The Father of America’s First Engineering School: Sylvanus Thayer

Introduction

The United States Military Academy, or West Point, is widely considered one of the nation’s premiere colleges and a historical treasure. Its mission is, “to educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of Duty, Honor, Country and prepared for a career of professional excellence and service to the Nation as an officer in the United States Army” [1]. Being one of the 10% accepted merely represents the first hurdle, as cadets will immediately be faced with countless challenges and obstacles [2]. The entire experience is designed to produce individuals who are able to perform complicated tasks under extreme circumstances. It is not a subtle point that new cadets are required to memorize, among many other things, the following definition of leather, “If the fresh skin of an animal, cleaned and divested of all hair, fat, and other extraneous matter, be immersed in a dilute solution of tannic acid, a chemical combination ensues; the gelatinous tissue of the skin is converted into a non-putrescible substance, impervious to and insoluble in water; this is leather” [3].

Despite its current prestigious and strict reputation, West Point’s original history is one consisting of a lack of direction, vision, resources, organization, and even discipline. It ultimately took the idealistic drive of a graduate inspired by engineering focused European military schools to provide the structure the Academy so desperately needed. His name was Sylvanus
Thayer and he went on to be considered “the father of the military academy”. By implementing upgraded standards and emphasizing civil engineering the United States Military Academy became the preeminent engineering school in America and produced prominent engineers, military heroes, and even presidents [4]. Thayer’s influence undoubtedly changed the course of a nation by establishing an entirely new and innovative approach to technical education.

The Founding of West Point

West Point came to be out of military necessity at a decisive point in America’s infancy. During the American Revolution the British determined that controlling the Hudson River would in effect give them the entire command of water communications with Indian nations and divide American colonies, cutting off their supplies [5]. Realizing the British strategy, Americans were eventually able to establish adequate, if not shoddy, fortifications along a critical turn in the river, known as West Point. The men establishing the fortifications were underpaid and often relied on foraging in order to eat [6]. An early defense tactic was the construction of an immense iron chain to be strung across the river in order to stop incoming British ships. The 600 yard long chain was put into position in November 1776 and thankfully was never put to the test by the British as many believe it surely would have failed [7]. Another threat to West Point’s existence came from within: General Benedict Arnold. He was appointed command of West Point in 1780 and ultimately plotted to turn it over to the British in return for compensation and a prestigious position in their military [8]. The fate of the young Country relied on the small rag-tag group at West Point. Fortunately, Arnold’s plan was thwarted and West Point’s fortification remained. Once the immediate British threat dissipated the next question was what to do with the remaining facilities and soldiers.
Shortly before his death, George Washington wrote to Alexander Hamilton that “the establishment of a military academy upon a respectable and extensive basis has ever been considered by me as an object of primary importance in this country” [9]. Washington’s motivation was due to the heavy reliance on foreign support when it came to the engineering and construction of proper fortifications throughout the Revolutionary War effort. This motivation needed to be balanced with the general public opinion which was weary of training a standing army. Initially, without much direct guidance, some preliminary training was conducted to only a handful of army engineers. Eventually, in March 1802 the United States Military Academy at West Point was established as a permanent institution [10]. This establishment did little in the way of creating structure required to produce competent military officers. Only a handful of officers were graduated each year and there was no standard for length of study [11]. Conditions were so poor that one early superintendent, Jonathan Williams (grandnephew of Benjamin Franklin), resigned in disgust within a year [12]. Chaos ruled and cadets were seemingly free to do as they pleased. It didn’t help that there was a great deal of political conflict regarding the institution. Some feared that attendees of West Point were only appointed due to political affiliations and their wealthy families. At one point in 1810 the Academy was deprived of appropriations from Congress and as a result did not provide instruction [13]. The War of 1812 forced the issue and highlighted the need for competent military leaders. Out of an overall lacking performance by officers, West Pointers provided a few bright spots and as a result a renewed focus was put on the Academy.

The first permanent position for superintendents of the Academy was established by President Madison and Captain Alden Partridge filled the role during the war years. With
Partridge came a tougher regime but ultimately what amounted to a destabilizing environment in which Partridge conducted day to day operations at his own whim; with a serious lack of emphasis on curriculum [14]. A court martial was brought against Partridge and President Monroe decided in 1817 to replace Partridge with the then 32 year old Sylvanus Thayer. Thayer had studied with Partridge at Dartmouth and even more Thayer was a cadet at West Point while Partridge was an assistant professor [15]. This new, young, and relatively inexperienced superintendent set upon a path to implement drastic changes to the fledgling Academy that would eventually establish it as the premiere engineering school in the country. In no way would it be an overnight success and Thayer faced a difficult road ahead.

Sylvanus Thayer’s Education and Inspiration

Sylvanus Thayer was born in Braintree, Massachusetts to a wealthy farming family on June 9th, 1785 [16]. Initially, Thayer pursued a traditional education at Dartmouth College, but developed an affinity for Napoleon Bonaparte’s military pursuits and as a result sought out an appointment at West Point [17]. After graduating from Dartmouth, he received his coveted appointment to the United States Military Academy and became the thirty-third graduate ever from West Point after a single year of attendance [18]. His classical education from Dartmouth made the studies at West Point seem simple and Thayer was fascinated by the military campaigns being conducted in Europe. Thayer was commissioned as a Second Lieutenant to the Army Corps of Engineers in 1808 and initially served developing coastal fortifications around West Point while also working as an instructor of mathematics [19]. His academic aptitude was a great resource to an Academy that was short on such expertise at the time.
As the War of 1812 waged on Thayer served in various engineering capacities and by the end submitted an official request to the War Department for permission to travel to Europe and learn from their military institutions; this came at the exact time President James Madison felt an urgent need to address a grim lack of military leadership [20]. The request was approved and Thayer was to be accompanied by Colonel William McRee; neither officer was exactly sure what the outcome was to be of the visit but each was excited by the prospect to travel Europe fully funded by the U.S. government [21]. The pair set sail aboard the Congress on June 10th, 1815 [22]. The next two years were spent studying allied fortifications, military operations, artillery schools, and most significantly the top French engineering institute, Ecole Polytechnique [23]. This was a school that was transformed by Napoleon, one of Thayer’s military heroes, into a military academy in 1804 [24]. While absorbing France’s methodologies, Thayer also gathered over a thousand technical volumes on military art, engineering, mathematics, and maps of Napoleonic campaigns [25]. Napoleonic maps are still studied by West Point cadets to this day.

Thayer and McRee returned at a critical juncture for the Academy just as Monroe brought the court martial against Superintendent Partridge and on July 17th, 1817 he provided Major Sylvanus Thayer with formal orders to assume the role [26]. It would be logical that the higher ranking McRee would have been chosen for the job, but Thayer had impressed many with his personality, intellect, seriousness, and passion. Indeed, Thayer understood how desperate his young country was for competent military leaders and he was inspired by what he had seen during his time in Europe. Now armed with his library and determination, it was time to get to work.
Thayer’s Tenure as West Point’s Superintendent

No one could have imagined what challenges lay ahead for Thayer when he arrived as the new West Point superintendent on July 28th, 1817 [27]. There was no welcome party awaiting his arrival and the current superintendent was somewhat dumbstruck when Thayer provided his new orders. Partridge remarked he’d leave in a day or two and left Thayer to himself without any guidance or update regarding the Academy’s current condition [28]. On his own, Thayer decided to tour the grounds and take an account of things. He was quickly alarmed to find that a majority of the 213 cadets were on what appeared to be an unlimited vacation and that a good number of the professors were under arrest [29]. The fact was that these professors were actually qualified and capable instructors; Partridge was jailing them as revenge for providing Monroe with details of the Academy’s poor conditions [30]. Partridge did not go quietly and was brazen enough to attempt a pseudo mutiny only a month after Thayer’s tenure started. Thankfully, Thayer’s resolve and calm demeanor overcame this early challenge to his authority.

Thayer’s vision for the Academy was that it should contain the country’s finest men and its cadets would be trained upon three pillars: honor, education, and discipline [31]. Entrance exams were immediately instituted. He was determined to create a higher standard, not just for academics but also for the personality of each cadet. Thayer understood the reverence shown to European officers and it was in large part because of the moral standards which they were perceived to uphold. It was imperative for the functionality of a large military system and the resulting public perception of the military that an officer be trustworthy. The honor code
became a critical aspect to Thayer’s Academy and persists today as the simple edict, “A cadet will not lie, cheat, steal, or tolerate those who do” [32].

For academic curriculum, Thayer relied on Ecole Polytechnique’s model of instruction. He immediately implemented a comprehensive course load which included English grammar and composition, French, classic literature, mathematics, military drawing, philosophy, engineering, geography, history, and military specific courses [33]. It was crucial that cadets demonstrated knowledge through application. Class sizes were reduced into small sections and students were intimately instructed and tested. Due to funding restrictions, Thayer even went so far as to allow proficient cadets to serve as assistant professors in order to allow for the direct manner of instruction [34]. This was at a time when the general practice was to provide a lecture to a large audience of students without any true discourse. At West Point, it was not possible to hide in a classroom and if a cadet had deficiencies in a subject it was immediately apparent. In effect, cadets were expected to arrive to a class with knowledge of the material and thus the time was spent reinforcing concepts. This system, the Thayer system, provided a blueprint for comprehensive blending of liberal arts and scientific education [35]. A significant number of cadets could not manage the increasingly difficult curriculum and Thayer ensured resources were available for assistance. Ultimately, if a cadet exhausted the resources available and still could not meet the minimum standard they were dismissed. Quickly, West Point was able to weed out insufficient officer candidates and produce highly effective and knowledgeable military leaders.

The last aspect of Thayer’s vision was that of discipline. Each cadet was required to provide the names and addresses of their parents, an overt effort to ensure cadets were on
their best behavior [36]. Vacation was eliminated and cadets only received leave when explicitly approved by the school’s administration and only after certain requirements were met [37]. There was a new Spartan feel to West Point’s grounds. Thayer was unwavering when it came to enforcing discipline regardless of how large or small the offense and without concern to who committed it. One such example is when the son of an influential General was dismissed for not returning from leave on time [38]. Slowly cadets and professors began to appreciate the fairness with which the new discipline was executed. There was no favoritism. The rules were explicit and clear and no exceptions would be made. This resolve from Thayer did much to shape West Point’s culture but would also ultimately be detrimental to Thayer from a political perspective.

Under Thayer’s stewardship West Point’s prestige grew significantly not only in America but also abroad. It existed as the only engineering school in the country and enjoyed a reputation on par with any university in the world. Unfortunately, by the 1830s President Andrew Jackson was one of the few people who was not impressed by Thayer’s rigidity. During Jackson’s second election a cadet planted a hickory pole into a parade ground and was therefore severely punished. Jackson publicly overturned West Point’s decision to expel the cadet, undermining Thayer’s authority and inspiring the young cadet to announce that he could do as he pleases [39]. Understanding that he could no longer effectively lead West Point, Thayer tendered his resignation in January 1833 [40]. Over roughly seventeen years Thayer successfully launched West Point on a trajectory that would ensure its influence and importance within the country’s history. He was revolutionary in his practices and generations ahead of his time.
Thayer’s Legacy

Thayer left his mark on West Point during a time that the United States was desperate for infrastructure development. America was diving head first into the idea that it was God’s will for the nation to expand westward, pursuing its Manifest Destiny [41]. Engineers would be absolutely critical to achieving this perceived destiny. Until roughly 1840, the only place to receive engineering instruction was at West Point and therefore nearly all of America’s civil engineers came from the Academy [42]. Due to this scarcity of proper engineering education, graduates became a highly demanded commodity and the United States Military Academy thus became the sole source for the necessary resources. West Point topographical engineers played critical roles during expeditions, essentially mapping the new world [43]. By 1830, nine out of 56 colleges had a West Pointer on its staff, this grew to 78 out of 203 in 1860 [44]. Other prestigious universities started to notice the Academy’s monopoly on technical training and started their own specialized schools. Harvard established a school of engineering and made a West Pointer its Dean, Yale’s chair for civil engineering was an academy graduate, and schools such as the University of Michigan and Columbia closely followed suit [45]. This far reaching influence demonstrates how Thayer’s ideals proliferated throughout all of American technical schooling. Fortunately, West Point maintained Thayer’s standards and its graduates played important roles throughout history. Beyond training the men that literally built the country in its infancy, to date West Point ranks fourth in the country for number of Rhodes Scholars and boasts alumni that were famous generals, government officials, astronauts, and presidents [46]. Names like Grant, Lee, McArthur, Patton, Eisenhower, Aldrin, and Schwarzkopf wouldn’t ring throughout history volumes had it not been for the inspired junior engineering officer who
believed that his young country could create an establishment comparable to the prestigious European institutions.

Thayer himself never returned to West Point following his departure as superintendent, but he did keep appraised of activities there. He often met with his protégé, Dennis Mahan, who led West Point’s engineering department and guided the Academy beyond Thayer’s stewardship [47]. It is clear that Mahan dutifully followed Thayer’s suggestions and strove to maintain his vision. After retiring from the military Thayer provided funding for the creation of Dartmouth’s engineering school and even established the Thayer Academy in his hometown of Braintree, MA [48]. Thayer died in 1872, but his impact persevered through the institutions he himself and his students created. It is hard to note anyone who played a more important role in the education system of the United States and therefore a more important role for the United States as a whole.


[17] Ibid.


[22] Ibid, pp.58.


[27] Thomas J. Fleming, pp.3.


[31] R. Ernest Dupuy, pp.3.
[34] Ibid, pp.5.
[35] Ibid, pp.6
[37] E.D.J. Waugh, “West Point Comes of Age,” pp.73.
[38] Ibid, pp.71.
[40] Thomas J. Fleming, pp.84.