

# GENE Chronicles:

## A History of the Department of Geography and Environmental Engineering



Department of Geography  
and Environmental Engineering  
United States Military Academy  
West Point, New York

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Authored by members of the faculty  
Department of Geography & Environmental Engineering  
United States Military Academy  
West Point, New York  
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Peter G. Anderson, Ph.D., editor

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**GENE Chronicles:**  
**A History of the Department of Geography**  
**And Environmental Engineering**

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## Introduction

COL Wendell C. King, Ph.D.

It is truly humbling to look back at the history of the United States Military Academy and this department and recognize their significance to the very existence of our Nation. Let me illustrate with just one example. One of the prize possessions of the department head's office is the drawing textbook of Cadet George Patton. Presuming General Patton studied his textbook, through it he learned the art of developing and interpreting military maps, conducting terrain analysis, and the many other military skills in the mapping sciences which were part of the curriculum of that time. Absent these skills, would Patton have been as well prepared to maneuver his tank army? Would he have achieved the success he did without this part of his preparation? From this nation's founding through today, West Point has existed to provide leaders for America and its Army.

The teaching of drawing and topographic engineering traces back to drawing classes first offered in 1803. The chair for the Professor of Drawing at the Academic Board was established in 1846. The first Professor of Drawing was a civilian, Robert Weir, a nationally renowned artist, and a teacher at the Academy since 1834. This position is now designated as the Professor and Head of the Department of Geography and Environmental Engineering. Seventeen professors later, I occupy this seat at the Academic Board as it leads the Academy today and plans for the inevitable changes necessary to continue to produce the best military leaders in the world.

I will leave the details of the history to the writings that follow, but I too emphasize that education in geography, geospatial sciences (mapping), and fundamental earth science studies (environmental sciences as they are titled today) have always been recognized as important in the development of cadets into officers. This fundamental basis for educating cadets has not changed as the Academy has evolved its curricula to meet the needs of today's Army. My goal here is to tell you about what we do today and what the future looks like.

The Mission of the Department of Geography and Environmental Engineering today is:

***To enhance the military and intellectual development of all cadets by providing an understanding of the earth, its people, and how they interact. Further, we offer studies in geography and the environmental sciences with the goal of preparing cadets for service in the Army and lifelong contributions to our Nation.***

The United States Army needs officers who appreciate the world, the place and the people, both of our adversaries and of our friends. At this time in history we are at war, not with a nation or a state, but with the forces of terror. There is no state or nation to fight and this is different for our leaders. Our enemy has no rules of engagement, but seeks by all means to destroy us and our way of life. Army officers must develop a better understanding of this world and the conditions that can manifest this hate for us. Further, the Army needs intelligence supremacy on the battlefield. The first rule of conflict comes in the very earliest records of war and strategy. “*Know the enemy, know yourself; and your victory will never be endangered. Know the ground, know the weather; and your victory will then be total.*” So stated Sun Tsu in *The Art of War*, written some time before 400 BC. We continue to heed this advice today as we prepare cadets to lead our Nation’s Army.

Today, the Department of Geography and Environmental Engineering is dedicated to developing tomorrow’s leaders for the Army and the Nation. We offer one course in Physical Geography, DIRT as cadets fondly call it, as part of the 26-course core curriculum required for all cadets. The core curriculum is designed to educate all cadets in the fundamentals; math, science, and the social sciences, to a level requisite for service to the Nation. Majors became a part of the cadet’s academic program in 1985. This department now offers five majors: human and regional geography, environmental geography, environmental science, environmental engineering, and geospatial information science.

If you really consider the West Point curriculum carefully, it is clear that what we teach today is an evolution of past offerings to remain current with knowledge and technology. Drawing has been supplanted by

computer based cartography, photogrammetry, and remote sensing. Surveying is still taught, but now with global positioning, laser measurement systems, and many refinements that allow us to better map the earth's surface. Geography remains a study of the spatial distribution of the features of the Earth, including its people. Now, however, there are more countries and more people than could have even been imagined as our Nation and West Point were born. So many people that the impacts of crowding and competition for scarce resources represent major sources of insecurity in the world today. These factors are major contributing influences in setting a world climate that foments terrorism. On the surface the environmentally related majors appear to be new to the curriculum, but not completely. Many of the lessons in natural philosophy, such as studies in geology, mineralogy, etc., represented the state of knowledge.

The final component of our current teaching mission is offering the environmental engineering sequence to the Corps; let me explain. In addition to the 26 courses taken by all cadets, including our physical geography course, cadets not majoring in engineering must choose a minor from one of seven engineering disciplines, of which our environmental engineering sequence is one. Through this sequence we develop the problem solving and critical skills of the cadets while introducing them to the environmental issues important to our country and the world. The engineering sequence supports achieving the overarching academic goal of the Academy which is to produce:

“Graduates anticipate and respond effectively to the uncertainties of a changing technological, social, political, and economic world”

One measure of the success of our programs is the number of cadets we attract to our majors and our engineering sequence, and by this measure we are doing very well. More than 10 percent of the Class of 2004 have enrolled in our majors and about 15 percent selected the environmental engineering sequence. The sequence number was capped at 15 percent because of space limitations in our teaching laboratories; enrollment might be higher.

Much as it was in the first hundred years, accomplishing our mission falls on the broad shoulders of a dedicated faculty (men and women), made up of civilian professors, military officers on rotational assignments, and

permanent military officers. At the present time, the department's faculty consists of 6 military on extended tours, 5 civilian professors, and 21 military officers on rotating assignments. Looking at the recent history of the Academy and this department suggests civilians faculty are new, but our civilians can trace their heritage back to the first Drawing professors of the early 1800s, most notably Professor Robert Weir. Whether part of the history or a recent change for West Point, the addition of civilians to our faculty, now making up 25 percent of the total faculty, must be judged by how well we are accomplishing today's mission; in this light, our civilians are a total success. Civilians with doctorates provide a level of academic rigor that cannot be achieved with just young military officers with masters degrees. Our civilians develop into expert teachers and they are able to share this knowledge with the junior faculty, which makes for better teaching for everyone. Second, civilians provide continuity to the teaching programs. We are able to better develop and grow, in teaching, in the curriculum, and in research, all because we have civilians here for the long term. The final great benefit seen from adding civilians is that we have been better able to share the technical expertise collected at West Point with the Army. I think examples are the best way to show this. In the past two years, the highlights of this department's support to the Army include: conducting two studies to help the Army find places to test equipment and train in tropical environments; research supporting the development of the next generation of land navigation systems being built into the new individual soldier equipment; two military geography books, Afghanistan and Iraq, in support of planning and operations in those regions; studies of the next generation of individual soldier drinking water systems; and these are just the highlights.

The rotating military officers continue to educate and inspire the Corps, serving as the daily role models of selfless, professional public servants. It is the energy of the young officers that is the superstructure on which West Point is built today, and I expect it has been that way for a long time. These officers, besides inspiring cadets in the classroom everyday, coach the cadet clubs, work with the sports teams, teach military science courses, and constantly mentor cadets on officership. The pace of officer activity at West Point is head spinning, but it is the lifeblood of the Academy. Then, these same officers return to the Army to lead battalions, brigades, and higher; they are truly the hidden treasure that West Point provides the Army.

The view from the top floor of Washington Hall has never been more beautiful. Across the plain, the Long Gray Line parades into the history of the 21<sup>st</sup> century. The cataclysm in New York and Washington of September 11, 2001 starkly reminded us of how essential what we do is to the very existence of our Nation. The Army lost great leaders as this new battle was joined and will lose more before victory is achieved and the war is won. We must have leaders ready to assume the duties of command, which is to win our wars. These leaders must be competent military officers with a selfless dedication to Duty, Honor, Country. I look out my windows and see the plain, the beautiful Hudson River, and most impressively, the Corps-- moving out to their appointed duties; now, I appreciate it all more clearly.

Yes, this is the greatest view in the World; I hope the Department Head 100 years hence has the same view, Go Army and God Bless America.

Wendell Christopher King,  
Colonel, United States Army.

Enlisted US Army, April 1970.  
Commissioned, ROTC, August 1972, Ordnance Corps.

Department of Geography and Environmental Engineering,  
Acting Head, August 1997.  
Appointed Professor and Department Head,  
United States Military Academy, 25 March 1999.

## The Department of Drawing, 1803-1876

Jon C. Malinowski, Ph.D.

### **A Wash Basin, a Piece of Glass, and a Candle**

On February 28, 1803 the Seventh Congress of the United States granted approval for a teacher of drawing to be attached to the Corps of Engineers, thus paving the way for two centuries of geographic education at the United States Military Academy. It may seem a stretch to connect the teaching of drawing to modern geographic inquiry, but in the first decades of the Academy it is clear that elements of contemporary geography thrived. The teaching of military topography and technical drawing foreshadow today's cartography by emphasizing the accurate representation of the earth's surface. Furthermore, terrain sketches taken in the field help to develop an appreciation of the human and physical landscape that remains a core part of the 21<sup>st</sup> Century curriculum.

The first person to fill the new position Congress had created was a Frenchman named Francis Desiré Masson. Masson began teaching both drawing and French in July of 1803. Not much is known about Masson, but he seems to have been broadly educated and ambitious. Forman (1950) mentions that Masson once lectured on field and permanent fortifications as part of an attempt to translate into English everything that was known in Europe about engineering. Although details differ among accounts, Masson seems to have taught drawing until 1808 and French until 1810, when he once again taught drawing for a time following the departure of Christian Zoeller, the Swiss instructor who had replaced him. The Masson name continued for a few years longer as his brother, Florimond Masson, taught French from 1810-1815. There is evidence that after Masson left West Point he remained active and exhibited his works at the Salon of Paris until the early 1850s (Moss 1976).

Not much is known about Christian Zoeller, the Swiss teacher that took over from Masson in 1808. For undisclosed reasons, he left the Military Academy just 18 months after his arrival in September of 1808. But he returned in 1812 and taught for another seven years, finally resigning in

January of 1819. Charles Larned, Chair of the Department during the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, described Zoeller as a man of little education who was “unequal to the requirements of his position” (Moss 1976).

He was replaced by Thomas Gimbrede (1781-1832), known as “Jim” to cadets (Dupuy 1940). Gimbrede became well-known as a miniature painter, engraver, and lithographer (Forman 1950). Although a bit eccentric, he managed to remain at the Academy for nearly fourteen years. Many of Gimbrede’s works survive, including engravings of famous Americans as well as technical engineering drawings. Several of his portraits are in the collection of the National Portrait Gallery, including likenesses of Thomas Jefferson, John Quincy Adams, Winfield Scott, and Stephen Van Rensselaer. Gimbrede died while holding down his duties at West Point on Christmas Day, 1832.

Gimbrede’s successor, Charles Robert Leslie (1794-1859), was born in London to American parents from Maryland. He returned to America in 1800 and grew up poor after his father, a clock maker, died in 1804. Although apprenticed to a bookmaker, his artistic skills brought him some recognition, and by 1811 he received support to study at the Royal Academy in England (Speel 2002). He soon won critical acclaim for his depictions of scenes from *Don Quixote* and other stories. He took the Teacher of Drawing position at the Academy in the spring of 1833, but only remained for 13 months, departing in April of 1834. His early departure apparently stemmed from not having enough time to paint and the health of his wife, who did not adjust well to the climate. He went on to become Professor of Painting at the Royal Academy in 1848. He also penned a popular biography of the English painter John Constable entitled *Memoirs of the Life of John Constable*. His works are in the collection of the Victoria and Albert Museum in London and the Museum of Fine Arts in Philadelphia. When Leslie left, the Academy hired Robert W. Weir to replace him. Weir’s forty-two year tenure at the Academy remains one of the Academy’s most distinguished and will be addressed in the next section.

An important component of the Department’s early structure was the use of cadet instructors. For decades, cadets who had demonstrated proficiency in certain subjects were used to instruct their classmates. Department records indicate eight cadet instructors between 1818 and 1834, when Robert W. Weir arrived, but there were likely even more.

Names of the known instructors include Henry Brewerton, who would later become Superintendent from 1845-1852, and William T. Stockton, who fought with the 1<sup>st</sup> Florida Cavalry during the Civil War and was wounded at the Battle of Chickamauga.

Another important figure during the early period is Seth Eastman. A Mainer by birth, Eastman entered the Academy at age sixteen, where he became a student of Gimbrede. Eastman graduated in July of 1829 and was transferred to frontier posts in Wisconsin and Minnesota. At Fort Snelling in Minnesota he befriended the local Dakota Indian population, learned their language, and even briefly married a Native American woman, with whom he had a daughter. More importantly, he painted their daily lives (Figure 2-1), chronicling a culture and way of life now nearly lost.

When Charles Leslie left the Academy in 1833, Eastman was asked to return to the Academy to help teach drawing with the newly appointed Robert Weir. During his time on the faculty he authored *Treatise on Topographical Drawing* (1837), which was used for years by USMA cadets. As his reputation as a painter grew under Weir's tutelage, Eastman exhibited his work in New York at the National Academy of Design, which made him an honorary member, and other galleries. The Academy also proved good for his social life as he met the daughter of an assistant surgeon stationed at West Point. Mary Henderson married Eastman in 1835 and later bore him four boys and a girl.

After leaving the Academy in 1840, Eastman fought in the Seminole War and then went back to Fort Snelling in Minnesota. His contact with native peoples in Florida and along the frontier found its way into his painting. In 1849 he moved to Washington, DC and painted illustrations for Schoolcraft's *Historical and Statistical Information Respecting the History, Condition, and Prospects of the Indian Tribes of the United States*. During the early days of the Civil War he was put in charge of mustering and disbursing for New Hampshire and Maine and later became the military governor of Cincinnati before retiring at the rank of lieutenant colonel in 1863. He later returned to Washington, DC as a brevetted brigadier general to paint Native American and fortification scenes for the Capitol. He died in August, 1875.



Figure 2-1. Indian landscape by Seth Eastman.

Eastman's legacy is a great one. He represents one of the first Academy graduates to make a mark in the art world. His paintings of the American Indian are considered to be some of the most accurate, vivid, and important in the history of American art. At West Point, he and instructor Weir were among the pioneers of the Hudson River School of Painting that helped to distinguish the American art community from developments in Europe.

In Eastman we see the transition from one paradigm to another. During the first three decades of drawing instruction at the Academy, the instructors were Europeans or Americans trained in Europe. Instruction was in the classic European style, which encouraged the copying of the works of the masters. Copying taught students to appreciate perspective while sketching from models helped to teach technical drawing. Cadets were able to copy each other's work, and would place a candle in a wash basin, put a piece of glass over the top, and create a simple light table to facilitate the copying process. But Eastman and Weir, American painters, would push this classical curriculum to include an appreciation of landscape by requiring cadets to sketch and paint natural scenes while in the field. And while classical techniques did not disappear, Weir himself was a

classically trained artist, the 1830s and following decades brought subtle changes that affirmed the American-ness of the West Point drawing curriculum.

### **Robert W. Weir**

While the rills, like young children, go prattling along,  
Full of life, full of joy, full of motion and song;  
And swelling the brooks, with glad voices they raise,  
To Him who made all things, their tribute of praise.

- Robert W. Weir, 1834

Robert Walter Weir (Figure 2-2) was the first American-born leader of drawing at the United States Military Academy. This difference with his predecessors should not be overlooked, for in Weir's life we see a celebration of being an American painter, moving away from the classical styles heralded in Europe. During his forty-two years at the Academy, Weir witnessed the birth of the Hudson River School of American painting, instructed nearly every major Civil War general, and demonstrated what it means to be a civilian in the service of the Academy.

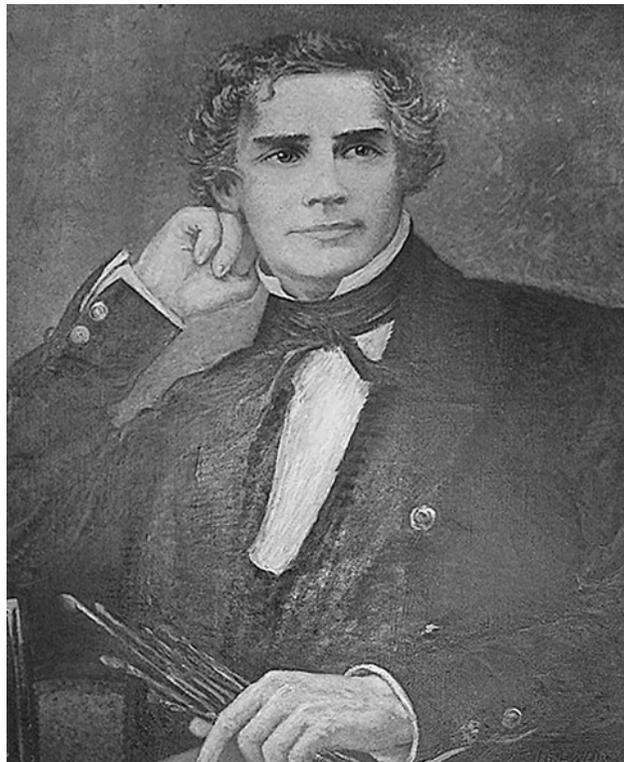


Figure 2-2. Portrait of Robert W. Weir. Located in fifth floor foyer, Washington Hall, USMA, West Point, NY.

The son of an immigrant Scotsman, Weir was born in New York City on June 18, 1803, less than thirty days before the arrival of Masson at the Academy to teach the first drawing courses. As befitting the son of a well-to-do merchant, Weir received a proper education, except during a few years when his father's business faltered, and then entered into the business world. At age seventeen, an interest in art overwhelmed him and he left business to apprentice with a British-born New York heraldic painter. To improve his skills, the young Weir would awake before daybreak and go to the American Academy of the Fine Arts to make drawings from the plaster casts and models they had. By 1822 he was receiving commissions to paint, and his works, mostly history paintings, were shown in New York, Albany, and other cities.

Weir traveled to Italy in 1824, one of the first American artists ever to do so (Gerdtz 1976). In Florence he worked on religious paintings and in the countryside he practiced landscapes. Eventually, like so many other American artists after him, he moved to Rome. At the Vatican and other historic sites he studied the works of the masters. He also made friends with other Americans staying there, such as Ralph Waldo Emerson's older brother William, and a number of British artists. When a friend became ill, Weir accompanied him back to the States in 1827.

Upon his return, Weir continued to show and receive acclaim for his art. He was a member of many important artistic organizations, such as the Sketch Club and the National Academy, and moved in the same circles as Washington Irving, William Cullen Bryant, and Asher B. Durand. By 1832 Weir was named Professor of Perspective at the National Academy. Influential friends, positions of responsibility, and a series of well-received commissions probably played an important role in Secretary of War Lewis Cass' decision to offer Weir the commission of Teacher of Drawing in 1834.

Weir moved to West Point with his wife and two children in the summer of 1834 to accept the \$900 per year position. Perhaps the most significant effect this move had on Weir was an increase in landscape painting. Before this time, historical and religious paintings comprised most of his efforts, but the rural isolation of West Point and the dazzling beauty of the Highlands were irresistible. The idyllic landscape paintings of Weir and his friends, such as Thomas Cole, mark the beginning of the Hudson River

School of Painting, considered by many to be the first truly American school of painting.

Just after Weir's appointment came his most important artistic commission, a chance to paint part of the Rotunda in the United States Capitol. Weir's contribution, the 12' x 18' *Embarkation of the Pilgrims*, is his best-known work, depicting the Pilgrims leaving Holland for England in 1620 on the ship "Speedwell" (Figure 2-3). Commissioned in 1837, it was unveiled for the first time to the Corps of Cadets in 1843 before being installed in the Rotunda.



Figure 2-3. Robert W. Weir's *Embarkation of the Pilgrims*.

Other artistic pursuits by Weir during his time at West Point included the painting of *War and Peace* above the altar in the Old Cadet Chapel and the design of the gothic revival Church of the Holy Innocents in Highland Falls. Sadly, the first funeral ever held in the church was for Weir's first wife, Louisa, who died after childbirth in 1845. His daughter from that birth also passed away within the year.

Weir remarried and continued to teach for another thirty years. In 1846 the Congress elevated the position of Teacher of Drawing to Professor of

Drawing. Weir was paid \$1500 per year, \$500 less than professors in most other departments. This discrepancy was resolved in 1855 (Gerdtz 1976). Weir contributed to the Academy not only through his teaching, but also by painting well-known portraits of Sylvanus Thayer (Figure 2-4), Winfield Scott, and Robert E. Lee. Weir also continued to exhibit his works in New York City and Boston. He was forced to retire in 1876 at the age of seventy-three. His health had declined and he periodically weathered serious illnesses. He died in 1889. His sons Julian Alden Weir and John Ferguson Weir carried on their father's artistic life and became famous in their own right.



Figure 2-4. Portrait of Sylvanus Thayer by Robert W. Weir (USMA collection).

During Weir's tenure, drawing was an important part of the cadet curriculum. In the Third Class year cadets studied the human figure and topography. Second Class cadets studied landscape techniques (Morrison 1998). In this curriculum we see both the classic training in the human

form by working from statues or engravings, and a military component of topographic and landscape techniques. Field sketching in the 19<sup>th</sup> Century served much the same purpose as remote sensing techniques do today. It allows battlefield commanders to quickly record battle settings for later study. Cadets during the later years of Weir's tenure also learned to produce intricate engineering drawings of fortifications, weapons, or mechanical devices. This naturally supported the curriculum in other departments.

Weir's insistence on landscape sketching also shows an appreciation for the natural landscape that became such a central tenet of the Hudson River School painters. As a modern geographer it is romantic to see this concern for landscape as what scholars would later call, "sense of place". Was Weir's goal to teach cadets to appreciate the world around them in addition to important military and artistic skills?

There is little doubt that Weir was well liked by cadets. He did not lecture, but made cadets draw from the moment they entered the studio (Morrison 1998). As a cadet's sketched or painted, Weir would move about making corrections on their attempts. An oft-told story recounts James M. Whistler exclaiming, "Don't, Sir, you'll spoil it!" as Weir approached. Whistler failed to graduate, but not because of Weir. In fact, Weir was very forgiving of cadets, awarding passing grades to any cadet who made an honest attempt. He also routinely invited cadets to view his private art collection at his home, and his hospitality is often mentioned in cadet letters from the period (Morrison 1998).

Many of Weir's cadets were accomplished artists. Cadet Seymour Truman later returned as an instructor and married Weir's daughter Louisa. Seymour graduated from USMA in 1846 and served in the Mexican-American War and the Seminole Wars in Florida. He was at Fort Sumter when Civil War hostilities broke out and was promoted to brigadier general a year later, serving in the Peninsula Campaign. His controversial 1863 ordering of African-American troops to assault Battery Wagner in Charleston, South Carolina tainted the remainder of his career, but he continued to serve and was later captured at the Battle of the Wilderness. His career ended in 1876 and he spent much of his later life in Florence, Italy, where his father-in-law had spent a pleasant year decades earlier.

Other Department instructors also had notable careers. Thomas H. Neill (Class of 1847), known as “Beau Neill”, taught between 1853 and 1857, commanded troops at Civil War battles such as Fredericksburg, Chancellorsville, the Wilderness, and Gettysburg, and eventually became Commandant from 1875-1879 before retiring in 1883. Sedgwick Pratt, Class of 1867, taught during the 1870s and went on to become a Brigadier General. Battery Pratt at Fort Sherman in the Panama Canal Zone is named in his honor. Other instructors, such as Joseph P Farley and John S. Poland also reached the rank of Brigadier General.

Weir’s tenure at the Academy may never be rivaled. First, his leadership and commitment allowed the drawing curriculum to become a respected and established part of the Academy’s educational sequence. Second, perhaps no other faculty member in the Academy’s history guided and mentored so many great American leaders. Third, Weir’s insistence on field sketching and nature painting laid a foundation for an appreciation of the human and physical landscape that continues in the Department’s curriculum today.

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## The Technical Drawing Period, 1876-1942

LTC James B. Dalton, Ph.D.

During the last years of Weir's tenure as Professor of Drawing, technical drawing started to move to a more prominent position within the Drawing Department. In this study, technical drawing is referred to as that drawing which utilizes mathematical principles in the construction of the drawing. The drawings were becoming more detailed works of machinery (Figure 3-1) and included topographical works as well. Surveying was an instrumental part of the Department and was taught during summer training as practical survey (Larned 1910).

First Lieutenant Charles W. Larned (Class of 1870) arrived at West Point in August 1874 to assume the duties of Assistant Professor of Drawing. Professor Larned had no prior qualification for the position except to serve as an instructor for Professor Weir when he was a cadet. A common practice, during the 19<sup>th</sup> century, was for cadets to assist professors with instruction and carry the title of instructor. Larned's other major qualification was his experience with the 3<sup>rd</sup> and 7<sup>th</sup> Cavalry bringing with him a sense of the Army's needs. When Professor Weir retired in 1876, Larned was promoted to Professor and Department Head. The Academic Board does not appear to have looked for or considered a civilian artist for the position of Professor of Drawing, as Superintendent Thayer had when hiring Robert Weir (Pappas 1993).

Professor Larned departed from the previous methods of instruction, moving from copying master's works to a method of training future officers' mental facilities. He desired to follow what had been done in the mathematical departments (Greene 1912). Professor Larned had "sought to apply to the Department of Drawing by training the eye to see properly and the hand to execute accurately" (Greene 1912). The drawing course under Larned's guidance changed drastically from Weir's course, especially when compared with Weir's pre-civil war drawing course (Figure 3-2). Professor Larned moved quickly to increase the mathematical and topographic nature of the Drawing Program (Forman 1950, Larned 1910).

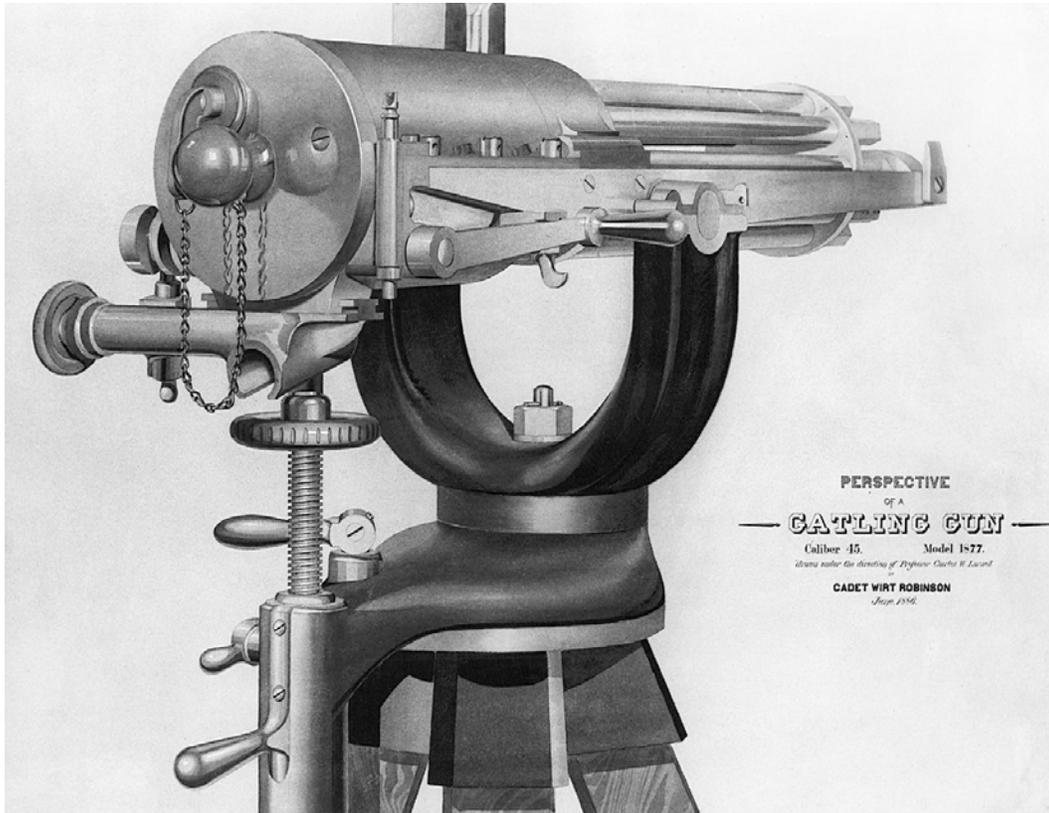


Figure 3-1. Cadet Wirt Robinson's *Perspective of a Gatling Gun*. June 1886.

Cadet Charles Noyes wrote about the changes a year after Professor Larned assumed the leadership of the Department. He stated that “Professor Larned has instituted a new feature in his Department of Drawing. He is going to give practical instruction in making military surveys. Work started with cadets following the road from the South Gate to Fort Putnam, making notes as they progressed.’ A month later, Noyes reported that Larned was ‘getting very much interested in my drawing. We are now engaged in making the topographical sketch of the survey which was made last month.’ Because only two or three drawing days remained, Noyes and several classmates took their sketches to their rooms, where they could complete their drawing” (Pappas 1993). Noyes did not realize that the changes he witnessed were only the beginning.

The major changes that Larned oversaw were the development and implementation of a program that was in fact geared for surveying, topographical works, cartography, and construction engineering related

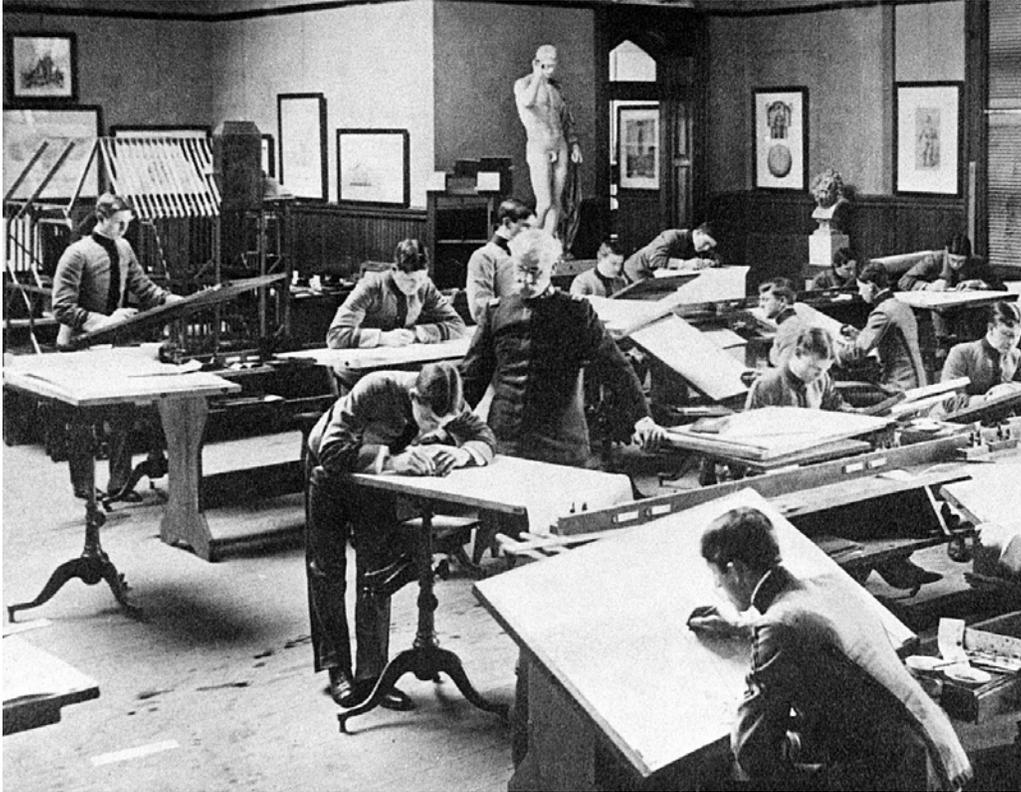


Figure 3-2. COL Larned overseeing a technical drawing class, as part of his refocusing of the course curriculum. (D/G&EnE Photograph Collection).

topics (Greene 1912). A comparison of course work in 1876 and the classes offered in 1900 illustrates the changes orchestrated by Professor Larned (Table 3-1). Professor Larned's vision for a revised curriculum was aided by his appointment as a senior member of the academic board and subsequent chairmanship of the Revision Committee. In his memorandum to the Superintendent, dated May 17, 1910, Larned reports the results of the work done between 1905 and 1906 in the curriculum review. He also described the committee's recommended revisions and how the implementation of the changes was progressing. The three elements they proposed and implemented were: 1) methods of instruction (integration of subjects), 2) amount and nature of the courses, and 3) the amount of material for the cadets. His committee felt that so far the revisions had been helpful but reserved final evaluation until they had been in effect for a longer time (Larned 1910).

Table 3-1. Comparison of Courses Taught in the Department of Drawing during a Four Year Academic Program.

1876	1900
Topography	Plane and Descriptive Geometry*
Landscape	Shades and Shadows*
Pencils and Colors	Linear perspective and Isometrical Projections*
	Topography and Plotting Surveys
	Field Reconnaissance, Contouring and Sketching
	History of Cartography and Topography
	Triangulation and Large Surveys
	Free Hand Drawing and Landscape
	Mechanical and Architectural Drawing
	Military Landscape, Sketching in the Field
	Memory Drawing
	Free Hand Mechanical Drawing without Instruments
	Building Construction, working Drawings and Isometric Sections

\* Transferred from Mathematics Department.

Adapted from Greene. 1912, pp. 33-35.

Reasons for the change are varied but can be generalized as reacting to the needs of the Army and the Nation. As the new century began, Larned realized that the Army needed officers that were well trained in topographical skills and could apply this material regardless of where they were deployed. The Spanish-American War added weight to the increasing demand for Army Officers with knowledge and the ability to solve new challenges. Colonel Larned served for 34 years as professor and department head, until his death in January 1911. He was an influential member of the Academic Board and served on many committees.

One of his most valued contributions was as committee member and/or chairman of various building projects (Greene 1912). Additionally, Professor Larned served as the leading member of the committee that designed the USMA coat of arms and created the Corps motto: Duty, Honor, Country (see Appendix A). Many of his writings, related to honor, are reflected in the USCC honor code.

Upon COL Larned's death, LTC Edwin R. Stuart (Class of 1896) was appointed Professor and Head of the Department of Drawing. Edwin Stuart graduated 1<sup>st</sup> in his class of 73 and served in the Spanish War, at Fort Leavenworth, in the Philippines, and a short tour of duty in France during World War I (Holt 1920). During his tour in the Philippines, he contracted a disease that would later contribute to his unfortunate early death.

Colonel Stuart's service in the Philippines involved the military mapping of the islands, which was noted for a high degree of efficiency (Holt 1920). This service and his time as an instructor of engineering at Fort Leavenworth brought a call of service at West Point. His dedication to organization, high standards, and quality teaching served him well as LTC Stuart continued implementing the revision started by Larned's committee at the turn of the century.

Although department head for only for a short period (1911-1920), he had many accomplishments. Colonel Stuart wrote two texts that illustrate the departmental focus and emphasis on topographic drawing. These works are examples of the full evolution of technical drawing toward Mapping and Topography and away from mechanical drawings of bolts and machinery. Stuart can be credited with the continuation of the evolution from landscape drawing, to technical drawing and into topographic drawing. His 1917 text titled *Topographical Drawing* "is designed as a basis for a course of instruction and practice in topographical drawing" (Stuart 1917). The text was geared solely to topographical drawing and did not cover the basics about map interpretation. The first six chapters were designed as a reference covering map classifications, scales, projections, instruments, drawing materials, and plotting (Stuart 1917). The rest of the text was devoted to methods and practice in topographical drawing, and a four color plate of a finished work (Stuart 1917). The example of a finished map (Figure 3-3) showed the cadet what the end product was



The following year LTC Stuart published another text, entitled *Map Reading and Topographical Sketching*, which emphasizes the need for all military personnel, regardless of grade, to have the ability to read and interpret a map (Stuart 1918). He reasons that “only by learning to make maps can be acquired that intimate understanding necessary to enable one to interpret and evaluate the topographical information embodied in a map (Stuart 1918).” A review of the text shows that it is focused on the basics of map reading with a full treatment of the fundamentals in six chapters. Topographical mapping is not discussed until the tenth through the thirteenth chapter. The final chapter of the text deals with panoramic sketching geared specifically for the military (Figures 3-4 and 3-5). When compared to his 1917 *Topographical Drawing*, this text is much more general and broad in its treatment of the science of topographical drawing, and includes the fundamentals of map reading not found in the 1917 text. It is not hard to image both of these texts being greatly appreciated at the time for their quality and their significance to the Academy and the Army.

Stuart’s untimely death on March 6, 1920, related to illness contracted while serving in the Philippines, ushered in MAJ Roger G. Alexander as the new Head of the Drawing Department. This change resulted in new Department leadership, as MAJ Alexander (Class of 1907) brought fresh Army experiences from WWI.

By the time Major Roger G. Alexander became department head in 1920, the landscape drawing emphasis under Robert Weir had changed to emphasize topographic drawing and mapping, surveying, and mechanical and architectural drawing. These courses became the foundation of future courses in topographic analysis and graphics, and in engineering fundamentals.

Major Alexander became Professor of Drawing soon after returning from Europe, where he had served as a member of the American Expeditionary Force in France (Crackel 1991). He brought with him experiences and knowledge gained during World War One. Major Alexander was influenced by his childhood in rural Missouri, and “the earth, horses, seeds, harvests, storms, mud, heat, cold, and country schools” and his two years at the University of Missouri, where he was involved with student teaching Schick 1947). These various factors played a significant role in his military career. His decision to pursue a career in the military brought him to West Point, where he graduated in 1907, number two in his class.

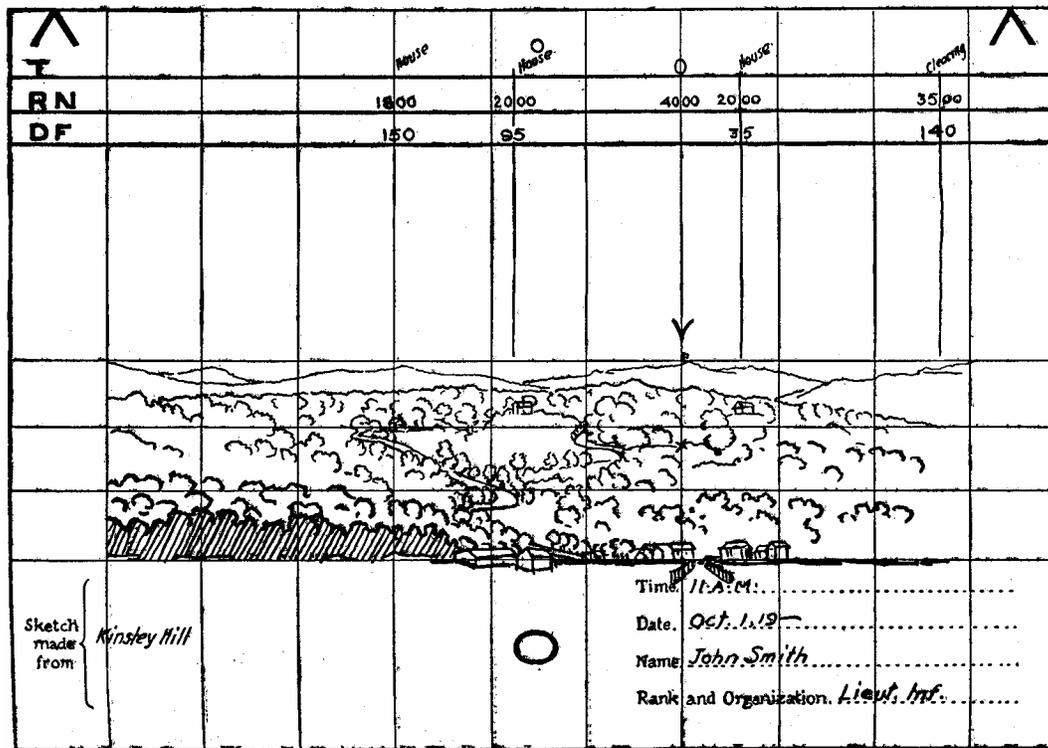


Figure 3-4. An example of topographic sketching; Figure 43 page 136, in LTC Stuart's 1918, *Map Reading and Topographical Sketching*.

Five years after graduating from the Military Academy, then First Lieutenant Alexander returned as an Assistant Professor of surveying and topography in the Department of Practical Military Engineering (Schick 1947). He served in this capacity from August, 1912, to September, 1916, and is said to have enjoyed “the world of maps, photos, graphics, and their application to the military.” (Schick 1961). While in Europe, from May, 1917 to July, 1919, Major Alexander was in charge of topographical work and established a huge printing plant for the production of maps to be supplied to Allied Forces (Schick 1961).

When LTC Stuart died in 1920, USMA Superintendent Brigadier General MacArthur asked Major Alexander to become Professor and Head of the Department of Drawing (Schick 1961). LTC Alexander (Figure 3-6) reported as Professor and Department Head on 31 May 1920; he would remain in this position until September, 1945. He utilized his childhood background, country school teaching, and European experiences throughout his tenure at West Point, making numerous changes in the

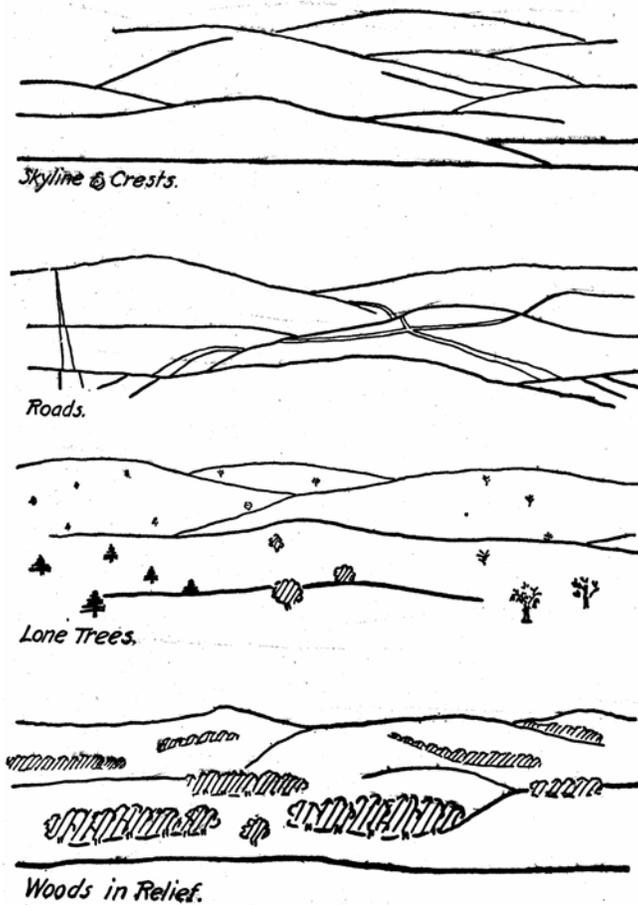


Figure 3-5. An example of topographic sketching; Figure 44, page 137, in LTC Stuart's 1918, *Map Reading and Topographical Sketching*.

department curricula. His wartime activities and experiences provided him with a base to gauge future needs and evaluate the material and courses that needed to be revitalized.

Based upon Superintendent MacArthur's directive, Colonel Alexander placed increased emphasis on "battle map preparation and soon thereafter surveying and descriptive geometry were added to the courses taught by the department" (anonymous 1980). "Military topography and landscape representation became important components of the curriculum" and have been retained as important components of the curricula ever since (anonymous 1980).

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# Drawing to Computers Consolidation and Expansion

Peter G. Anderson, Ph.D.

## **Introduction**

The period of time from 1942 through 1979 brought many changes to America, as the country became involved in three military conflicts: World War II, the Korean War, and the Vietnam War, and experienced the “baby boom years.” Growth, turmoil, reflection, prosperity, and change characterized these years. The Department of Drawing would undergo continued growth and change; however the foundation that developed during the preceding century would not be eroded. The department had been an important component of the USMA curricula, and would remain a leader in cadet education and faculty development and leadership.

## **Military Topography & Graphics (1942 – 1960)**

On January 2, 1942, the Department of Drawing was renamed the Department of Military Topography and Graphics (MT&G). The academic focus of the department had become military sketching and mapping, map and air photo interpretation, surveying, and graphics and mechanical drawing (Figure 4-1) (Tozeski 1976). Second, Third, and Fourth Class cadets had been and continued to receive instruction from the department; “drawing and surveying had plagued cadets” for over 100 years (Broshous 1953).

During the 20<sup>th</sup> century, technological advances required the Army, USMA, and the Department of Drawing to adapt and change. Although the decrease and then loss of landscape drawing meant a potential loss of cadet landscape analysis, characterization, and appreciation, other skills and knowledge were acquired. These new skills enabled the cadet to function in an increasingly technological society. Through lecture and

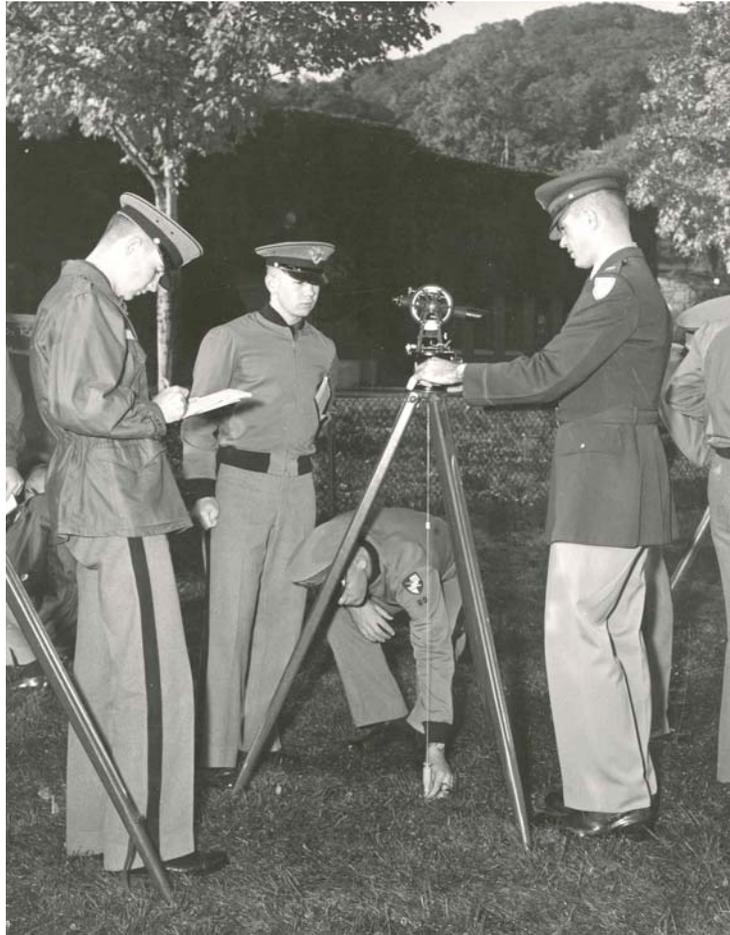


Figure 4-1. Instruction in surveying. (D/G&EnE Photograph Collection)

practical exercises, an end result of cadets being able to read, understand, and use maps and technical drawings was expected.

During the Drawing years, cadets received drawing instruction on alternate afternoons, for many years alternating with French classes. As the number of cadets at USMA and courses in MT&G increased, Fourth Class cadets received instruction in graphics, surveying, and military topography, and Third Class cadets military topography and graphics (Wilby 1945). Course schedules and criteria for graduation were modified during World War II. Colonel Alexander contributed continuously to the functioning of his department and the Military Academy during these difficult years.

Early September, 1945, brought another change to MT&G, when Colonel Alexander was selected as Acting Dean. The position of Academic Dean was formally authorized by an act of Congress on June 20, 1946; COL

Alexander held this position for the next year. Colonel Lawrence E. Schick (Class of 1920) was selected as Colonel Alexander's replacement as Professor and Head of MT&G. This would be Colonel Schick's third tour of duty at USMA; the previous two stays were with the Department of Drawing, under the tutelage of Colonel Alexander. His first tour of duty at the Military Academy was for five years beginning in 1925. In 1933, Colonel Alexander asked Schick to return, which he did as assistant professor from 1934 to 1938. During this time period he developed expertise "in the fields of engineering graphics, descriptive geometry, and surveying (anonymous 1961)."

Colonel Schick served for almost five years in Alaska and Okinawa when he once again received orders to report to West Point, to become Professor and Head of MT&G. He would serve as department head when the Academy's curriculum would receive review in light of knowledge and experience obtained during World War II and the Korean War. His contribution to USMA curriculum reorganization would have a significant impact on his department in 1960 (anonymous 1961).

Throughout the 1950s, academic advances, technological developments, and military lessons learned during World War II were incorporated into courses at USMA; MT&G was at the forefront of these changes (anonymous 1961). Colonel Schick sought to reduce vocational style training in his department (Figure 4-2) and instill in the cadets more theory and fundamental principles (anonymous 1961). Lessons in astronomy and geology were added to the topography course. Courses in geology, established in 1837 and eliminated from the USMA curriculum during General MacArthur's superintendency, 1919-1922, would soon return to the curriculum.

Also contributing to the reorganization of MT&G was Colonel Charles R. Broshous, professor and deputy head of the department. Colonel Broshous (Class of 1933) returned to the Military Academy in 1939 as an instructor in the Department of Civil Engineering (Tozeski 1976). During World War II, then Captain Broshous went to southern England, as the first American officer, "with the task of establishing the Southern Base Section, the place the invasion of Normandy would depart from (anonymous 1972)." Broshous would be promoted twice during this time period and as Deputy Engineer helped supervise the construction of

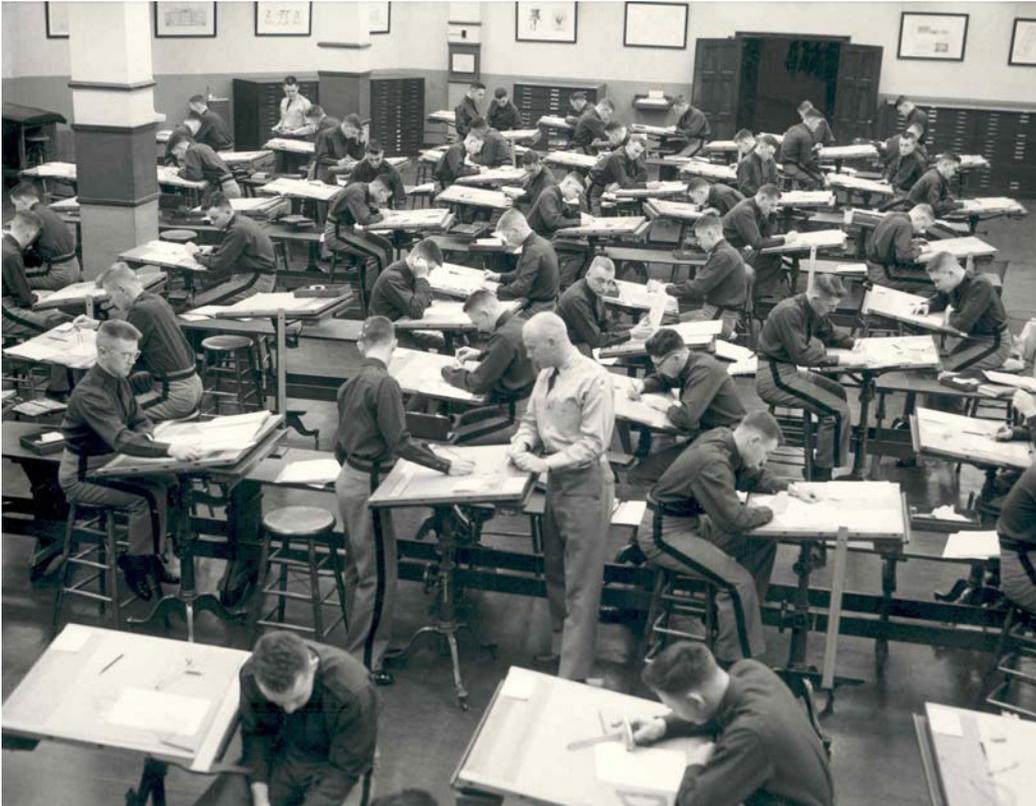


Figure 4-2. Technical drawing class period. (D/G&EnE Photograph Collection)

roads, camp sites, hospitals, and marshaling areas (anonymous 1969). These and other war time activities would contribute to Colonel Broshous' future as professor and deputy head of MT&G, appointed 1948, and head of the Department of Earth, Space, and Graphic Sciences (ES&GS), appointed 1961 (anonymous 1972).

One aspect of Colonel Broshous' influence resides in the following statement: "Modern warfare emphasizes the utter dependence of all ranks on maps. Experiences during World War II and in Korea have further substantiated the need for the mastery of map and terrain analysis. As a consequence, additional emphasis has recently been placed on certain phases of the course in Topography (anonymous 1972)."

This emphasis relates to map and air photo interpretation, military sketching, and terrain analysis (Figure 4-3); terrain analysis began to include more geology and physical geography. During periods of 'acceptable weather,' cadets spent time outside learning the fundamentals of military sketching and practicing map reading. These fundamentals

were considered important due to returning Korean veterans stating they had “great difficulty in matching terrain with the map, and vice versa, as the terrain is practically devoid of man-made features which assist in orientation (anonymous 1972).” To address this problem while increasing new technologies in the existing courses would provide new challenges for the department.



Figure 4-3. Instruction in aerial photography interpretation, circa 1950s. (D/G&EnE Photograph Collection)

### **Earth, Space, & Graphic Sciences (1960-1979)**

During the late 1950s, Colonel Schick directed a review committee, the Mathematics, Science, and Engineering Committee; changes to the USMA curriculum for the 1960-61 academic year would have a significant impact on his department (anonymous 1961). The primary impact of the curriculum study and review was a departmental change for MT&G, one that brought a new name that reflected a change in the courses offered (Schick 1961). On October 10, 1960, the department received a new name: Earth, Space, and Graphic Sciences (ES&GS), a name that reflects a two-fold departmental emphasis, in engineering fundamentals and the environment (Tozeski 1976).

The department added new courses: astronomy-astronautics, geology, physical geography, the digital computer, and engineering fundamentals; retained courses in graphical calculations, techniques, and representations (Bessell 1968); and world geography was transferred from Social Science to the new department. These and other courses were divided into two instructional groups: the Engineering Fundamentals Group (EFG), and the Environment Group (EG) (Schick 1961). The evolution of the instruction of geography and geography courses prior to the transfer is addressed in the next chapter.

Colonel Schick (1961) stated that the “Engineering Fundamentals Group consists of Earth Measurement and Graphic Science. Measurement is the cornerstone of science and engineering. Earth Measurement has vital military relevancy, and Graphics is an important component of technology as a means of communication ... Illiteracy in this area is unthinkable for officers of the Armed Forces.” Courses in the EFG were former courses of the graphics group of MT&G: surveying, descriptive geometry, topographical drawing, engineering drawing, and graphical mathematics.

Courses in EG were physical geography, astronomy-astronautics, and world geography (Figure 4-4). The purpose of these courses was an increased awareness of the environment, the understanding of its nature, its history, and its effects upon people and military, political, and economic activities, and applying this knowledge to judge and evaluate situations and events (Schick 1961). The terrain studies course of MT&G became the physical geography course of ES&GS.

A problem would have developed for the new department, if concern and consideration had not been given earlier. In the Environment Group, former military topography instructors had to be retrained as geography and astronomy-astronautics instructors (Schick 1961). All instructors would teach the new physical geography course, while half would teach world geography and half would teach astronomy-astronautics (Schick 1961).

Training for these changes began during 1959. Some instructors monitored the economic geography course in the Department of Social Science and conferred with geographers in other schools, such as Dr. Preston James of Syracuse University, whose text was adopted (Schick 1961). The physical geographers also received instruction from other geographers, such as Dr.

Arthur Strahler of Columbia University, whose textbook was adopted (Schick 1961). “In addition to training the instructors, maps, globes, readings, and other teaching aids had to be procured; syllabi had to be developed for the new courses; and existing rooms adapted to the new course arrangement (Schick 1961).”



Figure 4-4. “How geography relates to your world.” (D/G&EnE Photograph Collection).

Colonels Schick and Broshous supervised the changes that altered the pathway of MT&G, retaining the department’s rich history, while bringing it into a new era, the space age (Bessell 1968). This old department, with a

rich heritage, new name, and revitalized purpose, would remain a leader at the Military Academy.

Colonel Broshous became the department head when Colonel Schick retired in 1961. He would continue altering courses, working for continual improvement of his department, the courses, and the instructors. “He demanded that the faculty present substantive and relevant subject matter utilizing the most modern and imaginative instructional techniques (anonymous 1972).” Colonel Broshous “revolutionized the courses of instruction in his department and strongly influenced other departments in such matters as computers (Lincoln 1985).” During his tenure at West Point, he praised the cadets and stated that recent cadets were better prepared for academic, military, and social life at USMA, than cadets of prior years had been. He stated that, “as an instructor in the Department of Engineering in 1937, I taught vector analysis to First Classmen. In Earth, Space, and Graphic Sciences, we now teach it to Plebes. We are pushing forward in knowledge (anonymous 1969).”

On February 29, 1972, Colonel Broshous retired as head of the Department of Earth, Space, and Graphic Sciences. Professor and Deputy Head of the department Colonel Gilbert W. Kirby (Class of 1949) was appointed the new department head. Colonel Kirby’s first tour of duty at the Military Academy occurred in 1956, as a member of MT&G. He was assigned to Europe in 1960 and in 1967 Colonel Kirby accepted an appointment as a permanent professor in ES&GS (LaMoe 1989), becoming department head on March 1, 1972.

During his tenure, Colonel Kirby supervised changes to ES&GS, based on USMA curriculum review groups from 1975 through 1978 (anonymous 1980). He developed a program that would enhance the USMA curriculum and prepare future officers to meet the challenges that await them: “As the academy expanded its programs he shifted the nature of courses to keep pace with exploding technology (anonymous 1980).” Electives in physical geography, astronomy, regional geography, automated cartography, and geographic information systems were added. World regional geography was shifted from the core curriculum to the elective program. An environmental studies program was initiated that focused on “matters of national environmental concern, emphasizing scientific research, and encouraging thoughtful alternatives and solutions through sound engineering (LaMoe 1989).” And in the engineering field, Colonel Kirby

gave increased emphasis to the core course in computer science, and to computers and computer science in the military (anonymous 1980).

Colonel Kirby and his staff set out to improve the map and landscape interpretation and integration skills of USMA graduates. In 1977, the department began teaching a new course, EV203: Terrain Analysis. This core course brought together elements of the old military topography course, with instruction in physical geography. The terrain analysis course included cartography, advanced map interpretation, and remote sensing, integrated with meteorology, climatology, and geomorphology (LaMoe 1989). The intent of this Third Class core course was to increase the cadet's "understanding and appreciation of the environment over which they will operate as soldiers and in which they will live as members of society (anonymous 1980)." The current version of EV203, Physical Geography, continues to work towards this goal.

### **The Evolution of Geography at USMA**

The study of geography at the United States Military Academy has had a long, yet sporadic history. Additionally, geography was a component of the entrance requirements for admission to the Military Academy from 1866 through the mid-1900s. However, the importance of geography as an integral component of the cadet's course of study did not materialize until World War Two.

Colonel Joseph Swift, USMA Superintendent 1812-1814, stated that cadets should learn more about the United States and other countries (Pappas 1993). He acted upon this concern by requesting the appointment of a professor of History, Geography, and Ethics in 1813, in addition to a chaplain and surgeon. Secretary of War Armstrong agreed and Reverend Adam Empie was appointed chaplain and acting professor of History, Geography, and Ethics (Pappas 1993). With the selection of Morse's *American History* and Morse's *Geography* as textbooks (Pappas 1993), a long and sporadic offering in history and geography courses commenced.

Chaplain Empie pursued his religious duties and activities, conducting Sunday services and morning and evening prayer. Through prayer and other religious activities, Chaplain Empie came into contact with the cadets daily. Unfortunately, history and geography were not prevalent subjects in his academic material as were ethics and law.

With the appointment of Captain Sylvanus Thayer as Superintendent in July 1817, the professorship of history, geography, and ethics was retained and during 1818, expanded (Dupuy 1940). An April 14, 1818 act of Congress established the Department of Geography, History, and Ethics; the chaplain retained his dual role as chaplain and professor. The Reverend Cave Jones was appointed the first professor (Boynton 1864), however his appointment at West Point was short lived. On July 23, 1818, Reverend Thomas Picton was appointed chaplain and professor of Geography, History, and Ethics, and served in this capacity until his resignation on January 1, 1825. Reverend Picton taught geography, history, ethics, and law, using Morse's *American Universal Geography*, 1812 edition, as his geography textbook (Aimone 2002).

During his tenure as chaplain and professor, Rev. Picton's teaching methodology varied from Thayer's prescribed daily recitation in small class sections. Due to his duties as chaplain and a lack of an assistant professor (Pappas 1993), Picton lectured to the entire class. This overwhelming workload gave cause for a proposal in 1819 to separate the chaplain's duties into two courses and departments (Pappas 1993). The chaplain would remain the professor of ethics, and a new professor and Department of Geography, History, and Natural Law would be created. However, this did not occur and the Department of Geography, History, and Ethics and the dual activities of chaplain and professor would be retained until the late 1800s.

Throughout most of the chaplain-professor duality, an 83 year period (1813-1896), history and geography were not taught. This is suggested by examining the textbooks used by the various chaplains of the years 1825 through 1896. During Chaplain McIlvaine's and Warner's tenure, January 1825 through September 1838, there is no indication, based on textbooks used (Aimone 2002), that either man included history and geography as part of the material presented to cadets. Nye indicates that Chaplain Adams taught a course in "English Grammar, Geography, and Ancient and Modern History" to the Third Class (Aimone 2002), however no texts are listed that indicate the nature of the geography or history material. During Rev. Parks and Sprole's chaplaincy (1840-1856), no textbooks are listed that indicate that history and geography were taught (Aimone 2002). Chaplain French (1856-1871) taught international law, grammar, and geography during the 1866-67 academic year. The text used for geography

was once again Morse's *American Universal Geography* (Aimone 2002), unfortunately the same 1812 edition as used by Rev. Picton.

Beginning in the 1867-68 academic year, history, geography, and ethics instruction was discontinued, "...and the course of study pursued under the direction of the chaplain included only the subjects of international, constitutional, and military law (Ernst 1896)." Forman (1950) states that history was introduced in 1820, discontinued almost immediately, reinstated in 1852, discontinued in 1862, and reintroduced again in 1883. The reintroduction of history during 1883 occurred due to Chaplain Postlethwaite's efforts; there are no indications that a course in geography received the same attention. Tozeski (1976) summarizes the status of the teaching of history and geography at USMA during the 1800s: "In reality, until the latter part of the 19<sup>th</sup> century, history and geography were taught cursorily or not at all, while the Academy Chaplain concentrated on ethics, moral law, and philosophy."

Other Academy faculty indicated that history and geography were subjects that should not be part of the course of study. In 1818, McRee and Bernard (Pappas 1993) stated:

The Academy curriculum should be restricted to subjects absolutely necessary, that only mathematics, sciences, and French were considered essential for cadet education as officers. They considered history, geography, civil law, classical languages, and "Belle Lettres" merely an addition or accessory to a military education.

The 1826 Academic Board (Pappas 1993) stated that:

Mathematics, Natural Philosophy, Engineering, and Military Tactics, occupying above three quarters of each day, as they occur during four years given to study here, constitute *main course* on whose success this Institution is always to depend. To support this main course, the Board considered French, Drawing, Chemistry and Mineralogy, and a miscellany of several subjects to be a *subsidiary course* whose purpose it is to furnish the needful means for full success in the principal one.

Considered miscellaneous courses were geography, history, law, and grammar, all taught by the chaplain. The board suggested that subsidiary courses be dropped from the curriculum as the knowledge of these courses should be attained prior to a cadet arriving at the Military Academy (Pappas 1993).

Admission to the Military Academy during the early to mid-1800s was set by the act of 1812, which stated that candidates to the Military Academy “should be well versed in reading, writing and arithmetic (Forman 1950).” The entrance requirements for a cadet were changed during 1866, requiring the candidate to demonstrate knowledge of English grammar, descriptive geography, and United States history, in addition to previously mandated subjects (Mills 1900); these requirements remained unchanged until 1901 (Forman 1950). Richardson (1917) states that the potential candidate must exhibit proficiency in algebra, geometry, English grammar, composition, and literature, descriptive and physical geography, and general and United States History. In 1944 the geography requirement was changed to accept geography of any nature (Wilby 1944).

In the mid-1850s, the Academic Board regarded the incorporation of humanities into the curriculum a failure and the study of these subjects diverted attention from science, mathematics, and engineering (Pappas 1993). They characterized history as little more than a chronological listing of events and that geography was no better than that offered in high schools (Pappas 1993). However, the humanities and social sciences continued to be taught at the Military Academy. When classes began in late summer of 1861, the curriculum included mathematics, English, U.S. geography, and French for the Fourth Class, and ethics and law for the First Class (Boynton 1864).

The Academic Board continued to evaluate and make changes to courses of study. By 1847, the chaplain had been assigned an assistant professor and one or more instructors. Unfortunately, the increased number of cadets at USMA strained the small department, which had been charged with teaching geography, history, ethics, law, and English, although some of these subjects were rarely taught. The task of teaching such a variety of subjects resulted in some subjects being taught infrequently at best. Attempts had occurred during the mid- to late-1800s to separate the chaplain and Department of Geography, History, and Ethics, however this did not occur. English was transferred to the Department of French in

1878 (Ernest 1896), and in 1908, a Department of English and History was established (Tozeski 1976).

The last chaplain to have the dual responsibilities of professor and chaplain was Rev. William Postlethwaite (1881-1896). With his death in early 1896, this duality was dissolved; the chaplain would no longer teach courses, he would tend to his ecclesiastical duties. The Department of Geography, History, and Ethics was abolished by an act of Congress on February 18, 1896 (Tozeski 1976). History and geography were transferred to the Department of Law and the department name was changed to reflect the transfer: Department of Law and History. At this time, the geography taught was historical geography, presented as part of the history course.

History remained part of the Department of Law and History until 1908, when it was transferred to the newly created Department of English and History (Tozeski 1976). Geography continued to be taught as historical geography, with a change that included material related to military geography (Barry 1911). Except for the historical and military geography material, there is no indication that geography was taught during the late 1800s through the early 1940s. The attempt by Superintendent Swift to have cadets learn more about their own and other countries, through geography and history courses, does not appear to have been a priority for other Superintendents and members of the Academic Board during the 1800s and early 1900s.

In 1921, a provisional Department of Economics, Government, and History was created and made permanent in 1926 (Tozeski 1976). While there is no indication of the status of historical geography, four lessons were included with history that considered the “main features of the political geography of Europe, Asia, and Africa (Sladen 1923).” The status of an independent geography course may be considered nonexistent during the early portion of the twentieth century.

This trend began to show slight glimmers of change during the early 1940s. Military geography was given increased emphasis and the cadets responded with enthusiasm (Wilby 1943). During the spring semester, 1945, an Army Service Forces Manual, *Geographic Foundations of National Power*, was used for an International Relations course (Wilby 1945). A new course for 1946 was being developed in 1945: Economic

and Political Geography (Taylor 1946). The course was to be given to the Second Class, consisting of 68 lessons, and would use three textbooks and one atlas. The atlas used, *Goode's Atlas*, is used by the present faculty, however many changes have occurred and new editions published since 1946.

A fundamental change occurred for geography during the 1946-47 academic year: the reintroduction of a geography course (Tozeski 1976). This occurred concurrently with a departmental reorganization and name change, when Economics, Government, and History, became the Department of Social Sciences on April 16, 1947 (Taylor 1947). From this point on, the presence of geography would be continuous.

During the late 1940s and 1950s, the number of lesson periods for Economic and Political Geography decreased, and the course content changed somewhat, based on the textbooks used. However, the textbooks all referred to economic geography, and *Goode's Atlas* continued to be used. By 1956, the geography course began to exhibit increased emphasis on physical geography principles and regional studies integration, but economic geography remained the focus (Bryan 1956). An increase of physical geography principles and regional studies continued between 1957 and 1959. The result was a revised course for the academic year 1959-60, with a focus on regional geography of the world (Davidson 1960). The next academic year would bring further changes for geography, and increased visibility at the Military Academy, in the form of the Environmental Group in the Department of Earth, Space, and Graphic Science.

Throughout the middle of the twentieth century, the rich heritage of the Department of Drawing served as a foundation for course evolution and curricula modernization. Landscape drawing and mapping courses evolved into cartography and computer mapping courses. Physical and world regional geography courses developed to fulfill Superintendent Swift's desire for increased cadet understanding of the world they live in. The department exhibited signs of consolidation while expanding, change that would keep the department a leader at the Military Academy.

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# The Post Vietnam Era - Circa 1975 to Present

COL Michael B. Kelley, Ph.D.

CPT Jeffery A. Starke

## **Introduction**

The post Vietnam era is one characterized by explosive growth of populations and technology; the linkages of regions into a world economy; the transformation of our Army in terms of mission orientation and capability; and, like society and the Army around us, transformation of the department through a series of leadership periods, name changes, and orientations.

World population and centers of influence changed as technology and growth combined to "shrink our planet." The Army reset itself, orienting on values-based leadership. Winning the cold war and its orientation on the plains of Europe resulted in a transformation of mission to one needing rapid response and orientation to a multitude of mission areas. The current transformation of the Army is unprecedented in its history.

Within this timeframe, society has undergone many transformations from "Generation X" into the "digital age" or "D-generation." The evolution from large mainframe computers to current palm technology has revolutionized the world in which we live. Processors that are faster, hold more capabilities than ever imagined, and are networked, by remote infrastructure, provide the landscape for the turn of the century. The explosion of technological advances has been paralleled with an increased respect to the environment.

Geography has seen a transformation in importance here at West Point. No longer oriented on a single region or theater, the U.S. Army has fought over the last twenty-five years in places most Americans didn't know much about. "Where" has become as important as "how" or "why." As our recent graduates can vividly attest, understanding the future battlefield has never been more essential to success as an Army officer.

The "green revolution" of 1969 and the inaugural Earth Day of 1970 have resulted in a "mainstream" response across society and community "right-to-know" legislation that has permeated every facet of life. The alphabet soup of acronyms identifying important federal environmental legislation, such as NEPA (The National Environmental Policy Act), CWA (The Clean Water Act), and CAA (Clean Air Act) began to permeate mainstream America, her press, and her classrooms. West Point was no exception. From the early 1970's the Department of Earth Space and Graphic Sciences was home to a popular cadet elective: *Contemporary Environmental Issues - Man and His Environment*. *Man and His Environment* was the merger of two disciplines - Environmental Science and Environmental Geography. Hence the beginnings of two current day programs trace their roots at West Point to the early 1970's.

Today, the responsibility of environmental stewardship and the identification of environmental security are imbedded in the major decisions that are shaping the way we train and fight. Environmental awareness has increased in importance to our society, environmental policy touches a myriad of activities, and environmental issues are not simply the interest of a small number of people with "radical views."

The confluence of technology, culture, religion, environment, security, and the role of our national government was never more apparent than the September 11th, 2001 attacks on our symbols of power - the World Trade Center and the Pentagon. These unprecedented attacks resulted in the loss of almost 3000 lives and billions of dollars in infrastructure. America was changed in 2001, much as "Pearl Harbor" changed America in 1941.

As society has reacted and evolved, so has the department. During the thirty years since the early 1970's the department has evolved to keep pace with the growth of technology, the importance of the "where," geography, and the pervasiveness of "environment." Although all departments across the Academy have evolved with societal changes, none has demonstrated the consistent change related to society and the environmental and technological revolutions as the current Department of Geography and Environmental Engineering (G&EnE). The department incorporated the use of computers into the academic environment. This transformation led to the renaming of the Department of Earth, Space and Graphic Sciences (ES&GS) to the Department of Geography and Computer Sciences, and then the departure of Computer Sciences to the present Department of

Electrical Engineering and Computer Science (EE&CS). The explosive growth of environmental concerns into the mainstream in the contexts of technology, stewardship, and security, then lead to the Department of Geography and Environmental Engineering, our name today. The current department embraces technology, peoples and places, and environment under one roof. The geographic disciplines, the study of man's interaction with earth – the home of humanity, still remain the link of continuity for the department and have evolved with the integration of technological advances.

### **The Department of Geography and Computer Science**

At the onset of the cold war just after the end of World War II, technology was viewed to be the determining factor to win the war. At no other time in our history was technological advancement, in direct competition with the former Soviet Union, more evident. The evolution of this technological boom, with the advent and incorporation of the mainframe computer into Army operations, served as the beginning to the eventual evolution of the Department of Geography and Computer Science (G&CS).

The role of computers at the Military Academy was first introduced as a management tool within the Dean's Office under Brigadier General Bessel's tenure. By leveraging the interest of a few selected officers at the Academy, he was able to establish the Academic Computer Committee. The initial goals of this committee were:

- Every cadet should have practical exposure to computers, including the writing, running, and testing of computer programs to solve real problems.
- This should occur during the plebe year so that the new skill might be exercised periodically in all four years of a cadet's education.
- Each academic department should examine and report the usefulness of computers within its own disciplinary sphere.
- High priority should be given to making computer power available in every academic department, every cadet company and, eventually, to every classroom of the academy. (Ressler 2002)

Computers first appeared at the Academy in 1962 with the Academic Computer Center (Figure 5-1). This evolved into what is known today as the "Goldcoats." This distinct title was adopted from the gold lab coats worn by the workers. As computers were interwoven into the Academy,

there was a degree of inertia that needed to be overcome if they were to be integrated into the curriculum. There were initial doubts as to whether computers would survive as a technology; never mind as a separate discipline. It was Colonel Charles R. Broshous, ES&GS department head from 1961 to 1972, who agreed to incorporate computer instruction into the plebe core course in engineering fundamentals. The role of computers continued to expand resulting in what were referred to as “computer center riots” just prior to major project deadlines.



Figure 5-1. Early computer use and activity, USMA. (D/G&EnE Photograph Collection).

With the advent and subsequent evolution of technology within mainstream America, the Army embraced the capabilities of technology and applied them to the battlefield. As computer technology evolved from mainframe computers to the innovation of the “portable” computing system, the department identified the need to adapt and develop an expertise within the officer corps.

The rising popularity of portable computing and the increased need to support the field army resulted in the Secretary of the Army renaming the

Department of Earth, Space, and Graphic Science to the Department of Geography and Computer Science in December 1979.

Under the direction of USMA Superintendent General Andrew Goodpaster, the Academy formed the Automation Planning Committee. This committee set out a 5-year plan “to be a leader of colleges and universities in the use of computers in education.” At this time, many viewed the PC as a toy. The first Apple computers used at the Academy were ‘loaded’ with “a few ten-thousands of characters of memory, displayed 40 lines of characters on a converted television, used an audio cassette for storage, and sported a tiny assortment of software” (Ressler 2002). FORTRAN was the language taught and used by the faculty. There was even CADETRAN—a version designed to help cadets understand the computer logic with a penciled “mark sense” form. With the advent of computers at the Academy, the logistical support required was the limiting factor. The initial Terak microcomputers in 1983 cost \$8,935.

In 1985, the Cadet Personal Computer Project was approved with the following goals:

- Provide a tool to enhance learning by the cadet and teaching by the faculty.
- Increase the quality of cadet work and save time in preparation.
- Assist in graduating lieutenants who are prepared for our technology dependent Army. (Ressler 2002)

The rapid evolution of technology continued as the Class of 1990 was outfitted with Zenith 248 IBM-PC at a cost of \$1,700. Some of these Zenith computers undoubtedly traveled to the Gulf Region as this class provided most of the junior officers for Operation Desert Shield/Storm. Also, during this timeframe, the popularity of ARPANET (precursor to the Internet) began to migrate into the Academy. The debate over the validity and appropriateness for the Internet was a debate that would underscore the Academy as a whole.

The key personality who contributed to the advent of the computer science program at the Academy was Colonel Gilbert W. Kirby, Jr. (Class of 1949). Colonel Kirby served as the Deputy Head from 1967 to 1972 under Colonel Broshous and as Professor and Head of ES&GS from 1972 to 1979 and as Professor and Head of G&CS from 1979 to 1988. He is often referred to as the “father of computer science at West Point” (LaMoe

1989). Under his visionary leadership, the importance and application of computers to both the academic interests of the Academy and the “outreach” to the Army were set in motion. Colonel Kirby incorporated computer technology into the faculty as “members were required to check their electronic mail accounts daily (LaMoe 1989).” Also, it was his innovation to have the Internet come to the Department of G&CS as MILNET.

Colonel Kirby’s concept of outreach to the Army by the Academy resulted in the creation of an Academy center known as the Computer Graphics Laboratory (CGL). The Defense Mapping Agency provided initial financial support for the fledgling center. A small group of faculty and cadets provided an enormous value to the force. One example that permeates every Brigade level Tactical Operation Center is the current use of TERRABASE. This creation of the department is a tool used to assist staff officers in analyzing the battlefield and providing the commander with a method to visualize the terrain’s effects upon the operation. TERRABASE is the evolutionary product of the original MICROFIX Topographic Configuration software first fielded in July 1986. The Office of Artificial Intelligence Analysis and Evaluation was also founded in this timeframe to provide further outreach support between the Academy and the Army (Bacastow, Ressler, Guth 1986).

The department maintained its “thread” to the past and future with the teaching of geography. Throughout the department’s history, “Geography and its component field, Cartography, treat the description of the earth as the home of man” (anonymous 1980). In response to the onset of the green revolution, the department began offering the *Man and His Environment* elective, reputedly the second most popular elective at West Point (personal communication between Colonel Thomas Magness [Ret.] and Colonel M.B. Kelley, 2001).

In 1977, Terrain Analysis was added as a core course taken by all cadets during the yearling year. A scant few years later this course had evolved to not only include aspects of cartography (a strong historical connection to the department's past), but also the *new* science of *space-based* remote sensing, along with traditional physical geography. *Terrain Analysis* has continued to evolve to the hybrid course entitled *Physical Geography* we know of today, a course that includes a modest introduction to the tools of geography (e.g., remote sensing, cartography, geospatial information

sciences, and photogrammetry), and a brief introduction to several aspects of cultural geography (e.g., religion, urban centers, population, and medical geography), as well as traditional physical geography subjects. *Physical Geography* (a.k.a., "Dirt") continues to be taken by all yearling cadets. Geography gained a heightened popularity with the onset of remote operations to locations such as Grenada and Panama and operations such as Operation Desert Shield/Storm. Cadets could see first hand the relevance of their geography course material to their careers.

In the 1980's another first at West Point occurred for the department. Just as West Point saw its first graduating class that included females in 1980, the department was the first academic department at the Academy to have a female officer in its senior leadership. Major, and then Lieutenant Colonel Cathy Kelly served as a Permanent Associate Professor for a number of years in the 1980's as the director for the human-regional geography program. She has retired to the local Highland Falls area where she continues to be active in the community.

In 1985 the department added another mission area to its portfolio with the teaching for the first time of *Contemporary Environmental Issues - Air and Water Quality Engineering*. With the introduction of *Air and Water Quality Engineering*, taught to the civil engineers as an outgrowth of traditional sanitary engineering, the department began its foray into the discipline of Environmental Engineering.

With the migration of the computer science program to the current department of EE&CS and the retirement of Brigadier General Kirby as Professor and Head of G&CS in 1988, the department was realigned into the Department of Geography under the leadership of Colonel Gerald E. Galloway, Jr. (Class of 1957). Colonel Galloway, who previously served as Professor and Deputy Head for the later years of Colonel Kirby's tenure, served as Professor and Head of Geography for only a short period of time from 1989 - 1990. His short tenure as department head was the result of his appointment as Brigadier General and Dean of the Academic Board in 1990. General Galloway served for six years from 1990 to 1995 as Dean of the Academic Board, overseeing a number of academic changes at the Academy including the realignment of our department to its current configuration. During the period from 1990 to 1991 at least two officers served for extended periods of time as acting head of the

department. They include Colonel (Ret.) Robert C. Ham and Colonel (Ret.) William J. Reynolds.

### **The Department of Geography & Environmental Engineering**

The 1970s and 1980s brought about more change as a huge environmental movement took hold of all aspects of academia, national policy, and headline news. The Army was not to be exempt from this new “green” revolution. In 1990, the Academy adapted by realigning the Department of Geography into the Department of Geography and Environmental Engineering. Under the leadership of Brigadier General Gerald E. Galloway, Dean of the Academic Board, Colonel John H. (Jack) Grubbs (Class of 1964), former Permanent Associate Professor in the Department of Civil and Mechanical Engineering was appointed as Professor and Head of the Department of Geography and Environmental Engineering in 1991.

During the early part of Colonel Grubbs' tenure as Professor and Head of G&EnE, the department leadership changed significantly and then stabilized into the three programs we know today - the Geography program led at that time by Lieutenant Colonel William W. Doe, III (Class of 1974); the Mapping, Charting and Geodesy program led by Lieutenant Colonel Scott A. Loomer, and the new environmental program lead by Lieutenant Colonel W. Chris King. Colonel John Robertson, formerly the Dean's Research Officer, joined the department as deputy head.

There are many significant milestones in the department's history that were achieved over the last decade. These include the resurgence of the geography program in both human/regional geography and environmental geography disciplines; the integration of five new civilian faculty members into the leadership of the department; the explosive growth of the geospatial information sciences field; the coming of age of the environmental science and engineering program (Figure 5-2), including the new environmental engineering core engineering sequence; and the establishment of the Center for Environmental and Geographic Sciences - our department outreach arm.

In 1996 the Environmental Engineering major received its initial six-year accreditation from the Accreditation Board for Engineering and Technology (ABET), a testament to the leadership of department as they worked for four years to achieve that distinction. Colonel Chris King

spearheaded the accreditation effort which resulted in our program being accredited back to 1994. This stamp of approval allows our cadets to sit for the Fundamentals of Engineering Examination during the spring of their senior (firstie) year and provides our graduates with the fastest possible road to registration as Professional Engineers.



Figure 5-2. Environmental science laboratory. (D/G&EnE Photograph Collection).

The department's geographical roots remain firm, with EV203 - Physical Geography, evolving in focus but remaining the department's core course required of all cadets during their yearling year. The geography Action Plan, authored by Lieutenant Colonel William Doe, realigned the geography program during academic year 1995-1996 to essentially its current configuration, which includes majors and fields of study in both environmental geography and human-regional geography. Leadership of the Geography Group transitioned from Lieutenant Colonel William Doe, who retired in 1996 to Colorado State University and retains a significant tie to the Army and the department via his research activity, to Colonel Eugene J. Palka (Class of 1978) who arrived for duty in the summer of 1998, having served in a rotating assignment from 1986 to 1989. Under Colonel Gene Palka's leadership the geography program has significantly

grown in cadet interest, instituted several curricular adjustments, hired its second civilian professor, and is well aligned with a number of prestigious geography programs and professional societies throughout the country.

Colonel John Robertson, our deputy and the chair of the Academy's Laboratory Equipment Resource Committee (LERC), will be remembered for facilitating the funding of the environmental laboratory program. He retired to Texas in 1997, having served the vast majority of his career at West Point. At that time Colonel Chris King moved up from the environmental group to be the deputy head and Lieutenant Colonel Michael B. Kelley assumed the leadership of the environmental group.

Colonel Jack Grubbs provided superior service to the department and the Academy from 1991 to 1998 as Professor and Head. His legacy is one of synchronization between programs and between departments, the hiring of the original four of our current five civilian professors, the creation of an exceptional command climate in the department, and the strengthening of our three programs into the diverse, balanced programs we enjoy today. Colonel Jack Grubbs retired from active service in 1998 and was promoted to Brigadier General. He now serves in a leadership position at Tulane University where he maintains strong connections to the department via his service as a member of the Environmental Engineering Program Board of Advisors.

Colonel W. Chris King assumed the leadership of the department with his selection and appointment as Professor and Head of G&EnE in 1998. Colonel King has overseen the promotion of two and the hiring of our fifth civilian faculty member, and during the period 2000 - 2002 the significant realignment of the curriculum for the class of 2005 and beyond.

Colonel Scott Loomer, while serving as the mapping, charting and geodesy group director from 1992 to 1998, oversaw the development of the department's Geographic Sciences Laboratory (GSL) (Figure 5-3), a state of the art laboratory for the geospatial information sciences, while serving on the Academic Computing Advisory Committee (ACAC) for the department and later its chair. He also played a pivotal role in the technology transformation of the Academy throughout his assignment from 1992 to 2001. Colonel Loomer also served as the deputy head, acting head, and again deputy head of the department, retiring in 2001 to a senior technical position at the National Imagery and Mapping Agency (NIMA).



Figure 5-3. Instruction in the Geospatial Information Sciences classroom (D/G&EnE Photograph Collection).

He continues to maintain a strong connection to the department and her outreach efforts via his NIMA position.

The department has continued to embrace its technology roots within the Mapping, Charting, and Geodesy program, renamed the Geospatial Information Sciences program in 2000. This small group of talented individuals develops the skills required to apply the Geographic Information Systems (GIS) technology that has permeated every facet of our Army's battlefield. GIS serves as the bridge between our drawing era heritage and the expanded application of computer-based technology. With his extensive academic, research, and consulting experience in Geospatial Information Sciences, Dr. John Brockhaus was the first civilian faculty member to join the department in the 1990s. He arrived in late 1994 and, virtually from the beginning, has assumed a prominent leadership role in the program and the department. He currently serves as an Associate Professor and leads the Geospatial Information Sciences program as its group director.

## Summary

Since the beginning of the post Vietnam period in the mid 1970's, this department has enjoyed a reputation for relating people, culture, environment, and the world around us, while designing and employing technology in a flexible, adaptable organization. G&EnE is poised to embrace change, is responsive to the needs of the Army, and is ready to help lead the United States Military Academy into the third century of service to the nation.

Our faculty and staff, aligned within robust infrastructure and cognizant of our rich history, embrace our current challenges and look to the opportunities of the future including the implementation of the Class of 2005 curricular changes. Irrespective of any future changes, our mission will be to continue to develop cadets and junior faculty - our cadet graduates ready to join the Long Gray Line as Second Lieutenants and our returning field grade officers ready to reinvigorate the Army from their experience here at West Point. The department and the Academy will continue to provide each of our graduates with the knowledge, skills and abilities necessary to lead America's Army and the Nation in the twenty-first century.

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## Epilogue

Peter G. Anderson, Ph.D.

The current Department of Geography and Environmental Engineering has a long and rich history, dating to the initial years of the United States Military Academy. Every member of the Long Gray Line has taken at least one course from the Department of Drawing or its successors. The fundamental concept of earth observation and recording that began with Masson's first drawing class continues in the many courses offered in 2002.

USMA graduates have served their country admirably and with honor for two centuries. They have been engaged in numerous operations ranging from humanitarian assistance to armed conflict, at home and abroad, throughout this time period. American economic, political, and military activities have not been welcomed by all of the world's citizens. A recent expression of this was the act of terrorism committed in New York City, Washington D.C., and in western Pennsylvania on September 11, 2001. The resulting 'War on Terrorism' has presented new challenges for America's military with new problems and obstacles. Recent and future graduates will have to adapt to a changing world, and the resulting conflicts.

The mission of the Department of Geography and Environmental Engineering is "the military and intellectual development of all cadets by providing an understanding of the earth, its people, and how they interact ... with the goal of preparing cadets for service in the army and lifelong contributions to our Nation." Past, present, and future Geography and Environmental Engineering faculty and staff have and will continue to conduct this mission with enthusiasm and pride. The reason for this dedication is the product: members of the Long Gray Line, young people willing to serve their country, to preserve a fundamental precept of our country: life, liberty, and the pursuit of happiness.

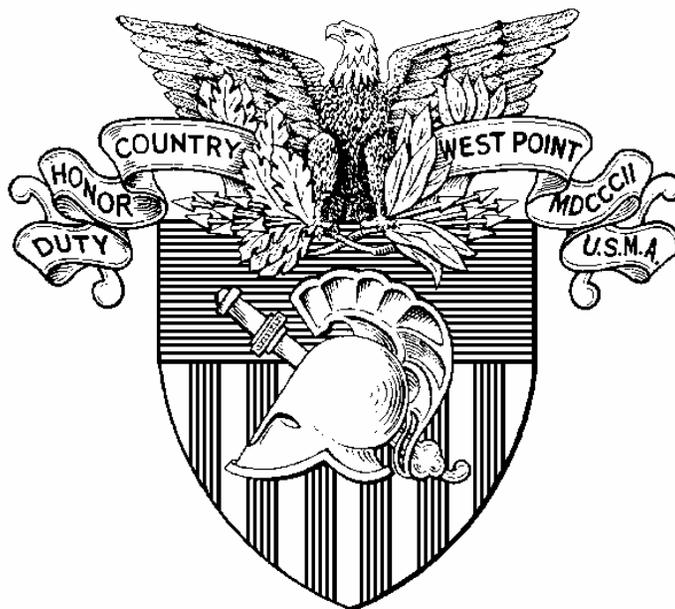
To past, present, and future cadets, and faculty and staff members, your service is valued, as you defend the freedoms of America.

America Thanks You.



## Appendix A

### The United States Military Academy's Coat of Arms and Motto



From: Origin of the Motto: Duty, Honor, Country, *Assembly*, [1978] xxxvii (3) 32-33.

The motto, Duty, Honor, Country, was devised by a board consisting of Colonels Larned, Bass, and Tillman, which was appointed sometime prior to 1898 to design a coat of arms that could be used on diplomas, invitations, publications, insignia, Corps colors, buttons and sculptured decorations on the public buildings of the Academy. A motto is, of course, an essential part of any coat of arms. ... The board that devised the coat of arms and motto did not express any opinion as to the relative importance or precedence of the three words, other than to state them in the order given.

The report of the Larned Board follows:

Department of Drawing

U.S. Military Academy

West Point, N.Y., January 14, 1898.

The Secretary of the Academic Board,

Present.

Sir:

The committee of the Academic Board appointed to consider and report upon a device for the United States Military Academy, have the honor to report as follows:

The selection of an appropriate badge or device for a corporate body of any kind involves several distinct considerations, such as significance, propriety, heraldic correctness, beauty of design, intelligibility, and suitability to special purposes. The selection of a satisfactory motto includes some of the forgoing, such as significance, propriety, intelligibility, and suitability, as well as dignity, conciseness, and to a certain extent sonorousness and tradition.

Your committee has approached the subject without bias and with an endeavor to give it impartial consideration from every point of view. It first undertook to decide upon general principles for guidance in the preparation of sketches and suggestions, and after considerable thought and discussion, the following points were decided upon as defining with sufficient precision the limitations of the particular case:

1<sup>st</sup>. The design should be of general, and not of a special significance; that is to say, the character of the institution as a military university educating for all arms of service renders it imperative that the device should not be that of a special corps, however honorably associated with its development.

2<sup>nd</sup>. The design should typify: the national character of the Academy; its military functions; its educational function as a foundation of knowledge; its characteristic spirit and motive principle.

3<sup>rd</sup>. The design should be simple rather than involved.

4<sup>th</sup>. It should be heraldic so far as relates to the correct principles of heraldic conventions, but there should be a certain latitude in the artistic symbolism which need not be of purely medieval type.

5<sup>th</sup>. It should be sculpturesque.

6<sup>th</sup>. It should condense with clearness to the limits of a seal and a letter head.

7<sup>th</sup>. It should be appropriate to the official uses of the Academy, i.e., diplomas, invitations, publications, corps flag, etc.

Guided by the foregoing, a number of sketches were prepared and considered by the committee. These sketches endeavored to embody, under different combinations all of the conditions imposed. The shield bearing the National Arms was adopted as the shield, and the Eagle as the Crest of the Arms, and these were variously composed with emblems suggested. Correspondence with Prof. Holden, a graduate of the Academy, a herald at arms himself, and author of a forthcoming work on heraldry, was entered into and all sketches and designs were submitted for his criticism as to their heraldic propriety and correctness. After considerable correspondence, discussion, and modification, a device was finally prepared which met the approval of the committee, and is herewith submitted.

In the same connection, the question of an appropriate motto was carefully considered, and the one appearing upon the scroll of the design agreed upon by the committee.

#### THE DESIGN

“A” The Emblem of the United States Military Academy is to be a Helmet of Pallas over a Greek Sword. It is borne on an oval with the inscription West Point MDCCCII, and surrounded by a band bearing the motto: - Duty – Honor – Country – U.S.M.A.

“B” The Arms of the United States Military Academy are to be: On a shield bearing the Arms of the United States, the emblem of the United States Military Academy, viz: - a Helmet of Pallas over a Greek sword,

proper. Crest: An eagle with wings displayed. Motto: Duty – Honor – Country – borne on the scroll with the words: “West Point, 1802 U.S.M.A.”

In selecting the arms, the Guiding Motive was to combine emblems that should be simple, beautiful, dignified, and significant of the military profession and learning. The sword is, and has always been, the universal symbol of War in its general sense – any other emblem of war has a restricted meaning. The sword is, therefore, broadly the symbol of the military profession, is generally so accepted, and is easily and clearly so understood in a device. In symbolism, it is better to accept a form that has the advantage of antiquity, as well as universality, the more especially so as antique forms are generally simple and more artistic. The Greek Sword fulfills these conditions. The Pallas Athene Helmet has, for many centuries, been used as the symbol of Wisdom and Learning, and more especially Secular Learning. She was a militant Goddess, fully armed, and since Homer, her wisdom is especially associated with war and the arts of war. The combination of these two emblems is particularly graceful, compact, effective, and sculpturesque.

This device as a coat of arms strongly commends itself, besides its beauty and significance, for the reason that it has been already adopted by the Academic Board for display over the Sally-port of the Academic Building, and is thus sculptured in the most prominent and significant position at the Military Academy. It has been associated, also, with the institution for many years, and is familiar to its graduates for at least fifty years, as prominently decorating the walls of the Drawing Academy in the old building.

It will be observed that this emblem is easily detachable from the shield, crest, and scroll, for use as a seal and letter head or badge. For this use, it is borne on the oval Greek Shield, which as an additional symbol, typifies especially defensive war, and the sciences connected therewith. This shield bears around its margin the motto and the letters U. S. M. A., and on its body, the words: West Point, MDCCCII.

Your committee is of the opinion that if the general design meets with the approval of the Academic Board, the design, as a whole, should be placed in the hands of an artist skilled in such work so that it shall be conventionally correct, and in harmony with heraldic practice.

The emblem, if adopted, should not be essentially modified, for the double reason that it is drawn as borne upon the walls of the Academy, and also because much research and care has been expended in making sure that the shape and proportions of both sword and helmet are archaeologically correct in every particular.

#### THE MOTTO

After much thought and inviting the opinion of many others, the Committee is satisfied that the sentiment expressed by the words: "Duty, Honor, Country" more clearly and concisely expresses the genius of this institution than that embodied in any other motto or quotation which has suggested itself or has been suggested by others. It has met the approval of those to whom it has been submitted.

Respectfully submitted.

(Signed) Chas. W. Larned,  
Professor of Drawing,  
Chairman.

(Signed) E. W. Bass,  
Professor of Mathematics,

(Signed) S. E. Tilman,  
Professor of Chemistry,  
Etc.

## Appendix B

### Living Histories: Testimonials to Experiences of, Lessons Learned, and Changes at the United States Military Academy, West Point, New York.

Writing a history many years after events have transpired, is interesting and rewarding, however gaps in information often proves frustrating. The commentaries that are included in this appendix are the views, experiences, memories, and lessons learned of just a few of the graduates of the Military Academy at West Point. Hopefully the stories that are contained here will provide further understanding of the Department of Geography and Environmental Engineering's history, and provide memories to those of the Long Gray Line.

The letter that follows, written by then CPT Schick to COL Alexander, was a catalyst for this portion of this book. The story contains such pride in Lt. Del Campo's ingenuity, based on his USMA background that I couldn't help but wonder if other USMA graduates had stories to share. There are many stories to share; the following stories are only a few.

Peter Anderson, editor

570 Graham Rd.  
Ft. Sam Houston, Tex.  
1 Apr 39

Dear Col. Alexander,

Knowing that you are always on the lookout for practical achievements of young grads that have their roots in the Dept. of Drawing, I am reporting what seems to me a sensational accomplishment of a Lt. A. R. Del Campo, U.S.M.A. '31.

Del Campo is a Cavalry Officer who is now on detail with the Ordnance Dept. Detail began July 1, 1938 at which time he was assigned to Ft. Sam Houston as Asst. Post and Div. Ord. Officer. ... Del Campo was keenly appreciative of his own limitations but pitched in with proper determination tempered by an appropriate humility and has earned the respect and confidence of his associates already.

In addition to the normal ordnance requirements, shortly after Del Campo's arrival, this division was equipped with the new M-1 rifle as a replacement for the Springfield. A very important and practical problem presented itself immediately – there were no arms racks for the new rifles and they wouldn't fit in the old Springfield racks.

The local experts took shots at the problem. None produced anything feasible. ... Here Del Campo appears in the picture. He had an idea and asked for the mfg. of a pilot model. It was produced in the local shop under his supervision and was immediately recognized as a real solution to the problem. It was immediately adopted for the 2° Div. Then the task of mass production was given to Del Campo. He had to make 300 of them – each rack holds 20 rifles. He took charge of the whole thing.

A sample rack was sent to Washington. Shortly thereafter one was sent to the Cavalry Board, Ft. Riley and the Inf. Board, Ft. Benning by express. Within a week both boards reported themselves as favorable to adoption. The Ord. Dept. then declared the design as officially adopted for the Army and has ordered production.

During the peak of production he was finishing 12 racks per day. ... Del Campo had nothing to go on but his USMA training. He used everything

he knew – drawing – physics – engineering. His gratitude to the various USMA depts. knows no bounds.

This incident of “local boy makes good” appeals to me tremendously. I was sure you would like the story. Incidentally Maj. Winnigstad got the letter of commendation but he is first to declare that Del Campo deserves all the credit.

Our family is thriving properly in the Texas sunshine and are real enthusiastic about this station. Our very best regards to you, Mrs. Alexander, and all the Dept.

Sincerely yours,  
L.E. Schick

# Reflections on the Department

Gerald E. Galloway, Ph.D.  
Brigadier General (Ret.) USMA 1957  
Professor, Department Head, and Dean, 1989-1995

Twenty six years ago, as I sat in an office in Vicksburg, MS, reading the Army Times, I came across an ad seeking applicants for the position of Professor and Deputy Head of the Department of Earth Space and Graphic Sciences (ES&GS). Never having taught at West Point but having been stationed there as an engineer in the sixties, I did know that ES&GS was the successor to the old Military Topography and Graphics (MT&G) department which had taught me surveying, map reading, and drawing, all of which I enjoyed. I had never even met Colonel (General) Kirby. I applied and the rest is my history of an exciting and professionally rewarding association with the finest department and the finest individuals at the Military Academy.

In 18 years in the department (two in grad school, nine and a half as not-head, a year and half as head, and five years as a part-time instructor while I was in the Dean's office), I witnessed and participated in amazing changes in curriculum, focus and department names. I saw the Academy stand up and recognize the jewel that the department had become.

From the very start – for me 1977 - there was a clear vision. Gil Kirby saw that the department should:

- Offer the Academy core courses that would be required components of the intellectual baggage of the USMA graduate – EF 105, Computers and MS 203, Terrain Analysis. Getting the Academy to agree to these choices is another story.
- Identify disciplinary areas where the talents of the interests of the faculty, the cadets, West Point and the Army could be combined in a laboratory experience that would benefit all participants. This of course led to the creation of laboratories and centers of excellence and to the first appearance of the ever-present tin cup (for begging dollars and support.)

- Offer quality programs as follow-ons to the core offerings and that would not only meet cadet interests but would support long-term Army needs and department efforts in the labs and centers. In the beginning, the department was the only group at West Point that really understood that concentrations could lead to majors. It was obvious that geography and computer science would lead the way.
- Recruit as faculty self-starters who were interested in teaching cadets, exploring new horizons, working long hours, and when necessary going “on the road again.” A look the rogues gallery of old department bio-books tells you that we did in fact get the best and that they today are serving well the Army and the nation.

I remember the challenges and successes of 1979 and the early 80’s:

- Getting MS203 to become EV 203. My fellow professors and Gilbert’s colleagues on the Academic Board could not initially recognize what was academic about MS203. But with some help from Commandants and Superintendents who understood the role of terrain in both military operations and day-to-day living, EV 203 rose from an extension of Camp Buckner map reading, to a quality academic course that was appreciated universally by most cadets, except the map-challenged.
- Renaming the department. Gilbert Kirby had been here when it was MT&G, saw the shift to ES&GS, and recognized that we were no longer what we had been and together we defined that the best answer was the most logical – name it for what we taught —and surprisingly, it was accepted by the Academic Board.
- The arrival of desktop computers. In the early 80’s, as the Academic Board debated the future utility of computers to the educated officer, the department began to move from dumb terminals linked to the main frame to stand-alone behemoth desk top systems that eliminated all the down-times previously experienced. While most of the Academy treated this new arrival much as their predecessors had greeted the automobile – get a horse. Gilbert persisted and it soon became obvious that this desktop approach really might go somewhere.

- The advent of concentrations and majors. Both geography and computer science had something to offer cadets and they responded. The Geography program was quickly ranked by the AAG as one of the best in the country and computer science was found to be leading the pack in undergraduate fundamentals. Both were ready to take off.
- The expansion of the labs. It did not take long for the Army to recognize the synergism gained in bringing together topography and computer science and what it might offer the Army as a whole. Gilbert Kirby's begging for dollars turned to selective acceptance of the offers being made by labs at Fort Belvoir, Fort Monmouth, and from the Pentagon. USAREUR soon saw the value and G&CS established satellite offices in Germany – at least it seemed that way. The mapping work soon was followed by Artificial Intelligence and the two efforts found more synergism and more demands for their time. Faculty members were busy, cadets were impressed, and when the Army went to war in the Gulf, it was well served by the products of the department.

In the late 80's, the department of Electrical Engineering was beginning to include computer work in its curriculum as interest in the old stuff – conventional EE - waned and EE was dropped as a core course. Reluctantly, we all agreed that the long-term home for computer science should probably be with EE. So CS moved across Thayer Road. Besides, G&CS had created its own computer science program – the mapping, charting, and geodesy program, MC&G - with its own labs and computer science look-alikes. And we all recognize where that program has gone in capturing 21<sup>st</sup> century majors.

At the same time, more and more cadets wanted to deal with environmental issues. The geography program had spawned several environmental courses and the need to expand even more was obvious. Even the Academy recognized that perhaps there was a place for environmental engineering in the curriculum – just not in the Department of Geography. In another 'hotly contested' battle, the strength of the departments association with environmental disciplines involved won out and the Academic Board reluctantly agreed to the establishment of the environmental engineering major and its move towards accreditation.

As I look back on the years with the department, I can see well its tremendous successes and appreciate Gil Kirby's vision and his steadfast efforts to beat down all those who got in our way. As he remarked once - maybe more often - to a senior Academy official, "Either support us or get out of the way." In the beginning it was the latter - in the end everyone wanted to join in the success.

What did we not do? My only regret was my inability to convince my colleagues that EV365, Cultural and Political Geography, should be a core course. Nothing in the 13 years since I formally left the department has altered that belief and the nation's current inability to understand the culture of others makes this absence from the curriculum even more of a tragedy. However, I am told that much has been done recently to deal with culture across the curriculum.

My decision in the summer of 1976 to try for the P's job was one I will never regret. It gave me unparalleled opportunities to work with the very best - Gil Kirby, the faculty, the department staff, and the cadets who took our courses and majored in our disciplines. Hardly a week goes by that I do not run into someone here in Washington who fondly remembers his or her experience with the department, as students or faculty, and tells me that we collectively were teaching the 'right stuff.'

Well done ES&GS, G&CS, Geography, and G&EnE!

# It Was a Singular Honor

John H. Grubbs, Ph.D., P.E.  
Brigadier General (Ret.) USMA 1964  
Professor and Department Head, 1991-1998

As we all know, the Vietnam experience placed huge burdens on Army families. In less than five years of marriage, Judy and I were separated for 32 months. I had not thought much at all about teaching at the Academy; I only wanted a route to escape the separations. Two years of graduate school and a three-year teaching assignment seemed to be a great game plan if I were to remain in the Army. I had enjoyed and done well in my courses from the Department of Military Topography and Graphics (MT&G)...at graduation I even received an invitation to return to the department for a teaching assignment. My first contact was with Bill Van Zetta, the civilian executive officer of what had been renamed the Department of Earth, Space and Graphic Sciences (ES&GS). Not only was he an upbeat, positive representative of the department, Bill told me that (1) I could choose any engineering discipline I wanted and (2) go to any school that would accept me. So I took them up on the offer – two years at Princeton University and three years at West Point. I returned in the summer of 1973. Of course, the Army got one more short tour to Korea before allowing me to return.

The academic year 1973-74 was a watershed year for me. I was working with some outstanding officers and working for outstanding officers (then COL Gilbert Kirby and LTC Allen Biggerstaff). The department had an engineering fundamentals group, of which I was a part, and a geography group. My take on that first summer was that we worked hard to prepare for the upcoming semester and we played hard. We were all Vietnam vets and the time spent with families was ‘as good as it gets.’ The fall semester started with the infamous ‘Kirby Welcome.’ I specifically remember him speaking to the fact that the young officers wore the ‘white’ hats and he, the Department Head, wore the ‘black’ hat. He commented, “I would tell you about the second semester but many of you won’t be here then.” As it turned out, he wore the biggest ‘white’ hat of all and led a great department. I was honored to be a part of it.

Without going into too much detail, let me say that (1) we taught four hours a day Monday through Friday and (2) we taught in our class ‘A’ uniform. My first day in class was enjoyable. My second day was more enjoyable. Teaching plebes was great – young cadets like Mike Chritton, Nick Iorio, Rich Wiggins and Joe Lynam tended to inspire all of the instructors to do the best we could. Like so many others, when Judy and I left the Academy in the summer of 1976, we did so with a firm commitment to return to the Academy.

We were fortunate to return to West Point in 1983, although to a different department (my basketball scholarship to the Department of Engineering is a story for another time). It was great to be back and teaching computer-aided design and structural systems brought back the same enjoyment that I experienced in the 70’s. Although I enjoyed the Department of Engineering (later re-organized as the Department of Civil and Mechanical Engineering), the search for a new department head in the Department of Geography and Environmental Engineering caused me to refocus on the department that, eighteen years earlier, had given me the desire to spend the rest of my professional career in educating and mentoring the future leaders of the American Army. On the evening of June 27<sup>th</sup>, 1991, I received word that I was to serve as Professor and Head of the Department of Geography and Environmental Engineering. Thus began a seven-year journey with the finest group of people I have ever known.

The initial charter I received from the Dean, BG Gerald Galloway, was to achieve accreditation for the evolving environmental engineering program. Implicit missions also included improving upon (and increasing enrollments for) our geography programs, maintaining outstanding faculty, and insuring the Department of Geography and Environmental Engineering was, in both perception and reality, a high-performing, high-morale organization.

Let me state up front that I will not attempt to list the name of every contributor to our success – the list would be massive. I do believe an overall philosophy of ‘positive-leadership’ by our senior faculty produced an environment in which the junior officers could contribute from ‘the trenches.’ We did have measurable success and I hope that every member of our department understands his or her contributions to all that we accomplished.

When I arrived at the end of June, 1991, a search was underway for three permanent associate professors (PAPs, now known as Academy Professors). The committee had conducted the search in an outstanding manner and, after speaking with each of the candidates, I wisely accepted its recommendations. The new leadership included then Majors Bill Doe (geography) and Scott Loomer (mapping, charting and geodesy) and Lieutenant Colonel Wendell ‘Chris’ King (environmental engineering). Providing continuity – and giving me great counsel and wisdom early in my tenure as department head – was Colonel Robert ‘Craig’ Ham, Deputy Head of the department (replaced upon his retirement by COL John K. Robertson).

Our basic organizational structure included 31 officers and 11 civilians. We also had the opportunity to bring a visiting professor to the department on an almost yearly basis. During my tenure with the department we also had the good fortune for outstanding civilian professors to join our ranks. I will discuss their contributions separately.

I will address the seven years that I was fortunate to be a member of the department in terms of ‘categories’ rather than ‘chronology.’ Let me begin with programs.

### **Programs**

The Department of Geography and Environmental Engineering had curricular synergism that, to outsiders, was difficult to fathom. The Army operates ‘on the ground.’ Supporting the Army mission are requirements to understand: (1) the terrain on which we must fight and the weather in which we operate, (2) the technology necessary for the Army to maximize its use of terrain, and (3) the attitudes, values, and customs of groups of people (be they ally or enemy). Whether in our warfighting role or as nation-builders, the Army has the inherent mission to train and to operate in an environmentally sustainable manner. That mission includes improving the quality of life for inhabitants of the lands in which we operate. Although each of our disciplines can stand on its own merit, I have always felt that the fundamental strength of our curriculum came from the intersection among the disciplines. Our efforts to improve upon every facet of our programs reaped huge dividends. As I discuss specific initiatives, please do not assume that the department was ‘broken;’ it was a superb department when I arrived and I believe it was superb when I left.

**Geography:** Shortly after my arrival to the department, leadership for the geography program passed to Lieutenant Colonel Bill Doe. Not one to hide from his duties, Colonel Doe led ‘from the front.’ He presented me with a strategy for the geography program (already a strong program) including conceptual ideas for the direction of our core course, EV 203 (Terrain Analysis), and both the physical and human-regional geography programs. Because of the need to basically ‘educate’ the Academy on the fundamental role that Geography plays in the American Army, Bill Doe and I had several critical discussions regarding program changes and ‘marketing’ the geography product to senior leadership at West Point. With his faculty, he developed a “Geography Action Plan (GAP)”. In my opinion, there were no “GAPs” in what they accomplished. In executing the GAP, Bill Doe and the geography faculty made innovative and appropriate linkages to the environmental engineering and the mapping, charting and geodesy programs.

**Environmental Engineering/Science:** A basic curriculum for environmental engineering was already in place when I arrived. Once Lieutenant Colonel Chris King joined the department, I placed the success of our accreditation efforts into his hands. We had many strategic discussions, assessed the existing program in terms of (1) the needs of the Army and (2) requirements of the Accrediting Board for Engineering and Technology (ABET). I had previous ABET experience, Chris King was arguably the finest environmental engineer in the United States Army, and our officers were talented and eager to take the program to the next level. The basic strategy involved developing the environmental engineering curriculum along three avenues – earth sciences, chemistry, and engineering science/mathematics – all leading to an environmental course structure that was well suited to our most important customer, the cadet. Concurrent with the full development of the environmental engineering program, the ‘engineering sequence’ for non-engineering majors was developed. This five-course sequence proved viable, pertinent to Army needs, and popular among cadets. Long-gone are the days when motor sergeants disposed of motor oil behind the maintenance building. Whether in warfighting or training, the Army must operate in an ‘environmentally sustainable’ manner. The value of the environmental engineering sequence was obvious to the cadets and it soon had the second highest enrollments of all sequences. Using in-house expertise, based on experience of our senior faculty and officers coming from the finest graduate institutions in the United States, the dedication of our laboratory supervisor, Mr. Anand

Shetty, and resources allocated by the Laboratory Equipment Replacement Committee (LERC), we were able to build an environmental laboratory that today stands among the very finest in undergraduate education. Our ABET accreditation visit came in the fall of 1996. It simply could not have gone better. We received full accreditation along with an ABET report that glowed in terms of our program, our students, our faculty, and our resources.

**Mapping, Charting and Geodesy (MC&G):** At each opportunity I had to provide a briefing to distinguished visitors, I emphasized the point that not only was MC&G critical to the needs of the Army, it also served as the bridge between the geography and environmental engineering/science programs. Under the leadership and technical expertise of then Lieutenant Colonel Scott Loomer, improvements were made in our courses, our facilities, and our ability to support the field army. Cadet enrollments in MC&G increased as did the number of cadets taking our courses as electives. Parallel to the environmental efforts, improvements in the Geosciences Laboratory were spectacular. State-of-the-art workstations were ideal for teaching courses from Remote Sensing to Geographic Information Systems. We had a three-dimensional terrain analysis capability, a base station and capability to utilize and teach GPS systems. Because of our equipment and the expertise of the faculty (COL (Ret.) Loomer was a true expert), we were a major player in Army efforts to digitize the battlefield. Our faculty, our facilities, and our cadets worked together at the leading edge of the digital information world. From classroom instruction, to presentations at Army Topographic Conferences, to service on Army committees, to conducting research and to working closely with the Topographic Engineering Center (TEC), the MC&G group made major contributions to Army readiness.

### **Faculty/Staff**

**Staff:** I put the staff first because we still have staff who were in the department long before I arrived and will still be there when many of the current faculty leave the department. In total, we had a great civilian staff. Functions in the department included a heavy administrative workload (academic and personnel actions were significant), logistics, computer support, laboratory oversight and graphic support. That we met our suspense dates and provided the resources needed to succeed in our academic mission can be attributed to the work ethic of the staff. Although I would like to think that we were not always in a ‘crisis’ mode, I will be

eternally grateful for the manner in which the staff came through on short notice. I worked closely with our two senior members who remain today, Jean Keller and Bob Getz. There were some tough times for Jean as the Office Supervisor – she had to face personnel actions, hiring freezes, and major administrative actions. Similarly, I was always asking Bob Getz to make a ‘silk-purse’ out of a ‘sow’s ear’ in terms of graphic support. He always came through.

**Military Faculty:** Our military faculty, as I am sure it is today, was superb by every form of measurement. Bright, energetic, loyal and spirited, they not only delivered the goods in terms of teaching, they also served as great role models for our cadets and added distinction to the department in terms of participation at conferences (Association of American Geographers (AAG) and the American Society for Engineering Education (ASEE)) and in supporting the needs of the Army through our Center for Environmental and Geographic Sciences (CEGS). By sitting in classes, I was able to see first-hand the incredible talent that our young officers brought to bear. They knew their stuff and they knew how to interact with cadets. What impressed me most about our young officers was their collective ability to maintain a proper military relationship while building tremendous rapport with the cadets. When I read ‘. . . by far the best instructor at West Point’ time after time, it dawned on me that we did have a special faculty. While I have mentioned the talents and dedication of Colonels King, Loomer, and Doe, there were many others (too many to name all of them) who provided great leadership to the younger members of the faculty. I believe that our strategic success was a function of their ability to see into the future, to plan in a strategic manner, and then to let their individual faculty carry out specific duties.

**Civilian Faculty:** In writing these comments, I am differentiating ‘civilian faculty’ and ‘military faculty’ only for purposes of clarity. From the day that Dr. John Brockhaus walked in the door, it was clear that we had a single, common-purposed, faculty. The fears of many of the military personnel of the Academy were baseless. While I cannot speak to the situation in other departments, it was clear then and is clear now that our civilian faculty is as strong and supportive a faculty as can be found in the United States, regardless of institution. On the heels of John Brockhaus came Dr. Marie Johnson and Dr. Jon Malinowski. Not only did they excel in the classroom (yes Marie, you certainly did!), they provided great leadership in and out of the classroom. Their growth and their assumption

of major responsibilities in the department have been remarkable. Marie Johnson brought a significant research program with her, dispelling concerns that our faculty could not have research programs while involved in the massive requirements of our teaching mission. Beyond in-class teaching, she also transitioned into directing our Geology Field Course where her geology expertise could be utilized in the vast reaches of the Rocky Mountains. John Brockhaus and Jon Malinowski served as leaders and role models to our junior faculty through writing and participating in the activities of the Association of American Geographers (AAG). As it should be, our department's position of prominence in the AAG was significantly bolstered by their presence. Although the uniform was different (we all loved the 'team civilian' shirts in support of our Army athletic teams), the attitude, effort, and loyalty was indistinguishable between civilian and officer. That John Brockhaus was the head coach of Men's Volleyball, that Marie Johnson was head coach of Women's Lacrosse, and Jon Malinowski was head coach of our Nordic Ski Team speaks volumes about their commitment to the Department of Geography and Environmental Engineering, the Academy, and, most importantly, the cadets. One of my last faculty actions was to approve the recommendation that Dr. Mike Butkus be selected as an environmental engineering professor. Although I retired shortly thereafter, I have talked to Mike Butkus and have heard the reports ... and the tradition of having a world-class civilian faculty has continued.

**Visiting Professors:** During the early and mid-90's, the West Point Visiting Professor Program was critical to the Academy. During my seven years in the Department, I was privileged to have Dr. Harold "Duke" Winters, Dr. Gerry Mueller (pronounced 'Miller'), and Dr. Dick Dominguez join our faculty. Because I came from the engineering arena and not geography, Duke Winters was invaluable to me. I sought his guidance on matters 'geographic' and learned a great deal about geography from him, either through his teaching on subjects such as the Shenandoah Valley Campaign of the Civil War or through reading the draft of "Battle Settings." He also assisted me in meeting leaders of the Association of American Geographers (AAG). Following behind him, Gerry Mueller also added to the faculty in geography and Dick Dominguez came at the perfect time to help us with our preparations for the accreditation visit of the environmental engineering program. Whether in the classroom, at social functions, or in supporting program

development, these professors were clearly ‘part and parcel’ of the department.

### **Department Leadership/Teambuilding/Morale**

It is absolute folly to believe that every member is content with the workings of and personalities comprising an organization. At the same time, I believe that we were a very high-performing unit. From external review, internal surveys, and informal feedback, there clearly was a recognition of quality, a sense of purpose, a pride in what we did, a feeling of participation and a feeling of ownership of our success at all levels of the department. Not only did we have a sense of camaraderie, our cadets (majors and non-majors alike) had a very positive impression of the Department of Geography and Environmental Engineering. As Department Head, I read every course critique written by cadets – the vast majority gave the department in general and individual faculty specifically very high marks.

A Command Climate Survey was conducted in early 1997 to assess the morale of all academic units. There were 35 questions for which numerical ratings were given and an additional four questions which were ‘open ended.’ Without comparing ourselves with other departments directly, let me just say the results were incredibly positive (numerical ratings were above the Academy average in 34 of the 35 responses) and, for those of us providing the long-term continuity of the department, very humbling. Comments were replete with similarities to the following:

“The sense of teamwork: and what a team!!! We have great people with a clearly stated and well-understood mission. As a result, most of us are eager to assist other “team members” in reaching their peak potential. Everyone is willing to do their share.”

Along with the positive comments were also some very candid comments on where we could be better (and where COL Grubbs could have been better), but the overall tenor of that survey clearly indicated we were a department ‘on the move.’ Maybe my greatest contributions came from the fact that (1) I trusted everyone and (2) once I gave general directions, I got out of the way and let everyone do their job. My decision to require that none of the office suites (or alcoves) were dominated by a single discipline turned out, in my perspective, to have a positive effect on the department. I hope that the majority of our officers, regardless of

discipline, continue to teach EV 203 Terrain Analysis – both for esprit within the department and for the ‘sharpening’ of skills that may be needed in the future.

Morale also seemed to be wrapped up in our joint activities. For some it came in the teaching mission, for others it came in Land Navigation training which was professional in every respect. From the Annual Pre-Army/Navy skit (which I believe was the invention of BG Galloway – but truly perfected with Term-End-After, Jurassic Point, Forrest Grubbs, Must-see TV and Men-in-Gray), to our success on the fields of friendly strife (Louraine Robertson was our softball manager for six years – boy was she tough), to the famous (or infamous) ‘Dirtman’ and finally to our department parties (of which the Christmas Party at our quarters was my favorite), we certainly had the capacity to ‘celebrate life.’

It is absolutely true that I had fellow senior officers (and a few junior officers) comment to me about how we got along so well. Their comments were not born of what I had told them, the comments came from members of other organizations throughout the Academy. The “Dirt Department” was fully respected by all and envied by many. Given the nature of Army missions today, and the requirements associated with operating throughout the world, it is important to reflect on the efforts of the entire faculty to ‘educate’ the Academy as to our importance. It was not a matter of simply ‘protecting our jobs’, it was a matter of fulfilling the Academy’s responsibility to the Army.

### **Final Thoughts**

Never will I fully understand why I was given the opportunity to serve with such a talented, honorable, group of men and women as we had in the Department of Geography and Environmental Engineering. My belief is that we discharged our mission to the cadets, the Academy, and the United States Army in a manner that, in unforeseen times and places, will positively, and importantly, impact the security of our Country. We weren’t senior officers, junior officers, civilian faculty, or civilian staff – we were a single, cohesive, team. And now I see many of the young officers of the ‘90’s coming back as the senior faculty to take us well into this century. There is no question but that the Department of Geography and Environmental Engineering will continue to ‘lead from the front.’

It was a singular honor.

# We Were the Geography Faculty Once...And Young

## A Brief History of the USMA Geography Department in the early 1990's

Dr. William W. Doe III  
LTC (Ret.) USMA 1974  
Geography Group Director, 1992-1996

*With apologies and credits to LTC (Ret) Harold G. Moore and  
Joseph L. Galloway (“We Were Soldiers Once...And Young”)*

This story is about time and memories. The time was the early 1990's, a different kind of era when America faced, for the first time in many decades, a world without the bi-polar confrontation between the United States and the Soviet Union – the beginning of the so-called post-Cold War Era. Our Army was fresh from a fantastic and decisive victory in the deserts of Iraq and there was a renewed confidence and patriotism in the nation. Yet, there was much uncertainty over the emerging “clashes of civilizations” in the former Soviet Union, Eastern Europe, and the Middle East. We felt it then in the way our Army was changing, in the many ways our lives changed so suddenly, so dramatically, and looking back on it from a decade gone, we are left in no doubt. It was the years we went to Somalia and Haiti and Bosnia. It was the years the Academy itself was being challenged from external sources, like never before, to justify its faculty and its existence in a world no longer threatened by the Soviet Bear. This story is about the smaller, more tightly focused “we” of that sentence: a band of geography faculty who experienced these “sea changes”, both from outside and within, and who sought to keep the curriculum abreast of these new paradigms. For we were the Geography Faculty once...and young.

The focus of the Geography faculty during the early 1990's was to refocus the courses, curriculum, and majors towards the post-Cold War Era and the new roles envisioned for the Army in the 21<sup>st</sup> Century – our mantra was “Geography for the Army Officer in the 21<sup>st</sup> Century”. There were many changes taking place during this time both within the Department and the Academy. In many ways, the Geography program suffered from an identity crisis. Both within the Department and the Academy curriculum there was renewed interest and enthusiasm in the hard sciences

– chemistry, environmental engineering, information technology, and a sense that physical geography was misplaced in the Math, Science and Engineering (MSE) curriculum. Although the faculty continued to sustain and evolve EV203 (Terrain Analysis) as a core course, there was a sense outside the Department that this core course was “on the margin” – an artifact of days gone by – mechanical drawing, panoramic sketching, astronomy, etc. This perspective was on the heels of other Academy decisions to remove geography from the core curriculum, by eliminating EV365 (Political and Cultural Geography) as a required Humanities and Public Affairs (HPA) course. Therefore, in many ways, the Geography Program was in a fight for its life – to convince the Academy that it was not only different from its counterparts in the physical and social sciences, but as an integrative discipline, even more relevant to the Army and the nation in the years to come. Consequently, a great deal of energy within the Geography Group and Department was directed towards justifying and ensuring the long-term sustainment of EV203 in the curriculum, and to educate the Academy about the role of cultural geography. In the light of the September 11<sup>th</sup>, 2001 terrorist attacks and our Army’s subsequent engagements in Afghanistan, the Philippines, and other far-flung terrorist havens, the need to justify these courses now seems ironical.

In the early to mid-1990’s the Geography faculty recognized that the new world paradigms of the post-Cold War era were exactly what geography was all about – infusing the cadets with an understanding of the complex interactions between humans, culture, and their environment – the elements of environmental security, a new “buzzword” that appeared in the early 1990’s. To geographers, this term and its implications came as no surprise! Thus, the geography faculty set about to readdress the curriculum from within, both structurally and thematically. This two-year (1995-96) effort and internal assessment process was called the Geography Action Plan (GAP). The GAP actively involved both senior and junior faculty, military and civilian, in defining the themes and outcomes desired for a geographically competent Army officer in the 21st century. This effort was spurred on by a national assessment of Geography, conducted by the Association of American Geographers, called “Geography for Life”. This national assessment provided a useful framework for examining the physical, cultural, and spatial components of the discipline. The GAP process resulted in both streamlining the existing courses to meet faculty loads and student demands, as well as defining critical “gaps” in the Geography curriculum. These gaps were filled with newly designed

foundational courses that were approved by the Academy Curriculum Committee in the late 1990's, and which now provide a foundation for the Geography majors. This assessment process also helped to define the "bridge courses" and linkages between other programs in the Department, to include environmental science, environmental engineering, and Mapping, Charting and Geodesy.

Thus, this internal assessment, involving all of the Geography faculty and others, resulted in a stronger, more integrated Department-wide curriculum. Another emerging theme at the same time was a focus on teaching techniques and technologies that included the use of digital data, digital presentations and lesson plans and the Internet...technologies that are now taken for granted in the classroom. Several of the geography faculty were on the cutting edge of incorporating these new technologies into classroom pedagogy.

This story, then, is our testament to the way it was and to the Geography faculty, young and old, who served during the early to mid-1990's... and to the many cadets who passed through our classrooms, and who today serve and lead soldiers in Afghanistan, Cuba, the Philippines, Bosnia, Kuwait, and Korea. This is one small part of the Geography program's legacy and continuum over two centuries of education at West Point, and one that is perhaps even more relevant today, than it was when the Academy's graduates went West to defend the nation's frontiers and map the new territories of the Louisiana Purchase. This is our story and theirs. For we were the Geography faculty once...and young.

# Thoughts on Becoming a Military Geographer

Colonel Eugene J. Palka, Ph.D.  
USMA 1978  
Geography Program Director, 1998-2002

I routinely tell our cadet geography majors that I am one of the luckiest guys in the world because I have been able to enjoy two careers instead of just one. Although I have officially been an Army officer longer than I have been a geographer, I probably began to prepare myself for the latter at a much earlier age. Regardless, the two career paths have meshed nicely and I would argue that I am a better Army officer because I am a geographer, and visa versa.

While many would trace their interest in their chosen profession back to their late high school or early college years, my interest in geography dates back about 42 years to when I was 5 years old. As I recall, it was about that time in my life when I discovered a bookshelf containing about 100 copies of *National Geographic Magazine* in the waiting room of our family doctor's office. After that first encounter, as odd as it may sound, I was always happy to accompany my Mom or Dad during their visits to the family doctor, just for the sake of digging into those stacks of magazines. Early on I naturally focused on the pictures, but in time I began to appreciate the maps, and eventually the articles.

As one who grew up in an ethnic neighborhood (where English was a second language) in a steel town outside of Pittsburgh, *National Geographic* proved to be my connection with the rest of the world. With every visit to the doctor's office I took a "poor man's" vacation to some exotic place around the globe. I was fascinated by the maps and photos, which left vivid and enduring imprints in my mind. Despite my father's health problems and the limited family income which precluded us from traveling, I still had numerous opportunities to explore the world outside my neighborhood, thanks to *National Geographic*. The magazines initially whet my appetite for traveling and exploring, and in an abstract way, even satisfied those inclinations.

My brother, sister, and I managed to experience some of the Pennsylvania, Ohio, and West Virginia tri-state area during the course of athletic competition. As a recruited high school football, baseball, and basketball player, I was eventually afforded my first opportunities to travel outside the tri-state area on college recruiting trips. I settled on West Point, in part because of my vision to play in the Army-Navy football game, but also because I was attracted to what I supposed was an adventurous lifestyle and the opportunity to travel and live around the world.

During my time as a cadet, we did not choose a major in a particular discipline. I did, however, have the opportunity to take a number of elective courses. I used these courses to pursue my interests in geography. By the time I had graduated, I had taken every regional geography course offered by the Department of Earth, Space, & Graphic Sciences, in addition to geology, ecology, astronomy, and anthropology. In the absence of guidance, it seemed to me that those kinds of courses would serve me well as an Army officer and world traveler.

I wasn't a great student as a cadet, especially since I devoted time to both varsity football and baseball, and wrestled with my father's death during my yearling year. Nevertheless, I made the Dean's list during both semesters of my senior year and did well in my geography courses. As a cadet, I never managed to convince myself that I could benefit from the likes of my nuclear physics, thermodynamics, or electric engineering courses. My passion for geography, however, was unquestionable and I felt confident that the discipline was relevant to my career as an Army Officer. I recall being frustrated because I often wanted to devote far more time to my geography courses, and much less time to my engineering subjects. One of the highlights of my cadet academic career occurred a few weeks prior to graduation when I was invited to Colonel John Garver's office to be interviewed as a prospective geography instructor. Until that point in time, the thought of going to grad school and returning to West Point to teach had never crossed my mind. In fact, on graduation day, I had my TR-7 in 5<sup>th</sup> gear as I headed out of Washington Gate.

After completing the Infantry Officers' Basic Course, I headed off to my initial assignment with the 101<sup>st</sup> Airborne Division. I eventually extended my tour three times and during my nearly six years in the division, had the opportunity to travel and operate around the world. It was during these years in the 101<sup>st</sup> when I began to appreciate the unquestionable utility of

geography (both physical and human) for the military professional. Even as a young lieutenant, I honestly believed that my cursory background in the discipline enhanced my success as an Infantryman. I developed a knack for analyzing terrain, learned to routinely assess the impact of weather and climate, enjoyed using all types of maps and aerial photographs, welcomed the opportunities to prepare for deployments to distant countries, and enjoyed the experience of interacting with various cultures and landscapes around the world. I was also fortunate to be introduced to an officer named Colonel Gerry Galloway, who during his visit to Fort Campbell, happened to visit my rifle range during my company command tenure. Among other things, we discussed the possibility of graduate school and subsequently returning to the department in a teaching capacity. A year or so later, my hope turned into reality.

After being accepted by Penn State, Ohio State, and Ohio University, I elected to attend the latter, located in Athens, Ohio. Coincidentally, one of my favorite USMA geography instructors had attended the same institution for his graduate schooling. I was blessed with a couple of terrific mentors at OU, specifically Hubert Wilhelm and Hubert Bloemer. The former was a cultural-historical geographer who loved to do field work and had an affection for landscapes, while the latter inspired me to fill up my geographer's toolbox with the likes of cartography, aerial photography, remote sensing, and quantitative methods. Many of the faculty members and my fellow grad students had served in the Peace Corps and we had numerous international students in our program. I realized, however, that the Army had helped me to become the most experienced traveler among the students.

My subsequent experience within the Department of Geography & Computer Science (during the 1986-89 timeframe) proved to be my first opportunity to truly mesh my two careers. Under the guidance of Colonels Gilbert Kirby and Gerry Galloway, I had numerous opportunities to excel in both areas. The Department Head and Deputy Head provided terrific leadership and vision, and so it followed that the department had a superb range of course offerings, was extensively involved in cadet activities and military training, was engaged in cutting-edge research, and enjoyed a technological edge over many other departments at USMA. It was a great time for me to be a junior faculty member in the Department of Geography & Computer Science.

During my subsequent attendance at CGSC at Fort Leavenworth and my follow-on assignment to the 6<sup>th</sup> Infantry Division (Light) in Alaska, I fully realized the value of my grad school experience and teaching assignment at West Point. I continued to witness the relevance of geographic information, tools, and techniques, to my Army career. Moreover, I began to reap the benefits from many of the skills that I had honed during my instructor tour at USMA. Near the end of my assignment Colonel Craig Ham, one of my former mentors in the department, contacted me to inquire whether I was interested in pursuing a Ph.D. and returning to the department. In hindsight, I realize that Colonel Ham's question put me at the crossroads of my career.

Shortly after initiating the application process to several graduate schools, I received a telephone call from Dr. John Florin, department chair at UNC Chapel Hill and a former visiting professor in our department at USMA. I can recall his exact words, "Sir, if you would like to pursue your Ph.D. at UNC, we would be honored to have you in our program." When I asked him how he could make such a decision so quickly, he simply stated, "those before you have paved the way." Shortly thereafter, I came to realize that UNC had provided a steady stream of geographers to our department, including Colonel Galloway, our department head at the time and later Dean.

My experience at Carolina was a terrific one and included developing a lasting friendship with a fellow grad student named Jon Malinowski. Drs. Wil Gesler, John Florin, Steve Birdsall, Tom Whitmore, Melinda Meade, and James Johnson coached and mentored me just as they had done for dozens of other Army officer/grad students. I was truly blessed with a competent, professional and supportive cast. Again, my military experience proved advantageous throughout my graduate studies.

When I completed the degree in May of 1995, however, it was Jon Malinowski who joined the department and USMA a couple of months later, while I headed off to battalion command. I owe a great deal of thanks to BG Galloway, the Dean, and Colonel Jack Grubbs, the department head at that time, for enabling me to defer my return to West Point in lieu of commanding an infantry battalion, and then extending for an additional year as the deputy commander of a CAV Regiment. When I finally arrived during the summer of 1998, I was 3 years late! Fortunately,

LTC Bill Doe had done a remarkable job of pulling double-duty during my absence.

The past four years as the geography program director have flown by quickly. Different course offerings, curricular changes, publications, research projects, outreach initiatives, conferences, numerous fieldtrips with cadets, AIADs to different countries, etc., have made for a busy, yet extremely fulfilling assignment. I have been most appreciative of the latitude and support provided by our current department head, Colonel Chris King, and I cannot imagine a better work atmosphere anywhere at West Point or within any other academic department. Moreover, I still enjoy the fun, travel, and adventure of being both an Army officer and geographer. And, I believe that I have personally continued to improve in each profession because of what I have learned from the other. My recent deployment to Afghanistan reinforced my conviction that it is not only possible, but even necessary to merge military and geography experience. After all, battles, campaigns, and wars are waged in the geographer's domain; i.e., on the earth's surface and in its atmosphere.

I have never been too proud to borrow a good idea during the course of my career. The success that we currently enjoy in the geography program is a reflection of the contributions of many others who have taught me well or who have come and gone before me. Gilbert Kirby, John Garver, Paul Cerjan, Craig Ham, James Coniglio, Robert Fazen, and Clark Fuller were my heroes in ES&GS during my undergraduate years, although they probably never even realized it. They inspired me as a cadet and showed me what "right looks like" as a teacher. Gilbert Kirby, Gerry Galloway, Bill Reynolds, Sam Thompson, Cathy Kelly, and Craig Ham later coached and mentored me as a captain and junior faculty member and provided a superb atmosphere for professional growth and development in G&CS. Since that time and continuing through today, I have also been fortunate to be associated with our world-class group of visiting professors, including Duke Winters, Russ Mather, Clifton Pannell, Mel Marcus, Curt Sorenson, John Adams, John Florin, and Larry Fox. The latter constitute a virtual "who is who" in American Geography. Finally, I am grateful to Jack Grubbs, Chris King, Bill Doe, and Scott Loomer of the G&EnE era for shaping the current battlefield for me and for providing the never-ending support that enabled me to strive to "be all that I could be" as both an Army officer and geographer over the past 10 years. We are fortunate to have a rich tradition within our department and our heritage should serve

to inspire current and future faculty members to maintain those high standards set in the past, while charting a course towards continued success in the future.

# Geography and That Long Flight

Major Wiley C. Thompson  
USMA 1989  
D/G&EnE 1999-2002

When I chose Geography as my major, I used good Yearling logic: it was the same major that some of my friends chose and I heard that the “P’s” in the Geography Department were pretty cool. I also used another criterion that, unknowingly, was uniquely geographic in its perspective. I chose a department that was closest to my barracks. Once I started taking courses in my program my interest in Geography and my GPA began to increase. I started to see that learning could be fun and enjoyed the fact that almost everyday I could walk out to lunch formation and see something in the physical world that I had just studied about.

The foundation in physical geography I received at USMA has served me well as an aviation officer. In flight school I continued to build on the meteorology I had learned at the Military Academy. Few branches are impacted by weather as much as aviation, so even today I try and continue to build my knowledge of weather processes as this understanding will allow me to better do my job. Plus it’s nice to be able to listen to your Air Force weather officer and actually have some idea of what he is talking about. One of the best things about being a geographer and a pilot is that I always get a window seat. A little bit of altitude gives one a unique perspective of the terrain. Patterns and formations not visible from the ground are readily visible from the air. Most of my flying assignments have been in the arid western United States, where the manifestations of physical geography are readily visible and not hidden by vegetation. This perspective and location has allowed me to see some truly marvelous landscapes as well as have a conversation topic for a potentially long, boring flight.

I have also found that people, especially soldiers, are generally curious about their physical surroundings. I’ve fielded plenty of the “Why is it like that?” or “How did it get there?” questions. They have come from fellow aviators, crew chiefs, and my kids. I doubt I will ever grow tired pondering the answers to those questions, even if I’m the one doing the asking.

# Good Reasons to Take Geography

Major Patrick E. Mangin  
USMA 1990  
D/G&EnE, 2000-2002

When I arrived to West Point in July of 1986, I came mainly for an opportunity to receive a college degree and play Division IA football. Officership was secondary at the time, and so was the academic discipline in which I would receive a college baccalaureate degree.

After a bruising Plebe year in which I received back-to-back 1.90 GPA's, I knew that my choice of academic majors was going to be limited to some sort of humanities program, because it was certainly not going to be Chemistry or Math.

I first learned of the Geography Department through my plebe roommate who had discovered that there was a printer on the 5<sup>th</sup> floor of Washington Hall that people rarely used because it was such a physically demanding walk to use it. You see, we were the first class to ever receive a computer. They were god-awful dual disk floppy drives with no memory. The Academy, in its infinite wisdom, decided that turning in typed assignments would be the norm. However, there was only one printer in the company and there was a constant queue of plebes standing at parade rest in the company study room to use it. So, it was the shared printers, like the one in geography, which were highly sought after. The printers were the old dot matrix kind, and used paper that was always like twenty inches wide. But, the requirement said "typed;" this would have to do. For the few of us that shared the secret printer's location for a few days, we took in the various department posters and signs and I saw a poster for a course called "Geography of Russia." I had been interested in Russia because I didn't know much about it. The idea of Russia in 1986 intrigued me, mainly because it seemed so far away, not just in terms of real distance, but in terms of my imagined cultural distance between me and our Cold War enemy, "The Russians."

I also learned about the Department through other football players. It seemed the Department had earned a nickname, "Rocks for Jocks." A course in geology was offered, hence the term "Rocks" and because a

large number of Corps Squad athletes were geography majors, the term “Jocks” seemed appropriate. There was another nickname in the form of an equation given for the Department, whose two letter designator in the Academic books was “EV.” That equation was “EV = TV.” (TV being the thing you could watch instead of studying, because EV was inherently easier and had less homework than Civil Engineering). While Civil Engineering majors were always in labs and under stress from some sort of design problem, Geography majors could usually be found strolling around the plain discussing the formation of The Plain in regards to its physical and cultural environment, or boating around the island of Manhattan taking in the urban beauty of its skyline and then discussing what we saw over lunch at Pier 77. These all seemed like good reasons to take Geography.

What has come from being a geography major? First, the knowledge I gained from all the various courses I took. I feel I am well prepared to understand how the world works, from both a physical and human perspective. Second, I’ve been forever labeled as a geography major. This is very important. As individuals, we all have a personality. But when people view our department, they see a department personality. This department personality is difficult to describe, but people admire it. We seem to be “laid back” yet “professional;” “keen” yet “casual,” “contemplative” yet “humorous.” My close friends joke about this personality, something we all contribute to; I wouldn’t trade that association for the world. Third, Goode’s World Atlas has united entire classes of West Point graduates who joke at reunions about still having their original one used in “Dirt” and who embarrassingly admit to having used it in deployment planning to figure out what their arrival time would be given a twenty hour plane flight and a layover in Berlin of six hours. Fourth, if it weren’t for our department, our classmates wouldn’t know that there are alluvial fans and oxbow lakes. These two features are usually the first things to come out of a classmate’s mouth when I tell them I am now a Geography “P”. The Physical Geography course stirs deep, hidden memories locked in the back of our brains as we recall Drafting Room WPRs, the infamous contour map of Trophy Point, putting stickers and tabs on our Atlases, trudging up six flights of stairs after Eggs Macarthur for breakfast, getting chewed-out for improperly folding our standard issue 1:50,000 West Point maps, and getting cross-eyed when looking at “previously classified” images of Moscow through stereoscopes.

Our location in Washington Hall is storied. Our lecture hall is remembered by countless of infantry officers on branch selection night, by football players for their afternoon meetings, and by Yearlings for the Dirt skit. Our students not remember our names ten years from now, but the collective memory and personality of the department will be reflected on with fondness. I truly enjoy being here and contributing to the legacy that is Geography.

# From Dirt Student to Dirt P

Captain Matthew R. Sampson  
USMA 1991  
D/G&EnE 2000-2002

In the fall of 1988, I was a yearling taking EV203, Terrain Analysis (aka, Dirt). My instructor was CPT Michael Hoffpauier. He was a great instructor, and he was very animated in the classroom. I always enjoyed his classes, and I remember that his favorite phrase was “wildman.” Whenever he called on a cadet in class, it was “Hey, wildman!”

As the semester was drawing to a close, it was time to start thinking about what I wanted to major in. I had to decide early in the spring semester, and I was thinking about majoring in history as I enjoyed the subject and had done reasonably well in plebe history. One day after class, CPT Hoffpauier told me that I was doing very well in Dirt, and he asked if I had thought about majoring in geography. It was a revelation to me as I hadn't known that USMA even offered geography as a major!

It turned out that I finished the semester as the top Dirt student, and I started thinking that maybe this was the subject for me. Geography seemed to come naturally to me, and I enjoyed learning about the world around me. And, unlike math and physics, it made sense!

As much as I liked the subject of geography, I think the aspect that appealed to me most about the department was the faculty. Unlike other departments, the faculty members in G&CS were down-to-earth and treated cadets like real people. I remember all my instructors as being knowledgeable, professional, and caring. A few of the instructors I remember are MAJ Fontanella, COL Reynolds, COL Thompson, LTC Bailey, and CPT Galgano. They were a good example for me, and I wanted to be like them so it's only natural that I would eventually return to the department as a Dirt P myself. Interestingly, when I reported to the department in 2000, LTC Galgano was back as a senior faculty member leading the new guys through New Instructor Training. I suppose it made him feel old to have a former student back as a P, but it felt quite natural to me to see a familiar face from my cadet days.

# I Knew D/G&EnE Was For Me

Captain Rashad T. Hodge  
USMA 1997

My experience with the Department of Geography and Environmental Engineering begins with where I am from. I grew up in Central Jersey, and as adolescence, I always was interested in how our actions in our everyday lives affect my surroundings. My surroundings include the ground that I walk on, the water that I drink, the air that I breathe, and the life that is supported by it. The year was 1995, and it was time to declare my major. For most yearlings, this was a decision that took months of preparation. I knew there was only one major for me, and that was Environmental Studies. The department welcomed me with open arms and I knew that I would excel in this area. My motivation to learn was heightened. My grade point average was a 2.1 at the beginning of my journey as an Environmental Studies major. I made the dean's list all four semester's as a member of this department, and I enjoyed going to class again. After graduation, I knew that I would have to use my foundation of environmental studies to deal with situations that I would encounter as a junior officer in the United States Army.

During my career in the military, I have had to explain to my subordinates and chain of command the affects of our actions on the environment. Every soldier has had to deal with fuel spills, terrain analysis, and weather. My background with environmental studies always gave me an edge on planning tactical movement, and handling hazardous materials.

My service obligation is complete this July, and I plan to use my degree to build a promising career with Waste Management. Waste Management is the nation's leading provider of comprehensive waste management services offering a full range of environmental services to approximately to 25 million residential and two million commercial customers nationwide. I interviewed with this organization and they were very impressed with my success with Environmental Studies.

Many thanks goes out to the Department of Geography and Environmental Engineering. Your direction and education made me very marketable. Continue to build leaders of character.

# Army Environmentalist, an Oxymoron?

Second Lieutenant Joseph M. Lacanlale  
USMA 2001

Life is filled with many choices and one's decisions dictate the path that follows. For me, a combination of interests and people influenced my decisions. A strange brew of interests in the environment and the Army stirred within me. Mixed together, this potion yielded an Environmental Science Major and a West Point Class of 2001 graduate.

My interests in the environment stemmed from childhood. Born and raised in the San Francisco Bay Area I developed a natural appreciation for the diverse wildlife that surrounded me. Field trips and science camp further evolved my interest into a desire. The beauty of the Pacific Coastline at Big Sur, the surreal realm of Muir Redwood Forests, and the awesome Sierra Nevada Mountains captivated me. To further whet my appetite, I volunteered for a one-month backcountry experience in the North Cascades National Park. This experience included backpacking above tree line, whitewater rafting, trailblazing, and living with seven strangers from different walks of life. Working with people and the environment stimulated my interest in pursuing a future in this field.

During high school, serving in the military became something I also desired. Oddly enough, a family friend overheard my thoughts and introduced me to the United States Military Academy at West Point. After researching the various possibilities of each branch of service and the Academies, I set my heart on West Point. West Point meant serving in the Army, which provided the best possible option since being a platoon leader meant working with people. The conduct, demeanor, and sincerity of the officers I spoke with said much of the Army. It became evident that being an officer in the Army meant being accountable to a higher moral and ethical standard.

After enduring the rigors of plebe-dom and "the best summer of my life," another important decision for my future came about; I had to declare a major. I did not have to search far and wide since my interests lay with the environment, and meeting some of the faculty and cadet majors solidified my choice. The excitement and energy of the faculty and cadets made me

want to be part of their department. It became clear; the choice for me was “EV!”

Looking back, I made an excellent choice. I truly enjoyed being an environmental science major in the Department of Geography and Environmental Engineering. I’ve gained not only knowledge of how and why certain process occur in the environment, but more importantly, the knowledge that there are good, sincere people in the department, and furthermore, in the Army. The decision making process that guided me involved combining my interests with the personality of the people associated with what I enjoyed, and where the two intersect is where I found my niche.

# Before There Were Majors

Byron W. Ward  
USMA 1979

For some reason receding into dim memory, I was obsessed with going to West Point, finally achieving this goal in 1975 after a year at VMI and another at USMAPS, Fort Belvoir. I'm a member of the Class of 1979, the "Top of the Line" according to the official class motto, the "End of the Line" according to the more popular, unofficial one, as we constituted the last all-male class.

Like everyone else, my affiliation with the Department of Earth, Space, and Graphic Science started in Plebe year, except that some previous experience allowed me to take an elective in Chinese geography in the second semester instead of drafting. Two years later, I was among the first geography majors in USMA history, although at the time it was called a "concentration" not a "major," and everybody still received a BS in Engineering. In math and engineering courses, however, I was a dedicated goat, the Corp's biggest advocate of the 3.0 grading system and its vital "tenth bag." Happily, I fared better in Washington Hall. My favorite ES&GS course was Cartography, which taught me that the fastest way to get a girl to Kissing Rock was to ask her to model for photos for a mapping project on Flirtation Walk. I capped my geographical education with EV489, Independent Study in Geography, the main product of which was a fifty page Micheneresque dissertation on the geography of Stony Point.

After graduation and IOBC, Fort Benning, I went to Fort Dix as XO of a basic training company. Three months later, due to an odd combination of staffing, politics, and officers and drill sergeants fooling around with female trainees, I was a company commander, the first in my class. It was not an enviable distinction; my lack of experience resulted in several unpleasant confrontations with superiors, including one with a high-ranking officer with the apt name of Starry. I survived, though, and found things more pleasant at Redstone Arsenal, Alabama, where I was an instructor at the Missile and Munitions School. While there, in a burst of entrepreneurial spirit, I published my old Cartography project as a 24-page pamphlet entitled "Flirty: A Cadet's Guide to Flirtation Walk." It was sold

through the AOG Gift Shop until about 1992. The epitome of *modest* profitability, the venture netted a total of about \$50 in eight years.

Upon completion of my five-year service obligation, I decided to leave the Army and headed to the Hudson Valley to make a fortune in real estate and homebuilding. I missed my financial goal by the widest of margins, although it was a varied and invigorating struggle for a few years. It ended after I took a bold gamble on a continued upswing in the economy in the same season it decided to head south (of course, the fifth of scotch I was putting away every day didn't help, either). Thanks to a chance encounter with one of my old Ps, one pleasant distraction from my crashing business was the opportunity to return to USMA as a guest lecturer to a geography class. Among other aspects of local lore, I'm an authority on Pollopel (Bannerman's) Island, that fascinating speck of land that completes the view up the river from Trophy Point.

After the construction business finished with me, I ran a small engineering firm in Ulster County for a couple of years, then moved to California to take a job with a company contracted to provide public works services to Fort Irwin, the Army's National Training Center in the Mojave Desert. Not overly taxing, the job allowed me to indulge in a few diversions. I joined a small club of eccentrics that battles radio-controlled models of World War II-era warships, wrote an incredibly exciting but entirely unsuccessful novel, and, in a practical application of geography, started to climb mountains again.

The wife of my youth still abides with me. We met at her school in Tarrytown in early 1979 and were wed there a year later. After we moved back to the Hudson Valley she earned a master's degree from a school near our home in Newburgh, and in so doing I became one of the few graduates to be married to someone with degrees from Marymount *and* Mount Saint Mary's.

# West Point is a Wonderful Place

John W. Florin, Ph.D.  
Department of Geography  
The University of North Carolina, Chapel Hill  
Visiting Professor, 1980-1981

I was the first visiting professor in the department, during the 1980-81 academic year. I had been called by Col. Galloway, the not-head at the time, the previous spring and asked if I was interested in the appointment. I wanted to know how much time I had to decide. In typical Galloway fashion he said something like "how about tomorrow." My wife and I talked, and the next day I told my chairman I was taking a year leave and Carolyn turned in her job resignation.

I had no previous experience with the military, and had no good idea what to expect. We had two young sons, and were assigned quarters in Lee area, which enabled them to walk to the post elementary school; the only years of their lives they did this. They loved the school, their friends, and the freedom that living on post can offer young boys. Carolyn decided to spend her stay volunteering, and by the time our year ended I knew that she was going to be missed far more than I was.

For me it was a year of discovery. Cadets stand at attention when they find themselves ready to drift off! I finally told my sections to stop that. They are a lot like other students, except that they usually must work harder and know what they plan to do after graduation. I volunteered as an adviser in F-4 and found that many of the cadet concerns were not that different from those of my Carolina students. I was with those cadets when the post welcomed the return of the marine captives from Teheran. I would guess that many of those former cadets mostly remember the cold of that day, but for me no one experience was more important in my realization of the fundamental value and sacrifice of people in the Armed Forces.

My fellow instructors were good folk, and I took back to my university a conviction that we should accept any West Point-bound applicant to our graduate program. My department has lived by that conviction for 20 years and has never been disappointed. Army football games in autumn were what many of us once imagined college sports would be before it

was overwhelmed by the demands for success and income, even though we lost more often than not. I even attended every home basketball game!

Was West Point perfect? No. I never did get used to the fact that most of my students were more interested in becoming a 2nd LT than in geography. Highland Falls must have more to offer today than it did 20 years ago. I would rather have decided for myself when it is finally time to turn on the heat in my quarters. Did we make the right decision when Galloway made his call? Absolutely! As I have said many times, West point was a wonderful place to be a civilian.

# West Point One Year

John S. Adams, Ph.D.  
Professor and Chair  
Department of Geography  
The University of Minnesota  
Visiting Professor, USMA, 1990-1991

I arrived at West Point on 1 August 1990 to take up a one-year visiting professorship in the Department of Geography & Environmental Engineering. Jim Moentman was my sponsor and helped us get settled. The following day Iraq invaded Kuwait, so I knew the year would be far more interesting than I had anticipated.

I got to USMA by a rather circuitous route. GEN Galloway had completed his Ph.D. in geography at the University of North Carolina at Chapel Hill, and had worked with John Florin, a former student of mine when Florin was a graduate student at Penn State and I was teaching there in the 1960s. The visiting professor program was underway in the 1980s, and GEN Galloway had asked Florin for suggestions for possible visitors. At an AAG meeting in the early 1980s, Florin introduced me to GEN Galloway who asked me about my possible interest. As it happened, my daughter Ellen was a junior in high school, and was looking at military academies as her preferred college option. We had visited the Air Force Academy, and one look at the place had turned her off. I mentioned this to Galloway in 1983 and he suggested she visit USMA, adding "She can stay at our place if she'd like." Since he and Diane had a daughter the same age as Ellen, he knew something about what Ellen was facing.

Ellen entered USMA in July 1983, and today is S-2 of the intelligence battalion supporting the 1st Infantry Division in Wurzburg, Germany. She graduated in 1987, and a month later her brother Martin entered. When I arrived in August 1990 Martin had just begun his senior year, and I was feeling like an old hand, having visited West Point many times following Ellen's entry in 1983. During my year as a visitor, 1990-91, I taught two urban geography courses, and got to know the cadets in my classes as well as many in Martin's company. Each day, when I arrived in the classroom, the TV set was on and cadets were huddled around it watching progress of events in Kuwait, events that got intense in late winter as the invasion

began. John Clegg and many other officers from the USMA faculty and hospital were deployed, leaving classrooms and other parts of the post shorthanded. Frank Galgano and John O'Dowd were sources of constant amusement. Discussion speculated whether they would end up in jail-or as general officers.

Joe Northrop introduced us to better New York wines and Chinese art. Bruce Gwilliam returned from Arizona State University after earning his master's degree plus completing all course work for his Ph.D., demonstrating what could be accomplished in 24 months if one applies oneself (there's one in every crowd). GEN Dave Palmer was Superintendent and interacted with the visiting professors on a regular basis, asking our opinions on the curriculum and the quality of the academic preparation of the faculty. GEN Galloway was the Academic Dean and dropped by the department occasionally to check how far things had slid following his move to the Dean's Office. Bill Reynolds was temporary department head, and Craig Ham served as temporary deputy head, so things were in flux administratively, but it was a great year to visit.

All that was more than a decade ago, but Judith and I agree that the year we spent at West Point-in the classroom, the housing area, at church, with the cadets, at informal and formal parties, sharing senior year cookouts with Martin and his classmates (including girlfriend and swimming champion Colleen Criscillo - they were married 18 months later), football games sitting with the top brass, theater trips to New York, and developing an intense appreciation for the wonderful education, training, and preparation for citizenship and life that West Point cadets receive - left us with the conviction that this magnificent institution serves our country exceedingly well. We shall always appreciate the opportunity we were given to contribute in some small way to its mission. And now I understand why Navy deserves to be beat!

# Appendix C

## D/G&EnE Leadership Heritage

Francis Desire Masson	12 Jul '03 – 1 Sep '08
Christian E. Zoeller	1 Sep '08 – 30 Apr '10 1 Jul '12 – 5 Jan '19
Thomas Gimbrede	5 Jan '19 – 25 Dec '32
Charles R. Leslie	2 Mar '33 – 15 Apr '34
Robert Walter Weir	5 May '34 – 25 Jul '76
COL Charles W. Larned	25 Jul '76 – 19 Jul '11
LTC Edwin Roy Stuart	4 Oct '11 – 6 Mar '20
COL Roger G. Alexander	7 Mar '20 – 1945
COL Lawrence E. Schick	16 Dec '46 – 30 Sep '61
COL Charles R. Broshous	30 Sep '61 – 1972
COL Gilbert W. Kirby Jr.	1972 – 30 Jan '89
COL Gerald E. Galloway	1 Feb '89 – 30 Jun '90
COL William Reynolds	1 Jul '90 – 28 Feb '91 (acting)
LTC Robert C. Ham	1 Mar '91 – 1991 (acting)
COL John H. Grubbs	1991-1998
COL Wendell C. King	1998 - present

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*Classical Drawing*

*Landscape Drawing*



*Mathematical Drawing*

*Military Topography & Graphics*



*Geography*

*Earth, Space, & Graphic Science*



*Geography & Computer Science*



*Geography & Environmental Engineering*

