featured article

Maps in Children's Literature

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This paper reports the findings of a survey conducted to determine the frequency and use of maps in two categories of children's fiction books: those aimed at children just beginning to read and those intended for readers at the third to sixth grade level. The number of maps, type, purpose and general scale were noted. Results from the two samples were compared to similar information gathered for the Newbery and Caldecott award and honor winning books. While books for older children had twice as many maps as those for beginning readers the Newbery and Caldecott books had the highest percentage. Large scale maps were used more frequently than small scale maps and the number of fantasy maps and real maps was about equal. Maps tended to be used to explain the spatial events of the story but also many were employed as props or as general locational illustrations with little reference to the story.

INTRODUCTION

During the past 40 years cartographers, along with their colleagues in psychology and education, have focused their investigations of children and maps on three interrelated issues: first, how and when map skills should be taught (Rushdoony 1968, Freundschuh 1987); second, what cognitive abilities children possess for understanding spatial concepts and map reading (Siegel and White 1975, Blaut, McCleary, and Blaut 1970, Downs and Liben 1986); and third, what map types and symbols are appropriate for children (Bartz 1965, Patton, 1980). While this research has aided greatly in our understanding of the theoretical aspects of map use and provides a strong foundation for cartographers designing maps for children, virtually no work has been published which examines those maps to which children are most frequently exposed, that is, the maps found in children's literature. This paper seeks to answer three fundamental questions concerning maps published for children:

1. How often are maps used in children's literature?
2. What types of maps are used?
3. For what purposes are these maps intended?

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THE SURVEY

To answer these questions a survey of children's fiction was undertaken. As we wished to study those books most read by children we chose to confine our survey to fiction. According to circulation statistics compiled by the Greensboro Public Library Staff, children's fiction books circulate nearly three times as frequently as do non-fiction books.

Our sample was drawn from nearly 10,000 children's fiction books housed in a separate room of the main building of the Greensboro Public Library. The public library serves the city of Greensboro, North Carolina which has a population of approximately 180,000 and is the largest city in a metropolitan area of nearly one million people. The holdings of the main library and its seven branches exceed 671,000 volumes. We felt the collection would be typical of the titles available in most public libraries in the country.

The Greensboro Public Library children's fiction collection has two basic divisions: Easy Reading, that is, those books which are considered appropriate for beginning readers through the second grade, and the Third to Sixth Grade collection for children a few years older. These two

divisions seemed appropriate and were thus utilized in our survey. In addition, for use as a comparison group, it was decided to survey both the Caldecott and Newbery Award and Honor Books. These are undoubtedly the most prestigious awards given in the United States for excellence in children's literature and are available in virtually every public and school library.

For the Easy Reading and the Third to Sixth Grade books the survey was completed by selecting every tenth book on the shelves. For the Caldecott and Newbery volumes all of the fiction award winners and available honor award books were used in the survey. Books in the sample were checked to determine if they had color or black and white illustrations and if so whether any were maps. Books containing a map or maps were pulled from the shelves for further review. This review procedure proved to be the most difficult and in some ways the most interesting aspect of the project. As we paged through book after book we found ourselves repeatedly asking the question, "Is this a map?" In the end we were faced with three stacks of books, those with no maps, those with illustrations which by most definitions were maps, and the largest pile, those with illustrations that we considered "maplike." The most common of these maplike images were the "bird's-eye" views of landscapes. These perspective views ranged from slightly oblique to nearly vertical. One of the strongest conventions we found in children's book illustrations was the inclusion of a bird or an airplane to reinforce the idea that the observer was looking down on the landscape (Figure 1). For the purpose of this study only illustrations which we felt were specifically intended to show spatial location were included as maps. Usually these illustrations contained some cartographic elements such as lettering or symbols. For example, Figure 1 was not considered a map even though it could be used to understand the spatial relationships of the San Francisco Bay Area. If the Golden Gate Bridge, Alcatraz Island, or other sites had been labeled, we would have counted the illustration as a map. Using this admittedly subjective process the vast majority of illustrations in the maplike category were not considered to be maps for the purpose of this survey.

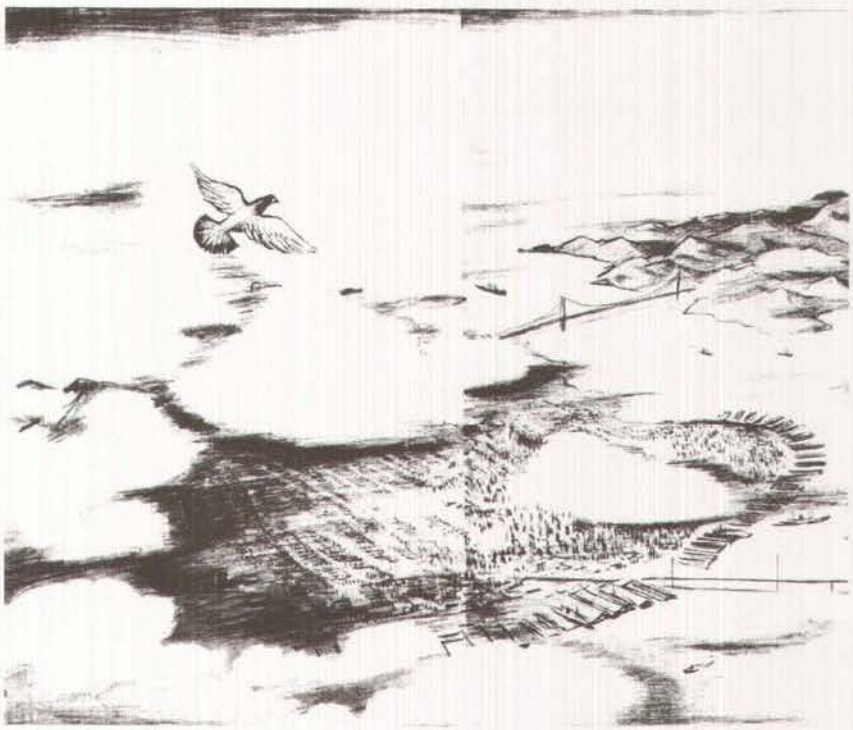

Figure 1: Example of a maplike image of San Francisco (Freeman 1957)

While maplike images were not counted as maps in the statistics shown in Figure 3 their importance for understanding spatial concepts should not be ignored. Many of these maplike images could function as maps, that is, as spatial surrogates, and they may represent bridges for children between their own personal perspective of the world and that view offered by maps.

It should be noted that the designation of what was or was not a map was made by two adults; if children had made those determinations there is convincing evidence to indicate that far fewer of the illustrations would

have been selected as maps. Downs, Liben, and Daggs (1988) questioned forty children between three and six years of age as to whether or not a series of slides were maps. They found that

> "Children and adults were almost unanimous in identifying a prototypical map form. It is a small-to medium-scale, colored representation which depicts the world from directly overhead and which employs conventional cartographic symbols. Deviations from this profile led to an increased likelihood of 'no' or 'not sure' responses, particularly among younger children. . . . On the other hand, with increasing age, the map concept expands to encompass a wider range of spatial representations."

While this important study clearly shows that children have a narrower concept than do adults of what illustrations are maps, the purpose of our study was to determine the number and type of maps to which children are exposed whether they identified the images as maps or not.

Figures 2 and 3 summarize the results of the initial stage of the survey. Figure 2 shows that all books at the Easy level had illustrations with the vast majority of the books (85 percent) utilizing color. The Third to Sixth Grade level sees the introduction of books with no illustrations (18 percent) and a dramatic reduction in the number of books using color for illustrations (down from 85 percent at the Easy level to only 12 percent at the Third to Sixth Grade reading level). The statistics for the Caldecott titles closely parallel the Easy reading books, while the Newbery statistics mirror those of the Third to Sixth Grade books. Although reading level is not a criteria *per se* for these awards, traditionally the Caldecott medals have gone to the Easy reading books while Newbery medals have been given to books at the Third to Sixth Grade reading level.

Figure 3 depicts the use of maps in the books surveyed. Five percent of the Easy reading books contained at least one map; the percentage of

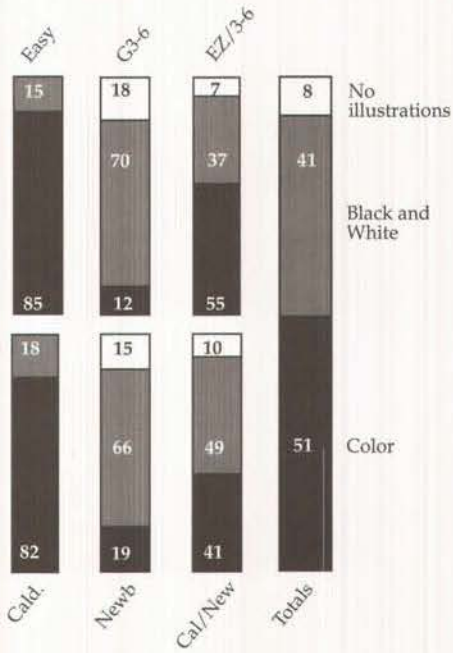

Figure 2: Percentage of books having color, black and white or no illustrations. Total sample size 898 books

Easy 5%	G3-6 10%	EZ/3-6 7%	Totals 8%
Cald. 9%	Newb 13%	Cal/New 12%	

Figure 3: Percentage of books using maps. Total sample size 898 books

books utilizing maps doubled for books written for children at the Third to Sixth Grade reading level. While this dramatic increase in the number of maps in books for the older children might have been predicted, the increased usage of maps in the award-winning books was a somewhat gratifying surprise. The difference in map usage between the Caldecott Award books and the general Easy reading books is considered statistically significant at the .05 level as were the combined totals for maps in the Caldecott and Newbery Award winners when compared to the combined totals for Easy and Third to Sixth Grade level books.

The second portion of this survey involved a more detailed examination of the maps discovered during the survey in order to determine the types of maps being produced for children and the purposes for which they were intended.

SURVEY RESULTS

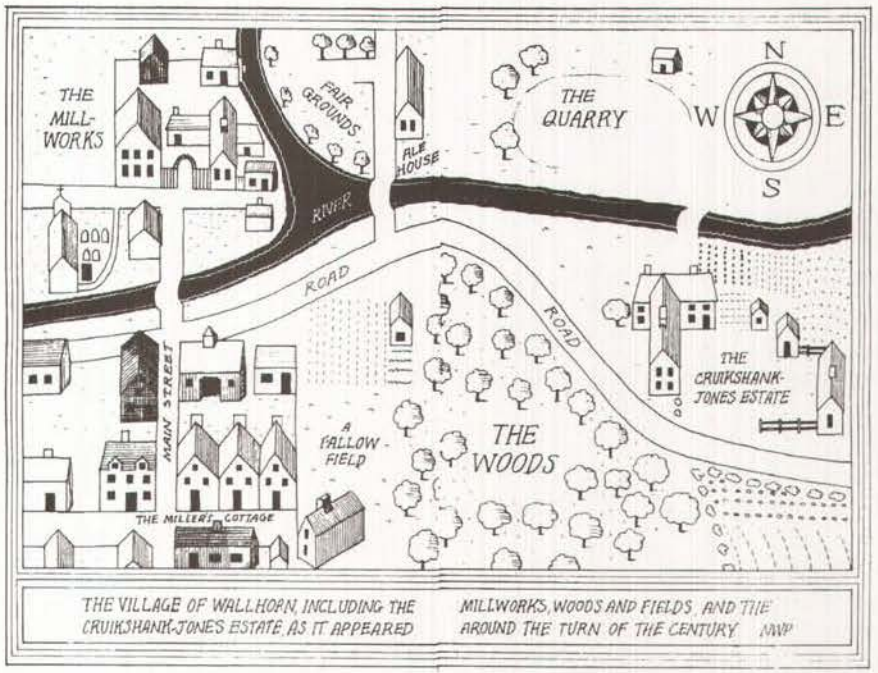

Figure 4: An example of a large scale village map appearing in The Spotted Dog, written and illustrated by Nancy Winslow Parker, Dodd Mead and Company, NY 1980

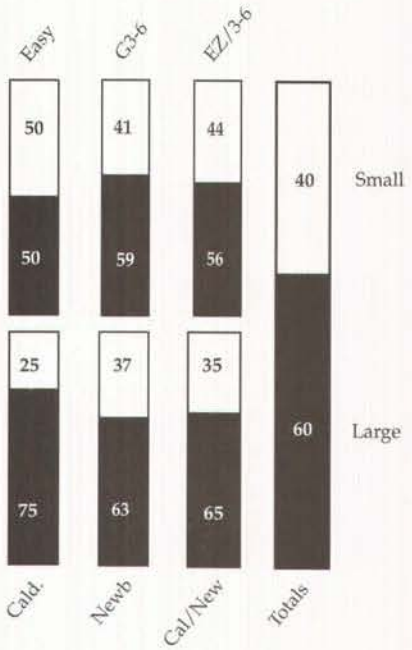

Figure 5: Percentage of maps drawn at a large scale and at a small scale

CLASSIFICATION BY TYPE

Three criteria which proved useful in categorizing maps by type included scale, real versus fantasy locations, and level of symbolic abstraction. In the case of map scale the most frequently employed maps were large scale; these we dubbed "village" maps (Figure 4). Any map which symbolized cities as a dot was considered a small-scale map (Figure 11). Fewer small-scale maps were found (Figure 5).[1] The preponderance of large-scale "village" maps may be an important contrast to the maps to which children are exposed in elementary textbooks and classrooms where according to Downs and Liben (1989), "Most common are political maps, usually of the United States and/or the world . . . small wonder that when shown a wide variety of place representations, children confidently and consistently recognize a small-scale, colored, political map as a map." Some research indicates that large-scale maps may be easier for young children to comprehend because they encompass far smaller environments. Children may be familiar with the concept of "town" or "neighborhood" since these landscapes are part of their everyday world while "Michigan" or "The United States" are merely words to most of them (Cox 1977).

Maps were also divided into those portraying real places and those showing imaginary locations. In light of popular concern about "geographic illiteracy" this division was included to see how many of the maps might aid in learning simple "place name geography." There was remarkable consistency across categories — in every case the division between real and fantasy maps was nearly equal. Often it was difficult to ascertain whether portrayal was imaginary without reading the text, and even then it was not always clear. Some of the most detailed maps were those accompanying fantasy stories (Figure 6). These fantasy maps could be just as revealing of imaginary landscapes as "real" maps could be of actual places and thus just as important to the story. Certainly many of the skills necessary to effectively use these maps are the same.

We expected that an interesting categorization could be based on the level of symbolic abstraction utilized, but we found very little range in symbol abstraction. Robinson and Petchenik (1976) describe a continuum along which all map symbols can be placed ranging from the very mimetic to the highly abstract or arbitrary (Figure 7). Haber and Hershenson (1973) report that the development of cognitive representations of the environment proceeds along a similar continuum beginning with highly eidetic images and evolving toward abstract representation. If children's cognitive representation of the environment is iconic (mimetic) then perhaps the cartographic representations of the environment intended for children should also be iconic. Indeed we found all but a few maps at the

[1]Only maps intended to be used by children reading the story were included in the statistics portrayed in Figure 5. Maps used as props and the two instances of maps included as notes to parents were not used.

Figure 6: An example of a detailed fantasy map (Kendall 1959)

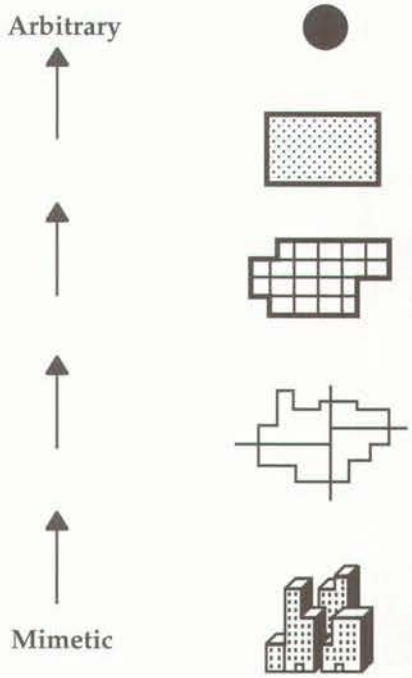

Figure 7: An example of the mimetic to arbitrary range of symbols in the representation of cities. From Robinson and Petchenik 1976

Figure 8: A map utilizing highly mimetic symbols (Kendall 1959)

mimetic end of the continuum (Figure 8). Figure 9, which could be placed near the middle of the continuum, was one of the most abstract, large-scale, maps encountered. Symbols on large-scale maps generally appeared to be correctly scaled, but as the scale of the map decreased, realistic relationships between symbol size and map scale were lost. The result was maps of the U.S. where cities were shown by clusters of buildings or the Rocky Mountains were portrayed as a series of individual peaks. While these overly large symbols may more easily be perceived as representing cities or mountain ranges their use may present a confusing image of the size of areas.

CLASSIFICATION BY PURPOSE

We found three general purposes for children's maps. Like map symbols, these can be arranged along a continuum. The distinction between simple or limited and complex or powerful seems to provide a useful description of the range of purposes we identified.

At the very limited end are those maps which were used simply as props to identify a particular setting. These maps were included with no intention of being utilized as maps (Figure 10). Typical uses of maps as props included wall maps in a school classroom or a globe in a professor's office.

Representing an intermediate point along the continuum are those maps designed to show where a story occurred or whence characters came, but not particularly useful in explaining the events of the story (Figure 11). For example, in a story taking place in Bulgaria there is a map of the country showing only its location in southeast Europe. The map is neither referred to in the story nor were any of the specific actions occurring in the story portrayed on the map (Shannon 1934).

At the more complex or powerful end of the continuum are those maps which help explain or communicate the spatial events of the story. A good example is the use of maps in a mystery story to illustrate where various events occurred, thus furnishing the reader an analytic tool for solving the crime. In another example a map shows where an inquisitive kitten had a series of adventures. The purpose of these maps was to provide a spatial structure to the stories not readily apparent from the text alone. This graphic representation of spatial structure is frequently used to organize or arrange the events of the story or in some cases to provide information not described in the text (Figure 12).

Figure 13 portrays the relative percentages of maps used for each of the three purposes. As might be expected a change was noted in the percentage of maps found in each category, when comparing the Easy books to the Third to Sixth Grade books. The books for the older readers included far more maps classified at the higher end of the spectrum and far fewer maps which were used simply as props. It is interesting to note the same shift when comparing the award-winning books to the books selected from the general collection.

Though only one book which directly attempted to explain map usage to children was found in our survey, several titles were found in the fiction card catalog which were designed to promote an understanding of what a map is or map reading skills. For example, the tale "Old Scudder" describes the compilation of a map by an old mountain man who wanders about plotting a variety of local phenomenon such as a buffalo-shaped butte and a tree shaped like a large nose (Gammell 1983). The primary purpose of the story is to teach the concept of what a map is and how maps use symbols to represent real places. Other educational stories were discovered which explained the use of scale and perspective change (Showers 1975, Schneider and Schneider 1946).

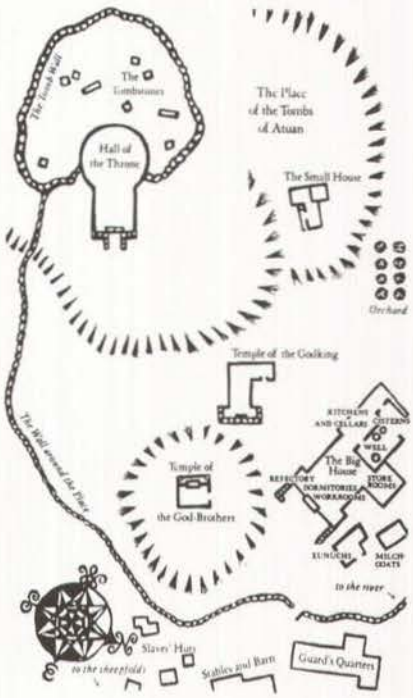

Figure 9: This map in comparison to the map shown in Figure 8 uses a far more abstract symbology. Notice, particularly, the absence of any attempt to show the third dimension. Reprinted with permission of Atheneum Publishers, an imprint of Macmillan Publishing company from The Tombs of Atuan by Ursula K. LeGuin, illustrated by Gail Garraty. Copyright © 1971, Ursula K. LeGuin

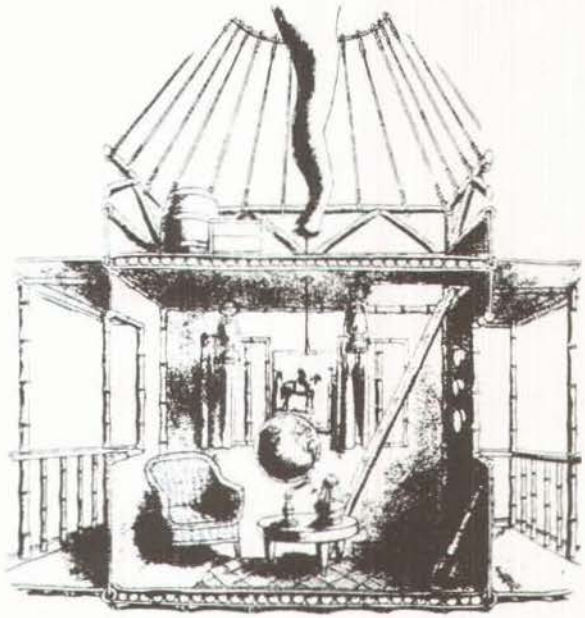

Figure 10: An example of the map as prop. The globe is included to complete a setting, not to be used (DuBois 1947)

Figure 11: A small scale view of Bulgaria used to show the location of the story (Shannon 1934)

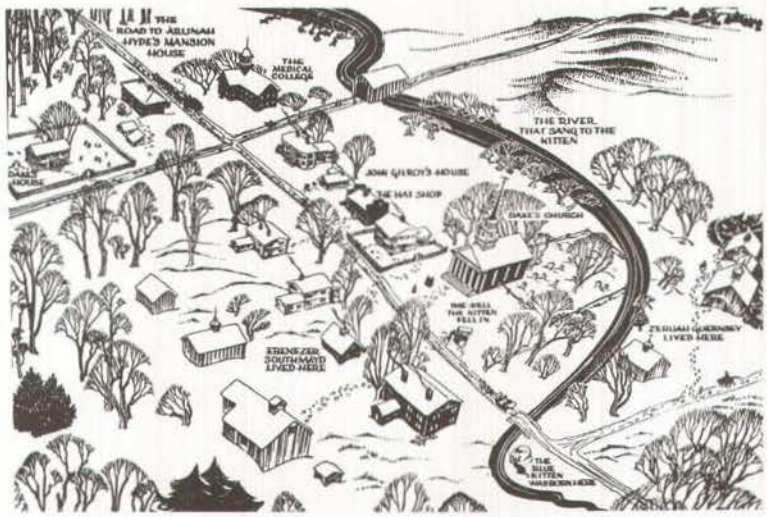

Figure 12: Example of a map whose purpose is to help explain or organize the events of the story appearing in The Blue Cat of Castle Town, The Countryman Press, Woodstock, VT 1987

CONCLUSIONS AND REMARKS

Approximately five percent of books written for children just beginning to read include maps. At the third to sixth grade level the number increases to ten percent. The use of color for illustrations including maps is quite common at the Easy reading level (85 percent), while only 12 percent of the Third to Sixth Grade books employ color. A significantly higher percentage of the Newbery and Caldecott Award and Honor books contained maps than did the general collection. Most maps designed to be used (that is, not used simply as props) were not of real geographic areas.

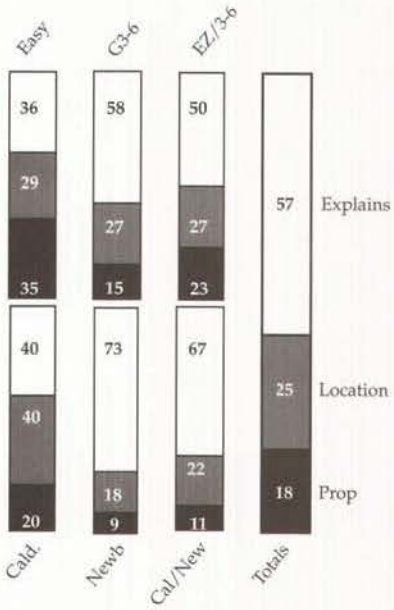

Figure 13: Map purpose: as prop, to show location or to explain events of the story.

After reviewing nearly one thousand children's books we have some subjective observations which go beyond the statistics already presented. First, only one book from the sample includes written instructions on how to use maps. While some cartographers and educational psychologists may question the underlying assumption by illustrators that beginning readers can understand maps, the reality is they are commonly used in children's literature.

Second, we found numerous examples of maps which did not seem appropriate for children. Sometimes maps clearly designed for an older audience are inserted unchanged into children's books. For example, one map employs the rather sophisticated technique of using contour lines to show topography. Other maps failed to match their map symbology to the educational development of children, as in the case of a map using cursive lettering in a book explicitly aimed at the Easy reading level.

Third, we found books which could have benefited greatly by the inclusion of maps, such as a fictitious story based on a historical sailing race around the world which fails to include a map showing the route. Or the innumerable books about children living or traveling in foreign lands which contained no maps.

Finally, some maps and many of the maplike images we surveyed are very innovative and constructed in such a way as to aid in the comprehension of those changes which occur in the transformation of the real environment to a map. To have a child understand that a particular view of a portion of the earth's surface is from above, illustrators include a bird or plane in the sky. The inclusion of these familiar flying objects may make it easier for a child to recognize what a perspective other than his own would look like by tying that view to a concrete object. Scale changes are illuminated by using nested images. For example, the village of Slipper on the Water is shown in considerable detail in Figure 6 and then as a much smaller and less detailed portion of The Land between the Mountains in Figure 8.

SUGGESTIONS FOR FUTURE RESEARCH

Like many investigations this one is preliminary. With each book pulled from the shelves new ideas and new questions kept coming to mind. Some of those questions caused us to revamp what we were doing; others we decided to leave for another day or other researchers. Clearly researchers need to look at non-fiction literature written for children. It is reasonable to assume that there are far more maps available to children on these shelves than on the fiction shelves. Also much more work needs to be done in determining what map types are most effective for different purposes. We would also like to urge more collaboration between children's authors, illustrators, and cartographers.

Many times a map is the only illustration in a book, particularly at the older reading level. In quite a few cases the map was the frontispiece, end sheet, or in some way set apart from other illustrations. This fact coupled with the higher percentage of maps used in the prestigious Newbery and Caldecott books suggests a level of importance attached to maps not given

to other illustrations. Why that should be so is not readily apparent, but perhaps illustrators like cartographers realize the unique and powerful ability of maps to bring something as large as a town, nation, or planet into the child's view. Once brought into the field of vision the child is provided a framework for the comprehension of spatial relationships and for the understanding of place. ⌀

ACKNOWLEDGEMENT

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REQUEST

The authors would appreciate receiving copies and/or citations of exceptional or unusual maps in children's literature. Please send any correspondence to Jeff Patton, Dept. of Geography, University of North Carolina-Greensboro, Greensboro, North Carolina 27412.

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El Uso de Mapas en la Literatura Infantil

Extracto

Este escrito expone las encuentras de un reconocimiento producido para determinar la frequencia de el uso de los mapas en dos categorias de la literatura novelesca infantil: esos diseñados para ninos que empiezan a leer y esos disenados para los lectores a el nivel del tercero al sexto grados. La frenquencia de uso, el tipo, el propósito, y la escala general de los mapas fueron notados. Los resultados de las dos pruebas fueron comparado con informaciòn similar buscada en los libros aclamados de Newbery y Caldecott. Mientras los libros diseñados para los niños mayores contenián el doble de los mapas que esos diseñados para los niños menores, generalmente los libros de Newbery y Caldecott contienen un gran por ciento. Mapas con escalas grandes fueron utilizados con más frequencia que esos conteniendo escalas pequeñas y el uso de mapas de fantasia y de mapas efectivos fue uniforme. En los cuentos, los mapas fueron usado para explicar acontecimientos especiales y igualmente fueron utilizados como ilustraciónes generales con poca referencia a la historia.

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