

MAP READING VERSUS MAP MAKING IN ELEMENTARY GEOGRAPHY TEXTS IN THE UNITED STATES, 1850-1900

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Background

Jedidiah Morse is considered to be the father of American geography and his *Geography Made Easy* was the dominant geography textbook in the first half of the nineteenth century. Morse's geography was widely acclaimed for its comprehensive coverage of the subject matter, but it was essentially a compendium of unrelated facts regarding the world and its peoples. Geography was seen largely as memory work rather than a study of cause and effect, and Morse's text was dominated by the catechetical style of questions and answers typical of a memorization pedagogy (Brown, 1941). This question and answer format was used in virtually all textbooks for all disciplines in the first half of the century, but it continued longer in geography than in any of the other disciplines, perhaps because of the dominance of the Morse textbook (Nietz, 1966:233). The reliance on the Morse volume lessened somewhat as textbooks by new authors emerged, but in some ways geography never completely emerged from the shadows of rote learning that was so strong during its formative years (Downs, 2004: 189-194).

It was toward the second half of the nineteenth century that technological changes involving pulp paper and wax engraving made textbooks affordable and as a result, many new authors ventured into the publishing arena (Patton, 1999: 6). This new method of production allowed for both the maps and paragraphs of text to be contained on the same page, and specific sets of questions could be linked to each map.

The early role of maps within the textbooks supported the memorization pedagogy by having students learn the names of countries, cities, and physical features such as rivers and mountain ranges. Since most early teachers were trained as generalists, with minimal background in the sciences and geography, they were forced to carefully follow the outline provided by the geography textbook (Trifonoff, 2004). The early authors, such as Morse and Mitchell saw maps as a reservoir for place names and included map memorization questions in their textbooks, which was perhaps easier for a novice teacher to follow and implement (Morse, 1794; Mitchell, 1840). But the new authors who emerged during the latter half of the nineteenth century began to expand the role that maps played within the textbook by including uses for the map beyond the memorization of place names.

The emergence of elementary geography textbooks and maps, 1850-1900

Education in America began to change in the middle of the nineteenth century as graded classrooms began to replace the one-room schoolhouse. Schoolbooks also became differentiated according to grade level and this was the case in geography where several author's developed a graded series of texts. Particular attention was given to the maps to make sure that they were appropriate for students at the primary and elementary levels. Cornell noted that the maps in existing textbooks were not appropriate for the use of elementary students. "...maps, professedly intended to elucidate, were rendered rather labyrinths of perplexity, by being covered with circles, lines, and various names and emblems, mysterious to the pupil, irrelevant to his stage of progress,...a waste of time" (Cornell, 1858:5). Cornell and others changed the maps in their elementary textbooks by limiting the number of place names, using clearer fonts, and developing sets of map questions specific to each map (Cornell, 1874; Guyot, 1866; Frye, 1873). In responses to new ideas about education, and perhaps in order to make their own volume more attractive to teachers and school boards, several of the new authors also incorporated new and different map questions and activities (Figure 1).

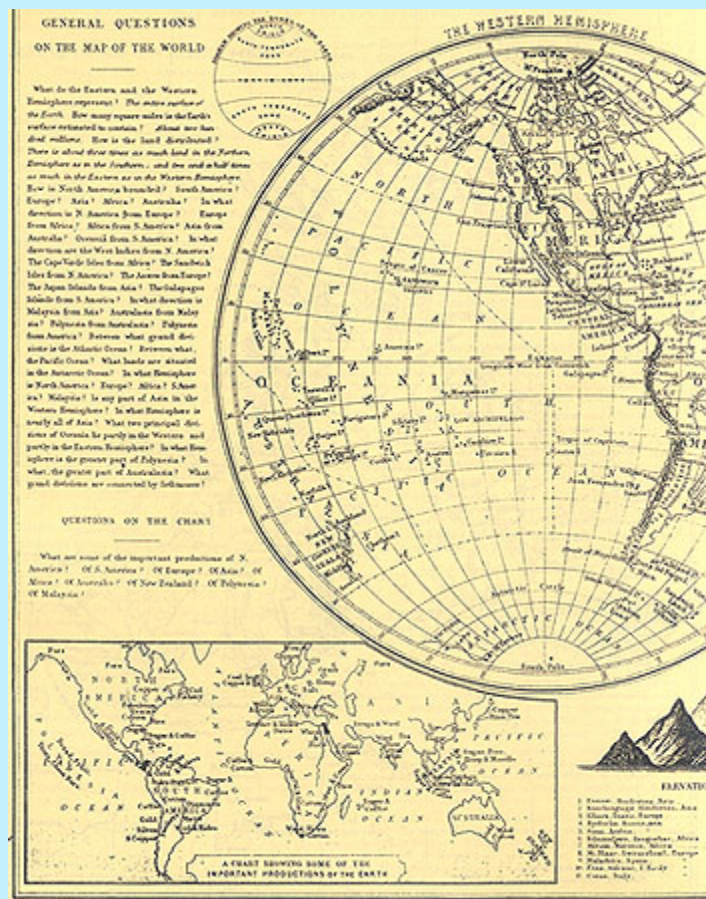


Figure 1: An example from the "Intermediate Geography" (Sarah S. Cornell, 1814).

Types of map activities in elementary geography textbooks

Textbooks in the latter half of the nineteenth century contained a variety of map activities ranging from map reading to map making to cognitive mapping. A number of elementary textbooks for students of ages 9 to 12 were examined and the volumes by Cornell and Guyot were selected as representative of the study period (Cornell, 1874; Guyot, 1866).

Map reading in elementary textbooks

Both Cornell and Guyot emphasized the importance of map reading, which they viewed as a critical component of the study of geography. Maps had a prominent place within their texts and numerous activities and exercises were designed to assist the students with the study of place names, and also for the retrieval of information in response to map questions and other text questions. Cornell included a map studies section with each map and a set of questions called "Memories Aid" that the teacher could use for instruction and also for examinations. Cornell makes note of the fact that on her maps she only includes names that are mentioned in the text so as to not clutter the map with unnecessary information (Cornell, 1874,20).

A typical map found in all geography textbooks of the study period was the world map using the globular or two-hemisphere projection. This map in Cornell's elementary text is a carefully designed layout of the Western and Eastern hemispheres, with insets showing global climate zones, latitudinal reference lines, elevations of mountains, lengths of rivers, and also a chart (Mercator projection) showing major global commodities. This lavish two-page spread was accompanied by a set of thirty-eight questions, which called for the student to identify or locate specific places, to determine the places that border a given country, to establish direction, and to scan the map for specific names or features. Questions include: "How is North America bounded?; In what direction is North America from Europe?; In what hemisphere is North America located?; What are some of the important productions of S. America?" (Cornell, 1874:6-7).

There were sometimes numbered sets of questions, such as those accompanying the map of North America, which has the questions arranged in five groups, creating five potential separate lessons. Cornell also created a hierarchy of font types and sizes for different map features, such as country names, or names of rivers and water bodies. Teachers

would then be able to instruct students to study only certain features, such as the country names, which were in all upper case letters, and thus be able to customize the lesson according to skill level and time available (Cornell, 1874: 14). The map studies questions for the North America map include: "How is North America bounded?; What land is northwest of Pennsylvania?; What is the outlet of the Great Bear Lake?; What is the capital of British America?; Where is the Mosquito Coast?" (Cornell, 1874:20-21).

Arnold Guyot drew on his strength as a physical geographer for the content of his text, and enlisted the help of a classroom and normal school teacher, Mary Howe Smith, to adapt the material for the primary and elementary grade levels (Figure 2). He included a teacher's guide at the beginning of the text, where he expounded on his ideas on geography education and the role of maps. He saw the map as being the center of geographic study, and remarked: "The thorough study of the map, on the wall and in the book, and the mastering of it so as to engrave, so to speak, its image in the mind of the pupil in strong and deeply-cut outlines, never to be effaced, is, and must remain, the prominent object of the course....everything is gained and a solid foundation is laid for the future edifice of his geographical knowledge..." (Guyot, 1866:i).

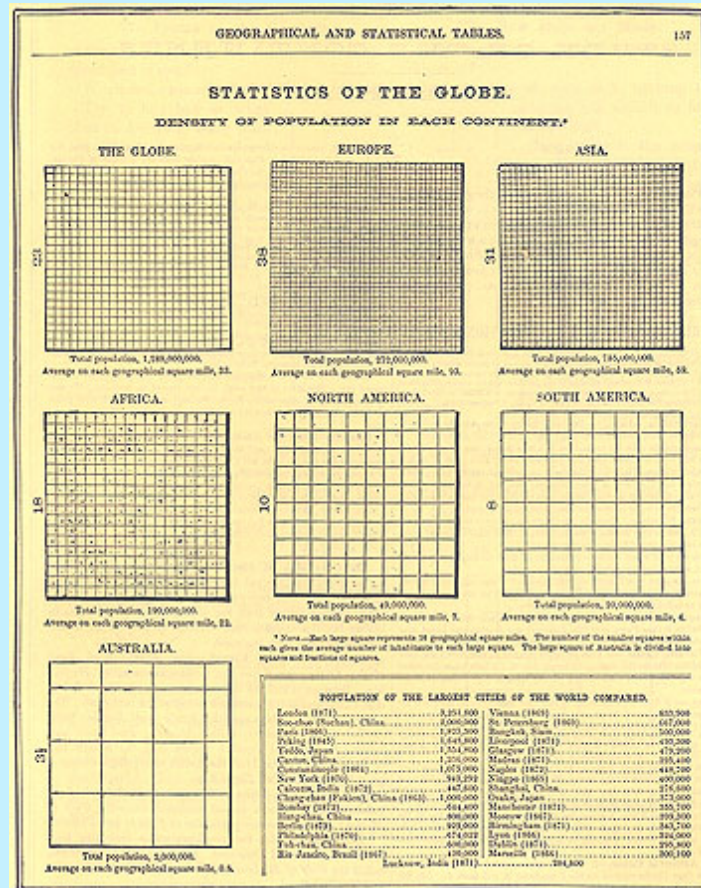


Figure 2: A page from the *Common School Geography* (Arnold H. Guyot, 1866).

The map and map questions are similar in appearance and style to those in the Cornell textbook. Representative questions from Guyot include: "What is the most western point of the continent of North America?; Where are the Rocky Mountains?; What peninsulas are on the Arctic coast? (Guyot, 1866: 20). In order to help students gain some sense of scale, Guyot also included a unique set of diagrams to help students compare world regions in terms of both area and population. This diagram contained assorted rectangles and squares showing the areas of countries and regions, so that the student could compare the size of a square representing Africa to one representing North America. Also, the population of continents was shown using the same size square for all continents, but varying the internal grid according to population density (Guyot, 1866: 155-157). These creative and abstract representations seem somewhat progressive for the time and also seem somewhat difficult for a novice teacher to integrate into a map lesson. Their position at the back of the book would make it easy for the teacher to dismiss them entirely.

Making in elementary textbooks

Along with the general map reading exercises and questions, map making activities started to appear in geography textbooks in the mid 1800s. The central aim of these map making activities may have been to assist the student in the

memorization of map features, but they also allowed the students to use their mechanical skills and become more involved in the educational process. Map making activities show a progression from the most basic copying of an existing map through to the creation of a new and original map.

Sarah Cornell developed a set of cards or teaching aids for map drawing, which contained a latitude and longitude grid as a backdrop on which the student constructed the outline of the appropriate country or continent. She thought this activity was suitable for even primary grades (Cornell, 1874: p.91). The first step was to provide students with a map and then also give them another paper or map card with the latitude and longitude grid on it. The student then copied the outline of the country by mimicking the spacing on the grid of the original, a method known as similar squares. The second step was the coloring of the map, and the third involved filling in the details, such as rivers, mountains, cities, canals and railroads. Specific and symbols were suggested, such as a line with numerous cross lines for a railroad, It was also suggested that the lettering be the same as map being copied, and/or the lettering should be sure to create a hierarchy indicating the more important places. The scale was prescribed by grid given, and this map drawing could be adapted to different media such as slate, paper, or blackboard. Cornell cautioned teachers against trying to attempt all this in one sitting, and also suggested this as an activity for a class project (Cornell, 1874:93).

For Guyot, the construction of the map involved precise geometry and his elementary textbook map making lesson had students use perpendicular bisectors in conjunction with measuring the sides of the figures, as well as the labeling of the map. His complicated directions call for an exact division of the geographic space, but further investigation is needed to determine if these directions coincided with activities in mathematics textbooks of the study period. Students in the twenty-first century might have difficulty, "...dividing the right-hand half of A into three equal parts, and marking one of these parts M, as it is an exact measure of many portions of the map. At the right-hand end of A, draw a second vertical line, C, making it a very little less than two M in length" (Guyot, 1866: 18-19).

Other authors were not as regimented, and Appleton (1880) used a different approach in his elementary textbook. He had students begin by mapping a familiar environment, and he provided directions for measuring the classroom and establishing a local scale. From the classroom he moved to other local landscapes, "What is the name of the city in which you live? Map it." (Appleton, 1880:8) He also provided suggestions for symbolization and noted that this could become a collaborative learning activity by having each student mark their route to school and then combine information from a number of students into one map of the community (Appleton, 1880:8-10).

Another author, Alexis Frye (1873), included lessons on how maps are made and started by having students measure their desks, the spaces between and the room (Figure 3). Then he moved them out to the yard and district. Going out and observing and measuring were seen as integral parts of the learning process (Frye, 1983: 15-18). Mary Lucy Hall also saw observation as a critical component of elementary geography and encouraged students to go out and observe and then come in and make maps of their mental representations of the local landscapes (Hall, 1872: 1-2).

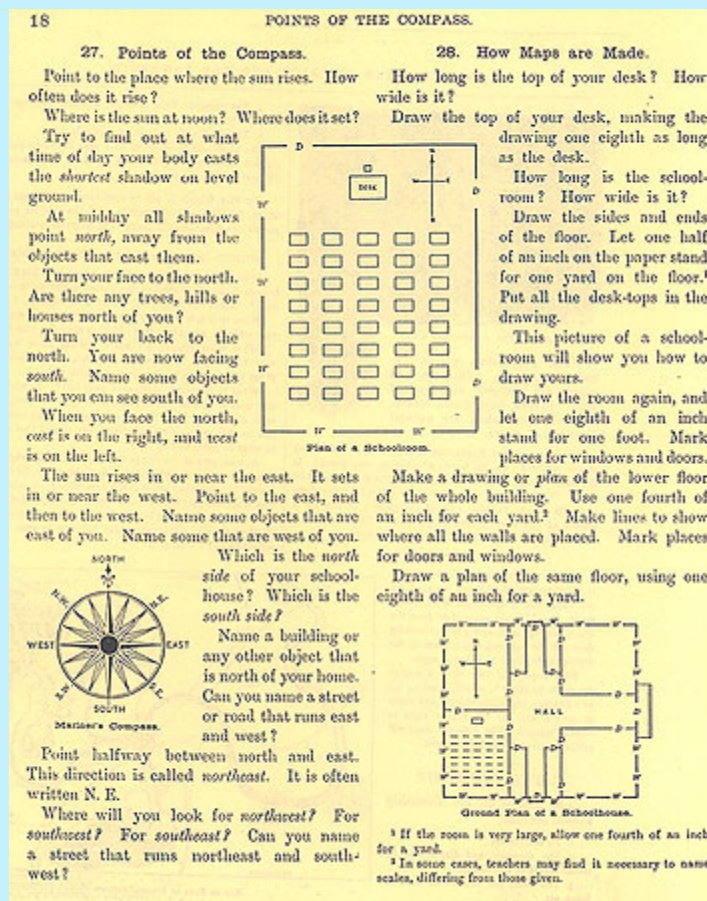


Figure 3: A page from the *New Primary Geography* (Alexis Everett Frye, 1873).

Implications

These mapping activities go beyond the typical memorization of countries and capital cities associated with early map use in geography. This richness even goes beyond many modern geography textbooks and map workbooks that simply have elementary students color in the land and water, and find specific places. What is not known, however, is the extent to which these suggested activities were actually implemented in the classroom. We need to search for information in the archives of normal schools or teacher colleges to determine what was actually taught, and how classroom teachers used the textbooks. Another source for determining the extent of map use in the elementary classroom of the 1850s are the remaining textbooks themselves, many of which were annotated either by the student or the teacher. These inscribed textbooks, while not providing definitive proof of actual map use, can be used in conjunction with other information collected from teacher and classroom accounts of the study period. By understanding past map practices in the elementary grades, we can more confidently create new activities that will challenge our student's geographic capabilities.

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