THE REVOLUTIONARY WAR IN THE HUDSON HIGHLANDS: FORTIFYING WEST POINT, 1775-1779

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ABSTRACT: Since control of the Hudson River was one of the critical strategic objectives for the British and Colonial American Armies during the Revolutionary War, the Hudson Highlands became the key terrain of that conflict. The Hudson River was a pivotal component of the war's strategic geometry because the Highlands intersect the lower river valley and effectively form a fifteen-mile-wide barrier and West Point is the most dominating position along the river. Consequently, the Americans began a long, and sometimes disjointed effort to fortify the West Point area and secure that critical terrain. However, initial American efforts were unsound and all but ignored West Point's dominating terrain. This historical military geography employs maps, historical records, and a digital elevation model to examine the placement of fortifications at West Point and evaluates their effectiveness. The study illustrates that from the river perspective, it is easy to see how Constitution Island could be mistaken for key terrain. The study will likewise demonstrate the "revolutionary" nature of Kosciuszko's plan for an integrated, terrain-based fortification system.

Keywords: Fortification, Military geography, Revolutionary War, West Point, Hudson Highlands, Hudson River

INTRODUCTION

Geography offers a unique and important vantage point from which to study the nature of places from a military perspective and explain the development of discrete military landscapes. In that context, military geographers endeavor to explain the immutable nexus of geography and military operations by applying geographic tools, information, and technologies to the analysis of military problems. Geographic information has been used to support military operations for as long as history has been recorded because geographers understand that the complex and interacting components of the landscape—terrain, weather, climate, and people—affect military operations in time and space (Galgano and Palka, 2010). This military geography paper examines linkages between strategy, terrain, and the human landscape in the Hudson Highlands to illustrate the development of Fortress West Point during the American Revolution. In so doing, it will examine and explain the initial and misguided efforts that were focused elsewhere; and describe the innovative nature of Thaddeus Kosciuszko's plan for an integrated, terrain-based fortification system on what are today the grounds of the United States Military Academy.

West Point, New York is one of the oldest continuously occupied military lands in the United States. As a place, it was destined to become important because the Hudson Highlands were the key terrain of the American Revolution and West Point was the most dominating position along the Hudson River (Palka, 2001). In fact, in the first year of the conflict, George Washington identified West Point as the most important position in the Highlands and perhaps of the war (Boynton, 1863). Nonetheless, preliminary efforts at fortifying this strategically important place were flawed and essentially ignored West Point's dominating topography. Rather, the Continental Army originally fortified Constitution Island, as well as other peripheral locations, neglecting West Point's commanding location. This mistake nearly proved fatal in October 1777, when British forces defeated the Americans at Forts Clinton and Montgomery (about six miles south of West Point) and occupied the Highlands for twenty days before withdrawing. Following that defeat the Continental Army recovered the area and with direct intervention of George Washington, and the help of more skilled military engineers, at last developed a sound system of fortifications in the Highlands, thus taking advantage of West Point's natural geographic advantages (Palmer, 1991).

From a military and strategic perspective, the question is why the Hudson Highlands were so important to British and American war efforts, and specifically why was West Point such decisive terrain? Clearly, the answer lies in West Point's absolute and relative location. This is an interesting analysis because at the start of the Revolutionary War, the West Point region hardly seemed to be one of the most decisive places in North America; and West Point was decidedly not a significant place in the spring of 1775. The area's rocky terrain and poor soils meant that it was largely uninhabited, and settlement there was established principally to fulfill the terms of land grants from the British Crown. The area that comprises the grounds of modern-day West Point was originally ceded

to Captain John Evans on 1 March 1694, but he found it too difficult to make a living there, and the land reverted to the British Crown. The area remained mostly unpopulated during the next century, and at the start of the war, the scarcity of arable land limited settlement to a few wealthy landholders (Knowlton, 1839). These estates contained cultivated fields and outlying tenant farm dwellings; otherwise, the region was essentially devoid of development. However, despite the lack of roads and other infrastructure, West Point was located on the most significant transportation and communication artery in the Colonies (Boynton, 1863; Stowe and Weller, 1955).

MILITARY GEOGRAPHY OF THE HUDSON RIVER AND HIGHLANDS

The geological structure of the Hudson Highlands and Hudson River valley imparted logic to their fortification (Figure 1). This ridge and valley system forms a 15-mile barrier to north-south movement, although the general trend of its many glacial valleys supports movement southwest to northeast, bisected by the river. The Hudson River was strategically important, as was the dominant topography that facilitated control of the river at critical places along its course. The region's geologic structure is part of a belt of granite and gneiss mountains stretching northeast from Pennsylvania, across northern New Jersey and southeastern New York, into western New England (Berkey and Rice, 1919; Miller, 1924). The region's geomorphology has been influenced by a number of processes including granitic intrusion; folding and faulting; fluvial erosion; and glaciation (Miller, 1924). The Hudson Highlands were modified significantly during the Pleistocene epoch, and evidence of this geomorphic activity includes numerous glacial valleys; asymmetrically eroded hills; and the fiord-like walls along the Hudson River (LaMoe and Mills, 1988). The dominant feature of the river's effect on the landscape is the deeply incised river gorge, the independent mountain masses on both sides of the river, and numerous rocky islands within the river (Thompson, 1966).

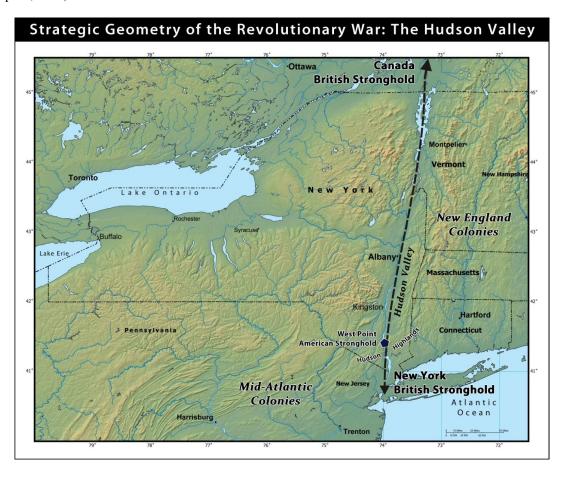


Figure 1. Terrain map of the Hudson Valley region. The Hudson River was the geographic link between major British bases in New York City and Canada, and separated New England from the Mid-Atlantic. Cartography by the author.

Throughout the Highlands region, the Hudson River includes well-defined fluvial and glacial terraces, about one hundred fifty feet above the river's level, one of which is West Point, which is thought to be a kame delta deposited during the retreat of the Wisconsin Glacier (Miller, 1924). Perhaps the most critical features of the Hudson River in the Highlands are the three remarkably sharp turns in the river—at West Point, Anthony's Nose, and Dunderberg—where the crystalline rock has withstood the erosive power of the river and glacial ice (Figure 2). At West Point, the river channel is further narrowed by Constitution Island, directly to the east (Figure 3).

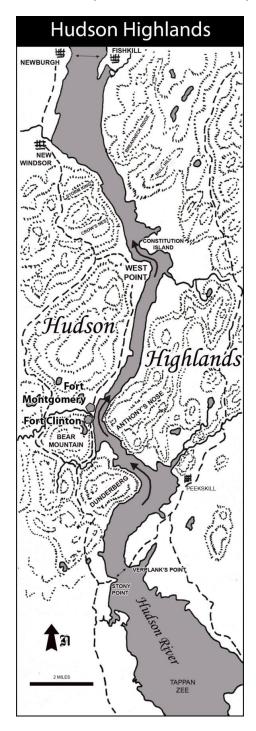


Figure 2. The Hudson Highlands are a 15-mile-wide area of rugged granite and gneissic hills that are bisected by the Hudson River between Tappan Zee and Newburgh. Cartography by the author.

Given the strategic importance of the Hudson River to British and American victory, it was essential for Colonial forces to evaluate the physical characteristics of this landscape and thus, develop an effective defensive scheme (Stowe and Weller, 1955). The Hudson River is affected by tides and tidal currents from its mouth at New York City, upriver to the Kingston area (Figure 1). Given that sailing ships were considerably affected by tides, currents, and winds, ideal defensive locations along the river should have included places where the river was narrow, the ebb tide strongest, wind patterns unpredictable, where adjacent terrain had a commanding view of the river, and could be easily fortified (Miller, 1972; Miller, Lockey, and Visconti, 1979). Thus, West Point was clearly the most dominating position on the Hudson River because of the structure of the terrain and the sharpest bend in the river. Here the Hudson, which mainly flows in a north and south direction, turns abruptly west and then back again to the north (Figure 3). In the days of sail, boats were vulnerable to shore batteries when forced to slow to navigate this turn (Nickerson, 1928). Furthermore, sailing around the bend at West Point is problematic because tricky winds and strong tidal currents create "dead water" conditions at that spot (i.e., the combination of winds, river, and tidal currents prevent movement of a ship) (Stowe and Weller, 1955).

The strategic importance of the Hudson River came sharply into focus during the spring of 1775 when the Continental Congress took steps to develop plans to defend this crucial region. Prior to the Revolutionary War, navigable rivers served as principal transportation networks in North America; and by the outset of the Revolutionary War, the Hudson River was perhaps the most important communication and commercial artery within the Colonies (Stowe and Weller, 1955). From their experience, American leaders understood that the natural invasion route between the Colonies and Canada was along the Hudson Valley because it linked New York Harbor and Canada either through Lake Champlain, or along the Mohawk River, Lake Oneida, Oswego River, and Lake Ontario corridor (Diamant, 1994). Thus, American leaders recognized the strategic importance of the Hudson River as a major thoroughfare into the interior of the colonies and as a vital link between New England and the Middle-Atlantic (Coakley and Conn, 1992).

These geographic realities meant that the Hudson Valley corridor was essential to the strategic geometry of the American War of Independence for two fundamental reasons. First, the Hudson River was the natural dividing line between New England and the Mid-Atlantic colonies. By controlling the Hudson River, the British could drive a wedge between the manufacturing and agricultural centers of the colonies, thus rupturing the Colonial war effort. Furthermore, the Americans appreciated that the Highlands controlled important communication ferry links that crossed the Hudson from Fishkill to Newburgh in the north and from Verplanck's to Stony Point in the south (Figure 2). Should the British control and thus break these important links, they could prevent the Americans from moving supplies between New England and the Mid-Atlantic Colonies, and also obstruct the movement of reinforcements. Ensuring freedom of movement along this corridor was particularly important because New England provided most of the soldiers during the war (Boynton, 1863). Second, this terrain corridor physically connected the British military centers in New York City and Canada (Figure 1). Therefore, it was essential for the Colonial Army to retain control of the waterway and prevent the concentration and coordination of British military power and thus, to fragment British ability to act in unison (Diamant, 1994). This strategic geography demanded a concerted effort by the Continental Army to fortify and defend positions within the Hudson Highland to protect crossing sites, ensure the continued flow of logistics and commerce, and prevent the British from using the river as a major thoroughfare to transport troops and supplies (Stowe and Weller, 1955).

FORTIFYING THE HIGHLANDS: 1775-1779

Although many recognized West Point's dominating position, early attempts to fortify the area focused instead on Constitution Island, which was a major flaw in the Colonial effort to secure control of the Hudson River. From the beginning of the war, George Washington urged the fortification of the Highlands and West Point in particular (Fitzpatrick, 1944). As a representative to the Continental Congress, he served with the committee that introduced the proposal to establish strong points to prevent enemy vessels from using the river (Palmer, 1991). Despite Washington's clear grasp of geographic realities in the Highlands, the American effort there was plagued by a series of near fatal blunders. Perhaps the most insidious problem the Americans faced was the paucity of trained topographic engineers. As a result, early efforts to fortify the region were decidedly amateur and failed to incorporate West Point's dominating terrain. To make matters worse, the British also understood the crucial nature of the Highlands and were making plans to secure them as well.

The New York Provincial Congress (NYPC) was given the responsibility for this vital region, and was well informed of British plans to seize New York City and the Highlands (Force, 1853). As it became clear that the British intended to occupy the Highlands, the NYPC hurriedly ordered a survey of points along the Hudson River most suitable for defense. On 30 May 1775, they appointed Colonel James Clinton and Christopher Tappen to

evaluate the topography and prepare plans for the area's defense (JPCNY, 1775). The Clinton and Tappen report recommended the establishment of fortifications on Constitution Island across the river from West Point, and also recommended the building of Forts Montgomery and Clinton six miles south of West Point (Figure 2). They also suggest, "that ...by means of four or five booms, chained together on one side of the river, ready to be drawn across, the passage can be closed up to prevent any vessels passing or repassing." (JPCNY 1775, 175) However, for some reason, they inexplicably ignored the commanding topography at West Point.

The Continental Congress accepted this proposal and by the fall of 1775, work began on Constitution Island under the direction of Bernard Romans. This decision was the seminal flaw in the American effort to fortify and defend the Hudson Highlands for the next two years—a mistake that was nearly catastrophic. From the river perspective, it is easy to understand how Constitution Island could be viewed as the commanding position in the river bend at West Point. At first glance, it would appear that guns positioned on Constitution Island should dominate naval craft advancing from the south; however, positions on Constitution Island are dominated by the terrain on either riverbank, but especially by West Point. Moreover, guns positioned on Constitution Island did not have the elevation needed to deliver plunging-fire onto the decks of an advancing ship (Palmer, 1991). Geographic realities expose just how flawed their thinking was. Forts and strong points positioned on Constitution Island (i.e., Point C, Figure 3) can be dominated by those placed at points A, B, and D (Figure 3). This weakness is further illustrated in the line-of-sight diagram shown in Figure 4. Forts on Constitution Island are in danger from artillery emplaced on either riverbank, but principally from West Point (Point B, Figure 4). Finally, West Point masks the approach of ships from two-thirds of the positions on the island, and river batteries cannot engage advancing ships until it is too late (Figure 5). Nevertheless, from the very beginning, the Americans focused on fortifying Constitution Island and Colonel Romans, a Dutch civil engineer, cartographer, and naturalist planned and directed the construction of the first forts on the island. Unfortunately, he was the only person available with any aptitude to oversee the fortification of the Highlands. His work party arrived at Constitution Island and initial construction began in August, and reports from the island were headed "Fort Constitution" (JPCNY, 1775). However, a sharp difference of opinion soon arose between Colonel Romans and the Continental Congress over the effectiveness of the strong point on Constitution Island and the usefulness of Fort Constitution in particular (Miller, 1972).

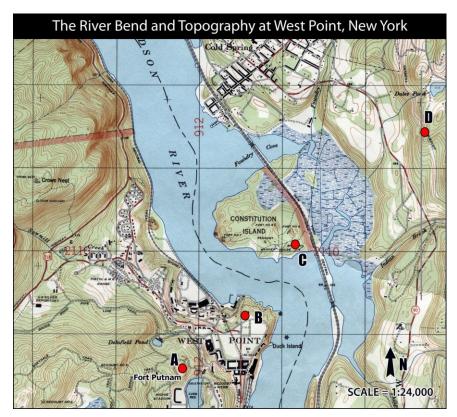


Figure 3. The bend in the Hudson River and the topography at West Point. Source: Map, Series V745, 1:25,000, West Point Special, 1944, U.S. Army Map Service.

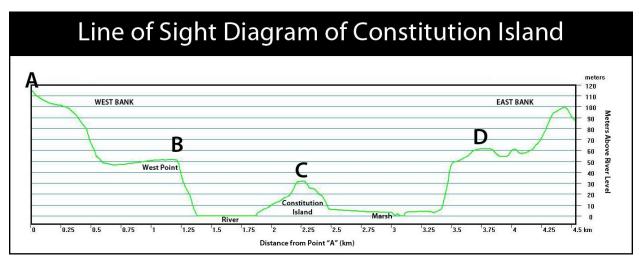


Figure 4. A terrain cross-section and line-of-sight diagram developed from a digital elevation model. Points A, B, C, and D correspond to the same points on Figure 3. The diagram illustrates how the terrain at West Point dominates Constitution Island. Digital data and cross section developed by the author.

Debate: Fort Constitution, Fall 1775

Romans envisioned that Fort Constitution was to serve as a grand bastion from which gunners could control the crucial bend in the Hudson River; however, it proved to be poorly sited and badly constructed. More importantly, it failed to take advantage of the range of its guns and the constricted Hudson River channel (Figure 5). Moreover, Romans curiously ignored recommendations made by George Washington and others to fortify the dominating heights at West Point (Bradley, 1976). Thus, if the Americans had been required to rely on Romans' bastion to stop the Royal Navy in 1775, an aggressive British offensive probably would have been able to run the river gauntlet with ease and the strategically vital Highlands would probably have fallen (Palmer, 1991). As the summer of 1775 turned into fall, and Romans began implementing his plan, it became apparent to a number of perceptive American officers that Fort Constitution had severe tactical shortcomings. Consequently, an intense difference of opinion arose between Romans, local commanders, and the Congressional Commission over the prudence of his plan (Boynton, 1863). This dispute amplified misgivings over the efficacy of the works there, but more importantly, instead of focusing on solving the problem, it delayed construction of all fortifications and further endangered the near-term security of the Hudson Valley (Forman, 1950).

This ongoing debate compelled the Continental Congress to scrutinize defensive plans for the region again, and the officers sent to evaluate the fortifications did not like what they found. Congressional representatives inspected the works on Constitution Island and discovered that they were incomplete, poorly constructed, and so inadequately sited that in reality, Fort Constitution was not a barrier at all (Stowe and Weller, 1955). Additionally, the garrison had not secured the landward approaches from the east. Unlike Clinton and Tappen before them, these Commissioners saw that the ground at West Point dominated Romans' position. Before they left the island, the inspectors concluded that Romans was not up to the task of establishing a system of credible forts in the Highlands (Bradley, 1976). These findings were reported to the Continental Congress on 23 November 1775 and include the first official suggestion recommending the occupation of West Point:

The fortress is unfortunately commanded by all the grounds about it; but the most obvious defect is that the grounds on the West Point are higher than the Fortress (on Constitution Island), behind which an enemy may land without the least danger. In order to render the position impassible, it seems necessary that this place should be occupied, and batteries thrown up on the shore opposite (at West Point). (Force, 1853, 175)

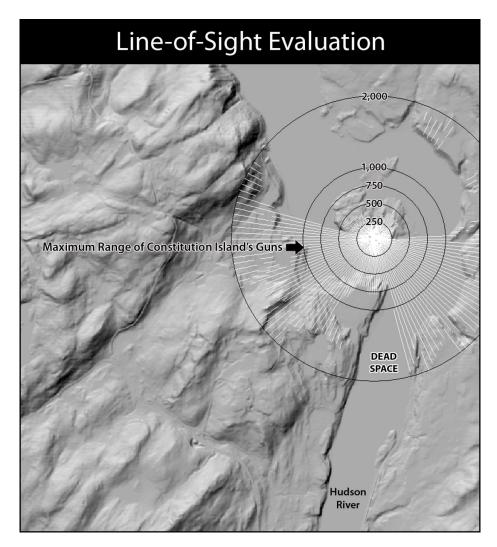


Figure 5. This surface model of West Point indicates the range fans from guns positioned at Fort Constitution. Distances are in yards. The largest guns on Constitution Island had a maximum range of about 1,000 yards. The range fan is extended to 2,000 yards to graphically illustrate actual site lines. The model suggests that guns at Romans' fort inadequately covered the river bend, but more importantly, fail to adequately cover the river approaches Source: digital elevation model from USGS (http://data.geocomm.com/dem/demdownload.html). Program used for this analysis: **MicroDEM** (http://www.usna.edu/Users/oceano/pguth/website/microdem.htm).

Unfortunately, the implementation of a workable and viable solution to defend the Highlands and West Point was to be further delayed regardless of this recommendation, and Colonial forces continued to vacillate in the Highlands. This exposed a fundamental problem that plagued the Colonists throughout war—the acute shortage of qualified military engineers to oversee construction of important fortifications (Palmer, 1991). Despite the recommendation given by Congressional inspectors, Romans refused to deviate from his plan, leaving American leaders no choice but to replace him in January 1776. However, replacing Romans did not solve the problem, and he was followed by a succession of officers and so-called engineers, who further obfuscated American efforts to secure the Highlands (Miller, 1972). All of this indecisiveness and lack of focus meant that the defense of the Highlands remained at risk throughout 1776 because numerous changes in leadership and lack of expertise resulted in inaction. Even worse, inertia meant that the fortification of Constitution Island would continue in spite of its obvious defects (Palmer, 1991). Strategically, the British were planning a concerted drive along the Hudson River from the north and south; and if successful, it would split the Colonies and prove lethal to the American war effort (Diamant, 1994).

Disaster in the Highlands: Colonial Defeat at Forts Montgomery and Clinton, 1777

Clearly the most important and problematical outcome of the debate over Constitution Island was a dangerous dilution of effort and a near disastrous concentration of work on other, tactically weaker positions in the Highlands (Richards, 1903). Rather than galvanize the Americans, the Congressional report of 23 November only led to further equivocation. In response, the NYPC appointed yet another commission to examine the Highlands defenses (the third in seven months). Characteristically, this committee was unable to agree on a unified solution to the problem, but did finally recommend the fortification of Popolopen Creek rather than Constitution Island. The idea of fortifying the area near Popolopen Creek was a good one (certainly more effective than Constitution Island), but these inspectors inexplicably ignored West Point. Possibly in an attempt to make something positive happen in the Highlands, the Continental Congress approved these fortifications (i.e., Fort Montgomery, Figure 2), a project that eventually brought work on Constitution Island to a standstill (Bradley, 1976). However, this plan meant that any meaningful work at West Point was essentially ended, and the key defensive topography was left unfortified.

Soon after the endorsement of this proposal, George Washington became aware of the disjointed efforts in the Highlands. It was clear in his mind that this deficiency had to be corrected and he assigned a new officer (Colonel James Clinton) to command the area. He also sent an inspection team (the fourth) under Brigadier General William Alexander Lord Stirling to examine circumstances in the Highlands (Fitzpatrick, 1944). Lord Stirling performed a methodical appraisal of the topography along the Hudson River and he recommended the building of strong points at Stony and Verplanck's Point, and a new position on the south bank of Popolopen Creek, on high ground that overlooked Fort Montgomery (i.e., Fort Clinton, Figure 2). Stirling saw that West Point dominated the defensive works on Constitution Island and indicated that a fort should be placed there. Unfortunately, Stirling did not mention West Point in his final report and this critical location was again ignored. Thus, George Clinton (Governor of New York), in cooperation with his brother, Colonel James Clinton (military commander of the region) built Forts Clinton and Montgomery during the spring of 1776 (Bradley, 1976). This indecisive effort and failure to capitalize on West Point's geographic strengths meant that British forces could have easily taken control of the Hudson River in 1776. Thankfully, the British were also overcome by a curious inability to act decisively. Nevertheless, given that retention of the Hudson Highlands was so important to the American war effort, it is hard to comprehend how the Colonists accomplished so little during 1775 and 1776. Yet, the Americans could not count on British inaction forever, and as 1776 drew to a close, preparations in New York indicated that the British were about to make a concerted effort to seize the Highlands.

General Sir Henry Clinton, the British commander in New York, led a British expedition north to seize the Highlands in the fall of 1777. In early October, the British landed at Verplanck's Point (Figure 2) and captured the fort and garrison. Next, they crossed the Hudson and captured Stony Point; another important strong point recommended by Lord Stirling. Shortly after that, they continued north, over land, and captured Forts Montgomery and Clinton from the landward side—an inexcusable flaw in the construction of those forts. The Americans all but discounted a landside attack. At last, on 8 October 1777, General Tryon led about 2,000 British soldiers up the river to Constitution Island and demolished the Colonial fortifications (Diamant, 1994). Effectively, the British had accomplished their strategic goal and split the Colonies—the results of four inspections and two years of ill-defined and befuddled American efforts were defeated in a matter of days. The British controlled the Hudson River, the Highlands, and the vital river crossings in the region (Palmer, 1991).

Fortunately, for the Americans, the British victory was short-lived because General Burgoyne's army was defeated at Saratoga, thus unhinging British plans to hold the Hudson Valley. The victory at Saratoga and subsequent British retreat to the north meant that General Sir Henry Clinton's army was isolated in the Highlands, and he was compelled to abandon the area after a twenty-day occupation. Nevertheless, American control of the Highlands, and possibly the entire war effort, hung in the balance for those three weeks. This short-lived British victory at long last thrust West Point into a position of prominence, and crystallized American opinion on its tactical value. Given the ease with which the British seized the Highlands, George Washington took direct control of the problem and ordered the construction of new works on the Hudson River. His 2 December 1777 directive made explicit reference to West Point, directing that "... [a] strong fortress should be erected at the West Point, opposite to Fort Constitution." (Fitzpatrick, 1944: 236)

Fortress West Point: 1778

Regardless of their momentary loss of the Highlands and George Washington's galvanizing direction, American forces in the Highlands region continued to act with an inexplicable lack of purpose. It would seem that Colonial forces should have immediately built new and better fortifications in the Highlands after the British retreated, but

astonishingly they did little during the remainder of the year. Despite Washington's clear directive, a strong debate re-emerged over where to build major forts. Most local commanders wanted to abandon Forts Montgomery and Clinton and build a new fortification system at West Point. However, Washington's chief engineer in the Highlands, Lieutenant Colonel de la Radiere (a French engineer), wanted to re-occupy the Popolopen Creek area (Palmer, 1991). After much debate, local commanders finally prevailed, and it was decided that West Point would be fortified after all. Thus, in January 1778, a remarkable two and a half years after the initial topographic survey, Radiere developed a plan for a new fort on the plateau at West Point overlooking the bend in the river. Soldiers marched across the frozen river from Constitution Island and established a post that has been occupied ever since. The first unit to occupy West Point, a brigade commanded by General Samuel Parsons, arrived on 20 January 1778 (Bradley, 1976). An officer of Parson's Brigade recorded the first occupation:

Coming on to the small plain surrounded by very high mountains, we found it covered with a growth of yellow pines 10 or 15 feet high; no house or improvement on it; the snow waist high. We fell to lopping down the tops of the shrub pines and treading down the snow, spread our blankets, and lodged in that condition the first and second nights. Had we not been hardened by two years of previous service we should have thought it difficult to endure this. The pines not being large enough for logs for huts, we were under the necessity of making temporary covers of these scanty materials until we could draw logs from the edge of the mountain and procure the luxury of log huts; this we effected but slowly, the winter continuing severe. In two or three weeks we had erected our huts, and a French engineer by the name of La Radiere arriving, the snow being removed for the site of the present main fort, the works were traced out, and parties sent out every fair day up the river to cut timber and drag it on to the ice, to be ready to float it down to the Point when the river should be clear of ice. This service was rather fatiguing to the men, but as they had a cabin to lodge in at night and provisions served out with tolerable regularity, they thought themselves comparatively happy, though their work was incessant. (Richards 1903, 726)

After that time, West Point's fortifications began to slowly take shape throughout the first months of 1778, yet there were still distractions and debates. Radiere continued to object to building a strong point at West Point. Arguments and hedging between Radiere and local leaders, reminiscent of earlier disputes, slowed progress. However, in March 1778, Colonel Thaddeus Kosciuszko (a French-trained Polish engineer) was appointed by George Washington to assume the duties of Chief Engineer and put the arguments to rest (Bradley, 1976). But, Kosciuszko too quarreled with Radiere and Washington tried to persuade them to cooperate. Finally, in April Radiere was removed at the urging of local leaders, and West Point now had an expert engineer who understood its immense tactical geographic advantages (Bradley, 1976). Under Kosciuszko's supervision, an integrated system of fortifications began to take shape.

Contemporary military doctrine centered on the use of large masonry forts, but West Point's remoteness, coupled with the scarcity of labor, materials, and funds meant that a conventional fort was not realistic. Instead, Kosciuszko developed an innovative plan linked to an integrated system of smaller forts, each sited on commanding terrain, rather than a massive masonry structure (Figure 6). The lynchpin of his system was a bastion sited on the tip of West Point overlooking the river. This fort was initially named after Benedict Arnold, but renamed Fort Clinton following his defection to the British. Fort Clinton was the key fortification combined with four river-line batteries (Figure 6). This group of works overlooked a very innovative device, the Great Chain, which was emplaced to physically close the river between West Point and Constitution Island. The chain weighed about 150 tons and was mounted on log booms. Each spring, until the end of the war, it was stretched across the Hudson and taken up before the river froze (Bradley, 1976). Thus, Fort Clinton, the river-line batteries, and the soon-to-be rebuilt works on Constitution Island, when combined with the floating boom-and-chain apparatus, offered for the first time a "system" to control the Hudson River (Diamant, 1994).

The disastrous American defeat at Forts Montgomery and Clinton demonstrated clearly the need to defend river forts from landside attack. Thus, the immediate rear of Fort Clinton was protected by Colonel Henry Sherburne's redoubt also on the level of the Plain. On higher ground to the west, the 5th Massachusetts Regiment commanded by Colonel Rufus Putnam built a large stone fort, which would eventually bear his name (Figure 6). Its guns commanded the open plain behind Fort Clinton as well as land approaches from the south. Battery Sherburne and Fort Putnam were completed during the summer of 1779 (Palmer, 1991). Along the ridgeline south of Fort Clinton three Connecticut regiments built Forts Webb, Wyllys, and Meigs, naming them after their commanders (Figure 6). These redoubts covered the southern approaches to West Point along the river terrace and the dead space south and east of Fort Putnam (Bradley, 1976).

West Point's fortifications achieved their highest level of development by the end of 1779, after redoubts were completed on the hills south and west of Fort Putnam (Figure 6). Redoubt 4 was particularly critical to the defense of Fort Putnam because it stood on an overlooking plateau where enemy guns could fire into the fort below. Also in 1779, the garrison erected Redoubts 1, 2, and 3 with their batteries and outlying works. These new strong points added depth to the West Point position and also protected the approaches to Fort Putnam (Bradley, 1976). Hence, after nearly three years and numerous missteps, a credible bastion was finally in place on the Hudson River and it seemed likely that the Highlands were secure (Stowe and Weller, 1955). The final element of the West Point fortification system was the completion of the much-maligned defensive works on Constitution Island. Nearly three years after their discouraging beginning, Constitution Island's forts were finally completed—properly this time—and integrated into the West Point system (Miller, 1972). The island was reoccupied in 1778, and soldiers rebuilt the Marine and Gravel Hill Batteries to cover the Great Chain. They also constructed Redoubts 5, 6, and 7 along the crest of the island to protect the river batteries from a landside attack (Figure 6). At the same time, soldiers completed North and South Redoubts on the high ridge above the eastern shore, further solidifying Colonial control of this most critical point in the Hudson Highlands (Bradley, 1976).

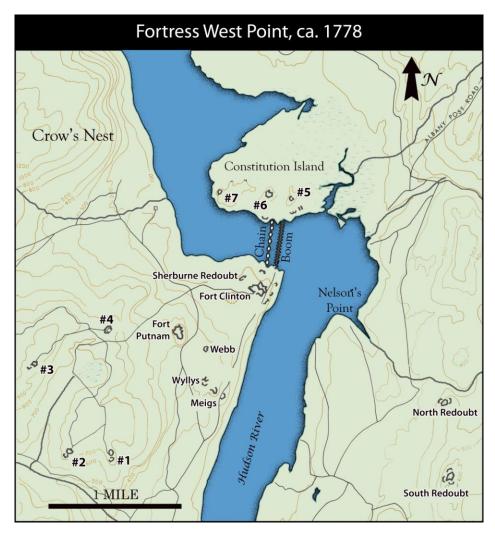


Figure 6. Map of West Point illustrating its fortification at its most developed state. After Palmer, 1991.

SUMMARY

Fortress West Point was never tested and we will never know if Kosciuszko's integrated fortification plan could have withstood a determined assault by British forces. However, the British were certainly troubled by its existence

and went to great lengths to gather intelligence on its composition. This ultimately led to their turning of the commander of West Point, Benedict Arnold, and his subsequent defection. Although they fumbled about for two and a half years, the American assessment to hold the Highlands was correct. The fact that they controlled the Hudson River—regardless of how carelessly—certainly contributed to the British inability to coordinate their grand offensive in the Hudson Valley during 1777. It is certainly reasonable to conclude that the British inability to act in unison contributed to Burgoyne's decisive defeat at Saratoga. This was a victory with significant repercussions because it convinced the French to support the Colonists in their war effort—in fact, it turned the tide of war forever in the American's favor. After 1777, the locus of the war moved southward and the Hudson Valley remained securely in American hands. In the final analysis, West Point's imposing topography, along with its integrated fortifications, and the Great Chain discouraged a repetition of Sir Henry Clinton's 1777 invasion. In truth, after 1778, the security of the Highlands was never again in doubt. One thing is clear, however, as a fortress, West Point was far ahead of its time. As modern soldiers will attest, a fortified position consisting of mutually supporting strong points is the basis of a truly effective defensive system and is considerably stronger than a single position built in the 18th century tradition. In this regard, Kosciuszko's fortification concept was revolutionary, complex, and elegant because his West Point fortification system—unlike earlier attempts on Constitution Island and at Popolopen Creek—was truly integrated, mutually supporting, and took fullest advantage of the commanding terrain and geography of the Hudson River valley.

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