MAPPING MIDDLE-EARTH

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During the late 1960s the works of J. R. R. Tolkien, The Hobbit and The Lord of the Rings, swept across America attracting thousands of fans. His writings are still popular and are often on required reading lists in high schools as well as colleges. The genre of epic quests, especially in fantasy literature, has been strengthened over the more than twenty-five years since Tolkien's works were first published. Over the past three years alone, Del Rey Books (the science fiction/fantasy division of Ballantine) has published seventy-three books of this type, thirty-seven of which include maps (Del Rey, 1983). Geography instructors at secondary and university levels have the opportunity to utilize this continuing popularity by designing perceptual map exercises based upon one or more of these books.

The purpose of this paper is threefold: 1) to underscore that literary works can be used as teaching vehicles; 2) to share a procedure I developed while designing The Atlas of Middle-earth (1981); and 3) to encourage geographers to capitalize upon the current literary map vogue as an exciting teaching medium.

Literary works as teaching vehicles

In 1980 Gary Elbow and Tom Martinson, in their article "Science Fiction for Geographers: Selected Works," advocated use of fictional works as a medium for catching student imagination via vivid imagery. In implementing such a strategy, Elbow and Martinson highly recommended Tolkien's works, and hopefully my Atlas of Middle-earth can also become a valuable teaching tool. In addition to using this atlas as a pedagogic vehicle, the synthesizing procedure developed for transforming a few small-scale maps and thousands of written clues into a series of reasonably complete and accurate large-scale maps may be helpful to cartography students.

Mapping Middle-earth

The opportunity to produce an entire atlas of "mental maps" was admittedly somewhat unique; but whether the end result was one map or two hundred, some of the same procedural steps were required to produce each map. My procedure was discovered by
trial and error, and I may have "reinvented the wheel" unknowingly. Initially, it seemed it would be best to draft the large scale maps first—the cities and battle sites—then to incorporate them into regional maps until finally all the calculated details came together neatly into a "world" map like so many puzzle pieces. This was, it seemed to me, how the mapping of our own world was done at first—piece by piece as information became available. Therefore, I began with the most major and most completely described city—Minas Tirith—a walled city of seven levels built on a hill at the end of a mountain range with a major river flowing at its feet (Figure 1). As Tolkien (1965: 24) described it:

To his right, great mountains reared their heads, ranging from the West to a steep and sudden end, as if in the making of the land the River had burst through a great barrier. They walked proudly up the winding road. For the fashion of Minas Tirith was such that it was built on seven levels, each delved into the hill, and about each was set a wall, and in each wall was a gate...and each time the road passed the line of the Great Gate it went through an arched tunnel, piercing a vast pier of rock—a towering bastion of stone which rose, even to the level of the topmost circle, and there was crowned by a battlement, so that those in the Citadel might, like mariners in a mountainous ship, look from its peak sheer down upon the gate seven hundred feet below...A narrow shoulder joined the Hill of Guard to the mountain mass, and was hedged with great ramparts right up to the precipice that overhung its western end.

Tolkien's descriptions were unusually detailed, but as I began sketching Minas Tirith a whole gamut of "reasonable assumptions" and calculations immediately became necessary. Elevation was given, but to determine the radius of the hill's base and of each circle, the nature of the hill itself had to be established. Was it conical, so all the circles were uniformly circular? What might the slope be? Did the climate and bedrock indicate that the hill was smoothed? What was the bedrock—granite? basalt? limestone? Perhaps this "bastion of stone" was a volcanic dike.

The answers to such questions were not easily available. Although Tolkien did an excellent job of describing his landscapes, he certainly did not provide nicely categorized Koeppen climates nor geological rock classifications. These data had to be inferred. However, as the clues were drawn from an increasingly-larger land area and an equally accreting text, it quickly became apparent that the "jigsaw puzzle" concept was unworkable, for the small areas could not be mapped in detail until the "worldwide" patterns were established. Imagination and a "feel" for
Figure 1. Cross section of the walled city of Minas Tirith.
the landscape were therefore an absolute necessity. To draw a cliff, especially in a large scale map such as Minas Tirith, it was essential to know whether the precipice was exfoliating granite, columnar basalt or a dense caprock overlying a crumbling shale. Similar situations arose at every turn—was a hill rounded, rugged or somewhere between; a stream braided or meandering.

Having settled what sorts of information I thought would be necessary, I began searching for what was actually available. The process became somewhat cyclical in nature: 1) read the text to determine what maps were desirable and what clues were available, 2) organize research files to list data gained, 3) re-read the text to find specific clues, 4) check with other sources to find corroborating information and 5) recheck the text to see if the supporting information was pertinent (Figure 2).

The next step after this literature search was the actual regional map drafting. As a starting point were Tolkien's own maps, yet they were not a panacea. His maps in the first and third volumes of The Lord of the Rings did not match exactly, nor did some of his textually-stated or inferred distances agree with these maps. Solving such distance and location questions were obviously imperative. A very rough sketch map was then made incorporating the corrected locations. Yet before more landform detail could be added to the map, the nature of the landforms themselves had to be determined. Again, only a complex meshing of clues could answer these questions: minerals, rock color, caves, springs, vegetation, stream patterns (dendritic, disrupted), landforms, glaciation (Tolkien mentioned several alpine glacial features, for example, horns and troughs), and climate, which was suggested by precipitation (snow, rain, types of storms), temperature, vegetation and winds. As with the original rough sketch, a check and recheck process was necessary to assure that the various clues gleaned could fit reasonably together. Then the map was actually drawn.

Perhaps an example would better illustrate such a unified landform analysis that resulted from a synthesis of many geographic clues yet from little or no original map information. Tolkien's (1965: 406) map, "The Downs, The Wold, the Brown Lands, and the Emyn Muil," showed little more than the major river (The Anduin) flowing into a lake in the midst of some hills (Figure 3). Even his larger scale map gave limited information about the Emyn Muil, describing only the two ridges on the west mentioned in the text. His maps did not show the downs or the wolds; yet during the southward journey travelers passed downs west of the river, opposite wolds on the east, then high wolds on the west and finally more downs on the west before arriving at the lake in the Emyn Muil. The lake, incidentally, poured through the hills in a major waterfall over a cliff so steep that portaging was possible only down a hand-cut stair (Figure 4).
Figure 2. Procedural flow for mapping the Atlas of Middle-earth.
Figure 3. The Emyn Muil and the Anduin River.
Figure 4. Waterfall at Rauros.

Figure 5. Lobeck's Weald in southern England (Lobeck 1939: 519).
A. K. Lobeck (1939: 519) discussed and illustrated the Weald of southern England, with its surrounding lowlands and downs, as part of an anticlinal extending across the English Channel into Brittany (Figure 5). The similarity seemed obvious, especially since Tolkien's Unfinished Tales (1980: 260, 299) confirmed that there were two low areas called "The Undeeps" at the two westward bends of the river. The difficulty was how to relate this anticlinal structure in the north with the Emyn Muil hills farther south. The western part of the hills were described as running in two ridges with western faces steeper than their eastern slopes. East of the river was "a strange, twisted knot of hills" whose outward faces were sheer, high and impassable, frowning over the plain below." Farther north the cliff "looked like a great sea-wall whose foundations had shifted, leaving great fissures and long slanting edges" (Tolkien 1965: 209, 212). The key was the description of the western hills—steep west-facing scarps with eastern backslopes—hinting at association with the downs just north. A case could be made that the Emyn Muil was a synclinal structure with the antecedent river Anduin dammed behind the southern cliff in a synclinal valley. The eastern hills could have been more tumbled because of the nearby mountains of Mordor. Once the decision of landscape morphology was settled upon, the drawing could be easily done.

This type of thinking process was repeated over and over until all the regional maps were drafted, almost camera-ready. Once these base maps were complete, the larger scale maps were then drawn. Each site map was begun by enlarging the appropriate part of the regional map and refining the details. Occasionally some additional information came to light which necessitated altering the base maps. Finally, when the small and large scale maps were completed, base maps were available on which to overlay the action maps—battles, migrations and travelers' pathways. 

Taken in its entirety, this procedure seems a bit overwhelming, but step by step it unfolded in a very natural way and became almost automatic. It was certainly an excellent exercise that reinforced awareness of interacting natural processes. One way instructors might utilize this cartographic procedure would be to give their students selected quotations, such as the one about Minas Tirith, and have them produce maps based on the text provided. An intermediate step might be added by requiring students to list not only the information available in the quotes but also questions unanswered but needed to be learned from research either elsewhere in the book itself or from some geographic text. If The Atlas of Middle-earth were combined with quotes from Tolkien, references would be readily available to the instructor. Student maps thus could be easily compared with those in the atlas and defended as necessary. Employing another approach, a local middle-school teacher I know selects a book or
book series (e.g. C. S. Lewis' Narnia books) which has no maps and combines a book report with a geography assignment by requiring students to produce a location map based on the text.

**Literary map vogue**

Outside the classroom, opportunities to utilize my cartographic procedure may be few, but the current popularity of Tolkien's works appears to have initiated a trend in literature, especially science fiction and fantasy works, which embraces the use of maps so the reader may better follow the narrative. Readers seem to love it. Tolkien (1980: 2) himself commented in a letter to his son about this seemingly insatiable appetite for spatial detail: "... while many like you demand maps, others wish for geological indications rather than places. It is curious that a story, when based on very elaborate and detailed workings of geography, chronology, and language, that so many should clamor for sheer 'information' or 'lore'."

While novelists themselves are obviously the most likely sources of geographic information within their works, they often do not provide it. These omissions, however, not only present literary geographers with superb opportunities for spatial interpretation but also with an exhilarating teaching tool. Moreover, we can encourage our literary friends to include even more maps in their works and to use geographic insights in their descriptions, and we can help guide them along the way.

**REFERENCES**

Del Rey, Judy Lynn, Del Rey Books, Personal correspondence, 24 March 1983.


