TEXT, IMAGE, IDEOLOGY

Maps in picturebooks: cognitive status and narrative functions

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Abstract

This article focuses on the relation between maps, mental representations, description, and narration in picturebooks. It is shown that maps are cognitively demanding, since they presuppose the development of cognitive abilities and the comprehension of complex visual codes, including recognition of the specific combination of signs and names representing land- and cityscapes, geographical abstraction as well as the symbolization, highlighting, and suppression of information. After a survey of findings from cognitive psychology and geography literacy about children’s map acquisition, the article gives an overview on some types of maps in picturebooks that are interesting from a narrative point of view, before turning to the pictorial character of maps. Three outstanding picturebooks with maps, Drei Jungen erforschen eine Stadt (1933) by Friedrich Böer, The Story of the Little Red Engine (1945) by Diana Ross and Leslie Wood, and My Place (2008) by Nadia Wheatley and Donna Rawlins, have been chosen to demonstrate the diverse types and functions of maps. Finally, the article focuses on the relationship between picturebook story and map, thus showing that maps are not merely illustrations, but constitute relevant aspects of the overall narration.

Keywords: cognitive psychology; geography literacy; map; map acquisition; pictorial map; picturebook

INTRODUCTION

Children and adults are often confused about maps. To exemplify this, the geographer Lynn Liben told a story about a child who examines a map with her father and inquires about the length of their upcoming trip. When the father answers: “About two days,” the child is upset and questions “Two days? Just to go three inches?” As Liben explains, the child is “confused by map scale, expecting paper space to translate more directly to environmental space” (2009, 310). This story demonstrates that the understanding of maps must be learned like a language. Yet while most people master their mother tongue at age 5, the acquisition of map understanding develops more slowly during the school years, as has been shown by studies in the realm of geography literacy (Downs and Stea 1977; Liben 2009; Liben and Myers 2007; Liben and Yekel 1996; MacEachren 1995).

The National Geographic Society defines geography literacy as the comprehension of human and natural systems and geographic decision making. More specifically, this capacity helps understanding the complexity of the world.1 An essential component of geography literacy is the understanding of maps, which is often coined “map literacy.”

It is a well-known fact that many children’s books contain maps. In many cases, these maps do not merely illustrate but constitute certain aspects of the overall narration—for instance, the points in time and space relevant for the story. Famous examples are the maps in Treasure Island (1882) by Robert Louis Stevenson, The Wind in the Willows (1908) by Kenneth Grahame, and The Edge Chronicles (1998ff.) by Paul Stewart.

However, due to their abstract character, one would not expect maps in picturebooks for young children. Yet, an astonishing number of picturebooks...
contain maps. This is, then, our fundamental question: What is the use of maps in picturebooks and how do they affect the child audience?

Although there is much research on the mental concepts connected to maps and their acquisition and use, just a few studies focus on the presentation of maps in children’s literature (Baker 2006; Charlton et al. 2014; Druker 2012; Goga 2014; Honeyman 2001; Pavlik 2010; Rogers 2008; Sundmark 2014). While these articles mostly deal with the narrative and aesthetic impact of maps or how they might be used in the classroom, there is virtually no investigation into the interrelation of maps as parts of children’s books and children’s understandings of the mental concept of a map at a certain developmental stage (cf. Kümmerling-Meibauer and Meibauer 2013).

The outline of this article is as follows: First, we summarize findings from cognitive psychology and geography literacy about children’s map acquisition. Second, we give an overview on some types of maps in picturebooks that are interesting from a narrative point of view, before turning to the pictorial character of maps. In a next step, three picturebooks with maps will be analyzed to demonstrate the diverse types and functions of maps. Finally, we focus on the relationship between picturebook story and map and draw some conclusions from our analysis.

MAP ACQUISITION

The maps we are interested in are physical artefacts that represent portions of the real or a fictional world. These might be called “real maps.” In contrast, there are “mental maps” or “cognitive maps” that represent salient aspects of one’s environment. Downs and Stea define this ability as “an abstraction covering those cognitive and mental abilities that enable us to collect, organize, store, recall, and manipulate information about the spatial environment” (Downs and Stea 1977, 6). Therefore, mental or cognitive mapping is an interactive, selective, and organizing process that allows generating mental images of the environment.

Both map categories refer to real land- and cityscapes on the one hand, and fictional land- and cityscapes on the other. Moreover, real maps and mental maps are dependent on each other. Real maps might foster the development of mental maps, while mental maps are the precondition for an understanding of real maps. The following schema visualizes the relationship between these categories:

The relationship of real maps and mental maps

Real maps [+ objective]

Fictional land-and cityscapes [-natural]

Real land-and cityscapes [+ natural]

mental maps [-objective]

Real maps have several properties. Basically, they have a symbolic and a spatial character. Maps are symbolic in that they are complex symbols for the things they represent. Most preschoolers are aware of this symbolic character and interpret maps and aerial photographs as places, although they tend to misjudge scope (Liben 2009, 310). Maps typically contain map symbols, which have a dual character in that they have qualities of their own and at the same time iconically resemble the things they symbolize. Preschoolers often confuse symbolic and referential properties, for instance, when they assume that red lines on a map indicate red roads. However, such iconicity errors vanish when children become older (ca. 10 years of age).

What children also have to achieve is the insight that symbols are created intentionally. This has been tested in settings where there was a conflict between intentionally assigned meaning vis-à-vis attribute resemblances, that is, red dots chosen for the purpose of colorfulness vis-à-vis symbols for fire engines (cf. Lloyd 2000; Lowes 2008).

From the perspective of spatial cognition, maps are highly demanding, since they presuppose the development of cognitive abilities and the comprehension of complex visual codes: “Each map depicts the referent space from a particular viewing distance (affecting map scale), viewing angle (e.g. straight down or oblique), and viewing azimuth or direction (e.g. facing north vs. west)” (Liben 2009, 311). Moreover, mapping of a three-dimensional referent onto a two-dimensional surface goes together with a loss of information. Therefore, one can safely conclude, “interpreting spatial meaning requires the users’ spatial cognition just as interpreting the symbolic meaning requires the user’s representational insights and concepts” (Liben 2009, 311).

A child who has not mastered the concept of projective space will not succeed on a mapping task that concerns correspondence across change in point of view and viewing azimuth. The comprehension and production of maps necessitate all cognitive skills that are central to the understanding of graphic representation, such as pattern recognition, scale transformation, reduction of
information, and comprehension of symbols and notational systems that represent landscapes and cityscapes (Downs and Liben 1987). Moreover, the interpretation of maps requires the ability to take distinct perspectives, for instance, eye level versus bird’s eye view, and to master proportions, and map color specification. This list of constants apparently reveals that a full-fledged understanding of maps presents a complex cognitive task.

Experimental studies have demonstrated that 4- to 5-year-olds have map concepts—that is, they have a basic knowledge of what a map is and they are able to recognize prototypical maps—although these studies also indicate that preschool children usually have problems with map identification and map utilisation. While the first category refers to the identification of map contents, the latter corresponds with the capacity to handle maps in a competent manner. In this regard, it has been proved that children, even in the primary school years, are prevalently confused about geometrical relationships, such as scale and perspective. Very often they show a tendency to reify symbols—for instance, taking the pictogram of an airplane (as a symbol for airport) as an indicator that a single airplane is located at this place (Downs and Liben 1987, 206). While there is some evidence for a developmental path that consists of three steps, topological space, projective space, and Euclidean space, and, obviously, for age differences in map performance, there seem to be “dramatic individual differences within age,” and gender differences as well (Liben 2009, 312).

This short survey obviously makes clear that map comprehension has to be learnt and that this learning process involves cognitive strategies. Turning to the role of maps in picturebooks, we find an interesting paradox: On the one hand, maps in picturebooks are an input for children to develop map knowledge. On the other hand, children need map knowledge in order to be able to interpret maps in picturebooks.

Furthermore, we may ask: How can map learning from picturebooks happen when maps are part of a story? Does the narrative character foster the acquisition of map knowledge and support the child’s capacity to create mental maps? Or does it, quite on the contrary, hinder this development?

TYPES OF MAPS AND LOCATION OF MAPS IN PICTUREBOOKS

In general, picturebooks have maps of single rooms, the interior of houses, city maps, road maps, and maps of landscapes, countries, and the whole world. Besides maps that depict existing cities, landscapes, and countries, there are also maps of locations invented by the author and the illustrator. In addition, it might also happen that these maps do not represent specific places in full detail, but that they are specifically used to refer to the concept of map in general.

In order to categorize the large amount of picturebooks with maps in them, we distinguish the following types by focusing on the narrative functions and genres of maps:

a. Nonfiction picturebooks that inform about the history, diverse functions, and types of maps (Kim Heekyoung and Krystyna Lipka-Sztarballo: Wo geht’s lang? Karten erklären die Welt, 2011)
b. Nonfiction picturebooks that focus on the depiction of children’s everyday life in different countries (Tim and Sonia Gidal: My Village in Germany, 1964)
c. Nonfiction picturebooks with the didactic purpose to teach map skills and to encourage children to create their own maps (Scot Ritchie: Follow that Map!, 2009)
d. Picturebooks that focus on travel topics: the map gives an overview of the travel route people and vehicles take. This type shows a preference for picturebooks about trains and their daily routes (Diana Ross and Leslie Wood: The Story of the Little Red Engine, 1945)
e. Picturebooks that give an overview of the location where the story is set, independently of whether the location really exists or is just based on the artist’s imagination (especially in picturebooks that tell a fantastic story) (Friedrich Böer: Drei Jungen erforschen eine Stadt, 1933)
f. Picturebooks whose fictional story focuses on the significance of maps for people’s individual lives (Nadia Wheatley and Donna Rawlins: My Place, 2008)
g. Picturebooks that use maps to playfully foil the beholder’s expectations, thus stimulating the reader to consider events and things from different perspectives (Kristin Roskifte: Alt vi ikke vet, 2003)
h. Picturebooks that show maps as essential part of the illustrations (David Wiesner: Free Fall, 1991)

Whereas nonfiction picturebooks about maps contain several maps, an examination of an extensive corpus of fictional picturebooks has shown that the majority of this book type contains just
one map. This specific map is often printed in the peritexts, for instance, on the book cover, the endpapers, the front matter, or attached to the back cover. It also occurs printed in the middle of the book, covering a doublespread, and as fold-out map blended in the text. Most frequently, maps are printed on the endpapers so that the reader initially looks at the map before starting to read the text. This arrangement matches with findings in geography literacy: experimental studies with 10-year-olds have shown that their understanding of a fictional story improves when they could scrutinize a map of the setting beforehand (Wiegand 2006, 24). By skipping back and forth during the reading of the picturebook story, the child viewer compares the single presentations of places in the pictures with the symbols on the map and is thus able to follow the route of individual characters or vehicles.

Picturebooks that show more than one map often insert maps into the pictures. The maps are then either part of the picture or they are separated by black outlines and set apart, usually in the upper corner of the image. In these cases, the viewer can directly control whether the information given in the map matches the presentation in the picture on the same page or doublespread.

PICTORIAL CHARACTER OF MAPS

Many maps in picturebooks differ in various aspects from maps in atlases and travel guides, because they reveal a pictorial character. Instead of presenting landscapes and cityscapes with abstract symbols, the respective items, such as buildings, vehicles, bridges, and trees, are depicted in a more or less realistic manner. In addition, the typical flatness of maps is annihilated by the use of a central perspective and the presentation of buildings and vehicles as three-dimensional objects.

A typical example is *The Story of the Little Red Engine* (1945) by Diana Ross and Leslie Wood, which contains a map in the beginning of the picturebook story. The map provides an aerial view of the railway section the little red engine is taking every day, going from its home shed to the destination station and back. The full-color map shows all important landmarks, such as a farmyard, a small forest, a lake, and a small village, which are additionally denominated. This procedure makes it obvious that the map does not reproduce a real landscape but a fictional place. In contrast to maps in atlases and geographical books, this map does not solely have abstract symbols and signs. It also includes pictorial representations of single items, such as trees, cottages, cows, and a caravan, in combination with abstract symbols (e.g., a wind rose), and a map title. Therefore, this map belongs to a specific category called “pictorial map” (Holmes 1993). In contrast to regular maps that focus on the accurate rendition of distances, pictorial maps are less technical. They depict a territory with a more artistic style by enhancing landmarks and often incorporating objects, such as buildings, vehicles, people, animals, and plants, in order to give the viewer a more familiar sense of recognition. Nevertheless, pictorial maps still hold to the overarching map concept, what distinguishes them from stylized pictures of landscapes and cities in picturebooks.

One might wonder why many picturebooks show a preference for this map type. Scholars working in the realm of geography literacy argue that pictorial maps might support children in getting a more consistent “sense of place” (Wiegand 2006, 43). In addition, case studies with children who were asked to draw maps of their home and neighborhood have shown that children under 8 years of age have a tendency to draw pictorial maps, while children over ten are able to create plan-like maps with a high degree of abstraction. Between 8 and 10 years of age, children usually draw hybrid map forms that combine pictorial and plan design (Liben & Yekel 1996). Matthews (1992), for instance, claims that there is a shift in the achievement of map skills at the age of about 11, concerning the spatial arrangement, degree of abstraction, type of symbolization, and reproduction of scale. Furthermore, he stresses that the number of mapped elements increases throughout the primary school age range. If this holds true, the picturebook illustrators’ preference for pictorial maps matches the investigations of scholars working in the realm of geography literacy.

THREE CASE STUDIES

The following section concentrates on three picturebooks with maps that display different map designs on the one hand and diverse narrative and visual strategies regarding the connection between the map and picturebook story on the other hand. We have selected picturebooks from different time periods, ranging from the early 1930s to the first decade of the twenty-first century, and different countries (Australia, Germany, UK). The main criterion for the selection consists in showing how they present prototypical patterns of the descriptive–narrative continuum, that is, how the story combines descriptive and narrative passages.
in various ways. In addition, the number of maps is different. While the first picturebook only contains one map on the first doublespread, the other ones display up to 10 maps on different doublespreads within the picturebook story. We intend to demonstrate the different cognitive abilities that are required to acknowledge the relationship between map, picture sequence, and story, since these picturebooks address different age groups. Whereas the first picturebook has a pictorial map and addresses preschool children, the second picturebook addresses primary school children older than 8 years of age and presents a hybrid between pictorial and plan map. Ultimately, the third picturebook displays a plan map with an abstract design and targets children aged 10 years and older.

DIANA ROSS/LESLEY WOOD: THE STORY OF THE LITTLE RED ENGINE

The first picturebook, The Story of the Little Red Engine, which has already been mentioned in the previous section, is aimed at pre-school children and tells the story of a little red engine that goes on its daily railway journey from its shed in Dodge to the village of Dumble and back again. During its trip the engine passes several stations, cottages, farmyards, a manor, hills, and a lake with frogs, and crosses a big road where all cars have to stop and until the engine passes by. The book cover reveals that the engine has a face with eyes/lamps looking curiously at a cat crossing the railway lines. The anthropomorphized character of the engine is additionally stressed by her ability to "talk" with all animals, vehicles, and people by using various whistles and toots. The story climaxes when the engine falls sick and cannot leave the shed in the morning until a mechanic supplies it with oil. Afterwards the engine is eager to catch up on the delay, passing the same places with great speed. The engine is in such a hurry that it cannot even change its tune when climbing the hills and crossing the road. Thus, it succeeds in arriving at its destination on time. This summary already indicates the narrative character of the story which focuses on the adventures of the little red engine with whom the reader shall identify. In order to enable the comprehension of the engine's railway route from its shed to the final destination, the first doublespread shows a map of Taddlecombe & District. The route starts in the background where a tiny red engine with its smoking chimney can be spotted. Following different curves that pass several landmarks, the route ends in the lower right part of the map, situated in the image's foreground. The wind rose indicates that Dodge is situated in the Northwest, while Dumble is in the Southeast. Hence, following the route on the map is not an easy task, since it does not go straight from left to right, but meanders through the countryside depicted on the map. To support the young child's sense of place, the map incorporates illustrations of buildings, vehicles, animals, trees, and lakes, thus revealing the pictorial character of the map, whereas the railroad and the streets are rendered in a quite abstract manner. This map type, then, gradually introduces pre-school children, who are not entirely accustomed to the complex visual codes of map symbols, to a first understanding of the functions of maps (Liben 2009). Just two characteristic map symbols are incorporated, namely the wind rose and the map legend. Although pre-school children are usually not able to read the letters in the map designation and to understand the wind rose abbreviations indicating the four directions, they will nevertheless get a first impression of what constitutes a map (Blades and Spencer 1990).

When reading or listening to the story, the beholder might skip forth and back to compare the single pictures of landmarks with the map in order to follow the engine's progress in the course of the story. This narrative strategy matches with the findings of Wiegand (2006), who stresses that pre-school and primary-school children might comprehend a fictional story better when scrutinizing a map of the setting before they start reading the story or looking at the pictures.

What makes this picturebook rather complex is the fact that not all landmarks mentioned in the text and shown in the illustrations are also depicted on the map. For this reason, certain places the engine passes by are impossible to locate on the map. In addition, since the reader follows the engine's route twice, the pictures that illustrate the second trip either show new places or the same places from different angles, enticing the reader into checking the map once again. Thus, the close relationship between map and story invites the child viewer not only to identify the landmarks on the map with those in the pictures, but also to interpret them as symbolic representations of places that are shown from vertically and horizontally different points of view. Seen in this light, it is evident that the map complements the picture sequence by familiarizing the child audience with different ways of presenting places. By comparing the illustrations within the picturebook story...
with the map drawing, children will also acknowledge the differences and commonalities between a map and a stylized image of the same place.

**FRIEDRICH BÖER: DREI JUNGEN ERFORSCHEN EINE STADT**

The second example is a renowned photo book by the German author and photographer Friedrich Böer who was mainly influenced by Neue Sachlichkeit (New Realism). In *Drei Jungen erforschen eine Stadt* (Three Boys Discover the City, 1933), Böer uses the avant-garde technique of photomontage in combination with black and white pencil drawings and colored ink paintings. Although the book roughly belongs to the category of nonfiction book, it combines descriptive and narrative passages. Therefore, the book aspires to transfer map knowledge in connection with a fictional story.

An elderly relative invites his nephew Karli, who lives in the countryside, to visit him in the city during the summer holidays. Since it is the boy's first trip to a big city, almost everything is new to him and he is excited about the traffic, the crowded streets, and the huge buildings. In order to acquaint himself with the urban space, the uncle suggests that Karli should discover the city accompanied by two boys from the neighborhood, Klaus and Theo. The three boys start with their very surroundings and gradually extend their radius, until having investigated all relevant quarters of the city.

In order to broaden the boys’ conceptual understanding, the old man provides them with a city map (see Figure 1). Hence, the boys’ exploration of the city goes hand in hand with an increase in their map reading skills which even enable them to become progressively independent of the uncle’s assistance. Accordingly, several images show the boys looking at a map together. At the end of the book, a large map is attached to the inner side of the back cover (see Figure 2). The reader is invited to unfold the map that is more than double the size of the book itself. On the left the uncle’s home is encircled with a thick red line. The main areas, buildings, and route ways are denoted in red block letters. The map’s accuracy and photorealistic style creates the impression that it depicts a real place, which is in fact not true. The map represents a general model of a modern city; therefore the city does not have a name in Böer’s book and is always referred to as “city.”

Although streets, apartment blocks, and trees appear on this map in a rather abstract manner, a closer look reveals the hybrid character of the map, that is, a combination of pictorial and pictographic elements. The map’s accuracy and photorealistic style creates the impression that it depicts a real place, which is in fact not true. The map represents a general model of a modern city; therefore the city does not have a name in Böer’s book and is always referred to as “city.”

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![Fig. 1. Friedrich Böer, *Drei Jungen erforschen eine Stadt*, 1946.](image1)

![Fig. 2. Friedrich Böer, *Drei Jungen erforschen eine Stadt*, 1946.](image2)
abstract map representations. The map’s flatness is contradicted by the buildings that are depicted from a central perspective. Thus, the buildings become three-dimensional, additionally stressed by tiny lines and dots that represent doors and windows. This observation fits the map capacities of the target group, children aged 8 years and older. At this age, children have acquired advanced knowledge on maps, but they still struggle with the interpretation of distinctive perspectives and have not yet fully developed spatial cognition (Liben 2009). The pictorial items inserted into the plan map enable primary school children to appropriately master the space projections and the abstract map symbols.

In this respect, the map serves several functions. The boys—and the readers—learn that the abstract symbols on the map present crucial parts of the city, for instance, buildings, streets, parks, railway, and bridges, thus acquiring map literacy. Provided with knowledge about the map symbols and the understanding that a map presents a rather abstract image of the city, the boys are then able to discover the specific institutions and contrivances that constitute a city, for instance the industrial area, the shopping area, the railway station, the residential area, the suburb, and the harbor.

Since the three boys always take the map with them during their excursions, it is strongly linked to their discovery of the city. While attentively observing the traffic in the streets and recognizing the various functions of diverse city quarters, the map enables the boys to get an overview, that is, to see how the different quarters and institutions are connected to each other and where they are situated exactly. Hence, learning about the functions and structure of the city is closely connected to learning to read a map. It is no wonder, then, that the map consistently appears in the images and the text. Böer’s picturebook demonstrates that map skills are not only necessary for orientation, but also for an understanding of the overarching structures—of a city, a landscape or a country—that cannot be acknowledged easily when being amidst a city or landscape.

NADIA WHEATLEY/DONNA RAWLINS:
MY PLACE

The last picturebook, My Place (2008), is created by the Australian artists Nadia Wheatley and Donna Rawlins. The first edition appeared in 1988 in commemoration of the year 1788, when convicts and soldiers started a colony in New South Wales. The first doublespread depicts a timeline of the colonization of Australia that begins in prehistoric times. The first given date on the timeline is 1788, whereas the last date is 2008, when the Australian government officially apologized for the former bad treatment of Aboriginal people. On the following spreads different children inform about their name, age, home, family, pets, and everyday life. Sometimes, they even refer to historical events, such as the Gold Rush in the middle of the nineteenth century, the two World Wars, the Vietnam War, and the Land Rights Movement. Against expectations, the order of these short reports is turned upside down: it starts at 1988 and goes back to 1788. There is always a decade in between the given dates. The 10 stories are first-person narratives that show children who live in the same place. This place changes over the course of a 100 years. When thoroughly reading the reports and comparing the names and events mentioned in the text, one might be able to see the relationships between these children. They are either family related to the child narrator, or they are employed as farm laborers, shepherds, and maidservants by the place’s owner. The last report is told by an Aboriginal boy who claims that this place has always been seen as a temporary domicile by his tribe. The most important landmarks for all children, besides their homes, are a huge fig tree that they climb to overview their surroundings and a creek with a swimming hole.

Each report is complemented by a map that shows the child’s place (see Figure 3). These maps—although drawn by the illustrator—look as if created by the children themselves. The child characters are 10 years old and even older, which matches the results of geography literacy of children that age: They typically have a keen interest in creating their own maps and gradually master the abstract design of plan maps, using arrows and even legends to point to diverse landmarks on their maps (Matthews 1992; Wiegand 2006).

When comparing the single maps in this picturebook, the reader is able to recognize landmarks that remain the same, such as the creek and the fig tree, and to acknowledge the crucial changes, from a pristine landscape with swamps, mangrove trees, a bay, and a creek with some single huts built by the Aborigines, to a small town with a railway station, a factory, warehouses, shops, a school, farmyards, residential buildings, and parks. In this regard, the map sequence introduces the reader to the environmental, historical, and cultural changes in a specific Australian place, thus
highlighting the strong connection between space, time, and history (cf. Charlton et al. 2014).

Moreover, there is a gender balance among the 10 child narrators who represent different social classes and ethnicities, thus mirroring the historical, social, and economic development of Australia. A couple of narrators have a migration background, indicating that their ancestors or family members immigrated to Australia from Europe, North America, and Asia. One might speculate what this sophisticated relationship between gender, class, and ethnicity has to do with the maps drawn by the child narrators, but one underlying idea certainly is to show that all children are capable of developing a “sense of place,” especially when it concerns their home and immediate surroundings (Wood 1992). Their maps then demonstrate that they do not only have advanced map skills, but are also able to transfer their mental maps onto the page.

RELATION OF MAPS TO STORIES IN PICTUREBOOKS

As has been shown in the preceding paragraph, maps in picturebooks are not mere decorations. Instead, they are integrated into the overall purpose of the narrative. The most important aspect is that certain literary characters move through space and time while passing certain points on a map. Many picturebooks with maps show a preference for trains as literary characters. Popular examples are the Thomas the Tank Engine (1946ff.) books by Wilbert Awdry and The Little Train (1953) by Graham Greene and Dorothy Craigie. One reason might be that trains are bound to a network of rails. Consequently, they have certain liberties to choose their specific goals, and are yet somehow bound to the track network (The Story of the Little Red Engine). In other cases, we find human characters like the boys exploring the city (Drei Jungen erforschen eine Stadt), or a group of children connected through a common property, for instance living at a certain place (My Place). By identifying with these characters, the child may become able to adopt their perspectives, that is, to act and feel like the characters that move in their environment.

This movement can be traced on the map. Therefore, the child reader can switch between the picturebook text and the map on the one hand, and move forward and backwards on the map, moving the finger along rails or streets, on the other hand. In a way, maps allow children to detect aspects of the literary character’s environment that may not be explicitly represented in the text or depicted in the picture sequence. Moreover, maps in picturebooks call the viewer’s attention to different perspectives on the world, determined by direction, distance, scale, location, and symbolization. By moving back and forth between single pictures and the map, children learn to remember relevant information and also to develop their skills to develop mental maps (Kulhavy et al. 1994). Many researchers refer to this formatted information as cognitive mapping—that is, the human ability to generate a general map schema (MacEachren 1995; Uttal and Tan 2000).
Indeed, when plots become more complicated, for instance, through a lot of information about several children in different places, following the plot can be difficult for young readers. A map (like a list of characters) may be helpful in this respect, since it facilitates the cognitive comprehension of space which is a significant part of picturebook stories.

On a final note, we want to mention that maps can be explained by adults (Szechter and Liben 2004; Wiegand 2006), and that maps may inspire children to draw their own maps, maybe even maps that are related to their own fictional stories, thus fostering map literacy.

Notes

2. A more sophisticated taxonomy would be based on a corpus, which we cannot provide here. However, we propose this taxonomy as a first step towards this aim. We include examples of picturebook types to make the categorization clearer. For lack of space, we can go into some detail in categories d, e, and f only.

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