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The Rhetoric of Maps and the Westward Expansion of the United States

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Introduction

The acquisition of new territories by the United States between 1783 and 1850 expanded the nation's borders to the Mississippi, then to the Rocky Mountains, and finally to the Southwest and West Coast. A pageant of now famous historical figures, as well as lesser known and unknown persons, pushed the frontier further westward through politics, diplomacy, squatting, courage, good fortune, warfare and, at times, apparent thievery. However, of all the tools at the disposal of politicians, patriots, explorers, adventurers, businessmen, and speculators, the map, above all things, legitimized westward expansion and symbolically made these gains manifest. With all of its rhetorical powers, lies, and limitations, the map became the concrete embodiment of the notion of Manifest Destiny.

Critical viewing of maps by teachers and students requires that we accept the fact that all maps have a point of view and purpose that emphasizes key pieces of information while distorting and/or limiting others. This applies to map projections as much as it extends to map content. Mercator projections, for example, consistently relate latitude and longitude to specific locations while grossly exaggerating the size of continents and landforms at the poles. Mercator projections worked well for sea captains of the 16th-19th centuries who needed reliable rhumb lines to sail more accurately from place to place. Indeed this was the purpose of the mercator projection. However, using the map out of context sends really inaccurate messages about the size of land forms. Russia, Canada, Greenland, and Antartica appear much larger than they actually are while continents like Africa actually appear relatively smaller (Monmonier, 1996, p.94). Maps may also lie or give one side of a disputed story. A head of state may authorize the publication of maps that deny a neighboring nation's land claim while including the disputed boundary as his nation's own possession. Such was the case over the disputed state of Kashmir. The neighboring countries of India and Pakistan each published tourist maps showing the disputed territory as their own almost twenty years after a ceasefire agreement had split the country in half (Monmonier, 1996, p. 90). In our nation which increasingly incorporates the visual graphic as part of navigating everyday life, the rhetoric of multiple map types such as, demographic maps, topographical maps, weather maps, road maps, and mass transportation maps, begs for our attention. The power to critically use maps clearly gives students a tremendous skill set by which they can most figuratively and literally navigate through life.

I intend this unit to be an exercise in critically interpreting and demonstrating the rhetoric behind maps. My plan is to connect students' knowledge of organizing and labeling familiar spaces and territories with the body of knowledge for interpreting representative maps of important events in early United States history.

Students are quick to define and at times defend their space, yet they have difficulty reading and interpreting maps. They know the territory of their neighborhood, their school, their locker, and their classroom. However, asking students to define political spaces on a map can be a daunting and frustrating task. Why are students so capable of bragging about and even defending their space when completing a task as apparently simple as labeling a map of the United States is so tedious?

I hope to arrive at some conclusions through the development and teaching of this unit. I will start with an observation gained over ten years teaching in urban school districts: student interest and ability in geography as a discipline is abhorrently low. Moreover, the importance of geography to many urban districts around the country has been eclipsed by initiatives that clearly focus attention on trying to raise reading and writing skills for standardized tests.

Yet the ability to organize space, recognize boundaries, and interpret symbolic renderings of space is a crucial skill for literally and figuratively navigating one's way in the world and through life. Understanding the basic principles of maps and mapmaking unlocks some of the most fascinating incidents in United States history. These principles should flow instinctively from students' innate ability to describe the boundaries of one's personal space, immediate surroundings and local area. Yet there is a distinct disconnection between the "boring" pictures of maps in a text book and the lively activity of one's neighborhood. Students enjoy differentiating why their neighborhood is better than another. Perhaps it's the personal connection to space that makes it worth defining and describing.

Overview

I propose to study maps and mapmaking in early United States history with my students. I hope to foster their making a personal connection with the fundamental skills of mapmaking exercised by the people who recorded the topography, surveyed the land, and fixed the boundaries of the United States further westward with increasing precision and authority. While familiarity with historical surveyors and cartographers is an expected outcome for students, the primary focus will be to have students understand the inherent rhetoric of maps generated in the maps and charts of the westward expansion of the United States.

To create familiarity with the fundamental skills of constructing a map, students will practice and demonstrate fundamental surveying and boundary marking techniques in space around the school property. They will practically apply these skills to creating small maps of the school campus that can be compiled into larger more comprehensive maps. In the process, students will gain familiarity with the challenges that face all map makers: selecting the appropriate scale, projection, and symbolization (Monmonier, 1996, p. 5). Throughout this process, students should increase proficiency in critically reading and constructing maps, cooperating with classmates, and understanding fundamental orienteering.

Before maps can be created, students will have to demonstrate the techniques for surveying and measuring. As we have practiced in our seminar at the summer intensive, students will use striding and lines to measure

and demarcate space. Because we have ample and relatively safe space on our high school campus and in the surrounding park lands to explore and map, I feel we have numerous site possibilities. However, as a starting point, our school has an approximately Â¾ acre flat rectangular grass courtyard that is completely surrounded by the physical building. We also have a long rectangular space that has been organized as a butterfly garden. Students will use striding and chain surveying in these spaces to demarcate equally proportioned 'homesteads' in a grid pattern. In this exercise students will use a replica of a Gunter's chain, an 18th century surveying instrument comprised of measured links of chains and poles (1). They will also execute instructions from Sam Wyld's The Practical Surveyor, a 1725 field guide to surveying land that outlines the methodology for land surveying techniques through the 18th and early 19th centuries. Students will transfer measured space into scale and grid it on a plat, the mapmaker's term for the scaled version on paper. For fun the mapped land may be 'parceled out' to people in my classes. This 'hands-on' activity will be connected to the history curriculum through the study of the Mason Dixon Line and the Land Ordinance of 1785.

Ultimately these exercises provide the foundation for studying the development of the Midwestern states from raw open territory to squarely proportioned townships. Since the process of 'gridding' the Midwestern territories continued in the states of Indiana, Illinois, Michigan and Wisconsin, students may be assigned projects to research and present the development of each of these territories as people transformed them from organized territories to states.

Exploring the rhetorical power of maps with my students seems a logical next step. The fact that maps must be selective, have a purpose, and have an audience should be understood in order to critically interpret maps. I like the following quote from Mark Monmonier as a point of reflection and discussion for students: "A good map tells a multitude of little white lies; it suppresses truth to help the user see what needs to be seen. Reality is three-dimensional, rich in detail, and far too factual to allow a complete yet uncluttered two-dimensional graphic scale model"(Monmonier, 1996, p. 25). Students should understand that maps as tools have a lot to say by what they include and omit. Their comprehension of maps throughout the unit can be assessed by having them periodically reflect orally and in writing according to this critical lens.

This critical view is particularly true when interpreting the political orientation of maps. Maps are tools to send political messages about power and nationhood. Two landmark maps worth interpreting are John Mitchell's 1755 map titled, "A Map of the British and French Dominions in North America with Roads, Distances, Limits, and Extent of the Settlements" and Abel Buell's 1783 map, "A New and correct Map of the United States of North America Layd down from the latest Observations and best Authorities agreeable to the Peace of 1783." Each map has a strong point of view about land possession. Collectively, these maps can help students learn about competing land claims in North America and how land claims were resolved. In addition, readings of the Mitchell map arguably contain the roots of Manifest Destiny, America's desire to occupy the North American continent from coast to coast. Once the Louisiana Purchase doubled the size of the United States, the idea of a coast to coast tract of land could be envisioned on a larger scale. William Clark's map of the western territory (1810) sparked that interest.

Students' practical experience with the map practicum should transition well to interpreting maps of exploration and surveying lands west of the Mississippi and their connection to Manifest Destiny. Surveying the Mason-Dixon Line and executing the Land Ordinance of 1785 were fraught with the challenges of clearing trees and watching for hostile Native Americans. However, while similar challenges faced Lewis and Clark and the Corps of Discovery, their task seems monumental by comparison. Jefferson's instructions for the expedition involved traversing and charting huge distances by rivers of different length, depth and questionable origin. They also traveled over lands of various elevation and topography. Studying their record

reveals the motivation of a president to inventory and legitimize his acquisition. Furthermore the results of the expedition including numerous journals and a master map reveal how maps can capture the imagination of a nation.

The Lewis and Clark Expedition is a logical point of study for the teaching westward expansion due to the ample resources in print and on-line. Recently (2004-2006) Lewis and Clark and the Corps of Discovery's exploration of the lands from St. Louis to the Northwest coast was celebrated for its bicentennial. The expedition was richly documented with hand-drawn maps and charts, illustrations of wildlife, and correspondence in the form of journals and letters. The largest collection of these primary source artifacts is easily accessible as visible images on-line at Yale's Beinecke Rare Book and Manuscript Library website (2).

Moreover, the exploration of the Corps of Discovery covers a large portion of northern and western lands that were added to the United States through the Louisiana Purchase. However, the Lewis and Clark Expedition doesn't include the exploration of territories held first by the Spanish and then Mexico that become part of the United States as a result of the Mexican American War of 1846-48. These territories were explored and mapped by Zebulon Pike and John Charles Fremont among others. This unit can easily be expanded to accommodate the study of the mapping techniques, end results, and unique circumstances of these additional explorers' work. In fact, having my students complete independent or group research on additional explorers and mapmaking related to the Southwest should occur prior to or after the completion of studying Lewis and Clark. In the case of each expedition, the explorers were faced with the challenges of traveling over uncertain territory and documenting their way. James Noble Wilford's The Mapmakers (Chapter 13) is an excellent source for background reading on these explorations. In addition, interactive web sites hosted by National Geographic, the History Channel, and PBS can be easily accessed to electronically explore the route, details, and documentation of the Lewis and Clark Expedition. Zebulon Pike also is featured on many sites on the web. Lewis and Clark's expedition (1804-06) and Pike's explorations (1806) continue to attract attention due to their respective 200 year anniversaries.

In order to personalize the experiences of Lewis and Clark, Pike, and Fremont, students will have to demonstrate the ability to locate the direction of the cardinal ordinates. I plan on having students use a basic compass to orient around the school campus and the surrounding parklands. Orienteering is a hobby that has enjoyed a bit of a revival since the GPS device has become a consumer item. Some schools have orienteering clubs that make use of GPS devices. These may be worth exploring to some degree. However, in its most fundamental form, orienteering requires people to use the position of the sun and stars as well as a compass to establish and keep a point of reference. Without the benefit of using a map, navigating one's way through unfamiliar territory becomes dependent on orienteering techniques.

The explorers of the American West sought to make the territory familiar and more easily accessible through another mapmaking genre, the topographic map. These are particularly useful in mountainous and hilly regions where knowledge of elevation and direction might be necessary for survival. I know little about surveying for elevation but am exploring the plausibility of having students use rudimentary techniques to note topographical changes. Should I succeed in mastering some basic transferable skills in this area, it would allow the students to explore topographical mapping on some of the uneven space on the school campus and in the New Haven Parks that surround the school. Composing topographical maps might be initially too challenging for my students and me to address. Moreover, the evolution of the modern topographical map emerges in 1879 when the newly formed United States Geological Survey (USGS) initiates the first of a number of nationwide mapping endeavors. This occurs outside the timeframe for my unit. However, we may view and learn about topographical maps through the USGS online resources (3). As I explore ways to

incorporate the topographic map into my curriculum I feel confident that striding, chain, and compass measurements are sufficient starting points for my students because these activities strongly correlate with specific historical events that initiate the phenomena of Manifest Destiny. Additionally, they are activities that students can easily explore around our school, homes, and community at-large in New Haven.

As New Haven is the home for my students and will most likely remain so for at least the next two to three years, it makes sense to conclude my objectives for the unit with an examination of some of the mapping moments in the city's history. The grid which is the organizational structure for so much of the Midwest is apparent in the founding design of New Haven. Fortunately for our study, the grid pattern of the nine squares of New Haven, the original city layout, is evident in the earliest maps of New Haven up through all contemporary maps. My objectives for the unit are framed so as to accommodate a study of maps of New Haven as time and interest permits. The history of the nine squares of New Haven may not be that apparent to students who are often more preoccupied with knowing their own neighborhood. Including an objective where a student can examine a map or image of their neighborhood and possibly compare to maps and/or images of other New Haven neighborhoods might allow students to gain a greater awareness of the New Haven in general. Showing historical maps that portray the neighborhoods of New Haven during different periods of history might also alert students to how maps are records of changes over time.

The Wadsworth Map of 1748 depicts New Haven as a community planned on a grid with nine squares. The center square was held as community land. It remains held in trust today as the New Haven Green. Since students are familiar with the Green, it makes sense to begin a discussion about New Haven neighborhoods there. Discussion about places in downtown New Haven should follow easily. From that point I imagine asking students to talk about their neighborhoods. Having students be able to describe the location of their neighborhood relative to downtown (and the Green in particular) will demonstrate student ability to articulate using direction and distance. Following this discussion, my showing a slide show of other New Haven map images over time will help show the continuity of the nine squares yet show how New Haven changed over time. As my ability with technology improves over the summer, I hope to also gather satellite images of New Haven to include in the presentation and discussion. Some of the images I have been able to collect thus far include a bird's eye view illustration of New Haven, a ward map, a map showing the proposed Route 34 Connector (1979), and a panoramic map of New Haven from 1879. Each of these maps can be viewed on-line from web addresses included in the resource list (4).

The bird's eye view of my students' journey through the rhetoric of maps in western expansion of the United States stems from my observations that students appear to be uncomfortable demonstrating proficiency with geographical skills. Unfortunately, proficiency in geographical literacy is problematic in many schools across the country.

Geo woes

The application of technology toward helping us know where we are and where we are going has proliferated rapidly in the last twenty years. Web based driving aides like Yahoo Directions and car navigation systems certainly facilitate planning and executing travel from place to place. This is probably good news for all the high school students who will be driving soon because each year the media seems to report how incapable young people are at knowing prominent locations. It seems that each year the media features a study that

shockingly proclaims the high proficiency by which high school students demonstrate in failing to identify the location of prominent landmarks, cities, countries, and continents.

I have located two bodies of evidence that suggests that low proficiency is the reality for our nation's teens and that teachers face a number of challenges in teaching geography in the classroom. The first study, the 1990 National Assessment of Education Progress (NAEP) published in ERIC reported that their national sample of twelfth -grade students correctly answered only 57 percent of geography based questions regarding knowing locations, using geography skills and tools, understanding cultural geography, and understanding physical geography on their 76 item test (5).

Perhaps the most troublesome issue is not the fact that young people fail to score proficiently in these studies. Instead, circumstances that allow for young people to be so seemingly disconnected from fundamental principles of time, space, and place is the problem. Shouldn't students better demonstrate proficiency in words, thoughts, and actions that allow the articulation of connection to space, place, community, environment, nation, and world?

In 1984, five themes of geography (location, place, human/environment interaction, movement, and regions) were drafted by the Joint Committee on Geographic Education of the National Council for Geographic Education (NCGE) and the Association of American Geographers (AAG). This should have been the first step to a geographical renaissance. Instead, despite revolutions in the way we map and think about space since 1984, such as Google Earth, GPS, Car Navigation Systems, Camera phones, text messages, and proliferating media through the endless channels of cable and satellite television and radio, school boards, in response to legislative initiatives that focus on achievement on standardized tests, appear to have pushed geography off the side of Tom Friedman's flat world. If students are going to make successful and informed choices in an era defined by globalization, they need to articulate better in geographic terms.

A second and more site-specific study published in The Geographic Review of October 2001 featured the low performance of middle school students in Oneonta, New York, in regard to their geography knowledge and skills. The reasons cited point to a school climate dominated by accountability to new state standards where geography is superficially represented or underrepresented. Hence, in the presence of pressure to teach toward standardized tests, geography has become marginalized as frivolous learning. Among the findings of the study were the suggestions that requiring additional geography courses for teachers in training and providing professional development in including geography objectives in lesson planning were largely ineffective in increasing overall student proficiency in geography skills. However, the report indicated that something did work. Student outcomes in geography and spatial reasoning improved when middle school teachers from Oneonta Middle School engaged in a partnership with faculty from the Hartwick College Geology Department. Rather than work to replace the curriculum that was heavily related to the state standardized tests, Hartwick faculty helped Oneonta faculty prepare materials that supplemented the curriculum with activities that emphasized geographic skills and spatial intelligence (Jean Palmer Moloney and Elizabeth Bloom).

The report summarizing what many teachers may experience first-hand, suggests that through no fault of anyone in particular, teachers must teach in an environment that too often emphasizes practices that focus primarily on an end group result as opposed to more fully engaging in practices that emphasize a learning process and proficiency for individual learners. The YNI experience, a collaborative initiative between urban educators and university faculty, provides me the opportunity to meet the needs of individual students and district needs. Through the experience of sharing a seminar with fellow teachers and a seminar leader from

the Yale faculty I can craft objectives that promise to address defined curriculum needs yet transcend curriculum limitations.

Crafting a Connection: The Figurative Growth of Adolescents and the Westward Expansion of the United States

The physical, emotional, and intellectual growth in the development of adolescents and the physical and political growth of the United States perhaps have some figurative parallels. Growth implies expansion into larger literal and figurative space. A teenager begins to see the larger world through added freedoms, and additional responsibilities. Adolescents are growing bodies that usually expand their range of territory and social networks. The United States developed from a loose collection of thirteen eastern seaboard colonies to a unified continental power. Maps outline the boundaries of literal and figurative boundaries. Having students relate the measurement of their own physical, intellectual or personal growth or their knowledge of territory to skills used to define topographical space and boundaries may connect two disparagingly isolated entities- the adolescent with the history curriculum. For this reason, reflection needs to be a part of student learning. Journal prompts throughout the unit should be great ways to have students reflect on the process of growth. Journals are one strategy I will use to reach my objectives.

Objectives: What do I want my students to accomplish with my unit?

Students will connect personal experience and skills with elements of maps and map making by demonstrating fundamental techniques of surveying and mapping and applying them to their immediate space and community. They will subsequently apply those skills to significant episodes and events in United States history relating to the growth and expansion of the United States. They will be able to demonstrate orally and in writing significant characteristics of the rhetoric of maps and apply them to historical maps: The John Mitchell 1755 map, Abel Buell's 1783 map, the Land Ordinance of 1785 and the William Clark 1810 Master Map of the American West. These maps specifically relate to the surveying and mapping of space and fit into the context of the political, economic, and social development of the United States. They also relate to local, state, and national standards. Students will apply the knowledge of the fundamental surveying and mapmaking to an independent study of another important exploration in the Westward expansion of the United States (i.e. John Charles Fremont or Zebulon Pike). At the end of the unit, students will be able to demonstrate orally and in writing the meaning of key terms and concepts associated with the exploration and mapping of western land growth in the United States. Moreover, students will also apply the key terms and concepts of mapping of location and space to the study of their own community through examining a number of historical maps of New Haven.

Although students will explore the expansion of the United States from the eastern seaboard to the Pacific Ocean, they will begin and end their study by focusing on how boundaries are mapped in New Haven, Connecticut. The first objective will get students familiar with new techniques to map space that they are more or les readily familiar with- the school grounds. It also is meant to prepare students to address the nuances of fundamental mapmaking and more completely comprehend a remarkable period of United States history- the westward expansion. The objectives in the area of the westward expansion directly address the application of mapmaking concepts and procedures that surveyors and explorers used to carry out their tasks. There is room in the objectives to encourage student exploration of additional historical figures such as Zebulon Pike, John Charles Freemont, and others who explored, surveyed, and/or mapped lands that became

part of the United States. The first concerted effort at surveying frontier lands and organizing them into townships occurred through Congress' adoption of the Land Ordinance of 1785.

Land Ordinance of 1785

John Wilford wrote that in the autumn of 1787, the first and only public auction of land from Thomas Hutchins's surveys generated a disappointing $100,000. The process of completely surveying townships ended after only seven townships were auctioned off. Instead of proceeding with additional public lands surveys, Congress decided to instead sell large tracts of Ohio land that would later be surveyed and subdivided (Wilford, 2000, p.220). Nonetheless, the Land Ordinance shows us how a township was surveyed and mapped. The "squareness" sets a trend for the planning of townships across the western United States. This is historically significant as is this event's connection to the United State's young past and developing future. Soldiers of the continental army were to get lots from the townships as payment for duty rendered during the war. In addition, the government made earnest an attempt to promote education for the young by reserving lots for public education in each township.

Images of the Land Ordinance of 1785 can be found on the web or in many textbooks. Stanford University's The Bill Lane Center for the Study of the American West contains an activity page with excerpts from the land ordinance, images of primary source field notes, and a land grid. The page lists document based questions (6).

The Land Ordinance of 1785 was considered an opportunity to set up townships in newly acquired land from the treaty of Paris 1783. The Treaty which ended the Revolutionary War gave the Ohio country to the United States. Because the Articles of Confederation did not give the federal government the power to tax, Congress hoped that selling homesteads in the Ohio Valley would pay off the war debt. Discussion of the fact that the parcel sales were slow might be best saved for another study. The importance of the Land Ordinance of 1785 is how the model of parceling land became the benchmark for the organization of territories across the mid-western states. A sample of the Land Ordinance of 1785 is included below.

> "The Surveyors, as they are respectively qualified, shall proceed to divide the said territory into townships of six miles square, by lines running due north and south, and others crossing these at right angles, as near as may be . . .

The lines shall be measured with a chain; shall be plainly marked by chaps on the trees and exactly described on a plat; whereon shall be noted by the surveyor, at their proper distances, all mines, salt springs, salt licks and mill seats, that shall come to his knowledge, and all water courses, mountains and other remarkable and permanent things, over and near which such lines shall pass, and also the quality of the lands . . ." (Land Ordinance of 1785-see note six)

The above passage succinctly describes how the territory was to be divided. Moreover it mentions the technique (measured with chain) by which the parcels would be measured. The land ordinance called for organizing the new territory into square townships of 36 square mile sections. That means 36 sections of 640 acres each. The sixteenth square or section was to be set aside for the purpose of public schooling. Four sections were reserved as land bounties for veterans of the Revolutionary War. The remaining parcels were sold for the price of $1 per acre (7).

A look at even modern maps of Ohio and other Midwestern states reveal that the practice of organizing parcels into square townships set a much followed precedent. It also demonstrates one of the mapmaker's greatest challenges- accounting for the curvature of the earth. John Noble Wilford's The Mapmakers Chapter

12 provides a descriptive and historical account of the challenges of the surveying and mapping of the Seven Ranges of the Ohio Territory. Aside from dealing with the problem of potential Indian raids, Thomas Hutchins, the chief surveyor of 13 appointed, had to accurately calculate and maintain east to west lines on specific parallels. Moreover, longitudinal (north to south) lines also had to be reckoned with. Wilford points out that Hutchins' original line of parallel (forty degrees thirty eight minutes and 2 seconds) was off by almost one kilometer. Moreover, using approximations instead of the more precise secant measuring techniques employed by Mason and Dixon, Hutchins erred in maintaining a course that followed the curvature of the parallel line (Wilford, 2000, p. 219).

The convergence of longitudinal lines also posed a challenge to the executors of the Land Ordinance of 1785, as it does for all boundary makers. True square or rectangular boundaries are impossible due to the convergence of lines of longitude. In other words, because lines of longitude converge or draw closer as they approach the North Pole and South Pole, it is impossible to have truly square (ninety degree) boundary-line corners that align with lines of latitude and longitude. Wilford indicates that the solving of the problem of reconciling rectangularity and convergency in the surveying of the Ohio Territory is due to Jared Mansfield, a successor to Hutchins. Mansfield set the compromise which became the common precedent for future map makers of the United States by keeping the principal meridians and parallels and "jogging" subordinate parallels. Wilford commented,"Such a map of township boundaries took on the appearance of off-line masonry" (Wilford, 2000, p. 221).

A look at the township map of Ohio or of the United States in general reveals the work of the aforementioned boundary mapping techniques. As I looked at the maps I couldn't help but wonder how the 'squareness' seems so unimaginative. Yet, this method of surveying and organizing the land is amazingly simple and efficient. As other historical examples show (the political boundaries in Africa for instance), political boundaries are often created out of efficiency for political reasons, particularly to highlight possession. The 'squareness' of this organizational pattern can still be seen throughout the maps of the Midwest. Because New Haven was a planned community that was outlined in a squared or grid pattern, I would like to have students observe, compare and contrast maps of Land Ordinance with early maps of New Haven. Comparing this to a map of the New Haven should generate some interesting discussion. It should be thought provoking to point out that the nine squares, the original layout for New Haven, is also a grid pattern but it doesn't align with the cardinal coordinates.

A look at the surveyors

One might imagine that the territorial expansion of the United States from an eastern seaboard nation to a transcontinental union of 48 continuous states might include an historical record with a cast of famous surveyors. While I imagine most contemporary historians might pass at a chance to meet and converse with the leading surveyors in America today, I certainly doubt that any would pass the chance to dine with the top surveyors of early America.

In this unit, I may include surveyors as topics of study because of their accomplishments in mapping territory in colonial America or in the early United States. Students may want to explore the life of George Washington, Thomas Jefferson, Benjamin Banneker, and even Ben Franklin. Each was involved in rather important work as surveyors, community planners and observers of natural phenomena. Washington served as a surveyor before

becoming a military leader. Yet, as Wilford points out, Washington drew on his surveying skills at times to carry out his duties as a military leader. This included his inaugural mission to inform the French to abandon disputed claims with British Virginia. Thomas Jefferson helped survey the southern colonies as well as design and build his own house Monticello. He also designed the University of Virginia campus. As president, he was responsible for acquiring the Louisiana Territory and organizing the Lewis and Clark expedition to explore and map the Louisiana territory and more. The intellectually gifted Benjamin Banneker worked as a surveyor in the planning of Washington D.C. Ben Franklin is believed to be the first man to map the Gulf Stream current. He is believed to have studied and illustrated the current in his trips to England prior to the Revolutionary War.

While the currents of educational, political, and social practice of the seventeenth, eighteenth, and nineteenth centuries consistently point to men as surveyors, I expected to find some accounts of women involved in surveying. Aside from Sacagawea's contributions to the Lewis and Clark Expedition as a guide, I unfortunately found nothing. This is an area worth further exploration as women were crucial contributors to the settling of the West.

The Mapping of One Place over Time

While techniques for surveying and mapping land have evolved with new technologies, the rhetorical power of maps has perhaps remained the same. Striding, the Gunter's chain, and the sextant as tools of measurement have been replaced by pinpoint laser devices and Global Positioning System (GPS) devices. Paper as a medium to draw maps has been replaced by digital images. Nonetheless, images of a single parcel of land over time primarily still convey the simple message of ownership. In *Maps in Our Lives*, an online exhibition of maps sponsored by the Library of Congress and the American Congress on Surveying and Mapping (ACSM), the history of surveying is exemplified through the presentation of maps of a single parcel of land over time (8). The prized parcel, viewed from representations rendered from 1760 to 2004, showcases a parcel of land once surveyed and mapped by George Washington. The first image is a map of Mr. Clifton's Neck Land copied by George Washington in 1760. Washington surveyed this land after acquiring it and designed River Farm (the land is bordered by the Potomac River and Little Hunting Creek. His simple but exquisitely hand-drawn map (1766) titled, "A Plan of My Farm on Little Hunting Creek and the Potomac" shows his organization of over 800 acres into four fields of approximately 200 acres each. The map includes a compass rose, the rivers, and illustrations of woods and pastures. The exhibit continues with survey maps showing the property in 1793, 1859, 1920, 1937, 1995, 1999, and concludes with an orthophotographic map of the area from 2004. The maps show the complexities of a land parcel being subdivided over time. In fact, the intensity, and density of the parcel become apparent from the earliest to latest images. Perhaps the exhibit's greatest message is that maps have come to mirror the sophisticated means by which we manage, control, and claim ownership to land.

A Tool of Persuasion

"A good propagandist knows how to shape opinion by manipulating maps. Political persuasion often concerns territorial claims, nationalities, national pride, borders, strategic positions, conquests, attacks, troop movements, defenses, spheres of influence, regional inequality, and other geographic phenomena conveniently portrayed cartographically" (Monmonier, 1996, p. 87).

The triumph of Manifest Destiny certainly involved the map as a tool of persuasion. While the Louisiana Purchase secured land between the Mississippi River and the Rocky Mountains, Lewis and Clark's map of 1810 suggests that the United States would look more complete if the stretch of land from the Rocky Mountains to the coast were incorporated. If Jefferson's instruction for Lewis and Clark to continue to the coast later allowed

the United States to lay claim to Oregon territory, then Lewis and Clark's Map certainly made this claim a more visual reality. One can easily imagine any early 19th century politician, businessman, or citizen looking at a map of the newly acquired territory included on Lewis and Clark's map and wondering, "Why should the United States stop acquiring land between the Atlantic and Pacific Oceans with such little space left to gain?" Whether purposely done or not, the map certainly shaped opinion that the United States was more complete if extended to the Pacific Ocean.

The relationships of maps and Manifest Destiny perhaps have some origins in the land claims of Colonial America. Maps had been used in Colonial America to visually portray the claim of long tracts of land from the Atlantic as far west as land existed (Colonial charters are as bold as they are ambiguous on this topic). Such was the case for Virginia, Massachusetts, and Connecticut. The original English Land claim for Virginia included practically the entire Atlantic seaboard and all lands west. The French initially claimed the same lands. The Charter of 1609 for Virginia claimed the Atlantic from present day North Carolina to New Jersey and all lands west. Massachusetts and Connecticut made claim to tracts of land that run west. Essentially these claims pushed their western border as far west as the Pacific Ocean. The importance of the map in the territorial claim game was its ability to visually and selectively show your claim. As one can infer from the written language of the Connecticut Charter, one's relying solely on the written language in the charter left much room for interpretation.

- And Know Ye further, That We, of Our abundant Grace, certain Knowledge, and mere Motion, have given, granted, and confirmed, and by these Presents for Us, our Heirs and Successors, do give, grant and confirm unto the said Governor and Company, and their Successors, all that Part of Our Dominions in New-England in America, bounded on the East by Narraganset-River, commonly called Narraganset-Bay, where the said River falleth into the Sea; and on the North by the Line of the If Massachusetts-Plantation; and on the South by the Sea; and in Longitude as the Line of the Massachusetts-Colony, running from East to West, That is to say, From the said Narraganset-Bay on the East, to the South Sea on the West Part, with the Islands thereunto adjoining, together with all firm Lands, Soils, Grounds, Havens, Ports, Rivers, Waters, Dishings, Mines, Minerals, precious Stones, Quarries, and all and singular other Commodities, Jurisdictions, Royalties, Privileges, Franchises, Preheminences, and Hereditaments whatsoever, within the said Tract, Bounds, Lands, and Islands aforesaid, or to them or any of them belonging.
- Charter of Connecticut (9)

Connecticut, Virginia, and Massachusetts as well as the rest of the original thirteen states resolved most of the competing land claims among themselves and with Great Britain as a result of the settlements that ended the Revolutionary War (Treaty of Paris). Prior events included states such as Connecticut actually fighting fellow countrymen in disputed territory over the land. Much of Connecticut's land dispute occurred with people of Pennsylvania over land in Pennsylvania. In this case the rhetorical power of the map was used ineffectively to convince the opposing party to yield. Instead, the claims achieved the provocation of open hostility by both disputed parties.

Strategies: How or by what methods will my students achieve their objectives?

The Map Practicum

The Map Practicum will be the featured strategy of the unit. Unlike learning about westward expansion and Manifest Destiny through text and images exclusively, students will get "hands on" practice using the measuring and mapping techniques used by George Washington, Thomas Jefferson, Mason and Dixon, Thomas Hutchins, Lewis and Clark, Pike, and Freemont. Evidence of the efficacy of using the practicum with students can be pulled from our own practice practicum at the Yale National Initiative, from the activities described in texts and manuals, and from the practices outlined by orienteering clubs.

In addition, the following strategies from R.J. Marzano's Classroom Instruction that Works will be incorporated into the unit:

Cooperative Learning

Jigsaw Cooperative Learning is a secondary strategy that will allow students to connect with each other. In studying Lewis and Clark' journey from St. Louis to the West Coast, they passed through many areas. Segments of the Lewis and Clark expedition may be assigned to students to research and report on. As each group reports on the details of their segment of the trip, students will gain a firmer understanding of the expedition.

Summarizing and Note taking

Summarizing and note taking will be employed by students to learn essential information. For instance, I imagine that students will need to be briefed in the techniques and procedure for completing the Map Practicum. Students will have to summarize the steps to measuring space and distance. They will also summarize and take notes on each episode of the westward expansion.

Setting Goals and Providing Feedback

Setting goals and providing feedback will be essential to students' success in the unit. Many students may be intimidated by the prospect of having to work with others to measure and map space in the practicum. Having students complete a K-W-L chart or K-W-L discussion at the onset of activities might identify those who may need extra encouragement to complete the tasks. For each phase of the practicum I am thinking that a reward would be granted (perhaps a sticker or certificate). This is somewhat analogous to the patches that a boy scout or girl scout receives when he completes a task. I will also give bonus points for extra effort, attention to detail, team work, etc. In addition, the rubric for each part of the activities is designed to give students feedback.

Nonlinguistic representations

Maps are nonlinguistic representations and thus can appeal visually to learners. As such, I am happy that the Maps and Mapmaking seminar has provided the opportunity to explore a variety of map collections that can be employed as visual aids to learning in the classroom. I have been able to access maps or illustrations of the Land Ordinance of 1785, the Lewis and Clark Expedition, Pikes Expedition, and Fremont Expeditions. The

Newberry Library, the USGS, and The Bill Lane Center for the Study of the American West include lessons or contextual information for historical maps of the West.

Identifying Similarities and Differences

Identifying Similarities and Differences will be useful in examining maps of the neighborhoods in New Haven over time. We will look at different maps of New Haven (an historical map, then a data map, then a modern map. . .). Students will identify similarities and differences.

Cues, Questions, and Advance Organizers

Anticipatory sets, essential questions, and graphic organizers will be useful to teaching each component of the unit.

Reflective writing

Students will keep a journal when they are working on the practicum. This will allow them to become reflective practitioners in regard to the learning process. Lewis and Clark kept detailed journals of the expedition. Having students read the journals will provide a model for the type of reflective practice that students can learn from.

Classroom Activities: How will I employ strategies for the unit? To what time frame will they adhere?

The Map Practicum at Wilbur Cross High School

Day One

Striding

The map practicum will occur early in the unit as an opportunity for experiential learning. The first step will involve work in the classroom. The lesson will start with asking the students how they would go about making an accurate map of the room. As students share answers I would guide the discussion to problems of measurement and scale.

With the help of volunteer students, a demonstration of measuring strides and the room will follow. Demonstration one will include defining striding. Demonstration two will include calculating feet per stride and measuring the length of the room. Demonstration three will be applying the strides to the width of the room.

Students will keep notes on the demonstrations and be informed that they will each get the challenge of practicing measurement by stride and then applying it to a class project.

Students will be given a homework assignment to practice stride measuring in some area in or around where they live or in some other agreed upon area. They should report their findings in a journal entry of Â½ to one pages in length titled: How I practiced measuring with striding?

Orienteering

Following the demonstration on striding the class will practice using the compass.

My opening questions will be "How can I tell which direction I am walking?" and "How do I know if I am walking North, South, East, or West?" Discussion of the natural landmarks on the earth and in the sky should follow.

Discussion should next turn toward answering prior knowledge about the compass. Points of discussion will include the acknowledgement of the cardinal ordinates and an elaboration on the difference of magnetic north from true north. Demonstration of using the compass to distinguish direction will follow. As time permits students may use the compass to determine the orientation of the walls of the room and/or practice striding along an ordinance.

For homework students should complete a journal entry in which they describe where the sun is in September, December, March, and June when they get up to come to school. A short explanation of how the earth's tilt toward the sun changes direction each season would be made if necessary. Preferably this would occur in more detail when the students have completed their assignment. Students will be informed that they will be given practice in using the compass and then have to apply it to a graded project.

Day Two

In day two of the practicum lesson students will practice stride measurement and orienteering with a compass in a larger area such as the schools butterfly garden (approximately 130'x 40').

Striding: In teams of three, students will figure out their strides per foot average and apply it toward measuring the length and width of the garden. A strides per foot average for the class could also be calculated.

Orienteering: Students will orient themselves in the garden with the compass. They will map the orientation of the walls of the garden and add their measurements.

Day Three: The Land Ordinance of Wilbur Cross High School

During a school block period (90 minutes) students will be charged with the challenge of mapping the school quadrangle using the compass, strides and measuring with chain. They will then 'grid' the quadrangle into 'student homesteads'. In day three of the practicum lesson students will use compass, striding, and chain measurement to map the central quadrangle of the school.

Upon completion of the quadrangle map on graphing paper, students will discuss and play with calculations for different sized homesteads. Proposals for homesteads of different size will be entertained. In the end the class will have created a number of oriented and 'gridded' maps of the courtyard that show 'homesteads of different sizes.

Back in the classroom on another day, these maps would be compared to maps of the boundaries laid out for the homesteads created by the Land Ordinance of 1785.

Notes

1. A Gunter's chain measures 66 feet. More precisely the chain is comprised of 100 links. Each link is 7 92/100 inches. A brass piece marks every tenth link. Moreover, a red flag is placed at link 50-the halfway point. The chain is used in conjunction with an offset staff which is 10 links long (six foot seven and 2/10 inches long).Two people work the chain and record measurements of land parcels in the number of full chains and links. A plot measured at 804 means 80 full chains and 4 links. For a more complete explanation see Sam Wyld, The Practical Surveyor.

2. To access the digital images of materials from the collection open http://beinecke.library.yale.edu/dl_crosscollex/ and type 'Lewis Clark' in the search box. Do not type the word 'and' between Lewis and Clark. You might be able to go directly to the collection by accessing http://beinecke.library.yale.edu/dl_crosscollex/ SearchExecXC.asp. The collection holds 11 pages of illustrations, notes, and hand drawn maps of their routes.

3. The USGS hosts many excellent sites on topographic maps. Topographic mapping officially began with the USGS when the USGS was organized in 1879. Since its inception the USGS has issued series of maps of the country in particular scales- 7.5 minute 1:24,000 scale where 1 inch = 2,000 feet, 1:100,000 scale where 1 inch is approximately 1.6 miles, and 1:250,000 scale where 1 inch represents approximately 4 miles. To view the history of topographic mapping view http://erg.usgs.gov/isb/pubs/booklets/topo/topo.html .

4. One of the most interesting maps I plan to use is a panoramic map of New Haven from 1879 that is included in the Library of Congress collection- see The Library of Congress American Memory. To get to the site open http://memory.loc.gov/ammem/index.html

and click on 'Maps'. Scroll to 'Panoramic Maps', click and search by keyword, browse, and/or use subject index. Once a panoramic map is opened one can zoom in on particular buildings and even read street names. I am excited to try guiding my students through this map to explore New Haven neighborhoods in 1879.

5. (NAEP 1990 note) "A similar pattern of generally poor performance occurred in the national assessment of geographic knowledge (NAEP 1990c). The 76-item test measured knowledge of four topics: knowing locations, using geography skills and tools, understanding cultural geography, and understanding physical geography. Overall, the national sample of twelfth-grade students answered only 57 percent of these items correctly. Average scores for the four topics in the test ranged from 53 percent correct on geographic skills and tools to 60 percent correct in the cultural geography category.Very few of the respondents had taken a high school course in geography. Most of them, however, had been exposed to some geography content in their history and science courses. Students whose American history courses included substantial treatment of geography performed better than the others on this assessment."To access the report see: http://www.ericdigests.org/pre-9219/high.htm or http://www.thememoryhole.org/edu/eric/ed329486.html

6. The Bill Lane Center for the Study of the American West hosts a website with an exhibit called, *Exploring the West: A New Curricular Resource for High School Teachers.* The site contains ten one day lessons about the role that mapmakers played in developing the West. Lesson three, *Land Surveys*, contains maps and text of the Land Ordinance of 1785. Other lessons include: Reading Maps Critically, Mapping Railroads, National Expansion, Native Americans in European Maps, Claiming Land, Mapping Mistakes, Mapmakers' Perspective, Finding the West, and Satellite Maps. To access site see: http://west.stanford.edu/cgi-bin/pager.php?id=151

7. This Ohio History Central encyclopedia is a concise resource of historical information about the Land Ordinance and Ohio history. View the following url to view the site: http://www.ohiohistorycentral.org/entry.php?rec=1472

8. To view the *Maps in Our Lives* online exhibition of maps sponsored by the Library of Congress and the American Congress on Surveying and Mapping (ACSM) see http://www.loc.gov/exhibits/maps/ maps-exhibit.html.

9. The charter of Connecticut led to some interesting land claims by Connecticut. The charter indicates northern, southern, and eastern borders that we are familiar with today. However the western border is open to interpretation. Abel Buell's map published after the Treaty of Paris 1783 shows the western border of Connecticut being interrupted by New York but essentially being the Mississippi River. One could also claim that the South Sea that is the mentioned in the charter as the western border is the Pacific Ocean. These wildly conflicting claims caused problems for Connecticut and Pennsylvania in particular until Connecticut like many states on the eastern seaboard surrendered their land claims to the new United States government. To read the charter one may access http://www.yale.edu/lawweb/avalon/states/ct03.htm

A Comment on Resources

Numerous resources in print and on-line support the literal and figurative exploration of the American West. Yale's Beinecke Library holds the collection of original maps and papers of the Lewis and Clark expedition. These can be accessed remotely through digital images posted by the Beinecke library. Other on-line resources such as JSTOR offer immense exposure to journal articles. The University of Texas hosts the largest collection of on-line maps in the world.

It was exciting to browse the web site posted by the Herman Dunlap Smith Center for the Study of Cartography at The Newberry Library. The Dunlap Smith Center posts a number of annotated slide shows of maps connected to particular themes or events. These slide shows can be viewed from the website for free or purchased in hardcopy form. Slide set 21: Cartography of the Mexico-United States Frontier presents annotated images of maps from United States history as well as Mexico's history.

Slide show 31: Hiding and Highlighting Power in Eighteenth-Century North American Maps with commentary by Andrea Foroughi (Union College) 2002 discusses the notion that map images of the eighteenth century both hide and highlight the power of competing groups over land claims. Essentially maps say as much about political power by means of what they don't include as well as through what they feature. Slide five discusses the importance of John Mitchell's 1755 map of the English and French possessions in North America.

Historical study requires examining particular events from multiple perspectives. Deeper understanding of history can be achieved by finding and presenting the representative voice of all parties involved. 'The Cartography of the Mexico-United States Frontier' slides present multiple perspectives on events in the westward expansion that occur south of the Lewis and Clark expedition. It essentially is a representative and cartographical story of how the border between Mexico and the United States became defined. Lucas Alama'n's map of Mexico in his Historia de Mexico (1849-52) compares the size of Mexico before and after the Mexican American War (1846-48). This is a useful presentation in that students can explore a representative image and Mexican point of view as well as distinguish the territory that changed hands through the Mexican American conflict (http://www.newberry.org/smith/slidesets/ss21.html).

The United States Geological Survey (www.usgs.gov) has been an incredible source of historical maps, digital images, and topographical maps. Through the Rocky Mountain Mapping Center (http://rockyweb.cr.usgs.gov/) I was able to view and download satellite images and topographical maps of New Haven and Wilbur Cross

High School from the educational resources page via TerraServer at no cost. This will help in having students compare and contrast old and new map images of New Haven. In addition, the USGS hosts Maps of an Emerging Nation: The United States 1775-1987 (http://rockyweb.cr.usgs.gov/outreach/lewisclark/emergingnation.html). Students will benefit from viewing online versions of the Abel Buell map and maps that show the territorial growth of the United States. The online exhibit also contains lesson plans and classroom activities.

The Library of Congress hosts a number of maps including the maps of Buell, Mitchell and a Panoramic Map of New Haven from 1879.

Most sites allow students to navigate the maps through an image viewer that allows the reader to zoom in and out of maps as well as scroll across map images. This feature will be an invaluable tool in having students examine map images.

Reading List

Web related resources

http://www.pbs.org/lewisandclark/

This PBS sponsored website has interactive portals to explore Native Americans that were encountered, trails that were traveled, and journals that were written. Portals include: An Interactive Trail Map, The Trip Archive, and Classroom Activities.

http://www.nationalgeographic.com/lewisandclark/

Sponsored by National Geographic, this website includes an interactive journey log. The log outlines each leg of their journey and included journal entries and hand-drawn maps and illustrations. It also has portals called Searching for Sacagawea, Lewis and Clark's Lost Missouri, Photo Gallery, Lewis and Clark on the Rocks, Game, Kid's Activity, and Guided Trip.

http://www.lewis-clark.org/content/ content-channel.asp?ChannelID=57

This website contains a section titled Geography which discusses some of the tools and methods the explorers used to measure and map.

http://www.jstor.org/view/00167428/ ap010262/01a00030/0?frame=noframe&userID=815d1119 unl.edu/01cc99334100501e7d1af&dpi=3&config=jstor

An Analysis of the Exploratory Process. The Lewis and Clark Expedition of 1804-1806. Geographical Review 1972

http://www.lewis-clark.org/content/ content-channel.asp?ChannelID=57

Lewis and Clark.The Maps of Exploration 1507-1814. An Exhibition in Special Collections at the University of Virginia Alderman Library. The online exhibit shows maps that inspired the imagination to explore the western United States. Includes maps of European explorers and the 1803 Nicholas King Map of the Western United States

http://lcweb2.loc.gov/ammem/ gmdhtml/dsxphome.html

Library of Congress: Maps of Exploration and Discovery.

http://www.surveysinc.com/history/ surveyors.html

This site contains information on notable surveyors in United States history.

http://www.nationalgeographic.com/ resources/ngo/education/themes.html

The site hosted by National Geographic defines the five themes of geography and gives examples of activities that can be done to reinforce them.

http://users.netonecom.net/~swordman/ crafts/compassmaking.htm

This website has information on making homemade instruments such as a compass. While it may not be practical to actually make these instruments, it may be worth showing students some of the images and discussing them.

http://www.jstor.org/view/00167428/sp060002/06x0018r/ 0?searchUrl=http%3a//www.jstor.org/search/BasicResults%3fhp%3d25%26si%3d1%26gw%3djtx %26jtxsi%3d1%26jcpsi%3d1%26artsi%3d1%26Query%3dGeography%2bPerformance%2bin%2bHigh%2bSchool %26wc%3don&frame=noframe&currentResult=00167428%2bsp060002%2b06x0018r%2b0%2cFF7F &userID=802427a6yale.edu/01cce4405f114c3113a3c85a80 &dpi=3&config=jstor

The Classroom as the Field for Studying Geographical Education. L. Jean Palmer-Moloney and Elizabeth Bloom. *The Geographic Review*. 91 (4) 641-654 October 2002.

A report on the partnership between Hartwick College Geography faculty and Oneonta Middle School social studies teachers that suggests that a collaboration between college geography faculty and public school social studies/history teachers to supplement the curriculum with geographical material and material on spatial intelligence has the positive effect of boosting geographic skills and the presence of geography in the school curriculum while at the same time not detracting from the school climate that emphasizes performance on state standardized tests.

http://www.newberry.org/smith/slidesets/ss21.html

The Herman Dunlap Smith Center for the Study of Cartography hosts a series of 36 slide shows. Slide show 21, *Cartography of the Mexico-United States Frontier*, has commentary by Antonio Rios-Bustamante. It is a selection of maps illustrating the contrasting perspectives Mexicans and Anglo-Americans had of their common frontier region during the mid-1800s. Slide show 22, *Map-Making Misconceptions and the Quest for a Water Route to Asia through the Great Lakes*, has commentary by Jack H. Haymond. It highlights six representative printed maps that portrayed what sixteenth- to eighteenth-century explorers believed to be feasible water routes from the Atlantic Ocean and the Great Lakes to the Pacific.

http://www.princeton.edu/~oa/manual/ mapcompass2.shtml#Compass

OA Guide to Map & Compass - Part 2 part of The Backpacker's Field Manual by Rick Curtis published by Random House 1998 This has a large and easily-visible diagram of the parts of the compass. It also explains how to use the compass. Chapter Six includes information about the difference between North and True North, declination

http://lewisandclarkjournals.unl.edu/index.html

Site sponsored by the National Endowment for the Humanities to commemorate 200 years of the Corps of Discovery.

http://www.lib.utexas.edu/maps/histus.html

The Perry-Castaneda map collection from the University of Texas has an extensive collection of Historical Maps of the United States.

http://www.lewisandclark200.org/ index_nf.php?cID=1015

View to access the National Lewis and Clark Bicentennial Commemoration website. This site also has links to Native American reactions to the Lewis and Clark Bicentennial.

http://www.statelib.lib.in.us/www/ihb/ resources/docldord.html

This site contains the full text of the Northwest Land Ordinance of 1785.

http://www.ohiohistorycentral.org/ entry.php?rec=1472

I consider this a background reading for the Land Ordinance of 1785. It is from the Ohio History Central, an Ohio website.

Web Related Resources Regarding Maps of New Haven

http://beinecke.library.yale.edu/dl_crosscollex/ brbldl/oneITEM.asp?pid=2003038&iid=1064224&srchtype=

Wadsworth map of New Haven 1748 from the Beinecke library collection

http://beinecke.library.yale.edu/dl_crosscollex/ brbldl/oneITEM.asp?pid=2005614&iid=1032493&srchtype=

This map of New Haven and its vicinity was first published in 1831. The map shows New Haven, East Haven, West Haven, Hamden, and North Haven. The nine squares are visible as is Long Wharf. Westville is labeled on the map.

http://www.cityofnewhaven.com/Library/ Maps/neighborhoods.gif

This map shows New Haven Neighborhoods and 2000 census tracts.

http://www.yale.edu/nhohp/modelcity/images/ interviewee/projects-by-neighborhood.jpg

This map shows New Haven neighborhoods from a bird's eye perspective. It was published on an urban renewal website.

http://www.kurumi.com/roads/ct/pics/art-34-wh-75d.jpg

This 1979 map shows the proposed controversial Rte 34 connector which was just recently officially aborted. Instead a new plan for the area is being developed by the City of New Haven.

http://www.jud.ct.gov/external/imgs/kids/ NewHaven-BirdsEye-W.jpg

This map shows a bird's-eye colored draft of downtown New Haven.

Texts

The Americans 1998 McDougal Littell

A copy of the Abel Buell Map is found on page 117. Information about the The Land Ordinance of 1785 can be found on page 128. A special section on Geography and the Land Ordinance can be found on page 130-131.

p.128 Land Ordinance of 1785

p. 130-131 Special Section on the Land Ordinance of 1785

Chart The Mapping the Earth Files. Discovery Channel School Discovery Communications 2001 Discovery Channel's 31 page booklet is illustrated with lots of color photographs and is organized into articles about the history of mapping the earth. It gives a great summary of the processes used map the earth in antiquity and up to the present.

Classroom Instruction that Works by R. J. Marzano 2001, Alexandria, VA: ASCD Marzano's text includes a variety of effective teaching strategies that have been adopted by the New Haven School District.

How to Lie with Maps. Mark Monmonier. 1996. University of Chicago Press. ChicagoMonmonier's work is much acclaimed for his critical interpretation of maps.

Lewis and Clark Through Indian Eyes 2006 Alvin Joseph, editor

This text gives accounts of the Lewis and Clark Expedition from the experiences of Native Americans whom Lewis and Clark encountered on their journey.

Lewis and Clark's West William Clark's 1810 Master Map of the American West. This is a full-sized color facsimile of the original manuscript map from the Yale Collection of Western Americana.

The Mapmakers John Noble Wilford 2000 Vintage New York

Chapter 12 Mapping America, the Boundary Makers and Chapter 13 Mapping America Westward Topographers give detailed synopsis of the major people and their contributions to the mapping of the United States. Overall the book traces the development of mapmakers from antiquity to the present.

Mapping David Greenhood 1973 University of Chicago Press

As part of our course reading this provided the background for completing the map practicum in our seminar.

Mapping the World An Illustrated History of Cartography Ralph E. Ehrenberg

The author, former Library of Congress Chief of the Map and Geography Division, has chronologically arranged some of the world's great maps and provides their historical context. I found the following most useful to my study:

Mitchell Map 1755 Map of the British and French Dominions in North America with Roads, Distances, Limits, and Extent of the Settlements. p. 136

Benjamin Franklin's Map of the Gulf Stream p. 144

The Indian Map that Guided Lewis and Clark p. 150

Lewis and Clark Map the West p. 156

Celebrating the American Centennial p. 157.

The Army's Master Map of the West p. 177

Schoolcraft Triangle Michigan Aerial Photography p. 198

The Northwest Ordinances, So Called, and Confusion William O. Swan

History of Education Quarterly 1965 History of Education Society.

Undaunted Courage. Meriwether Lewis, Thomas Jefferson, and the Opening of the American West. Stephen Ambrose New York 1996

Steven Ambrose's 500 page work tells the story of the expedition of the Corps of Discovery in richly engaging narrative. It was a national bestseller.

A Wilderness So Immense. The Louisiana Purchase and the Destiny of America. Jon Kukla First Anchor Books Random House New York 2003. Want to read about the connection that Thomas Jefferson, Napoleon, Carlos III of Spain, James Monroe, John Jay and others had to the Louisiana Purchase? Kukla's account draws on the research of letters, memoirs, and contemporary documents. It includes a number of maps by David Lindroth.