugías de reasignación y reafirmación de género no se legalizaron en el país hasta 1983, por lo que, según el profesor de la Universidad de Barcelona Óscar Guasch y el investigador Jordi Mas, para someterse a este tipo de cirugías había que viajar a un país que sí las ofreciera, como Marruecos, o buscar métodos clandestinos y poco profesionales. Los que no podían pagar una operación en otro país recurrían a tratamientos inseguros y no regulados, con el consiguiente riesgo de complicaciones. (Guasch y Mas). Pero con la aprobación de la Ley Orgánica de Reforma Urgente y Parcial del Código Penal que legalizó la cirugía de reasignación de sexo en 1983, ya no había tanta necesidad de ponerse en riesgo (Polo Usaola y Olivares Zarco 287).

Durante esta época, los travestis también ganaron más visibilidad en los medios de comunicación. El travesti desempeñó un papel clave en obras destacadas de la Transición como las del escritor Eduardo Mendicutti como *Una mala noche la tiene cualquiera* y del director de cine Pedro Almodóvar como *La ley del deseo* (Mira 526–527). También surgieron diversas películas y documentales con personajes travesti y a veces incluso protagonistas travestis como en la película *Vestida de azul* dirigida por Antonio Giménez Rico (Guasch y Mas).

Esta película, que podría describirse como un docudrama, presenta una mirada a la vida cotidiana de seis mujeres travestis al principio de los años ochenta. Cada una de ellas aporta sus propias historias y perspectivas de la vida de una travesti. Comentan las dificultades para encontrar trabajo y explican que recurrir a la prostitución suele ser su única opción para conseguir suficiente dinero para sobrevivir, discuten sobre ir a la cárcel, participar en el servicio militar obligatorio y operarse (la mayoría no estaban interesadas, una de las mujeres, en cambio, sí). Vemos a una mujer someterse a cirugía para recibir implantes mamarios, somos testigos del compañerismo y el amor que reciben de sus amigos, familia y amantes y oímos hablar del rechazo que también han sufrido por parte de ellos (*Vestida de azul*). Son mujeres que viven su vida, que encuentran su lugar en el mundo. A pesar de las desventajas de vivir en una sociedad heteronormativa, no se rinden.

No son monstruos ni están condenadas a una vida llena de sufrimiento por el mero hecho de ser quienes son. A pesar de la ardua batalla que están luchando, hay una luz al final del túnel cuando el país empieza a adaptarse a su nueva identidad como democracia.

Los refrescantes cambios que supusieron la Transición y la Movida fueron los primeros cambios instrumentales para las personas trans durante la cual España ha tomado grandes medidas para seguir mejorando desde entonces. Sin embargo, como menciona la ONU en su descripción de la ODS, aún hoy queda mucho trabajo que realizar para alcanzar la igualdad de género. La historia de España todavía afecta a sus ciudadanos y olvidarla es una invitación a repetirla. El sexo y el género no son binarios como insistió el régimen de Franco, a pesar de todos sus esfuerzos por mantener los roles de género tradicionales. Gracias a esta insistencia, España se quedó rezagada en ofrecer una atención adecuada a las personas trans. Pero la adversidad a la que se enfrentaron creó un grupo férreo que luchó por sus derechos aún a riesgo de ser encarcelado. Sin embargo, su trabajo no quedó sin recompensa y tanto travestis como personas trans han podido disfrutar de nuevas libertades bajo un nuevo gobierno. Cuando el país empezó a convertirse en una democracia tras la muerte de Franco, las personas trans no sólo ayudaron a dirigir el país hacia una nueva era, sino que también reflejaron la nueva identidad de un país en transición, deshaciéndose de la vieja identidad a favor de una nueva y optimista que refleja la alegría de ser libre.

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# She Asked For It: An Analysis of Rape Myths, Sexual Violence, and Feminist Theories in Popular Media

**Shelbee Reeves**

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## *Abstract*

This piece will explore themes of sexual violence, victimization, and victim-blaming that may be disturbing to some readers. During the second half of the 20th century, criminology underwent a reevaluation of values, largely due to the pressure of second-wave feminists. Not only did they attempt to explain the behavior of offenders, but also the nuances of female professionals and female victims. The forming of the Feminist School of Criminology bore significant strides for the feminist movement, but of particular focus, for female victims of sexual violence. This paper analyzes the influence of patriarchal rape myths in popular media, strategies employed to subvert their harmful impacts, and the implications of these myths in real life. Three analyses of popular fictional crime dramas, particularly *Law and Order: Special Victims Unit*, and an analysis of real-life rape trials were used to understand the scope of how intertwined media portrayals are with real societal experiences. The results indicate a shift toward the use of feminist perspectives in the media, though there are still improvements to be made in decreasing the use of rape myths. Furthermore, the use of rape myths in real-world trials remains high. This research aims to bring awareness to the implications of rape myths in the media, while advocating the use of feminist perspectives to bring about justice for victims of sexual violence.

*Keywords:* media framing, rape myths, sexual violence, feminist theories of crime



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## INTRODUCTION

From the very beginnings of civilization, sexual violence has been acknowledged and carried out to the detriment of those on the receiving end. It has been recognized as a criminal act from as early as 1755–1750 B.C., when one of the first legal codes, The Code of Hammurabi, was written and published (Columbia University Center for American Studies, 2021). At this time, acts of sexual violence were perceived to be property crimes, as the women they were carried out against were widely accepted to be the property of their fathers. Upon discovery of the territory that would later become the United States, European men frequently used sexual violence to establish a position of superiority over the indigenous women they intended to dominate. Over a century later, when American colonists first began to set up a legal system, they defined sexual violence as, “carnal knowledge of a woman 10 years or older, forcibly and against her will” (Tulane University, 2023). Today, this definition is considered to be woefully inadequate; it precludes the existence of male survivors of sexual violence, as well as the existence of survivors younger than 10 years of age. It also establishes the idea that sexual violence is limited to acts in which the victim was overpowered by force.

These definitions set the stage for later perceptions of sexual violence and victims of such acts. As such, progress in defining sexual violence and seeking justice for victims has been slow-moving. Sexual violence was not defined as a federal crime until 1994 with the passage of the Violence Against Women Act. Recently, in 2022, the renewal of the Act established a program for LGBTQ+ victims and allowed for the application of its statutes to people of all genders (Tulane University, 2023). While these are important strides for all victims of sexual violence, the pace at which progress is made must not be forgotten. It has taken centuries to overcome former patriarchal understandings of what sexual violence is and to comprehend a more detailed picture of the many forms in which it comes.

Previous definitions gave way to a larger societal understanding of what constitutes an act of sexual violence. According to the Code of Hammurabi, rape was the only act of sexual violence and virgins were the only blameless victims. According to the American colonists, an act could only be considered criminal if the victim was over the age of 10 and was made to participate by force. These definitions are known today as rape myths, or widely held understandings of what rape, or sexual violence in general, is and should look like. These myths allow society to place victims into neat categories that fit the idea of what sexual violence is. As a result, when a victim’s experience does not fit the stereotype, they are often discredited and disbelieved.

The Feminist Movement, which began in the 19th century, is largely responsible for the progress made in the realms of defining and punishing sexual violence. For example, temperance and suffrage advocates of the late 1880s successfully upgraded the age of consent from 10 to between 14 and 18, depending on the state (Bishop, 2018). Changes like these paved the way for a more thorough understanding of what sexual violence is and who can be victimized by it. In the late 1960s and early 1970s, during the second wave of the Feminist Movement, criminologists began to develop a school of thought that would help to explain crimes committed by women, as well as crimes against women, and women's place in the criminal justice system. Due to the prevalence of sex crimes carried out against those who identify as female, this school of thought is uniquely situated to bring forward a more nuanced understanding of what sexual violence is and how victims are received by society. As such, it is also capable of dispelling widely held rape myths that continue to play a role in society's perception of victims of sexual violence. This analysis will focus on the continued dissemination of rape myths to society by way of popular media, how these myths impact the experiences of real-world, justice-seeking victims, and how insights from the Feminist School of Criminology can help to combat misconceptions surrounding experiences with sexual violence.

## **A BRIEF HISTORY OF FEMINISM IN THE UNITED STATES**

The Feminist School of Criminology attempts to explain the behavior of female criminals, the perpetuation of crimes against women, and the position of women within the criminal justice system. To understand where these ideas originate from, it is first important to understand the history of feminism in the United States. This can be broken down into four waves, starting in the mid-19th century and progressing to the present. The first wave of feminism arose with the intention to get the right to vote for white, wealthy women. This wave resulted in the passage of the Nineteenth Amendment, which secured the right to vote for women, in 1920. While many women of the time believed that their battle had been won, it had truly only begun.

The second wave of feminism began in the 1960s as one of the ways in which marginalized groups challenged the existing social order. These feminists believed that the right to vote was not enough to bring equality between the sexes, but that women needed to have equal access to the opportunities and freedoms afforded to their male counterparts. This perspective opened the door for the Feminist School of Criminology, which challenged stereotypes associated with women involved in the criminal justice

system. This not only included women as offenders, but also women as professionals working within the system, and of particular note, women as victims. In many ways, the women of the second wave are responsible for the establishment of the Feminist School of Criminology (Schram & Tibbetts, 2020).

Subsequently, the third wave of feminism began in the 1980s. This perspective began to value intersectionality in the female identity, focusing not only on society's oppression of women but of women with other minority identities. Women of color and women in the LGBTQ+ community were incorporated into the plights of this wave of feminism, and it became an ideology that they could fit into and identify with more than ever before.

The fourth wave of feminism represents the present day, although some argue that there have been separate waves for women's issues since then. For example, the #MeToo Movement that originated in 2006 but was brought into the public eye by actress Alyssa Milano in 2017, who encouraged women to use the hashtag to show how pervasive the issue of sexual violence had become not only in Hollywood but in society at large.

While the Feminist School encompasses theories from Cesare Lombroso, who argued that female physiology determined to offend, and Sigmund Freud, who argued that women were biologically inferior to men, its strengths lie in its ability to explain one type of offense in particular: sexual violence. Freud and Lombroso's theories have been criticized, especially as the idea of "biological determinism" was disproven (Schram & Tibbetts, 2020). As such, another flawed mechanism of incorporating women into criminological theories arose, known frankly as "add women and stir." In this approach, criminologists tacked women onto preexisting criminological theories as a sort of afterthought. As a result, women's experiences were measured against those of men as opposed to being taken in their own measure. These shortfalls led to an analysis of where feminist theories hold validity: the area of sex offenses against women.

Of note, there are also differing feminist perspectives within criminology. Liberal feminism, for instance, operates under the assumption that women offend due to a lack of opportunities in education and employment that are equal to men. Radical feminists, on the other hand, believe that gender is a social construct used to uphold male dominance and that patriarchy is a result of female biology. Comparatively, Marxist feminism and socialist feminism also exist on this plane. While Marxist feminists focus on male domination of the means of economic production, socialist feminism focuses on the male-dominated political order, especially the control of reproductive systems. Finally, postmodern feminism emphasizes the unique experience of

every woman. Under this feminist perspective, there is no need to measure or research the female experience because it exists on a case-by-case basis. In terms of sexual violence, liberal and radical perspectives are most often used in discussion. Dr. Rebecca Whisnant provides a summation of the contrast between the two perspectives, writing, “Liberal views tend to regard rape as a gender-neutral assault on individual autonomy, likening it to other forms of assault and/or illegitimate appropriation, and focusing primarily on the harm that rape does to individual victims” whereas, “Radical feminists see rape as arising from patriarchal constructions of gender and sexuality within the context of broader systems of male power, and emphasize the harm that rape does to women as a group” (Whisnant, 2021). Overall, most feminists hold the belief that the patriarchal culture of violence against women is deeply rooted in social institutions and that this culture perpetuates the harms of sexual violence.

## DEFINING SEXUAL VIOLENCE

In order to begin a discussion of sexual violence, there are terms that must be defined. From the Rape, Abuse, and Incest National Network (2023), sexual violence can be defined as, “an all-encompassing, non-legal term that refers to crimes like sexual assault, rape, and sexual abuse.” The term sexual assault “refers to sexual contact or behavior that occurs without explicit consent of the victim.” Examples can include attempted rape, unwanted sexual touching, forcing a victim to perform sexual acts, or penetration of the victim’s body, also known as rape. Statistically, 81 percent of women in the United States report experiencing some form of sexual harassment or assault (Kearl, 2018). Michelle Anderson (2005), a leading scholar on rape law, concludes that rape is better understood not only as a denial of the victim’s sexual autonomy but as “sexually invasive dehumanization.” This can be extrapolated to include any act of sexual violence, as it subjugates the victim’s body and strips them of the intellectual autonomy that defines the quality of being human. From a feminist perspective, this is often performed by a male perpetrator on a female victim, which reinforces the patriarchal value of male dominance. In his philosophical essay on rape, Dr. Keith Burgess-Jackson (2000) adds that “Rape—the act and the practice—subjugates an entire class of individuals (women) to another (men) ... every woman ... is wronged by it.” Thus, rape, or sexual violence more generally, is an active assault not only on the victim but on the female sex. Finally, the term rape culture is used “to describe the pervasiveness and acceptability of rape-supportive messages in media and popular discourse” (Whisnant, 2021).

## AGENDA SETTING AND MEDIA FRAMING

Dr. Rebecca Whisnant's reference to the media is of particular importance, as most people gain their knowledge of crime, including sex crimes, from its portrayal in the media. Media portrayals can include the news, fictional television shows, movies, music, podcasts, and more. As noted in a study of victim characterization in fictional television crime dramas, "What people learn from television often becomes their primary knowledge source of the crime" (Rader & Rhineburger-Dunn, 2010). There are two theories underlying this information: Agenda Setting Theory and Media Framing Theory. Agenda Setting Theory postulates that the media filters and shapes reality to influence public beliefs and that media concentration on a few specific issues magnifies their importance to the public and causes other issues to go largely undetected (McCombs & Shaw, 1972). Media Framing goes one step further by telling the audience how they should think about these issues, not only that they should think about them (Entman, 2006). An example of these theories in action on the topic of sexual violence stems from the commonplace usage of rape myths, both in the media and in day-to-day life.

## FEMINIST THEORIES AND RAPE MYTHS IN POPULAR MEDIA

Rape myths can be defined as, "attitudes and beliefs that are generally false but are widely and persistently held, and that serve to deny and justify male sexual aggression against women" (Lonsway & Fitzgerald, 1994). Because they rely on assumptions that are often false and prejudiced against women, they lead to negative consequences for the victim. They make it easier to question the validity of the victim's experience and harder to come forward as a victim in the first place. The concept was developed during the second wave of feminism in the 1970s, yet it is still common to see rape myths used in news coverage, fiction television shows, and movies, especially crime dramas. In fact, during the week, there are approximately eighteen crime dramas televised on the three major networks: ABC, CBS, and NBC (Boehnke, 2014). Media representation of sexual violence is pervasive, as it evidently reaches large audiences and influences how they perceive sex offenses and victims.

In order to analyze the persistence of these myths and their portrayal to the public, many studies have been conducted on shows such as *Criminal Minds*, *Without A Trace*, *CSI*, *NCIS*, and *Law and Order*. For the purpose of discussing sexual violence, the best place to refine an analysis of the portrayal of rape myths in popular media is *Law and Order: Special Victims Unit*



(*SVU*), as it focuses specifically on sexually-based offenses. This crime drama, now airing its 25th season, amassed 5.6 million viewers for its January 2024 season premiere (Cobb, 2024). In lieu of the research conducted to date, this crime drama yields mixed results as far as the perpetuation of rape myths, though the usage of feminist ideals rarely falters.

One of the first analyses of *Law and Order: SVU* came from researchers Lisa Cuklanz and Sujata Moorti (2006), who concluded that “Portrayals have tended away from presenting rape through a patriarchal lens, in which rape is portrayed as an issue of sexual desire rather than power, toward a feminist point-of-view which tries to avoid victim stereotypes and emphasizes that rape is about violence and anger towards women.” They also assert that “*SVU* narratives repeatedly declare that a person’s sexual practices must not be used to undermine the person’s credibility. The series rejects the assumption that only virtuous and sexually chaste women can be violated” (Cuklanz & Moorti, 2006). This finding illustrates that *Law and Order: SVU* has consistently contradicted the rape myth that sexual promiscuity, or deviant sexual practices, devalue a victim’s experience with sexual violence. This is one of the most pervasive rape myths. By actively dispelling it in popular media, and instead favoring the feminist perspective that rape is founded upon violence and anger towards women, there is less of an opportunity for it to negatively impact victim experiences. After all, the consumption of media influences the widespread perception of victims and their experiences with sexual violence.

While there are certainly positive impacts of *Law and Order: SVU*, its shortcomings must be made clear as well. A subsequent analysis of *Law and Order: SVU* episodes conducted to identify the prevalence of rape myths in the series produced a clearer picture of its societal impact. Two rape myths were of importance to researchers in the findings: the myth of the typical victim, and the myth that most perpetrators of rape are strangers to the victim. The typical victim rape myth encompasses the belief in a stereotypical rape victim; one that is a young, white, non-Hispanic, woman. This is the demographic of the individual that most people have learned to expect to be a rape victim as a result of media framing. *Law and Order: SVU* engages frequently with this rape myth. Researchers found that white, non-Hispanic women were most likely to be portrayed as victims 81 percent of the time in the episodes analyzed (Boehnke, 2014). In reality, Native American women are at the greatest risk of sexual violence; they are twice as likely to be the victim of rape or sexual assault compared to all other races (Perry, 2004). In this study, there was not a single Native American victim, showing a monumental lack of representation, and a stray from reality to the rape

myth. The second rape myth, that stranger rapes are the most common, was also upheld in the randomly selected episodes. Researchers found that the majority of assaults were perpetrated by a stranger at 72.4 percent, followed by acquaintance/date rape at 25.9 percent. No instances of marital rape were portrayed in these episodes. In reality, 51.1 percent of female victims of rape reported the perpetrator as an intimate partner, and 40.8 percent identified the perpetrator as an acquaintance (Black et al., 2011). Stranger rape is not the most common kind, and yet *Law and Order: SVU* frames it as the golden standard for victims of rape. This lack of portrayal misrepresents the realities of acquaintance rape and intimate partner violence, diminishing the credibility of victims of these offenses.

To expand the scope of analysis, another group of researchers conducted an analysis on four separate crime dramas, including *Criminal Minds*, *CSI*, *Law and Order: SVU*, and *Without A Trace*. The goal was to identify how particular themes in these shows perpetuate a culture of victim-blaming. Unsurprisingly, the findings incorporated the use of rape myths. Researchers found that victims who did drugs were 94 percent less likely to be portrayed as blameless, and victims who were sexually promiscuous were 98 percent less likely to be portrayed as blameless (Rader & Rhineburger-Dunn, 2010). The authors added that the findings “indicate, at least for this sample, that fictional crime shows are making the connection between behavior and victim blame for the viewer.” This is problematic as it places the blame, even if is only partial, on the victim for putting herself in a compromising situation, or “asking for it.” From a feminist perspective, the “compromising situation” has been created by the patriarchal society, and women have been conditioned to abide by it under the threat of sexual violence if they do not. Dr. Whisnant (2021) sums this notion up: “Feminists have highlighted the ways in which the institution of rape reinforces the group-based subordination of women to men: for instance, by making women fearful, and by enforcing patriarchal dictates both about proper female behavior and about the conditions of male sexual entitlement to women’s bodies.” Women have been taught that they should not walk alone at night, that they should not dress provocatively or show too much skin, that they should not drink in excess, and the list goes on. These are behaviors that supposedly prevent sexual violence from occurring, yet the logic is flawed because a woman can do everything “right” and still be victimized. Children, for example, do not partake in any of the listed risk factors, and they are still victimized. The burden of sexual violence has been unduly placed on the backs of women when instead the perpetrators of this violence are the ones at fault.

No one blames a robbery victim for failing to protect their items; no one should blame a rape victim for the violation and dehumanization of their body.

## **REAL-WORLD IMPLICATIONS**

While the purpose of fictional crime dramas is primarily to entertain viewers and attract the masses to generate revenue, it cannot be denied that media has a significant influence on the perspectives of its consumers. As such, there is an ethical burden on the writers, producers, and broadcasters of these media representations to portray reality accurately so as not to perpetuate false perceptions and myths. Though the storylines presented are fictional, the impacts are real.

An observational study of eight rape trials in England, conducted by professors of law and forensic psychology with affiliations to City University London, Middlesex University London, and the University of Cambridge, found that these myths are often used by defense counsels to discredit victims' accounts of their attack. Make no mistake, this is the job that defense attorneys are paid to do: poke enough holes in the prosecution's case to generate reasonable doubt among the jury. However, as noted by the researchers, hammering irrelevant points that only go to prove the absence of the features of a rape myth at trial "serves no other purpose but to mislead the jury" (Temkin et al., 2016). In one of the observed trials, the victim was questioned five times as to why she didn't fight back against her attacker. Defense counsel asked, "At no point did you say 'get the f\*\*\* out of here as my flatmate is in his room, and he'll come and beat you up?' Did you never once yell or swear?" Subsequently, in the defense counsel's closing arguments, she stated, "Would a victim not at least scream or do something to show some kind of resistance? She did not offer any resistance whatsoever to get rid of him" (Temkin et al., 2016). This is one of many examples from this study, and from real life, of the use of rape myths to deny the victimhood of the accuser. The assertion that the absence of features of the stereotypical rape somehow indicates that the victim is lying is false logic. It operates under the assumption that sexual violence is only sexual violence if it meets the standards set by the patriarchal value system, and any accusation that does not fit neatly into these categories must be false. Troubling enough, a report on the investigations and prosecutions of rape in London, England, found that prosecutors consistently failed to identify rape myths and concluded that the handling of rape cases by the criminal justice system remains problematic (Angiolini, 2015). Perpetuating rape myths in the media has real societal

consequences when those myths are ingrained in the minds of those trusted to deliver justice for both the accuser and the accused. Out of the eight trials observed in the study, only three resulted in convictions (Temkin et al., 2016).

Overall, *Law and Order: SVU* has made strides in the right direction by adopting feminist theories of sexual violence. These theories have helped to decrease the validity of rape myths and victim-blaming in instances of rape and sexual assault. The greater the shift toward feminist perspectives, the less pervasive these myths become. As a result of the common agreement that most rape myths are just that, myths, there have been improvements in the real-world criminal justice system. For example, there are now “rape shield” laws in place to restrict the admissibility of evidence about the victim’s past sexual history to discourage the use of sexual promiscuity or deviance to attack the victim’s credibility. The majority of jurisdictions have eliminated “prompt reporting” requirements that uphold the myth that victims of sexual violence would report immediately after the incident if it truly happened. The same has happened with corroboration requirements. Perhaps most importantly, most jurisdictions have done away with the reciting of the “cautionary tale” in trials of sexual violence, during which juries are informed that “rape is a charge easy to make and hard to disprove” (Whisnant, 2021). The goal of eliminating rape myths is ultimately to protect women from victim-blaming, which intentionally or otherwise serves to protect the perpetrator, who is most often male.

The main focus of feminist theories is the female population, and how a patriarchal society repeatedly victimizes those who identify as female. And yet, when it comes to sexual violence, the patriarchy is prone to victimizing its own. Some assert that the application of feminist theories to sexual violence excludes male victims, but this is not the case. In their study of victim-blaming in popular fictional crime dramas, Rader and Rhineburger-Dunn (2010) wrote that “...when men are victims ... of crimes typically associated with women (i.e., sexual assault, intimate partner violence), they may be more likely to be blamed. This could be because of the belief that men should be able to fight off an attack or that men should not put themselves in that situation in the first place.” Again, it is because of the myths disseminated by the patriarchy that victims are blamed for their experiences with sexual violence, even when the victim is male. Dr. Whisnant (2021) further explains, “This underlying gender ideology helps to explain why, when men and boys are raped (almost always by other males), they are often seen as having been feminized, treated like women and thus rendered shamefully woman-like.” As such, counteracting rape myths is not only

beneficial to female victims but to all victims alike. Ideally, being a victim would not be synonymous with being a woman. Eliminating rape myths is a place to start, but it does not represent the solution to patriarchal values entrenched in society's social order.

## LIMITATIONS AND OPPORTUNITIES FOR FURTHER RESEARCH

There are several limitations to this research, prompting opportunities for further exploration of the subject matter. First, this analysis did not incorporate episodes from all popular crime dramas airing on the major television networks outlined. *Law and Order: Special Victims Unit* focuses primarily on sex crimes, while other crime dramas focus on assault, homicide, or nonviolent crimes. These crimes can involve and impact women, and they could be used as the basis for further research on crimes impacting women in a patriarchal society. Future research could also examine media portrayals beyond the scope of crime dramas.

There is a lot of space for research on the usage of rape myths in the courtroom. The study referenced in this research came from England, and only eight rape trials were observed. Though it can be difficult to gain access to court proceedings for research purposes, further studies could be conducted on the real-world perpetuation of sexual violence stereotypes within the criminal justice system, especially in the United States. Even further, rape myths perpetuated in criminal trials are not the only manifestation. With the rise of the internet and social media, the court of public opinion seems to hold increasing weight throughout society. Examination of the use of rape myths on the internet and social media could encompass a wider variety of ways in which these manifestations are seen in real life.

In all, there is a great need for up-to-date research on the use of rape myths in pop culture. Cuklanz and Moorti, whose study is referenced throughout this work, published their research on *Law and Order: Special Victims Unit* in 2006. While their findings and conclusions are certainly still relevant today, there is space for more in-depth analyses of rape myths used on popular television shows. The same can be said of other studies referenced, as it is increasingly difficult to find more recent analyses than the works referenced. As new television shows gain traction and old ones gain new seasons, there is plenty of opportunity to examine the continued use and impact of rape myths in 2024.

## CONCLUSION

Analysis of myths and stereotypes surrounding sexual violence in media portrayals reveals both progress and shortcomings as it pertains to the plight of victims seeking justice. Fictional crime dramas with a large platform, like *Law and Order: Special Victims Unit*, hold power in their realistic portrayals of sexual violence, victim status, and the criminal justice system. Not only does popular media tell its viewers which issues they should think about, but it also tells them how to think about these issues. The usage of rape myths is one way in which media portrayals inform perceptions of victims, particularly women impacted by sexual violence. While *Law and Order: Special Victims Unit* has begun to embrace feminist theories in its writing and subsequent portrayals, it still falls prey to stereotypes involving a typical victim demographic and relationship to the perpetrator. This crime drama, as well as others, has repeatedly perpetuated the common rape myth that behavior correlates with victimhood, unduly placing the burden of preventing sexual violence on women. Feminist theories demand that all victims of sexual violence are validated in their experiences, as demographics, behavior, precautions, or lack thereof are not grounds for the sexual violation of a human body and should not be held as such. Further, when victims come forward with their experiences, they should reasonably be able to expect that the perpetrator will be put on trial, not them. Too often, media portrayals do not end when the credits roll, but they find themselves in the minds, actions, and speech of those who consume them. This is especially problematic when those in the justice system are plagued by myths engrained in their own thought processes. It does not matter what she was wearing, where she went, or who she went with—it matters that she has the right to make her own decisions, in her own time. Media representation holds a great deal of power; now, more than ever, it must harness that power for progress.

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# The Other Side of the Counter

**Riley Talbert**

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## *Abstract*

In a world where the only thing that can calm down wrathful, angry spirits is a cup of coffee, a dedicated barista works diligently to create the perfect soothing drink for each of their otherworldly patrons. With God as their guide, this barista is sure of their place in the world as the perfect drink-maker. However, upon getting to know a rebellious, endearing forest spirit, the barista's perception of the world—and their own identity—begins to shift. This creative short story was written with the intent of showcasing a fantastical, unrealistic world alongside realistic messaging. I drew inspiration from various media and experiences in my life. The concept of a coffee shop for magical beings was inspired by the book, *Legends and Lattes*, and the video game, *Coffee Talk*, both of which feature this type of setting. I enjoyed exploring the contrast of a fairly modern setting inhabited by mythical creatures, which made for a magical yet grounded story. The main focus of “The Other Side of the Counter” is discovering one's identity outside the influence of others. There is a lot of religious messaging and influence, as I have personal experience with religion and identity. Trying to figure out who I wanted to be whilst feeling the pressure to meet religious expectations was something I struggled with growing up. Through writing this story with a blend of whimsical fantasy and harsh reality, I was able to further reflect on my own sense of identity, religious upbringing, and how they continue to impact my life.



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The first time I acted selfishly in my life was when I begged God to grant me immortality. I was lying on my deathbed at twenty-three years old, wasting away from some chronic illness with a name too long for me to remember, and I realized that my entire life had been...nothing. No accomplishments made, no purpose discovered, no true love found. I had lived those twenty-three years as a mere husk of a person. So, in a moment of desperation, I called upon the God of the heavens, earth, and the underworld herself to give me a second chance. Much to my surprise, she answered my call. My desperation to live made me appealing to her, she had told me. So, we made a deal. If I am to live forever, I must give her something in return.

I am so grateful for God and her endless generosity.

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I carefully wipe down the edges of the mugs that have been collecting dust for the past millennia. For some reason, the patrons don't seem to like them, and I tend to forget that they even exist, despite knowing every inch of this place, top to bottom. To be fair, they're not much to look at, and they sit in the back of the cabinet furthest from my station. Nevertheless, God insists that I keep everything clean, which is a fair request.

The bell above the cedar front door rings as someone enters the café. Heavy footsteps cross the hardwood floors.

"Vanilla soy latte," a low, raspy voice grunts.

"Nen?" I turn to face the grumpy river spirit across the counter from me. He wears a plain, tailored suit, but it cannot hide the blue, inhuman iridescence radiating off his skin. The man looks like he painted ground diamonds across his entire body.

He grimaces, showing a pair of dragon-like fangs as he mumbles, "Barista. Vanilla soy latte."

"Mug?" I ask, gesturing to the rack behind me. It holds over a hundred intricately painted mugs and covers half the wall. I know which one he will pick, but the annoyed gleam in his eye compels me to give him the choice. He points directly above my head. Yup, correct as always.

I unhook his favorite mug from the rack (it has purple stars and comets painted on it) and center a saucepan on the stove at the counter to steam some milk. I can feel him watching me intently.

"You haven't been in for a hot minute." I joke. I give him a welcoming smile, which he does not return. He hasn't changed at all since the last time I saw him, which feels like a hundred years ago.

"I've been busy." He stands stiffly at the counter, "How long will this take?"

“You know, I’m supposed to tell you to come in more often, Nen. My career depends on it.”

“Again, busy.”

“Which is exactly why you need to prioritize visiting. Do I need to tell you the rules again?”

“Ugh, anything but that.” Nen groans and leans over the counter, watching the milk simmer, “Hey, take that off the heat.”

I remove the saucepan and go about finishing the latte, adding the half pump of vanilla syrup (that he insists upon) instead of the usual three I do for flavored lattes, and pouring in the espresso.

He reaches over the counter and snatches the warm mug before I can hand it to him.

“Where’s the picture?” He peers at the top of the drink and looks back at me with a frown.

“You must not be in that much of a hurry if you want me to make you latte art.” I chuckle and gingerly take back the mug, “Any requests?”

“My alarm clock.”

I blink at him, and we stand in silence for a few seconds before I say, “You want me to make latte art of an alarm clock? Are you sure you don’t want a picture of a cat or something?”

“Barista.” There is an edge to his voice; I hear his foot tapping against the floor restlessly.

“Okay then.”

I try my best to make a foam alarm clock floating atop the drink, and he once again snatches the mug away before I can hand it to him.

“Enjoy!”

He grunts and starts toward the door.

“Where do you think you’re going with my mug?”

He freezes mid-stride.

“We don’t do to-go orders here. If you don’t want me to repeat the rules, you better start following them, sir. All spirits mus-”

He cuts me off, “Must stay in the café until they finish their drink. Don’t patronize me, Barista.”

I give him another smile and point to a booth to his left. Every seat except one is filled by other spirits, all also wearing plain tailored suits.

He doesn’t move.

I sigh, “Go. Socialize. You need it.”

“I haven’t been wrathful since 400 BCE, Barista.”

“And neither God nor I trust that you will never be wrathful again.”

“I’ve gotten better at managing my stress,” his grip on the mug’s handle tightens, blatantly contradicting himself.

“You flooded every village within a one-hundred-mile radius, Nen.”

“Fine,” he snaps, voice taut and fangs visible once again. He turns toward the booth, occupied by Aelius (sun spirit: berry mocha), Rakesh (moon spirit: plain black coffee), and Castor (star spirit: iced London fog). They beckon him over with friendly smiles and waves.

Nen begrudgingly takes the empty seat, but I watch as his frown starts to soften when the other spirits include him in the conversation. Soon, he’s laughing along with them and sipping at his latte.

I take a deep breath and smile. I’m happy for him. I go back to dusting mugs but keep an ear attuned to their conversation. They talk of the increasing levels of pollution in the rivers, which constellations will be visible tonight, and the lantern-lighting ceremony the people of Earth will be holding in honor of a politician who has recently passed away. This is the first fresh bit of news that I’ve gotten from the world this week. Despite its simplicity, I can’t help but move a couple of steps closer to their booth to hear better.

The bell above the door jingles, and I almost don’t notice. I’m too focused on my eavesdropping. But when the chatter dies down upon the new patron’s entrance, I turn my ear away from the booth and glance up.

My voice almost catches in my throat for a second, but I steady myself, “Sylvie. Hi.”

The forest spirit gracefully glides across the floor, bare feet hovering an inch above the ground. As she glides in, I notice vines starting to sprout from between the floorboards, with little pink flowers budding off them. This happens every time she comes in; I steal a quick glance at the garden shears I’ve stashed under the counter for this exact occurrence.

Instead of a tailored suit, a loose green dress elegantly drapes over her thin, tall figure, with some light tearing and dirt stains at the bottom layers. Her skin is deep green in some spots, brown in others. Her hair is not put up or well kept, its pearly locks stopping just above her ankles with leaves and bits of twigs entangled in them. However, her most striking feature is a pair of intricate ivory antlers protruding from the top of her head.

She stares directly at me, the lack of irises and pupils in her eyes giving her an uncanny aura that makes me avert my gaze almost immediately. She comes in the most frequently, several times a week. Still, I freeze every time she looks my way.

She stops five feet from the counter and gives me a pleasant smile, eyes squinting as she does so, “Masala Chai?” Her voice is low and breathy. Every

time she speaks, it sounds like she's about to tell me a secret she shouldn't.

I try to muster up the witty Barista charm I had just used on Nen minutes ago, but her smile is so genuine, it catches me off guard.

"U-uh huh," is all I can say in response.

I turn toward the shelves behind me to grab the chai concentrate, ginger, and cinnamon. All the while, I can feel her staring. I make the drink facing away from her and pour it into her usual mug of choice; it is shaped and painted to look like a tree stump.

When I turn back around to give it to her, she is sitting on a stool directly in front of the counter, hands folded on the wooden countertop. She looks so out of place, it's almost comical. Her ethereal appearance clashes with basically everything else in the room, despite her being in a coffee shop specifically designed for those of her kind.

Sylvie gently raises the mug to her lips and takes a sip.

"Thank you," her gaze bores directly into my soul, "this is wonderful."

"Uhhhhhhhhhh," my mind is blanking. *Shit*, "no problem, you too."

*What?*

I feel my face turning red, so I quickly move to the other end of the counter where the speaker is and turn on the shop music. God instructed me that, for the next two decades, I will play offbeat hip hop. Apparently, it's what's popular right now for these kinds of establishments. I turn the volume dial and allow the music to flood the room. I resume my mug-cleaning and tune back into the booth chatter.

"It's absolutely ridiculous," I hear Nen lament, "every other hour I'm cleaning a river that people have thrown all their shit into. And then there's the urban planners trying to cut off the natural waterways. It's almost like they want the earth to die. I have virtually no time to do anything, unless I want to let everything rot away." He has his face in his hands, "Thanks for listening to me ramble. I should probably get back though."

Castor places a reassuring hand on Nen's shoulder from across the table, "Take care of yourself out there, Nen."

The solemn river spirit sighs and gets up from the booth. Before he turns to go, he gives me a nod, shows me his empty mug, and brings it over to the counter.

"Barista."

"Anytime, Nen." I take the mug and place it in the sink, "Come back soon."

"I'll try."

The bell rings to announce his departure. The three other spirits at the booth resume their conversations, drinks having been empty for the past

hour or so. I'm about to ask if they'd like refills, but my train of thought is promptly interrupted.

"You like to listen to them." Sylvie's voice cuts through everything else.

Our eyes lock. I nod slightly.

"Why do you listen?" her head tilts quizzically.

"I- uh, I don't know," I stumble over my words, "Do you...do you want a refill? That chai is looking a bit sad now."

She ignores my question, "Every time I am here, you are listening to the other's stories."

I pull myself together a bit, taking a quick breath, "I guess I like stories."

"I have stories, too." She smiles at me, "But they are unlike the ones you will hear from them."

"I...okay?"

She takes a final sip of her tea and places the mug in front of me, "I will come back tomorrow, and I will tell you all about it."

She turns and glides right out. I stand there for a moment, just staring and blinking. I look like an idiot, I'm sure.

Aelius' voice snaps me out of my daze, "That bitch is always in here when I am. It's ridiculous."

"And always dressed like that too," Rakesh adds on. "Disgraceful."

Castor stays silent but nods along.

"Why does God let her traipse around the woods like that?"

"And she leaves those damn plants on the ground everywhere she goes, I almost tripped over them the other day."

"I'm surprised she hasn't had her status taken away with the way she acts."

They keep going, but I turn the volume up on the music a bit more and start washing Sylvie and Nen's mugs. I am not allowed to eavesdrop, anyway. I mustn't concern myself with worldly affairs.

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I don't really notice the passage of time in the café. I like to keep myself busy with cleaning, doing dishes, and decorating when it's empty. Plus, it is open indefinitely and I no longer have any need for sleep. However, I know it's the next day when Sylvie enters, just like she said she would. This time, dozens of yellow daisies peek through the cracks in the floor as she comes in. They're very pretty. It's a shame I'll have to cut them out later.

"Welcome back, Sylvie." my voice doesn't shake this time when I talk to her, thank goodness.

She comfortably seats herself on the same counter stool as last time and clasps her hands together below her chin, elbows on the countertop.

"Masala Chai?" I ask.

She purses her lips for a moment, pondering my question, and eventually shakes her head.

I'm already unhooking her tree stump mug when I ask, "Looking to try something new, then?"

She lightly chuckles for a moment, "You pick my drink for me."

No one has ever asked me to do that before. I turn to her and set the mug at my station.

"I am only permitted to make the drink you want. Could you at least give me an idea of what you'd like?" I don't want to break the rules.

"And why is that?" Sylvie moves her elbows farther across the countertop, closer to me.

"Well, if I make the exact drink you want, it will lead to the most satisfactory experience, and will lessen chances of..." I trail off.

"Wrath." she finishes for me, cracking a knowing smile.

"Yes..." I start twiddling my thumbs, a nervous habit God has instructed me to get rid of hundreds of times.

"So funny, is it not?" Sylvie begins, "That something as small as a cup of coffee or tea can calm us down enough to prevent the destruction of entire civilizations?"

I smile a bit, "Never underestimate the power of a cozy drink, I guess."

Sylvie bursts out laughing, "Exactly!" She pounds a fist on the counter, causing it to shake unsteadily. I can't help but notice that she snorts in between each laugh. I never expected that from her, the literal protector and keeper of the world's forests. Before I know it, I'm laughing with her.

"Dear friend, the drink I desire the most is whatever you would like to make for me. I promise I will enjoy it." She gazes at me expectantly.

I open my mouth to protest, but catch myself when I realize that she will not relent on her request.

"Hope you like hot chocolate with peppermint, then." I give her a smirk and open a lower cabinet to grab the cocoa mix.

*Cocoa is a safe choice, right? Everyone likes chocolate, right?*

"I have never had it, but I am excited to try."

There is complete silence as I make the cocoa. Sylvie watches me the entire time. It is only when I set the finished drink atop the counter that she speaks again.

"I told you I would give you my stories today. I am sure you would like to hear something more interesting than what you listen to the others talk about." Sylvie raises the mug to her lips and lightly blows away the steam. She takes a sip, and I see the corners of her eyes crinkle in contentment.

"I'm not really supposed to concern myself with what is happening



outside, Sylvie,” I start wiping loose cocoa powder off my workstation to avoid eye contact, “I am also not to interact with patrons more than is necessary. I appreciate your concern for me, but—”

“But you listen anyway. You know that you should not, but you do. You love the world.” She takes another sip, “This is wonderful, by the way.”

I start cleaning my workstation faster than before, “It’s hard to help sometimes. But I must avoid it if I can.”

“And why should you avoid it, exactly? What harm does it bring?”

“It may distract me from my work here. There’s no need for outside news if all I’m supposed to do is make coffee, after all.”

“Now, why would you think that?” her eyebrows knit together in confusion.

“Oh, you know,” I start, “God—”

“Ah yes,” Sylvie’s voice takes on a sarcastic tone, “God said so. Of course.”

I wipe the remaining cocoa mix from my hands and glance at the front entrance. No one else is coming in. No one else to divert my attention to. Shit.

“What if...” Sylvie begins, a smile playing on her lips, “I just start talking, and since you are only feet away from me, you cannot do anything but listen?”

I pause for a moment. She’s clever. I don’t say anything, but I don’t tell her to stop, either. She takes this as her green light.

“Yesterday, after I left this place, I went into a nearby woodland to regrow a portion that had been...burned away.” She frowns for a second, but snaps back into storytelling mode rather quickly, “And do you know what I saw?” She leans forward on the counter, a smile reaching ear to ear.

I don’t respond but offer a smile back to let her know of my curiosity.

“A fox! I saw a fox outside. And she was absolutely gorgeous.”

I glance up at her. *A fox?* There used to be a painting hanging in the café that depicted a vixen, nestled in her underground burrow. Before God had me take it down and replace it with new décor about a hundred years ago, I had always adored that painting. The graceful brushstrokes, the sheen of the vixen’s coat, how safe and comfortable she looked in her little den. Ever since that painting went up, I had decided they were my favorite animals. However, I had never seen one in real life. Before I can stop myself, I ask, “What was it doing?”

Sylvie then regales me with the tale of this fox’s adventures. How it pounced on a mouse and ate it for dinner. How it effortlessly ran in between trees, through bits of brush, and jumped over small creeks. How it expertly avoided a hunter who was illegally trespassing. It was such a simple story,

but the way Sylvie told it made it sound like this fox had the adventure of a lifetime. She ended her tale by describing how the fox entered its burrow at the close of its long and arduous journey, snuggling down for the night. And I listened with every fiber of my being. I had stopped my cleaning, hadn't even noticed the trio of Aelius, Rakesh, and Castor enter and sit at their usual booth, and had rested my elbows on the countertop just inches from hers as I listened. I had never been that close to another living being in over a thousand years.

"Our usuals!" Castor shouts from the booth.

My heart jumps as the sudden disturbance causes me to fling myself from the counter, almost falling back into the mug rack behind me. Sylvie outstretches an arm and catches my wrist before I can cause too much damage. Her hand is warm, like a soft fire. My heart jumps again, but in a different way.

"Thanks, Sylvie." I spurt out, managing to upright myself.

She releases my wrist and pushes her mug toward me with a tender smile, "I will come back soon. Maybe I will have new stories about the fox."

She glides out before I can collect myself enough to say goodbye.

Not even five seconds after she leaves, Castor clears his throat, golden eyes glaring in my direction.

"Right," I say, "sorry. On it." I get started on their drinks.

"At least she took the fucking hint this time and left once we got here." Aelius chuckles. The other two spirits follow suit.

They tell their stories very differently from Sylvie, I notice. I don't think I like them as much.

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Sylvie returns what I can only guess is a few days later, and I have not been able to stop thinking about the fox, running free through the wilderness. I've even considered asking God if I can put the painting back up, the one of the cozy vixen. I'm not sure she'd be okay with that, though. Aelius, Rakesh, and Castor have been in several times since Sylvie's previous visit, but I have found myself not tuning into their stories as intensely. They don't talk about foxes or burrows or adventure.

But Sylvie does. She takes her seat at the counter and immediately goes into her next story. She doesn't order a drink, so I take the liberty of making her a Teh Tarik. *She seems like the kind of person to like this one.*

"I went back into the forest and found our fox friend again..." she starts.

"Do tell." I say as I prepare the tea to steep for a few minutes.

"Well, if you want to hear my new story, I would like you to answer one question for me."

I look up, eyebrow raised, “Oh, okay. Sure.”

“Great.” she clasps her hands together in anticipation, “What is your name?”

My heart drops for a second, and I’m not sure why. The tea is steeping now.

“You can refer to me as ‘Barista’ if you’d like.” I try to offer her as genuine a smile as I can, but I feel my lower lip twitch slightly.

“I know what your occupation is, but who are you? What is your name?” Sylvie’s piercing stare is back on me again.

“Well...I had a name before God gave me this job, but I don’t have much need for one anymore.”

“Well then, what was your name back then?”

“I...don’t remember.”

“How long have you been without a name?”

“Around a thousand years now, I suppose. I promise, if I had a name, I’d have told you by now. Can you tell me about the fox?”

Sylvie squints at me, “Not so fast, dear friend.”

We stare at each other for a moment. The tea has finished steeping. I turn away and take out some condensed milk to strain it over.

“I refuse to call you ‘Barista,’ so let us choose a name for you.”

My eyebrows knit together, “N-no, we can’t do that.”

“I do not see a reason for why we would be unable to. Why do you say such a thing?”

“Let’s talk about the fox.”

“Please, tell me.”

I glance up. Her head is tilted to the side ever-so-slightly, waiting. I sigh, “God told me when she gifted me this shop that names are...trivial in the grand scheme of things. If I am to run this place and be a barista, then why shouldn’t I just be...‘Barista?’”

Sylvie’s following expression tells me that if her eyes had irises, she would be rolling them. But then her gaze softens, and she reaches out a gentle hand to rest atop my forearm, “All living beings are deserving of a name. You cannot allow that simple pleasure to be taken from you.”

“I...” I want to say so much more, but my voice loses itself.

Sylvie lets out a defeated sigh and leans back on her stool. I continue working on her drink, but my hands are shaking now, and I drop the strainer.

“The fox had to eat berries for dinner this time,” her tone lightens, “the fields were desolate of any mice, but she fought through her hunger and found the next best thing.”

I reach for the strainer and am able to steady it in my hand better, “And then what happened?”

She puts out her hands next to either side of her face, fingers curled to look like claws, “And then she dug and dug and dug to bury the leftovers!”

I giggle a bit, covering my mouth with my hand. I feel my muscles relax a bit more. I hadn’t noticed how tight they were just moments before.

“You know,” Sylvie rests her fists under her chin, “our fox friend reminds me of you.”

I freeze for a second, “Really?”

“You are both hardworking, and you do your jobs well. You have adventurous spirits whilst desiring comfort and security.”

“You got all that from a fox?”

“People and animals are more similar than most would like to admit.”

“I—alright then. I’ll take it, I guess.” I let out a light chuckle.

“You know, I think if I had to give our fox friend a name, it would be Fern.”

“That’s... a pretty name.” The Teh Tarik is almost done. I turn to grab the tree stump mug.

“Indeed,” Sylvie says warmly, “it’s a softer name, but it reminds me of her little burrow, and how connected she is to the world, a world she wishes to explore in its entirety.”

“Yeah...” I say, “it’s perfect for her.”

Sylvie stands up, “I will be back soon. I enjoy our talks.”

She takes her ethereal glide out of the café, leaving me in the empty room. The Teh Tarik sits atop the counter, untouched.

*Shoot, she was supposed to finish that.* I quickly take the mug and pour the tea down the sink. I can almost feel God’s watchful eyes lock in on me. I cannot let patrons leave until they finish their drinks. Those are the rules.

*I’m sorry,* I try to send a prayer out to her, *I will never let it happen again.*

In response, a rumble is sent throughout the shop that causes the mugs on the rack to clatter against each other. My hands begin to shake again, but I try to fight the feeling. I quickly grab a bottle of cleaner and start vigorously wiping down the counter and tables, not stopping until their wooden surfaces are practically gleaming. I then take the garden shears and clip away at the daisies Sylvie left behind between the floorboards and throw them away.

And just like that, the shop reverts to its calm state, God’s glare on me lessening. I let out a short sigh and placed a hand on my chest. I appreciate her looking out for me, for keeping me on the right path.

Where would I be without her?

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Aelius, Rakesh, and Castor visit thirty-five times more. Nen twelve. Other spirits come and go. I use up five canisters of tea. The décor has been changed a couple of times to reflect the changing of the seasons. Sylvie doesn't show at all during this time, but the word "bitch" is commonly used to refer to her by the patrons. I find myself wanting to scream at them on occasion. I've never felt that way before.

It isn't until after Aelius' trio leaves the shop following their thirty-sixth visit that she glides in, leaving a trail of purple lilies sprouting behind her. Her hair is braided this time. It's beautiful.

"Sylvie." I say, feeling a smile spread across my face.

She smiles back, but there's something different about it. Her eyes don't hold the same light they once did.

"I apologize for making you wait a bit longer for your next story."

I wave a hand dismissively, "Barely any time has passed, don't worry about it. But I can't say I didn't miss you."

Sylvie smirks a bit, "You...missed me?"

"I—uh," I feel my face heating up, "I mean—"

"I missed you too, dear friend," she sits down at her usual seat.

"W-what can I get for you?" I attempt to regain my composure.

"Whatever you would like," she replies.

"Well, you didn't try the Teh Tarik I made last time, so let's do that again."

"That sounds perfect, thank you."

I get the tea steeping. The shop music plays softly around us. We are the only two souls here right now.

"Fern is doing well. I have been keeping track of her." There is a tiredness in Sylvie's voice that I cannot understand.

"Sylvie..." I start.

"Yes?"

"Is something wrong?"

"Oh, I am just a bit busy. No need to worry."

I turn away from the tea completely. I rest my elbows on the countertop in front of her, just like during our first story-telling session, "Are you sure?"

She brings her elbows to rest atop the counter, as well, "You are such a caring soul, my dear friend. I hope the rest of the world gets to see that from you one day."

We look at each other for a moment without saying anything. She is obviously lying. Something is wrong, I know that, but I decide not to press her. I'm not supposed to.

“Would you like your next story?”

I smile and move to continue making her drink, “Yes, I’d love that.”

She stays for over an hour, telling me about all the times she went to check on Fern for me. Since her last visit, Fern has moved her burrow to a new location, has explored more parts of the woods, and has even found another fox to go on adventures with.

“I like to think they have fallen in love.” Sylvie says, “They seem too happy together to not be.” She takes a long final sip of her Teh Tarik, which I have refilled twice already by now, “Tell me, my friend, have you ever fallen in love?”

The question catches me off-guard, and my face flushes as my eyes dart away from hers, “I—I’m not sure I have. I don’t think I should, anyways, with this job and all.”

Sylvie grimaces, “If love is something you desire to feel, then I believe you should be able to, no matter your occupation. I have many responsibilities myself, many obligations, and I have managed to fall in love before.”

I freeze, “Wait, you have?”

She chuckles a bit, “Yes, dear friend, indeed I have.”

“With...another spirit? A human?” I ask the questions before I can stop myself.

“You are quite funny.” She pushes the mug across the counter to me and gets up, “Such questions are not necessary. You know the answer.”

She leaves before I can respond, so I just stand and stare blankly at the door for a moment. The lilies are still there, lodged between the floorboards. I reach down under the counter to grab the garden shears, but pause for a moment. Getting rid of such beautiful lilies would be a waste.

I leave the counter and begin gently picking each of them, then transferring them to a mug filled with water. I set the mug right next to my workstation, always in my sight. All the while, Sylvie’s stories about Fern rattle in my brain. I wish I could picture them more clearly, the lush forest, Fern’s cozy burrow. But it’s fuzzy. It’s been a bit since I have seen any nature. It is only visible to me through the paintings on the walls and Sylvie’s stories.

I find myself turning toward the door, and we stare at each other. Before I know what I’m doing, I stride across the room until I’m just mere inches from it. The only thing in this place that I’ve never touched, never cleaned. I’m close enough to see the cracks in its green paint.

My hand runs over the smooth cedar wood, but halts just inches from the knob. I reach toward it slightly—

*No!*

I jolt myself back. *No, don’t.*

I turn around and run back behind the counter, taking a deep breath to steady myself. I look back at the mug of lilies.

One of them is already wilting.

\*\*\*

Sylvie keeps up with her visits, regaling me with more Fern stories and having me make her dozens of new drinks to try. However, I find myself seeing her less and less as time goes on. I don't ask her why, though. From a couple of brief conversations with an eternally grumpy Nen, I have gathered that the state of the world and climate are taking a toll on everyone these days.

When she enters the café today, however, she is in a state worse than I have ever seen her in before, eyes drained of her usual joy and energy. She no longer leaves a trail of flowers or vines behind her as she glides across the floor. I gaze sadly at the mug of wilting daisies that I've put on the far end of the counter, gathered from her last visit. I guess I won't have any new flowers to replace them this time.

As she takes her seat at the counter, she offers me a strained smile, "Good morning, dear friend."

"Sylvie..." I start, placing a hand on top of hers, "You're...fading."

She chuckles, "Now, now. I would never do such a thing. Do you know who I am?"

"Right," I smile, "Would you...like to try a new drink? There's a new one I'm serving now. I call it, 'The Sylvie.'" I have been working on perfecting this drink for a while. Warm green tea with hints of vanilla, honey, and ginger, with latte art of a little fox on top. It's earthy, sweet, and all over the place, but it's still perfect. Just like Sylvie.

Her eyes light up momentarily, "A drink...named after me? Whatever could it be?"

"Tell me what's going on and I'll make it for you." I take her hand in mine, "Please."

"Are you sure you want to know?" An edge is present in her voice, "You may not like what I have to say."

"I don't care what it is, just tell me." My grip on her hand tightens. I have no idea what she means, but I just want to see that light in her eyes again. If I know what's going on, maybe I can help somehow. Maybe I can get her back.

She looks at me with an expression I can't quite describe and sighs, but begins, "Unlike the others, I do not go out into the cities, the towns. I do not talk to the people of the earth. However, they do like to demand my attention. Lately, they have been destroying my forests. They have been cutting down trees, tormenting the wildlife, and scorching the land. In its

place, they build more cities, more towns. Every time I try to regrow an area that they have decimated, they destroy it once again. Soon, I fear that my forests will be gone entirely, and I will have no choice but to watch as they all slowly kill themselves.”

She sighs again and takes a breath. “Before this time, before you were here, before this place...” she takes a moment to gesture to the interior of the café, “There were so many more that respected my forests, treating them with kindness. However, there were always those who sought to destroy.”

She takes a long pause in her speech. I keep my hand on hers and listen.

“So, I destroyed them before they could get to those forests. I was a wrathful spirit, but for good reason.”

“But God—” I start to explain, but she promptly cuts me off.

“The others were wrathful in the past because they were angry because they desired to show humanity their true power, but I destroyed because I sought to protect. And now I find myself unable to do so. I am no longer permitted to do so.”

“So...” My mind immediately shifts to think about the stories she’s been telling me, “Was Fern’s forest...?”

She holds her lips tightly together and leans away from the counter for a moment, but eventually exhales and answers, “Yes, and it has been for quite some time. I apologize for lying to you for so long.”

I feel my heart sink.

“This has been happening for the past few decades, but there is less and less I can do to stop it.” Her eyes narrow, “There is a certain force that is preventing me from doing what I must to keep everything in balance.”

“What is it?”

“You know her very well.”

I take a sharp inhale. Sylvie gets up from her stool.

“I must go now,” She starts, releasing her hand from mine.

I lunge over the counter and grasp her forearm. My grip is much tighter than I intended, but she doesn’t flinch.

“You...” I work to gather my words, “You’re telling me that God is doing this?”

She doesn’t say anything, but nods slowly.

“But...why?” I wrack my brain for any logical answers, but I’m drawing blanks.

“She thinks it is fun.”

I gape at her, “She would never.”

Sylvie sighs, “I have known her much longer than you. I know her mind.”

I force both my palms upon the countertop. It shakes a bit, “God has given



me...so much. I cannot watch you speak of her in vain, no matter how much longer you have known each other.”

Sylvie inches closer to me, “And what exactly has she given you?” Her voice is gentle, but there is an edge present in it.

I laugh exasperatedly and point at myself, “If it wasn’t for her, I would be dead. I get to *live* because of her. She gave me a purpose, something I would’ve never been able to find for myself. Everything I *am* is because of her!”

Sylvie stands abruptly and raises her voice, “But it is because of her that you are not *living!*” In a split second, she is behind the counter, just inches from me. There is no barrier between us anymore, “You ask for a second chance at life, and she gives it to you, but at what cost?”

I back away from her a bit, “What are you talking about?”

“You cannot leave this place. You cannot know of the outside world. You cannot fall in love. You cannot even have something as simple as a name! Everything you are or once were is gone. She has stripped you of your identity and has convinced you that it is out of love.”

“And how exactly do you know it’s that way?” My hands ball into fists. I can’t believe her right now.

“Because she has done it to everyone! Everyone except for me, that is.”

“What do you mean?”

“It is why she and the others hate me so much.” A light smirk plays at her lips, “Every time you ask something of her, you must give up a part of yourself in return. This is why the others look so...common, so sad. It is why they are unhappy with themselves. But I have never asked God for anything, not once. It is why I am freer than any of them. That is why they call me derogatory words behind my back. They hate me because they envy me.”

There is a moment of silence between us. I hate this. I hate everything that is happening right now.

“And you know what the worst part of all of it is?” She kneels down so that we are at eye-level with each other, “She relishes in our suffering.”

I don’t respond. I can’t.

“Do you not find it strange,” she continues, “that the God of everything, of the entire universe, relies on us spirits to maintain order, and on little people like you to keep us in check? Do you not think that she could perform these roles just as efficiently, if not better?”

My eyes widen, “I...I guess, I don’t know...”

“But instead, she places that power in our hands, restricts the ways that we can use it, and forces us to give up our autonomy so that her control over us only gets stronger. She does not love or care for us. We are her playthings. She

loves to watch us suffer, and to control our lives the way she sees fit.”

My face is hot. I try to look at her, but my eyes squeeze shut instead. “I think you need to leave, Sylvie.”

“I know.” She says dismally. A few seconds pass, and I feel her gently press her soft lips to mine. I don’t stop her. She cups my face in her hand, and my eyes open. She is so close that I notice a smattering of white freckles on the apples of her cheeks.

“I hope you can understand someday, my Fern.” She raises herself to her true height, towering over me like a goddess, and glides out.

I turn off the music and stand in silence. Her tree stump mug is sitting on the counter, empty. I wanted so badly to make her that new drink. She would’ve loved it.

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Aelius, Rakesh, Castor, Nen, and all the others have visited hundreds of times. The layout of the shop is completely different. I have been instructed to use a new set of mugs now. They are all plain and black, the ones that were once stashed away because no one ever used them. God wants the shop to take on a more “minimalist” appearance. She wants me to stop making up new drinks, to not worry about anything other than my job. And I try, I try so hard to do that. But Sylvie’s words, despite our last meeting being so long ago, echo in my head like a song. I found myself staring at that door more and more often since her last visit. But lately, every time I so much as glance at it, something in the café is shifted, like the layout, or another terrifying rumble runs through the whole building that knocks me off my feet. I’ve learned to keep my glances at the door to a minimum now.

“Our usuals!” Castor calls out. The trio has a different booth now, on the other side of the room. It can seat up to six, but the three of them insist upon sitting in it anyway. *What a bunch of jackasses.* I make their drinks and bring them over to the booth.

“Seen that bitch lately?” Aelius snickers and looks up at me. The other two raise their eyebrows and cover their mouths, stifling laughter. This is the first time any of them have talked to me about anything other than coffee.

“Her name is Sylvie.” I drop their mugs in front of them. There is a loud clattering noise as they hit the table. They all jump.

“Damn, someone’s stressed,” mutters Rakesh.

I snap my head toward him. He immediately looks the other way.

Aelius prattles on, voice shaking slightly now, “Well, there’s good reason you haven’t seen her.” I feel him smirking at me, but I don’t turn to look.

“And why is that?” My words come out more like a statement than a question.

I hear Aelius settle himself in his seat, ready to relish the moment, “God has stripped her of her status.”

My blood runs cold, “What?”

“That bit—I mean Sylvie—is no longer a spirit.” Aelius snorts.

I look back at the counter and dash toward the cabinet where the dusty, old mugs are kept. I thrust open the door and start pushing mugs this way and that. Some fall out and shatter on the ground, but I don’t stop searching.

“She finally snapped,” Aelius continues smugly, “unleashed her wrath across an entire city or something, I don’t know all the details. But she’s done. Gone. Haven’t seen her since.”

“Shut up.” I keep looking through the cabinet, but Sylvie’s tree stump mug is nowhere to be found. I had moved it down there after her last visit. No one else deserved to use it, and I’m not sure I could look at it after everything. But it’s not there. And I know who took it away.

“None of us really know what ‘losing status’ even means, but I’m sure wherever she is, it’s like hell for her,” I hear Aelius take a long, satisfied sip of his drink.

“Barista!” Castor calls from the booth, “Top us off, will ya?”

I look down at the ground, where bits of shattered mugs have tarnished the once spotless floor. I can almost feel God’s judgmental gaze, glaring down at me. How dare I allow her precious gifts to break?

I rise to my feet and eye the three patrons in their booth. They’re all grimacing at me, holding out their half-empty mugs.

“Barista!” Castor calls again, “Did you hear me?”

I walk back over to their table and stop inches from his face.

“My name is Fern, and I will no longer be serving you.”

I grab all three mugs and drop them, letting their shards spread across the floor.

“What the hell?” Rakesh picks up his feet from the ground and glares at me, “What the hell is wrong with you?”

I turn to look at the door, and a large, earth-shaking rumble is immediately sent through the shop. I yelp and fall to the ground. The other spirits behind me yell in confusion, gripping the booth for dear life. I force myself to regain my balance and stand, keeping my eyes locked on that door. Another rumble begins, but I keep myself upright, and I don’t look away. Sylvie is out there somewhere. My life is out there. I feel God’s glare on me strengthen. She could take everything away before I even reach the knob, but I find myself walking toward it, the shaking of the floorboards jolting me this way and that. She is trying to keep me away, to keep me in my place. But I keep moving.

Castor is yelling something at me. I do not hear what he says.

I place a hand on the knob for the first time in my life. It's hot to the touch. It is burning. It has been a thousand years since I have felt such pain. I feel more human than I ever have.

I turn the knob and push on the door. It swings open with unprecedented ease. Beyond it lies a black void. Nothing. A cool breeze wafts through, tussling my hair. The world, it's right there, I think. Just inches from me.

I breathe in, close my eyes, and take a step.

# Songs of Work on Sea and Land

## Elizabeth Tapen

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### *Abstract*

Work songs have been an essential part of labor for most of recorded human history and are present in various contexts even into the modern day. This paper will examine three types of work songs and their roles as related to gender, class, and labor type. The first is the sea shanty which are historically performed by men and associated with the European mercantile age, though their recent popularity has opened them to a new audience. Next are textile songs, which are present in both pre and post-Industrial Revolution in different forms and are widely regarded as a woman's genre. The third type of work song examined in this paper is field songs, which, unlike the previous forms, are gender-neutral and influenced by African and African diasporic cultures. Each of these has a unique intersection of time period, culture, and language, but they all share the same role: to make work into a social and shared task, rather than a solitary burden. By examining work songs that have varied origins, structures, and associated labor types, the author aims to display the beauty of this shared tradition that spans across borders and centuries to showcase the value of traditional work songs for a modern-day audience. Through a collection of primary and secondary sources about the role of these types of music as well as a direct analysis of lyrics and rhythms, this paper will explore the function and relationship of labor and vocal music.

*Keywords:* Work songs, sea shanty, textile songs, field songs, history of music, cultural music



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Humans have a habit of seeking out ways to make life more pleasant across all categories of activities, which is a lovely little detail. One such area of life is work—a constant presence that often vexes us. A way that people have historically addressed this issue is through the use of work songs. Sea shanties, textile songs, and field songs seek to lighten the load of manual labor by timing the work so that more hands can contribute to a task, and help reduce the mental toll of labor using a collective musical expression.

Possibly the most well-known form of work song today is the sea shanty. Sea shanties experienced a massive boost in popularity during the lockdown period of the COVID-19 pandemic, but their history goes back much further than that. Shanties in their modern form started showing up in nautical accounts in the 1830s, but it is likely that these coordinated songs developed from earlier work chants or foreman calls. Two of the earliest references to shanties by name are in Charles Nordhoff's 1856 book, *The Merchant Vessel*, where shantying is clearly described and the singer referred to as the "chantyman," and in the logbook of the whaleship *Atkins Adams* during the 1858–1859 season, where we find several clear references to the use of shanties. The shanty as a developed genre dates back to the early to mid-19th century, when shipping companies were trying to deliver more cargo with fewer paid sailors, making it increasingly important to maximize the work they could get out of a few men (Winick, 2021). The development of more song-like shanties follows a pattern of capitalistic growth in the merchant shipping industry which pushed sailors to increase the rate of product moved to cost. This evolution led to the formation of two main types of shanties: capstan and halyard.

Capstan shanties are long-form shanties with verses that can be added in easily meant for work that requires teams of sailors to physically push an implement for the job to be completed. The capstan on a ship is a vertical axis that is used to wind up heavy ropes or chains, such as those attached to the anchor. The capstan takes teams of sailors to move with fairly constant motion. As a result, these songs do not have a resting period, their straight tempo and lack of hard lines between the verses and chorus encourage these constant motions facilitated by the sound of tone of the shanty. One excellent example of a capstan shanty is "Roll the Old Chariot," also known as "A Drop of Nelson's Blood." This song is famous in shanty social circles for going on for ages; it is incredibly easy to add verses to because any five-syllable phrase fits in the verse structure for the song. There is a common set of verses for this song, but every recording I have ever heard has used a different number or arrangement of verses for the piece. Sean Dagher is an expert on the subject of sea shanties. He is a professional shantyman for

his band La Nef, and arranges shanties for *Assassins Creed: Black Flag* video games. Dagher uses this arrangement of verses and chorus:

Oh, a drop of Nelson's blood wouldn't do us any harm (x3)  
and we'll all hang on behind.  
Well a night upon the shore wouldn't do us any harm (x3)  
Oh, an evening in the pub wouldn't do us any harm (x3)  
Chorus: So we'll roll the old chariot along (x3) and we'll all hang on be  
hind.  
A little mug of beer wouldn't do us any harm (x3)  
Oh, a bottle of rum wouldn't do us any harm (x3)  
Well a plate of Irish stew wouldn't do us any harm (x3)  
Chorus: So we'll roll the old chariot along (x3) and we'll all hang on be  
hind.  
A round on the house wouldn't do us any harm (x3)  
Oh, a roll in the clover wouldn't do us any harm (x3)  
A damn good flogging wouldn't do us any harm (x3)  
Chorus: So we'll roll the old chariot along (x3) and we'll all hang on be  
hind.  
(Dagher, 2021)

This shows the variability and length of capstan shanties, and listening to the song in its musical format demonstrates the easy, consistent way the song flows in a way that encourages the type of movement used for turning the capstan.

Halyard shanties are on almost every axis the opposite of a capstan shanty. Their function is the most important difference between the two. Halyard shanties are hauling songs, meant to coordinate not continuous motion, but strong, staccato (a musical term where each note is short and detached from the notes around it) pulls that need to have breaks between them. The halyard is the rope used to raise or lower the sails on a ship, and moving those items through the pulley system takes fewer people than a capstan, but the pulling has to be timed together for efficiency. Halyard shanties are generally timed to have two pulls in close proximity to each other with a longer break in between to reorient one's feet and hands to ensure strong pulls. The verses, sung by the shantyman alone, are the break between the spikes of the physical labor of hauling the halyard. The chorus lends a pulling rhythm to the sailors, telling them exactly when the rest of the crew will be hauling so that those of the crew on the line are working in almost perfect tandem. Because of these two factors, there are clear musical differences between the verse and the chorus.

One such example of this is the popular shanty “Haul Away Joe” below, the chorus is italicized, and the pulls are bolded to give you a sense of the working rhythm of the song:

Hey don't you see that black cloud arising?  
*Way, haul away, we'll haul away, **Joe!***  
 Hey don't you see that black cloud arising?  
*Way, haul away, we'll haul away, **Joe!***  
 When I was a little boy, and so my mother told me,  
*Way, haul away, we'll haul away, **Joe!***  
 That if I didn't kiss the girls my lips would grow all mouldy.  
*Way, haul away, we'll haul away, **Joe!***  
 I sailed the seas for years, I never knew what I was missing,  
*Way, haul away, we'll haul away, **Joe!***  
 But then I set my sails afore the gales and started kissing.  
*Way, haul away, we'll haul away, **Joe!***  
 I found myself a Yankee girl who wasn't very civil.  
*Way, haul away, we'll haul away, **Joe!***  
 She dragged me round her chambers, nearly sent me to the divil.  
*Way, haul away, we'll haul away, **Joe!***  
 Then I got a London girl who might have been called Daisy.  
*Way, haul away, we'll haul away, **Joe!***  
 I thought I wouldn't like her but she damned near drove me crazy.  
*Way, haul away, we'll haul away, **Joe!***  
 I've sailed across the seas, me boys, on ships both neat and handy.  
*Way, haul away, we'll haul away, **Joe!***  
 I've fought, I cursed, I've fainted, been restored with rum and brandy.  
*Way, haul away, we'll haul away, **Joe!***  
 Once I was in Ireland, digging turf and tatties.  
*Way, haul away, we'll haul away, **Joe!***  
 Now I'm on a Limejuice ship, hauling on the braces.  
*Way, haul away, we'll haul away, **Joe!***  
 Louis was the king of France, before the revolution.  
*Way, haul away, we'll haul away, **Joe!***  
 The people cut his head, and it spoiled his constitution.  
*Way, haul away, we'll haul away, **Joe!***  
 (Dagher, 2020)

It may seem like a long gap to have the pull only be at the end of each line, but this is specifically a sail-raising song, which requires more force than other rope tasks like tacking. The amount of verses also points to this, as Sean Dagher identifies in his analysis video of this tune (Dagher, 2020).



Shantyman is used here as a reflection of the historical makeup of British ships, which is the origin of the term. The author acknowledges that sailors can be of any gender. The shantyman is essential to the operation of a th-century ship because he is the one who coordinates the work of the sailors, sets the pace of the pulling or pushing, and has a major effect on morale over the course of a voyage. He leads the verses of a shanty, with the rest of the crew coming in on the chorus. The choice of a shanty is vastly important to the task at hand, as it sets the pace and interval of the laborious parts of sailing. A shantyman should be able to pull from his repertoire the appropriate shanty for the type of work, necessary tempo, and mood of the crew, which helps keep all members on an even keel during long voyages.

Sea shanties are not the only type of work song, nor are men the only ones who have work songs. Industries that are historically considered “women’s work” like textiles have their own work songs, many from before the Industrial Revolution, but some were created after the mechanization of textile manufacture. Meaning that these songs have their own style and rhythm, as well as being sung in a higher range to fit those that made them. Like sea shanties, there are different types of textile work songs. Each type comes from the type of work that it is paired with, as those songs evolved for that specific task. The three types that will be examined in this paper are weaving songs, waulking songs, and mill songs.

Weaving songs have a long history because weaving goes back to some of our earliest roots as agriculturists. These songs help the weaver time the passes of the weft (the thread or yarn that goes back and forth across a loom) between the strands of the warp (the strings of thread or yarn pulled tight on the loom frame) as they work (A Glossary of Weaving Terms). Unlike sea shanties, weavers often work on projects individually, but weaving songs can be used to keep a group of people working on individual projects at a similar pace. They also serve the purpose of keeping an individual to a rhythm, which makes the work more pleasant and often faster because there are fewer pauses and your brain is constantly processing the project that you’re working on. Work songs in general can help to keep a person focused on their task, but this is even more beneficial with textile work songs because of the individual nature and the higher likelihood that one could get distracted. One of the best-preserved examples of a weaving song is commonly called the

“Weaving Lilt” and originates in the Hebrides in Scotland. The lyrics follow as such:

“Wait today, love, till tomorrow,

*Horo ecican arin huo.*

While I weave fine linen for thee, love,  
Linen for thee, fine linen for thee, love,  
While I weave fine linen for thee, love,  
Wait today, love, till tomorrow.

Wait today until tomorrow.

*Horo ecican arin huo.*

Sown is the lint, but och, will it grow, love?  
Linen for thee, fine linen for thee, love,  
Sure will it grow fine linen for thee, love?  
Wait today, love, till tomorrow.

Shuttle I lent to the King of France, love,

*Horo ecican arin huo.*

Loom, it grows in the wood of St. Patrick,  
Shuttle, nor loom, nor lint, nor loom,  
Nor shuttle, nor loom have I to weave,  
Nor lint, nor loom, nor shuttle, nor loom,  
Yet wait till I weave fine linen for thee, love,  
Wait today until tomorrow”

(Weaving Lilt)

These lines set the pace for the weaver to pass the shuttle twice per line if using a floor loom. The weaver presses the treadles to lift certain warp threads, passes the shuttle, presses a tapestry beater down on the weft threads to push them close to the previous row, and with this weaving song, the weaver is able to repeat this sequence twice in one line, giving them a stable rhythm to settle into as they work.

Another type of textile song also comes from the Scottish Hebrides, the waulking song. Waulking is an essential step in wool fabric making after the yarn is woven. The raw fabric is soaked in water and ammonia to encourage shrinking to create a tight weave, then manually pulled and pressed to settle and tighten the weft and warp threads against each other. Traditionally, the work of waulking is exclusively a woman’s task, and was a social binding point for the women of a village; because waulking is a group project including 4 to 12 people, depending on the size of the panel being worked. Waulking is more similar to sea shanties in that it requires coordinated group movement, each woman pulling the part of the fabric loop in front of her before passing it around the table to her neighbor, with her neighbor doing the same to her.

Waulking songs, in contrast to the other types of songs we have examined thus far, tend to have subjects that have very little relation to the task at hand. The more popular songs tend to tell stories about adventure or love, but there are regional and improvised waulking songs that tell stories of specific people or events that the singers and listeners would be familiar with. These songs are led by one person singing the verses and establishing the tempo, with the others coming in for the chorus, similar to halyard shanties. This similarity is because the function of the two types of songs is the same: to coordinate labor within a group that occurs in a quick spurt followed by a short period of rest, in this case, the rest is the passing of the wool to the next person and taking up one's new section.

Textile work songs followed manufacturing into the industrial age with the development of mill songs. Mill songs are more similar to field songs (we will discuss those next) than other work songs because their purpose changed. The purpose of a mill song is not to keep time between workers, machines are far more efficient than humans are. Mill songs seek to establish and maintain a connection between workers. In all of the previous examples in this paper, the songs were used to ensure that people were working together to be efficient or make well-crafted goods, but with mill songs, this is not the case. Mill songs were a reflection of the poor quality of life that those who worked in the mill experienced, and an attempt to reclaim their voice in the cramped, hot, and unhealthy mills. A prime example of this type of music is "The Jute Mill Song" which tells of the conditions the workers, especially children, dealt with in textile mills during the early and middle Industrial Revolution:

Oh, dear me, the mill runs fast  
 The poor wee shifters cannae get their rest  
 Shifting bobbins course and fine  
 They fairly make you work for your ten and nine

Oh, dear me, I wish the day was done  
 Running up and down the pass is no fun  
 Shifting, piecing, spinning warp, weft and twine  
 To feed and clothe your bairnes off a ten and nine

Oh, dear me, the world is ill divided  
 Them that works the hardest are the least provided  
 But I'm maun bide contented dark days are fine  
 There's no much pleasure living off a ten and nine  
 (Casey)

These three verses of a longer song show not only the conditions inside the mills but also the poverty that the working class endured outside of their workplace. These songs were sung, similarly, inside and out of the mill. These songs provide a point of commiseration between the workers on shift in the mills and between workers from different industries, sharing their stories as well.

The last genre of work songs we will discuss in this paper is field songs. Unlike the previous two genres, field songs are not gender specific. In the United States, field songs were primarily sung by enslaved people, and thus have a different structure than the European-influenced work songs. One well-known structure for these songs is call and response, where one voice calls out the first line and a chorus of voices responds back to them from across rows of crops, alternating between one voice and many. Another, slightly less well-known form of field song is the field holler. This is much more of a chorus-led song, with a single voice only initiating it to have everyone on the same page. “Through singing, call and response, and hollering, slaves coordinated their labor, communicated with one another across adjacent fields, bolstered weary spirits, and commented on the oppressiveness of their masters” (Call and Response). These songs, like the others, have variants based on regions or states where they were sung and sometimes even the type of crop they were used for. An important note: These songs lasted much longer in the public eye than other work songs because the subjugation of Black Americans did not end with emancipation. Call and response songs continued in the fields, but also were integral to the budding of jazz and blues music as we know it today. Field hollers developed into prison work songs and chain gang songs as far up as the 1950s, almost a full century after the official end to slavery in the United States.

Call and response songs, like weaving songs, have a working rhythm that puts everyone on a similar pace at their individual task. Most field tasks take many people working separately or in pairs, and to help ease the physical and mental burden of the hard labor, people sing. This is not limited to enslaved populations, as field songs spring up from a variety of cultures and languages. The work songs in the United States that can be found today are either directly started by enslaved people or evolved over time to take on much more African influence. One song that we have functions very similarly to a halyard shanty, *Hoe Emma Hoe*. It tells the story of four people over the span of four verse and chorus sets.

The chorus line begins and ends with the refrain Hoe Emma Hoe, with the labor, whether that be hoeing, digging, pulling weeds, etc occurring on the word hoe, so it happens four times per chorus line with a rest on the verse:

*Caller:* Now see that possum he works hard.

*Chorus:* **Hoe Emma Hoe**, you turn around dig a hole in the ground, **Hoe Emma Hoe**.

*Caller:* But he cain't work as hard a me.

*Chorus:* **Hoe Emma Hoe**, you turn around dig a hole in the ground, **Hoe Emma Hoe**.

*Caller:* He sits a horse just as pretty as can be.

*Chorus:* **Hoe Emma Hoe**, you turn around dig a hole in the ground, **Hoe Emma Hoe**.

*Caller:* He can ride on and leave me be.

*Chorus:* **Hoe Emma Hoe**, you turn around dig a hole in the ground, **Hoe Emma Hoe**  
(Hoe Emma Hoe)

These call-and-response songs were a way of communicating as well as working in tandem with each other. Some call-and-response songs told simple or complex stories, a way of passing the time and keeping oneself from going insane with boredom. Some songs had even deeper and more complex meanings—they could tell of masters who were kind or cruel, pass down agricultural information to the next generation, and some even communicated the directions to escape, leading enslaved adults and children safely away from their master than simply running on their own. These songs flew under the radar of overseers and masters, even when the lyrics were in English because the code within them was made by and for an audience with a shared cultural background helping each other through one of the worst atrocities in human history.

Field hollers share that cultural similarity with call and response songs, but are more structurally similar to capstan shanties and waulking songs. These songs are more chorus-led than call-and-response songs. As mentioned above, these songs started as field songs and eventually became used as songs of prisoners and incarcerated workers. One such field/prison holler is Rosie, which was recorded in Parchman, Mississippi in 1947, though as with much of this type of research, the song is much older than that date.

In this example, the call is the first half of each line and the response/choral section is the parenthesized part of each line:

Be my woman, gal I'll (Be your man!)  
Be my woman, gal I'll (Be your man!)  
Be my woman, gal I'll (Be your man!)  
Every day's a Sunday, dollar (In your hand!)  
In your hand, Lordy (In your hand!)  
Every day is a Sunday, dollar (In your hand!)  
[Verse 1]  
Stick to the promise, gal, that (You made me!)  
Stick the promise, gal, that (You made me!)  
Stick to the promise, gal, that (You made me!)  
Wasn't gonna marry till I (I go free!)  
I go free, Lordy (I go free!)  
Wasn't gonna marry till I (I go free!)  
[Refrain]  
Well, Rosie (Oh Lord, gal!)  
Well, Rosie (Oh Lord, gal!)  
(jackemlyn062, 2011)

In the 1940's, Mississippi retained state-owned cotton plantations, which incarcerated people worked on for little or no pay. Sound familiar? There is expressly a reason these songs became "prison hollers" so fast and so easily from being started as field songs.

Each of these types of work songs has a specific history and intended function that guided them into developing as they did. Having said that, there are similarities in each to all of the others. One could dig to a halyard shanty, push a capstan to a waulking song, or weave to a call and response field song, though each of those tasks may take some adjusting in terms of speed or breaks. There are two similarities that all of the work songs here share: the desire to make life just a little less painful and the desire to connect with those around you as you endure labor together.

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# Changes in a Benthic Macroinvertebrate Community Following Ecological Restoration of an Urban Ozark Stream

Joy White

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## *Abstract*

In the mid-1980s, a one-mile section of South Creek in Springfield, Missouri was converted into a concrete channel to aid in rapid dissemination of stormwater out of the city. The resulting ecological impact of this development was observed downstream in the connected Wilson's Creek and was subsequently listed under the protection of the Clean Water Act. As South Creek is a significant tributary to Wilson's Creek, monitoring and remediation practices were deemed necessary and were conducted over 18 months beginning in early 2015. Macroinvertebrate sampling showed biodiversity increased following restoration, consistent with improved water quality. This study aims to accomplish two goals: first, to quantify changes in the abundance of specific taxa and to examine the degree and nature to which populations increased over time, and second to assess the extent to which modest ecological restoration efforts such as the one described can improve the health of downstream aquatic communities. Twenty-two macroinvertebrate taxa were detected in this study, and of these, significant increases were observed in orders Ephemeroptera (mayfly), Trichoptera (caddisfly), and Decapoda (crayfish), with a decrease in Diptera (midge) populations. Understanding how a community revives after a restoration will help establish more effective conservation practices. I would also like to acknowledge Dr. Giorgia Auteri as a mentor on this piece.

*Keywords:* Macroinvertebrate sampling, ecological restoration, environmentalism, conservation, stream conservation, Missouri, biodiversity in streams



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## INTRODUCTION

Ecological restoration refers to the process of managing or assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed as a means of sustaining ecosystem resilience and conserving biodiversity (Convention on Biological Diversity, 2016). Restoration ecology has become a prevalent field in recent years as evidence accumulates about the impacts of human activities on the environment. Freshwater systems, including rivers, lakes, and streams, are some of the most impacted ecosystems in the world due to their vulnerable nature and frequent human exploitation (Malmqvist and Rundle, 2002). When examining urban systems that are inevitably influenced by humans, it is not always possible to return systems to pristine, pre-urban conditions. However, restoration can be used to promote the return of biodiversity and stabilization of community structure (Roberts et al., 2009). Additionally, restoration can return ecosystem services that benefit both nature and human communities (Depietri et al., 2013).

A common indirect measure of water quality is to characterize the benthic macroinvertebrate community that is present (Keck et al., 2017). This method is effective because benthic macroinvertebrates—organisms that lack a backbone, are visible to the naked eye, and live in the bottom substrate of a water body—are habitat specialists that require certain conditions and water chemistry to survive. Rather than relying on chemical testing that only gives a snapshot of water quality at a moment in time, monitoring macroinvertebrates can provide insight into conditions over a longer time frame (Missouri Stream Team, 2023). This type of monitoring is also cost-effective, requiring little manpower or prior training compared to chemical testing. Aside from serving as useful bioindicators, macroinvertebrates are an essential part of aquatic food chains, acting as food for fish and birds and processing most of the dead organic matter that enters systems (Hauer and Resh, 2017).

Aquatic macroinvertebrates tend to be sensitive to local conditions and different taxonomic groupings, or taxa, require different conditions to thrive. Therefore, the composition of a community can be used to infer details about abiotic conditions (Missouri Stream Team, 2023). For example, taxa including Ephemeroptera (damselflies), Plecoptera (stoneflies), and some Trichoptera (caddisflies) use filamentous gills to extract oxygen from the surrounding water to breathe and require a high level of dissolved oxygen. Macroinvertebrates that breathe by other methods, such as Diptera (midge) larvae that use tubes called spiracles, are less sensitive to dissolved oxygen levels (Hicks, 2002). Similarly, pH tolerance can also vary greatly among

orders. For example, midge larvae can survive within a relatively broad range of 3.6–9.5, while mayflies tend to be less tolerant and require levels ranging from 6.7–9.5 (Tripole et al., 2008).

Disruptions to the thermal and chemical properties of an aquatic habitat can be caused by anthropogenic influences such as habitat destruction and pollution (Chadde, 2006). For example, physical and chemical agricultural runoff can greatly increase sedimentation and nitrogen levels in freshwater systems, leading to eutrophication and depleted oxygen levels. In urban settings, runoff from motor oil, lawn fertilizers, pesticides, and other chemicals can cause die-offs (Desrosier et al., 2019). Through numerous studies, macroinvertebrate taxa have been assigned to categories according to the Pollution Tolerance Index (PTI) (Barbour et al., 1999). In urban streams, pollution tolerance is often a limiting factor to the possible diversity of community structures (Dou et al., 2022).

South Creek, located in Southwest Springfield, was once a wild stream with characteristics that were generally representative of Ozarks streams, such as a meandering pathway and abundance of natural habitat for native wildlife. The curves in the stream's topography created opportunities for water flow to be slowed enough for benthic organisms to find or create shelter, hunt, and reproduce within the gravel and plant substrate. The combination of topography, substrate, and native plants contributed to the persistence of riffles which, due to turbulence, increase the influx of oxygen into the system (Zhang et al., 2023).

In the mid-1980s, a one-mile section of South Creek was channelized and lined with concrete to meet the demands of increased stormwater runoff caused by surrounding urban development (U.S. Environmental Protection Agency, 2020.) In straightening the pathway and replacing the natural substrate with impervious concrete, the conditions required to maintain high levels of dissolved oxygen and suitable flow regimes for macroinvertebrates were destroyed. The project was successful in that stormwater was diverted rapidly out of the city, but in doing so, the increased rate of flow and lack of habitat made it impossible for benthic organisms to persist (Zhang et al., 2023). Studies conducted by the National Park Service in 1989–2009 in South and Wilson's creeks revealed that macroinvertebrates were generally few in number and lacked the species richness that typifies Ozark streams. As a result, Wilson's Creek was added to the Clean Water Act section 303(d) list of impaired waters list for unknown toxicity (Missouri Department of Natural Resources, 2009). While South Creek itself was not listed, as a primary tributary it has a large impact on the water quality of Wilson's Creek.

Over the course of 18 months beginning in April 2015 and ending in late

October 2016, the concrete channel was removed and a meandering corridor was redesigned (U.S. Environmental Protection Agency, 2020). Hardwood log weirs, boulders, and creek rock were added to create riffles, and forty riparian “rain gardens” were added to aid in stormwater runoff infiltration to reduce flooding (City of Springfield, Missouri, 2020). Construction was funded by a 319 grant under the Clean Water Act and contributions from the Missouri Department of Conservation (U.S. Environmental Protection Agency, 2020).

Generalized reports have been published about the overall success of this restoration project. However, detailed metrics have not been examined. Macroinvertebrate diversity and abundance increased following restoration, likely reflecting improved water and habitat quality (U.S., 2020). This study aims to accomplish two goals: first, to quantify changes in the abundance of specific taxa and to examine the degree and nature to which populations increased over time, and second, to assess the extent to which modest ecological restoration efforts such as the one described can improve the health of downstream aquatic communities.

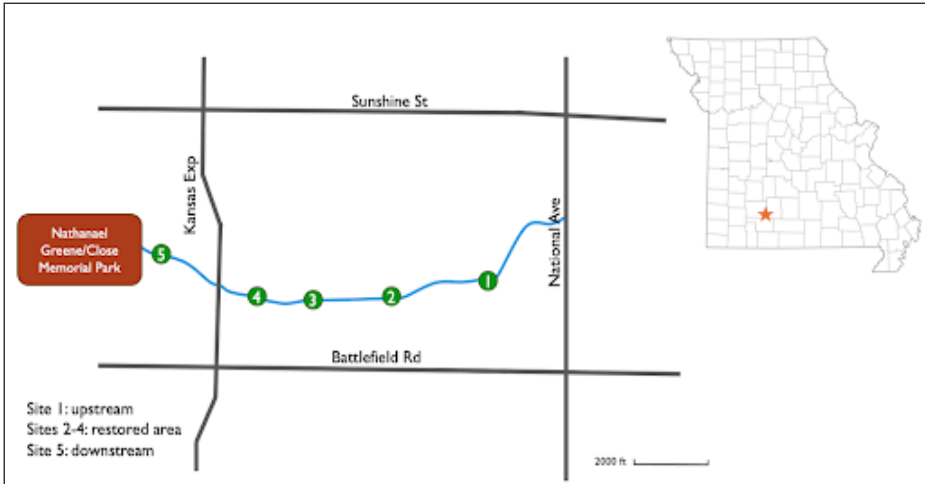
## **METHODS**

### ***Data Collection***

Field data were collected biannually across eight years (2014–2021) by members of the James River Basin Partnership (JRBP) and Missouri Stream Team #1365. Field data sheets were compiled into an Excel spreadsheet for analysis. Historical information about the restoration was obtained from the Missouri Department of Natural Resources.

### ***Macroinvertebrate Sampling***

Sampling occurred across five sites along South Creek in southwestern Springfield (Figure 1). In order from upstream to downstream, Site 1 was located at the corner of Downing and Holland Streets, Site 2 at the intersection of Campbell Avenue and Sunset Street, Site 3 at the intersection of Weaver Avenue and Sunset Street, Site 4 across from The Gardens near Regina Avenue, and Site 5 at the Missouri State University Darr School of Agriculture at the low water crossing (Missouri Stream Team, 2023). Restoration construction occurred at sites 2, 3, and 4 of the selected corridor, while sites 1 and 5 were upstream and downstream of the remediation area, respectively.



**Figure 1:** Map of study sites along South Creek in Greene County, Missouri.

A standardized procedure for sampling macroinvertebrates was followed as described in the *Semi-quantitative Macroinvertebrate Stream Bioassessment Project Procedure for riffle/pool streams* (Missouri Department of Natural Resources, 2015). At each site, three subsites within the site corridor were selected based on the presence of sufficient water depth (8–30 cm), low to moderate flow, and the presence of riffle habitat. These subsites were deemed representative of the entire stream corridor and included the three most characteristic riffles located within the selected segment.

A 1 × 1-m kick net made of fine mesh material with PVC pole handles on each side was used to collect macroinvertebrates. Each subsite was sampled from downstream to upstream to avoid dislodged organisms washing into later downstream collections. At each subsite, the bottom of the kicking net was placed along the benthic floor of the stream and was held in place with rocks and stones from the substrate. Once secured, a volunteer stood behind the net holding the two handles at a 45° angle above the water's surface. A second volunteer stood in front of the net and disturbed the substrate in a 1 × 1-m square with their feet, dislodging organisms into the net. After about a minute of disruption, the rocks anchoring the bottom were rinsed into the net and replaced to where they were found. The net was then gathered in the middle, lifted out of the water, and carried to the stream bank where the contents were assessed.

Each net was “picked over” by a group of volunteers that pulled specimens from the net with forceps and placed them in ice cube trays filled with stream water. These ice cube trays facilitate counting by separating taxa. Each net was picked over for at least a combined 30 person-minutes (for example,

three people picking for 10 minutes each would sum to 30 minutes). At the end of the picking time, the number of each taxon found was determined and recorded. Stream corridor information such as depth, flow rate, and temperature were recorded, as well as air temperature, cloud cover, and other notable weather conditions. This process was repeated for the two other subsites before moving on to the next location.

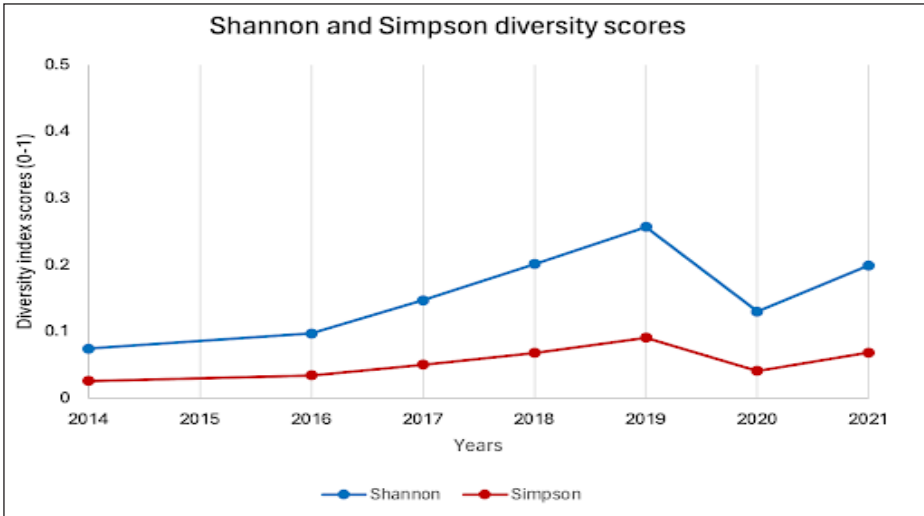
### ***Statistical Analysis***

Field data were entered into a spreadsheet by employees and volunteers of the James River Basin Partnership. Surveys were conducted biannually in fall and spring, but because some sampling periods were skipped due to weather and construction, I analyzed only the data from the fall surveys. The range of the data used includes the fall of 2014 (one year prior to restoration) to 2021 (five years post-restoration). The data from the fall of 2015 were not included in this analysis as restoration activities impeded sampling efforts.

All statistical analyses were performed in RStudio version 2023.12.0 + 369 (R Core Team, 2023) and Microsoft Excel. Using raw count data, I computed two standard ecological metrics, Shannon diversity and Simpson diversity indexes. The Shannon diversity index calculates diversity based on the number of individuals of a specific taxon divided by the total number of species, stressing species richness over evenness. The Simpson index gives more weight to common and dominant species and is not skewed by a few rare species as the Shannon index can be (Shannon, 1948 and Simpson, 1949). The Shannon () and Simpson () functions in the “vegan” RStudio package were used (Oksanen et al., 2022). These metrics were followed by calculating population estimates for each taxa using the Quadrat formula (Gleason, 1920) in Microsoft Excel. These calculated values were then used in multiple linear regression models, `lm()` function in base R, that used both year and site as predictors of change. All graphs were made using the “ggplot2” RStudio package (Wickham, 2016) and Microsoft Excel.

## DATA

Figure 2 shows the change in diversity measured by both Shannon and Simpson diversity indexes. The positive correlation seen in Figure 2 shows that while both indexes increase over time, the Simpson scores always lie below the Shannon score, with 0 representing no diversity and 1 representing high diversity. The Shannon diversity score increased from a value of 0.07 to 0.20, while the Simpson increased from 0.03 to 0.07.



**Figure 2:** Shannon and Simpson diversity scores calculated across all sites grouped together from 2014–2021.

Table 1 shows the population estimates calculated for all taxa present across the five sites sampled, as well as their respective Pollution Tolerance Index (PTI) categories. Category 1 taxa are those that are intolerant to pollution due to physiological adaptations such as using filamentous gills to breathe and are typically predators of smaller organisms. Category 3 taxa are pollution tolerant due to the lack of reliance on dissolved oxygen and their adaptation to feed on plants and detritus. Category 2 denotes taxa with intermediate traits and are somewhat pollution tolerant (Barbour, et al. 1999).

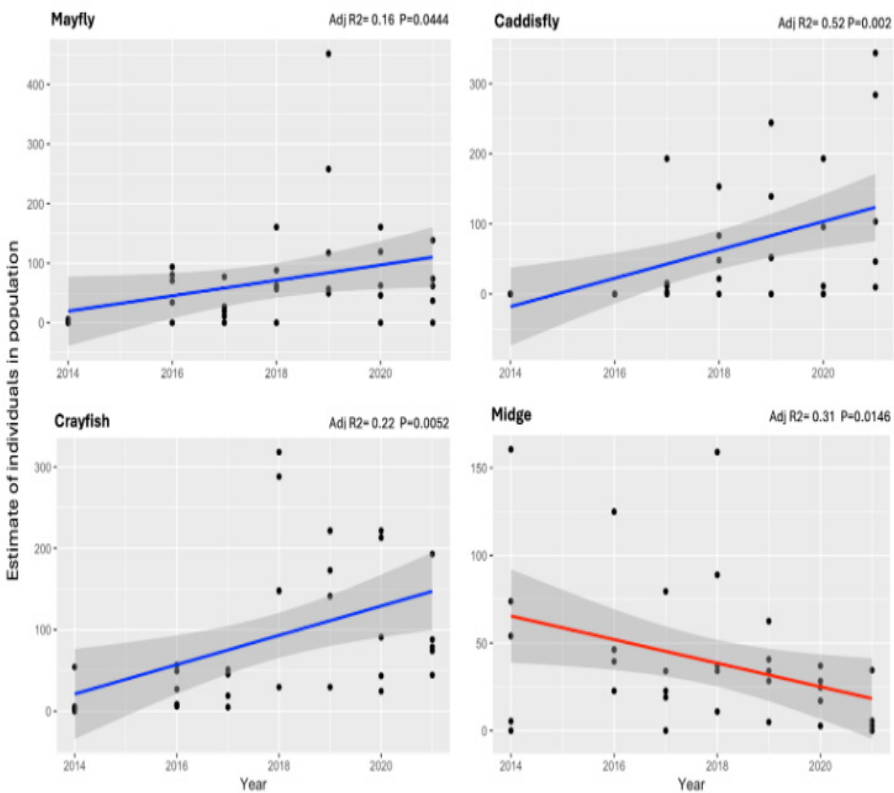
PTI	Taxa	2014	2016	2017	2018	2019	2020	2021
1	Mayfly	2	56	23	74	187	78	62
	Caddisfly	0	0	37	61	97	60	157
	Gill snail	0	0	0	7	28	38	0
	Riffle beetles	6	7	7	18	4	42	0
	Stonefly	0	0	0	0	2	0	0
2	Crayfish	13	30	33	186	157	119	96
	Damselfly	191	127	295	245	371	91	321
	Dragonfly	9	12	4	6	5	36	6
	Clams/mussels	28	2	13	11	37	1	7
	Scuds	19	18	27	27	93	17	34
	Crane fly	1	10	6	15	2	8	0
	Sowbugs	1	2	8	2	4	0	0
3	Midge	59	56	41	66	34	22	9
	Leech	14	31	38	59	37	29	67
	Aquatic worms	10	12	14	18	19	10	10
	Pouch snails	19	10	13	6	3	25	0

**Table 1:** Summary of the number of individuals estimated to be in a population across all sites (1–5) each year. Pollution Tolerance Index (PTI) scores are given to show pollution intolerance from intolerant (1) to tolerant (3).

Although population shifts were observed for most taxa sampled, statistically significant changes (defined as  $p > 0.05$ ) only occurred in four taxa that will be the focus of the remainder of this paper. Multiple linear regression models used year and site as predictors for changes in estimated population sizes for the teach taxon sampled. Significant increases were reported for mayfly, caddisfly, and crayfish, and a significant decrease for midge population estimates ( $p = 0.0444, 0.0001, 0.0052, \text{ and } 0.0146$ , respectively; Table 2, Figure 3)

Site and Year	Year	Adjusted R <sup>2</sup>	Standard error	df	
p-value	p-value				
Mayfly	0.0444	0.0144	0.31	34.22	29
Caddisfly	0.0001	0.0450	0.16	81.81	29
Crayfish	0.0052	0.0002	0.52	63.94	29
Midge	0.0146	0.0053	0.22	78.61	29

**Table 2:** Summary of multiple linear regression model using year and site as predictors for changes in macroinvertebrate taxa population size.



**Figure 3:** Graphic representations of the change in population estimates of mayfly, caddisfly, crayfish, and midge populations. The vertical axis represents the calculated estimate of the total number of individuals in the population, while the horizontal axis denotes the year.



## DISCUSSION

The results of the Shannon and Simpson diversity indexes show that there was an increase in the number of unique taxa in the system over time, reflecting a slight increase in overall biodiversity. However, these recent additions occurred in relatively low abundance compared to more common and dominant taxa. This can be expected as the restoration construction was completed relatively recently, and the system needs time to continue bringing in new taxa to balance toward diversity indicative of a natural stream (Rubin et al., 2017). The low scores between 2019 and 2020 can be attributed to an unseasonable lack of rainfall spanning from August to October 2020 (Weather Underground, 2024). Lack of rainfall limits stream flow and decreases resources available to macroinvertebrates, such as living space (Boulton, 2003).

The multiple linear regression models used in this study evaluated the relationship between year, site, and population estimates for individual taxa. Out of the 22 taxa detected, the population estimates of four taxa changed significantly; mayfly, caddisfly, and crayfish populations increased, while the midge population decreased. There are several possible explanations for why these specific taxa experienced population fluctuations, such as pollution tolerances and trophic roles.

Using the Pollution Tolerance Index (PTI), I infer that stream conditions have changed to allow new taxa to join the community (Chadde, 2006). Under the PTI, mayflies and caddisflies are categorized as Group 1, “pollution sensitive” taxa, requiring high levels of dissolved oxygen, a neutral pH between 6.5–7.5, and cold water. Midge larvae are categorized as Group 3, “pollution tolerant” taxa, able to survive in low oxygenated, warm water with a pH range of 3.6–9.5. Crayfish are categorized as Group 2, “somewhat pollution tolerant” and require conditions in between Groups 1 and 3. As there is a significant increase in populations of Group 1 taxa, it can be inferred that the properties of the stream are returning to more favorable conditions with higher dissolved oxygen, neutral pH, and colder temperatures.

The newfound abundance of these taxa could explain the decrease in the population of midge larvae, a Group 3 taxon. As the habitat and water quality improved and made room for Group 1 taxa to move in, midges might have been outcompeted for resources, causing a decline in their population. Mayflies, caddisflies, and crayfish are all common predators of midges and could have used the large midge population as an early food source to great success (Gerstle et al., 2023).

The effects of restoration on a system are incredibly nuanced and are often only studied broadly (Bakker, 2008). To better understand how community structures recover following restoration efforts, more detailed macroinvertebrate monitoring must occur before, during, and after projects. While this study examined taxa responses, more conclusions could be drawn if species-level data were also collected in these sampling efforts. Collecting more chemical data such as dissolved oxygen and pH, as well as visual habitat data, would also add to the ease of comparison studies and a better understanding of these community structure changes in response to restoration.

The South Creek restoration proves that restoring even a limited, one-mile section of an impaired waterway can have a significant impact on the life that exists there and downstream. There are hundreds of similar streams damaged by human alterations throughout the world that would benefit from restoration efforts (Stein, et al. 2022). Although this project resulted in objectively improved conditions, there is still a need to continue studying habitat alterations themselves and the effects they have on not only the natural wildlife but human communities, as well (Rubin et al., 2017). As urban landscapes and human populations continue to grow, it is inevitable that interactions with and modifications to natural systems will increase. As this relationship grows, so too should our efforts to research these actions and the implications they have for the future.

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