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Pinky Extension and Eye Gaze

Language Use in Deaf Communities

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Spatial Mapping and Involvement in ASL Storytelling

Susan Mather and Elizabeth A. Winston

Spatial mapping is an essential ASL discourse feature and is used by fluent signers throughout discourse. Signers use space and spatial structuring in ASL to help the audience process the flow of information they are watching, structuring it into coherent and cohesive chunks of language. By using space both referentially and prosodically, signers can structure, or map, concepts in the signing space, evoking conceptual referents in the mind of the audience. Utterance boundaries can be marked in space. No specific entity needs to be mapped in the signing space; the utterance boundary can be recognized by the shifting of the signing space from one area to another. Referential mapping produces visual patterns in space, as in the juxtaposition of referential spaces in comparatives or the diagonal movement backward and forward on temporal maps. Prosodic use of space also produces visual patterns, from basic movements from point A to point B that bound utterances to the more rhythmic, flowing patterns of poetry and literature in ASL. Space in ASL serves as a foundation for linguistic and conceptual structures of ASL messages. Signers choose to use spatial strategies in order to render a message meaningful.

Fluent ASL signing is often noted for the fluid beauty of the signs and the visual patterns and structures. Nonfluent signing often lacks the fluidity and visual spatial patterns that make ASL a coherent language. Much ASL research has focused on isolated, often invented, linguistic structures, ignoring the use of the language in context. Thus, the spatial visual patterns that connect and make the language coherent have been overlooked.

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This study is one part of a three-year research grant investigating visual involvement strategies in literacy in Deaf and hard of hearing children between the ages of three and eight years old. The larger project is studying the use of a variety of ASL involvement strategies by signers who are reading to students from books. The signers have varying degrees of fluency in ASL and English and are working with several different classroom styles and populations—from small classrooms at residential schools with all Deaf and hard of hearing students to large classrooms in public schools that are "reversed mainstreamed," with hearing students joining Deaf and hard of hearing children for the reading sessions. All the children in the study are between the ages of three and eight years old.

This paper focuses on a very small portion of the data collected. Specifically, it investigates the use of spatial patterns, both referential and prosodic, in the storytelling strategies of teachers who are translating a written English story to a signed mode for Deaf and hard of hearing children. Actually, this investigation is narrowed even further because a review of the data revealed that only one of the signers used spatial patterning throughout the storytelling.[1]

Because this is a translation, it is necessary to understand both the involvement strategies of written English stories that are meant to be read aloud and the nature of involvement strategies of ASL visual structures that are intended to portray the stories. Writers use rhyme and rhythm to structure a story for the audience, involving them in developing their understanding of the story as well as surrounding them in the pleasurable sound patterns of the language. In the same way, signers use space and spatial mapping in ASL to help the audience process the flow of information they are watching, structuring it into coherent and cohesive chunks of meaning. The use of spatial structuring is one essential feature of discourse structuring and is used by fluent ASL signers throughout discourse. Anyone attempting to produce an effective message in ASL must

1. This signer is the only one considered to be a fluent ASL signer. Since one objective of the overall research project is to analyze effective strategies used in translating English to ASL, this signer was chosen as the specific focus of this portion of the research. Spatial strategies used by the other signers in translating this story are referred to when they occur at different points in the story, but these are rare. Nonfluent ASL signers use spatial mapping rarely, inconsistently, and at the lexical and syntactic level rather than at the discourse level, thus neglecting to provide their audiences with an essential linguistic feature needed for appropriately processing the story for both content and enjoyment.

incorporate its underlying spatial structures; anyone attempting to produce a translation from one language to the other must consider these underlying structures and linguistic patterns in order to achieve an effective, meaningful translation.

THEORETICAL FRAMEWORK

Target Language: Functions of Space in ASL

REFERENTIAL SPATIAL MAPPING

Referential spatial mapping is the process of pointing to areas of the signing space in order to evoke conceptual referents in the watchers' minds. Most research on the use of space in ASL has focused on the strategies of spatial referencing, that is, the use of space for referring to entities introduced in the discourse. Padden (1990), Meier (1990), Van Hoek (1988, 1989) and Liddell (1990) have analyzed a variety of grammatical features of spatial referencing at the morphological and syntactic levels.

At the discourse level, Van Hoek (1989) discusses repeated referential mapping and the phenomena of locus shifting and locus sharing across larger segments of discourse. Van Hoek, Norman, and O'Grady analyze the development of spatial cohesion in ASL narratives in children. Metzger (1995) analyzes the use of spatial mapping in constructed action in narratives, and Metzger and Liddell (1995) expand that research. Locker-McKee (1992) discusses the use of space in the establishment of footing in ASL. Winston (1993) analyzes the use of spatial mapping as a powerful strategy for structuring ASL discourse. Signers use spatial mapping to reflect their mental representation of discourse structure to the audience, expecting that the audience will use the spatial maps to build their own mental representations of the discourse and arrive at an understanding of the text that is similar to that of the signer. When repeated, it is a powerful tool at the discourse level, especially when it is repeated in order to structure the text. Winston (1993, 1995) analyzes the mapping of comparatives in an ASL lecture. An example of these mappings is the comparison of the art and science of ASL poetry. In this example, the signer mapped one concept, the art of ASL poetry, on one side of the signing space and another, the science of ASL poetry, on the other side, then proceeded to compare his understanding of the two. These spatial mappings provided structures that allowed the audience to

participate in the creation of meaning by requiring them to interpret spatial referents previously established.

> Spatial mapping is a salient characteristic of comparative frames; it marks the topic by adding spatial dimensions to linear, sequential text, making it more salient to the audience. Such marking provides the signer with powerful cues with which to guide the audience in their interpretation of the meaning of the signed production. Watchers perceiving the introduction of spatial mapping into discourse will note the salience of the spatially mapped chunk of text as being important to the overall coherence of the presentation. As such, spatial mapping is a powerful marker for ASL discourse structure. (Winston 1995, 109)

In addition, spatial mapping allowed the audience to predict the point of the comparison, finding that old or given information was mapped on the nondominant side first, followed by the mapping of the new information in the comparison on the dominant side second. The signer used a variety of pointing strategies to point to the map, including shifting of body stance, head pointings, hand dominance shifting, and signing in the space as well as the more customary pointing with an index handshape. The signer mapped abstract entities in the comparisons, not being restricted to mapping only physical entities and relationships.

VISUAL PATTERNS: RHYTHM AND RHYME

A second function of spatial mapping is prosodic. The spatial maps discussed in the preceding section are all referential; they are maps that allow the audience to interpret references to entities established in the discourse. However, use of space in ASL also functions in phrasing and chunking utterances and ideas in ASL. Signers shift their location in space between utterances, using the shift to mark utterance boundaries. The locations to and from which they move are not necessarily locations that map entities but are simply locations that are different from where they were before, indicating a shift in topic, a new thought or utterance, or a shift of frame. Thus space functions to differentiate one chunk from another and can create visual patterns familiar to the audience. These patterns involve the audience, making the texts more visually accessible and, at times, such as in poetry and storytelling, more pleasurable.

Rhythm and rhyme patterns in ASL have not yet been analyzed in great depth, but a growing body of research clearly demonstrates that both rhyme and rhythm occur in ASL and are achieved through visual strategies. Boundary markers for narrative are analyzed by Bahan and Supalla (1995), who find that eye gaze is an important feature of boundary marking in ASL. Wilbur (1994) analyzes eye blink as a boundary marker in ASL. In ongoing research, Boyes Braem (1995) is analyzing the shifting of signers' bodies for marking discourse chunks. Valli's research (1993) on rhyme and meter in ASL poetry is a seminal work on this topic. He identifies several features of ASL that effectively produce rhymes and rhythm in ASL poetry. These include eye gaze, body shift, head shift, use of handshapes, and use of movement path contours. All of these features shape the space, affecting the visual impact created by the signer and involving the watcher in the rhythms and rhymes of ASL.

Valli's description of visual patterns in ASL poetry is valuable to this study for its work on spatial patterns, especially because he compares the patterns of rhythm and rhyme created through ASL strategies in a child's poem and in one created for adults. As becomes clear in the teachers' storytelling translations in this study, only one teacher consistently uses ASL rhythm and rhyme strategies to tell the story to the children (although all do use some of the rhymes and rhythms of ASL in smaller segments of text). These strategies are not only ASL strategies; rather, Valli identifies them as "children's" devices that make the discourse linguistically simpler and easier for children to comprehend, memorize, and produce.

SPATIAL PATTERNS AS INVOLVEMENT STRATEGIES

Interlocutors interact through a variety of strategies, many of which are linguistic. In linguistic terms, involvement strategies are those that speakers use to "reflect and simultaneously create interpersonal involvement" (Tannen 1989, 1). This involvement is achieved when the speaker encourages the audience to take an active role in creating the meaning of the discourse. Tannen (1984, 1989) describes two categories of involvement strategies. One involves the audience in understanding the content of the message, using constructed dialogue, imagery and detail, ellipsis, and lexical choice. The audience is asked to create a mental representation of the story, visualizing the people and events by interpreting the words of the speaker. The second category encourages the audience to experience the patterns of the language, an aesthetic pleasure that allows the audience to enjoy the experience of the text. Such devices include rhyme, rhythm, intonation, and repetition to enhance the audience's enjoyment and processing of the text.

Involvement strategies in ASL include all of these methods. Roy (1989) discusses the use of constructed dialogue in ASL as an example of an involvement strategy; Zimmer (1989) views constructed dialogue as an involvement strategy that adds the imagery and detail of characters—their "voices"—to discourse (Schiffrin 1994). In an earlier study, Mather (1989) compares the use of space by both a hearing and a Deaf teacher in making a story more interesting for Deaf children. Metzger, in her investigation of constructed action (1995), discusses spatial referencing as an involvement strategy. In discussions of the functions of spatial referencing in discourse frames such as comparatives, performatives, and temporals, Winston (1991, 1993, 1995) describes these spatial patterns as involvement strategies, claiming that space and its functions in ASL are very powerful means for shaping the structure of discourse and eliciting involvement in the audience. She analyzes the use of space in three ASL involvement strategies: comparisons, performatives (constructed dialogue and action), and time maps. Each of these relies heavily (although not entirely) on the use of referential spatial mapping to involve the audience in sense making and in the visual patterns of the texts. As Winston (1992) states:

> Comparisons use space to involve the watcher by placing items in space and allowing the watcher to make comparisons, and thus sense, of the placements; performatives use space to create scenes and personal involvement in the same way that constructed dialogue does in other languages; time mapping uses space to involve the watcher in events in time, as well as in the passage of time itself, through the use of imagery and detail.

Use of space and spatial mapping in ASL comparatives is a powerful discourse mechanism that involves the audience in both the creation of meaning and the visual patterns molded by the signer.

The Source Language: Written English Stories

WRITING CHILDREN'S STORIES IN ENGLISH

Written stories, especially children's books, are composed with the effect of the spoken word in mind. Thus rhyme and rhythm are part of the author's goal in the original composition. Authors put time and effort into composing the stories to carefully combine both words and sounds. Even though readers may not know the author's exact intention, they have a general understanding of English sound and rhythm patterns that are more

or less effectively conveyed when the story is read aloud. Thus it is possible for native English speakers to read aloud with little preparation and still provide at least some of the sound and rhythm patterns of the story. Children's stories are designed to evoke both the emotional and cognitive involvement of the children, using features that rhyme and create a musical rhythm. These qualities add to the enjoyment children experience by the repetition of established rhymes and rhythms (Johnstone 1994).

READING THE STORY ALOUD: THE READER'S FRAME

Fluent English speakers approach the task of reading aloud as one of taking the words and repeating them, adding intonation and rhythm to their speech. They have little difficulty in reproducing the rhymes and rhythms of the story. With little preparation, they are able to reproduce the effect wanted by the author—the combination of both form and content—to involve the children in the storytelling event.

Translation: From Source to Target

The task of "reading" is altered significantly when the "reader" is asked to translate an English-based story to another language such as ASL. Translation, changing a message from one language to another, means that the form of the message must be changed. For text that is more propositional, more content-dependent, this is not such a problem, for translation deals with the transformation very well. However, when the text is form-dependent (e.g., in text such as poetry, jokes, rhymes, and rhythms), the translator faces a dilemma. The rhythms, rhymes, and poetic features of the source language rarely coincide with the rhymes, rhythms, and poetic features of the target language. For example, in the original English story, the words *squeak*, *creak*, *hiss*, and *swish* are used extensively in the rhyme structure. In ASL, there are no specific signs for these words, making rhyme difficult. In order to produce a dynamically equivalent translation, the reader/translator will have to balance the form of the message in the target language with the content. The form of the resulting translation, if it is dynamic, will have the content of the message, with poetic forms and features that balance those of the source. (These forms will not be identical; rather, they will strive to produce the same effect of pleasure and comprehension in the target language as was created by the source language text.) In the case of a children's story that is dependent on both form and con-

tent to achieve the author's intent, a translation that accomplishes the same goal can be attained only by someone who is fluent in the target language and has spent some time and effort in preparing the translation's form.

The translation requires the same effort and time spent on meshing the rhyme and rhythm patterns of the target language before the dual goals of sense and pattern can be achieved. Without this time and effort, the translation is little more than a string of words without the author's intended rhyme or rhythm. The story loses its attraction, especially when the audience is children and the goal is primarily the combination of sound and sense. Unless the reader/translator provides the appropriate rhythm and rhyme strategies in the target language, involvement is lost. Thus, a "reader" simply transcoding the words without the patterns provides neither an effective nor a successful "reading" for the audience. Such a translation provides no dynamically equivalent text (Nida 1964; Hatim and Mason 1990).

As discussed earlier, one of the major linguistic structures of ASL at the discourse level is the use of space. It helps the audience interpret the signer's intentions and re-create the meaning of the text in their own minds. This paper focuses specifically on the use of this feature in the signed telling of the story, *Too Much Noise*. In the telling, only one teacher consistently used space for discourse chunking and prosodic marking throughout the reading of the story. This was the first teacher described, Ms. Daniels, who is regarded as a noted signer and storyteller in the ASL community. Others occasionally used space for referential mapping, but this was infrequent and often inconsistent and was applied at the lexical or syntactic level rather than the discourse level. This paper focuses on the effective use of discourse space and mapping in the storytelling of the one teacher who produced a dynamic equivalent of the story for her audience.[2]

2. This is in contrast to all the others, who use the book to show pictures rather than describe the animals. Since this is the point of having the pictures, it is not inappropriate. Nevertheless, it seems to break up the flow of the story for the other storytellers and the students. Reading aloud to hearing children, the teacher can often read and show the story at the same time, not having to take a great break between reading and showing. And they can talk while showing the pictures, saying things like, "Do you see the sheep?" or "Have you seen a sheep before?" They are able to keep the students' attention with both the visual and auditory channels. For signing, the teachers place the book in their laps while reading, their hands in neutral space. When they want to show the pictures, they have to stop, turn the book around, and show it, then turn it back around, put it down, and start signing again. Although none of these movements requires a great deal of time individually, the overall effect is that there is a great deal of time when nothing is happening. In addition, when reading directly from the book, the teachers lose all eye contact during the telling, the time when they need to be monitoring for understanding in the children. They receive no cues from the children about what they are understanding unless one of them becomes restless or disruptive. This was the case during the readings of the four other teachers. The teachers were interrupted by children and had to consistently regain their attention. Only Ms. Daniels kept their attention throughout the entire event without interruption.

Ms. Daniels avoided the problem by not reading from the book. Rather, she read it through, then translated the story into ASL. Because she does not have to stop for interruptions, she is able to monitor, adding information when she spots puzzlement in the children. She also is the only teacher who stands, giving herself the full range of movement and space to create the most visual impact. Whereas all the students can see her easily, the other signers seem to have a problem with the students not being able to see. By using signs rather than the pictures to describe the events, Ms. Daniels does not have long periods of waiting with little or no eye contact with the children.

3. Any names used to refer to the participants in the study are fictitious and have been assigned to preserve the participants' identities.

DISCUSSION

Data Collection

BOOK SELECTION

Two English stories were chosen for the larger project: *Too Much Noise*, by Ann McGovern, and *Five Chinese Brothers*, by Claire Bishop. These books were selected based on the following criteria: They contain involvement strategies (dialogue, repetition, imagery, and details) to encourage the production of imagery and detail involvement by the teachers, and they are generally popular, which encourages a successful book-reading event for everyone. The analysis in this project is limited to the reading/translation of the story *Too Much Noise*.

TEACHERS' BACKGROUND, THEIR SCHOOLS, AND THEIR STYLE OF READING *Too Much Noise*

Five teachers were involved in the larger project. Although only one rendition of the signed text, that of Ms. Daniels,[3] is analyzed for spatial

usage, the data from the other stories are referred to when appropriate. Although the other four readers did not use space as a basic structure, they did use some of the prosodic features such as ASL rhyme and rhythm that help to create the visual impact of ASL. Therefore, we refer to their renditions to illustrate points in the analysis and discussion. The following sections describe each teacher's signing skill, classroom setting, and approach to the translation task.

Two teachers work in a residential school setting; one is hearing and one is Deaf. They both tend to use ASL with their students. The Deaf teacher, Ms. Daniels, is also a well-known storyteller. Videotapes of her storytelling are sold nationwide by a company that specializes in videotapes and books of signed stories in ASL. Ms. Daniels had a group of six students who were six to eight years old. Her style of book reading is to read the whole book first and retell the story in ASL without the English text.

The second teacher (we will not assign names to the remaining four teachers) is hearing and a well-known person in the community for her involvement with people who are Deaf and hard of hearing. She also is a certified sign language interpreter. She had a group of six students who were four to six years old. Utilizing a somewhat different style of reading, she read each page first before signing the story.

The third teacher works in a self-contained classroom in a public school setting. This setting and teacher were chosen because of strong recommendations from the community and colleagues of the teachers. A certified sign language interpreter, she can switch from ASL to Manually Coded English (MCE)[4] effectively and effortlessly. She used both ASL and MCE with her group of six students ranging from three to five years old. In this task she read the story directly from the book, simultaneously producing a transcoded version of English signing on her hands.

The fourth and fifth teachers work in a mainstreamed program in a private day school. This setting is interesting for two reasons: (1) instruction is visually oriented, and (2) students with normal hearing are reverse-mainstreamed from public schools to that school for various reasons. Some students with normal hearing are sent by their school district because they may benefit from visually centered activities. These include, for example, students who can hear but cannot talk or students who cannot absorb information audiologically and therefore depend more on visual channels. They also include students with normal hearing whose parents are Deaf and use sign language at home, as well as students who are siblings of Deaf students. Both teachers from this school use Manually Coded English. One teacher, who is hard of hearing, had a group of twenty-two students (Deaf, hard of hearing, and hearing) ranging in age from five to seven years old. The other teacher, who is hearing, had a group of thirteen students (also Deaf, hard of hearing, and hearing). Their ages ranged from three to five years old. Both teachers are similar in their story-reading methods. They read and signed almost each line instead of reading the whole passage and signing afterward. Although both consulted their teacher-aide (who is fluent in ASL) on how to tell a story, they produced transcoded versions of the story for this task.

Of the five story readers, only one approached the task as one of dynamic translation, attempting to provide an equivalent of the written English story in ASL. She has achieved a balance of form and content, enabling the children to enjoy both the story and its linguistic form. The other four teachers approached the activity as a sound-based process, relying heavily on the English forms transcoded to signs and relying heavily on the sound-based rhymes and rhythms of English rather than those of ASL. They read the story directly from the book, usually adding signs as they read, trying to some extent to maintain the content in their signs. However, the form was maintained almost exclusively in their voices. Three of the teachers relied primarily on voice intonation for the poetic features of the story and included few ASL strategies in their signing. These stories had no dynamic, formal equivalence for the Deaf students. The fourth did not use her voice, telling the story entirely in signs. She was perhaps the most successful at communicating the content, but she did not include many ASL spatial involvement strategies or poetic features, thus losing one of the primary goals and effects of the story's author. There was little signed rhyme or rhythm in the storytelling of these four teachers. Therefore, this analysis focuses on the use of space in the single translation that achieves a dynamic rather than a sound-based literal equivalence.

4. Manually Coded English is a system invented to represent morphemic segments of the English language through signs.

TABLE 1. *Story's Structure and Author's Involvement Strategies*

Story Structure	Involvement Strategy
Introduction of main character, Peter, and his house	Imagery and detail
Inside of house	
House has many noises	Imagery and detail
What to do?	Inner dialogue and ellipsis
Outside of house	
Goes to wise man	Narrative
Gets advice	Constructed dialogue
Follows advice	Narrative and ellipsis
Repeat basic structure five times	Repeated strategies
Inside of house: problem resolved	Inner dialogue

DISCUSSION

Source Language: Original English Version of *Too Much Noise*

BASIC STORY STRUCTURE

The story, *Too Much Noise*, is analyzed by its basic structure and by the repetition of this structure to create the overall effect. The author divides the story into two locations: inside the house, where an old man (Peter) lives, and outside the house, where Peter tries to find answers to a dilemma. The overall discourse structure of the story, as well as the various involvement strategies included, is mapped in Table 1.

At the beginning of the story, the inside of the house is very noisy, which disturbs Peter terribly. He complains about the noises that bother him, listing them in the following structured series of rhyming, rhythmic sentences, using words to create visual imagery and detail:

The bed creaked.
The floor squeaked.
Outside, the wind blew the leaves through the trees.
The leaves fell on the roof. *Swish. Swish.*
The teakettle whistled. *Hiss. Hiss.*[5]

After this list of noises, Peter exclaims that he does not know what to do and then decides to ask the village wise man for advice. At this point

5. The italicized words are reproduced from the original book.

the author creates involvement for the children through ellipsis. She does not explicitly state that Peter will get help from the wise man; she just says that he goes to see him. The audience needs to make the connection between seeing him and a possible solution.

Peter leaves the "inside of house" location and goes to see the wise man, shifting to the "outside of house" location. The author does not require the children to make too many connections, however. In the next sentence she uses dialogue to add imagery and detail to the story, showing that Peter asks the wise man for help. Peter tells the wise man about each noise, repeating the "bed creak, floor squeak, leaves swish, teakettle hiss" refrain introduced at the beginning of the story. The wise man advises Peter to get a cow. Peter questions the value of a cow in solving his noise problem but follows the suggestion anyway.

At this point the author does not tell the children that Peter takes the cow home. Rather, she implies that the cow is there by describing its noise, adding it as a new first sentence of the main refrain:

The cow said, "Moo. MOO."
The bed creaked.
The floor squeaked.
The leaves fell on the roof. *Swish. Swish.*
The teakettle whistled. *Hiss. Hiss.*

This is an elliptical shift back to the inside-of-house location. The children again must deduce that the cow has added to the noise by interpreting the description of the cow's noise immediately before the house noises. Again, through this strategy the children are involved in creating the meaning of the story for themselves.

CYCLE: REPETITION OF STRUCTURE

The author repeats the basic story structure, moving from inside the noisy house to outside for help, back inside for more noise, and back outside for more help. The author never provides an explicit physical description of the interior or exterior; these are prototypical locations, without specific physical sizes, shapes, or distances. Thus the children create their own mental representations of noisy houses and the outside where the wise man is. This "outside" does not imply that the wise man is sitting out of doors; rather, it means that he is outside of the mental representation of Peter's noisy house. "Outside" is a very abstract location in this story.

The author repeats the main refrain throughout the story, building on it as new noises are added. The rhyme, rhythm, and repetition of the refrain draw the children into the story, giving them a way to predict what will happen at each stage of the tale. The author builds suspense and involvement by repeating the main refrain, going back five more times to the wise man, following his advice, and attaching more and more noises to Peter's house, each time adding a new (but utterly predictable) sentence to the refrain. Each cycle is introduced with language very similar to that of the first visit, the language changing only at the sixth visit when Peter becomes angry. This change in the structure and rhythm signals the audience that a change in the story is imminent, and indeed the sixth is the final visit. This time the wise man tells Peter to get rid of the animals. The author has the wise man recast the refrain, changing the frame of "get an animal" to "let the animal go":

Let the cow go.
Let the donkey go.
Let the sheep go.
Let the hen go.
Let the dog go.
Let the cat go.

Illustrating Peter's acceptance of this advice, the author repeats the refrain, changing it slightly:

So Peter let the cow go.
He let the donkey go.
He let the sheep go.
He let the hen go.
He let the dog go.
He let the cat go.

The refrain is recast yet a third time, as Peter begins to appreciate the "quiet noise" as he comments,

Now no cow said, "Moo. MOO."
No donkey said, "HEE-Haw."
No sheep said, "Baa. Baa."
No hen said, "Cluck. Cluck."
No dog said, "Woof. Woof."
No cat said, "Mee-ow. Mee-ow."

The author has used repetition and recasting of the main refrain as a major structure of the story, leading the children through the action, providing them with recognizable landmarks for moving in and out of the house location and with subtle changes in those landmarks that let them know the story is building and then coming to an end. The rhyme, rhythm, and repetition are structured to provide a story experience that includes the children in both creating meaning and also enjoyment of the rhymes and rhythm. Thus form and content are equally important to the author in the telling of this story.

The Target Language: ASL and Visual Patterns

BASIC STORY STRUCTURE, REFERENTIAL SPATIAL MAPPING, AND PROSODIC VISUAL PATTERNS

The English story has two main discourse locations: inside Peter's house, which is noisy, and outside his house, where he goes for help to reduce the racket. In the ASL signing, the two concepts are spatially mapped by the signer, who clearly establishes one signing space to refer to the interior of the house and another space to refer to the exterior. The interior consists of the space immediately surrounding Ms. Daniels (Figure 1). The concept of the squeaking bed is signed in the middle left (nondominant) space,[6] with all the signs related to the topic of the bed signed in that area. The concept of the creaking floor is signed in the lower center, with all the signs related to the floor signed in that area. "Leaves swishing on the roof" is signed in the upper right (dominant) area. Although the leaves, trees, and wind are technically outside (physically), the problem they cause is inside the house, and the swishing leaves are signed bordering the house space. Thus this whole sequence becomes part of the inside-of-house space in spite of logical, physical descriptions. The teakettle with its sink, stove, and hissing are signed in the middle right (dominant) space.

The first time the signer introduces these noises, she takes great care to explain each entity and the fact that it makes a noise that is intolerable to Peter. She actually signs the objects in the order of bed, tree, floor, and kettle in an alternating space (Figure 1). (This alternation is a use of

6. It is important to note not only the left and right sides but also their relative dominance for the signer. Thus, we describe spatial patterns in terms of left and right and their dominance and nondominance for the signer.

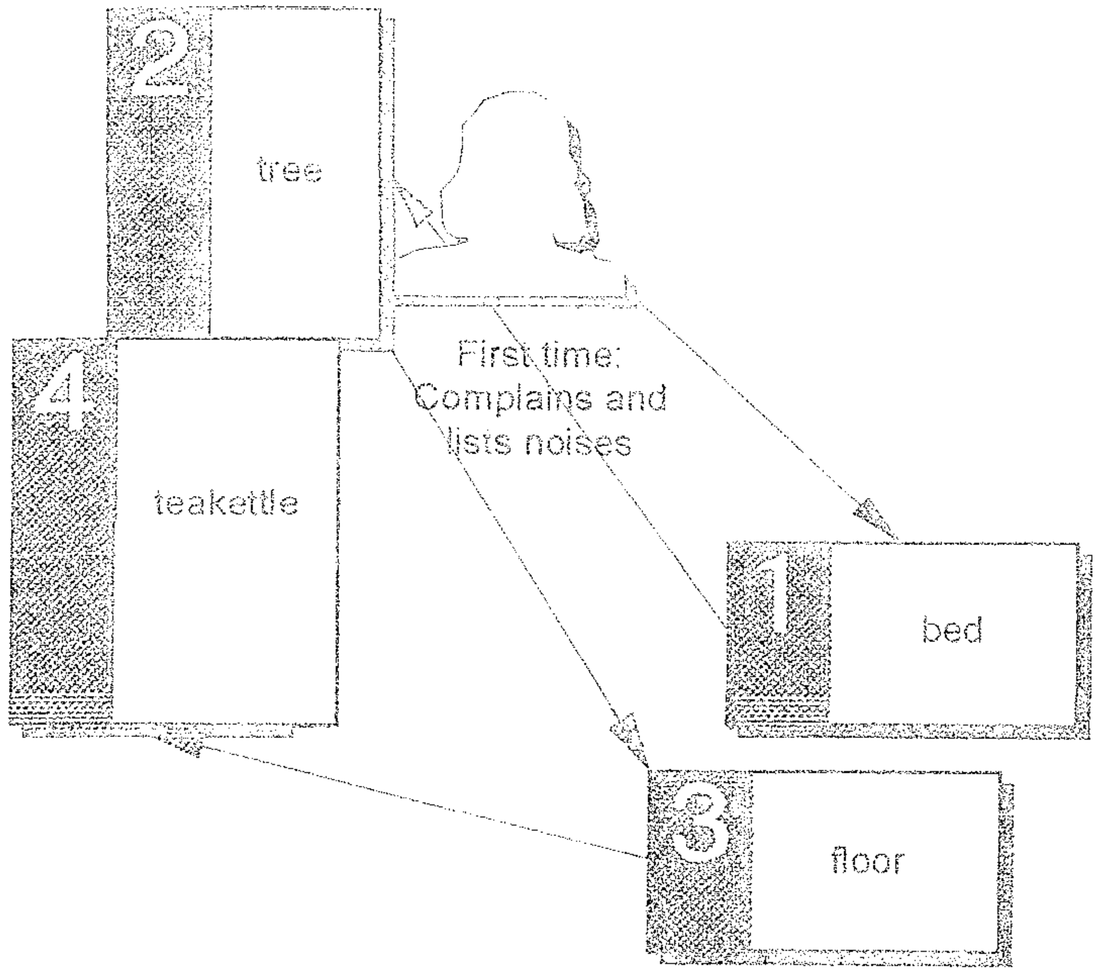

FIGURE 1. *First Time: List of Noises*

prosodic space noted by Valli [1993] and Winston [1993]). This is not the actual order of the story refrain.

The mapping of the interior of the house is not a physical layout; rather, it reflects a mental representation of "inside." This is evidenced by the placement of the various noisemaking entities both inside the house (bed, floor, and teakettle) and out (leaves hitting the roof). Although they are signed at relatively expected heights from a floor, it is not likely that a house would have a bed on the left, a floor only in the lower center, a roof on the upper right, and a sink and stove on the central right. Any truly physical description of a house would have the roof and the floor covering the entire house, with furniture and appliances in between. Thus it is clear that the signer is not trying to establish a realistic description but rather is attempting to evoke the concept of a prototypical house in the space in front of her body. The description and mapping are therefore of an abstract concept rather than an actual physical location.[7] Chunking

7. The other signers who used space at all here set up the house as a physical, concrete description, with the signs for each entity signed in order of height vertically from in front of the face to the level of the floor; they also signed only the sign for the entity, not the entire discourse chunk, at that height. There is no representation of the entire house being filled with noise.

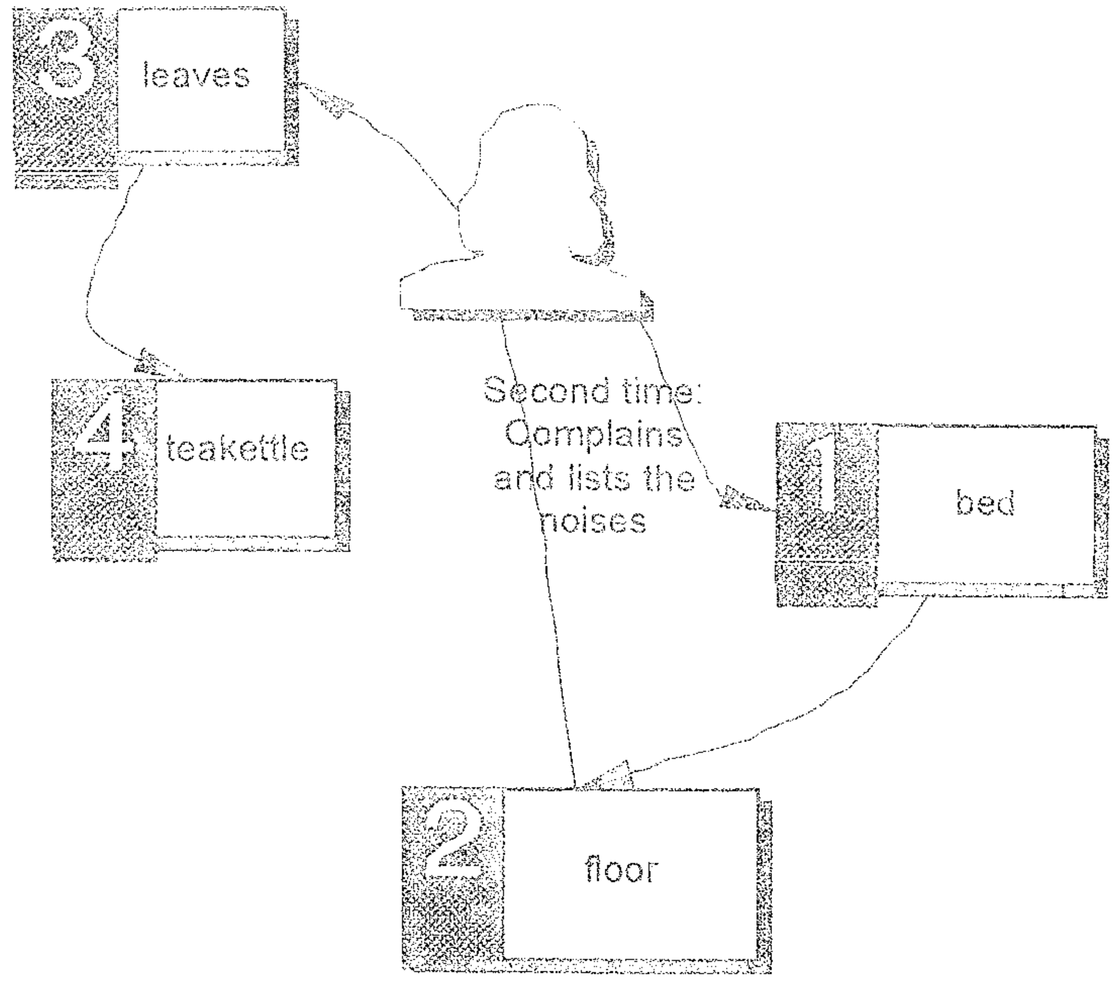

FIGURE 2. *Second Time: List of Noises*

of topics, themes, and ideas that structure the signer's intended meaning constitute an important discourse function of space in ASL. Space does not simply mirror the physical world (Winston 1993, 1995).

Once these entities and noises are established in the context, Ms. Daniels eliminates most of the lexical description and changes her order of mention (using the order of the original English story of bed, floor, tree, teakettle) and the visual movement pattern she created the first time. After the introduction, she consistently signs BED, FLOOR, TREE, TEAKETTLE (Figure 2).

Not only do these entities define the inside house space, they also fill it. The signer moves her hands continuously from space to space, never stopping, sweeping through the full space, creating the feeling of a house full of sounds.[8] These lines are a refrain, and the refrain is a single chunk within the story. Ms. Daniels accomplishes this same effect by her continued movements through the space and her filling of it.[9] The first pat-

8. This is in contrast to the other signers, who all end each utterance with some marked utterance boundary like a pause or a hand drop. They break up the visual pattern being created in the space and lose the sense of rhythm in the process.

9. The other four signers use the center of the signing space and produce more staccato styles of signing. Although they fill the auditory space with their voices,

tern is rather staccato, requiring a full direction change, both in height and side, for each entity. The second pattern is smoother, necessitating a shift of direction in the height but a more continuous flow from one side to the other for the first three items, with only the last sign changing both height and complete direction (from to-the-right to to-the-left). This smoothness of movement creates a more flowing rhythm and visually achieves the effect of the rhyme and rhythm of the English original, which is also smooth lines rather than staccato: each line is said with similar intonation.

Another aspect that creates visual rhyme is the use of handshapes in the creation of the pattern. Ms. Daniels chooses ASL strategies for her handshapes that, through their repetition, create rhymes and rhythm. In addition, she uses handshapes that are simpler and easier to process, reflecting the intended audience of children. For the main refrain, she uses primarily open handshapes (Valli 1993). For BED and FLOOR she uses B handshapes and adds both hands to the squeak sound. For LEAVES and TEAKETTLE HISSING she uses open 5 handshapes. These open, less compact, handshapes are easier to perceive and process, and she repeats them throughout her main refrain, changing them only when she gets to the animals and their sounds, the new information. She uses the sign for each animal, regardless of its handshape: CAT, SHEEP, HEN, DOG, COW, and DONKEY, but she makes sure that the children understand what each animal is by describing it if she thinks they do not understand.

After listing the noises, Ms. Daniels remains in the inside space and presents the next stage of the story: Peter's dilemma and decision to do something. Like the author, Ms. Daniels adds involvement strategies, but, in contrast, she uses inner dialogue to add visual imagery and detail rather than the ellipsis the author used. Peter has a discussion with himself about what he should do and decides that he should go see the village wise man. This inner dialogue, or type of performative, is an involvement strategy that provides a "voice," or in this case, a "body" to the character of Peter, making the story more vivid for the children.

Peter then leaves the house, and the signer shifts from inside house space to outside (Figure 3). Again, in contrast to the author, who uses

using English intonation, stress, and volume patterns, they do not produce an equivalent "filling of the visual space" with their signing. The signed rendition is not a dynamic equivalent of the spoken rendition.

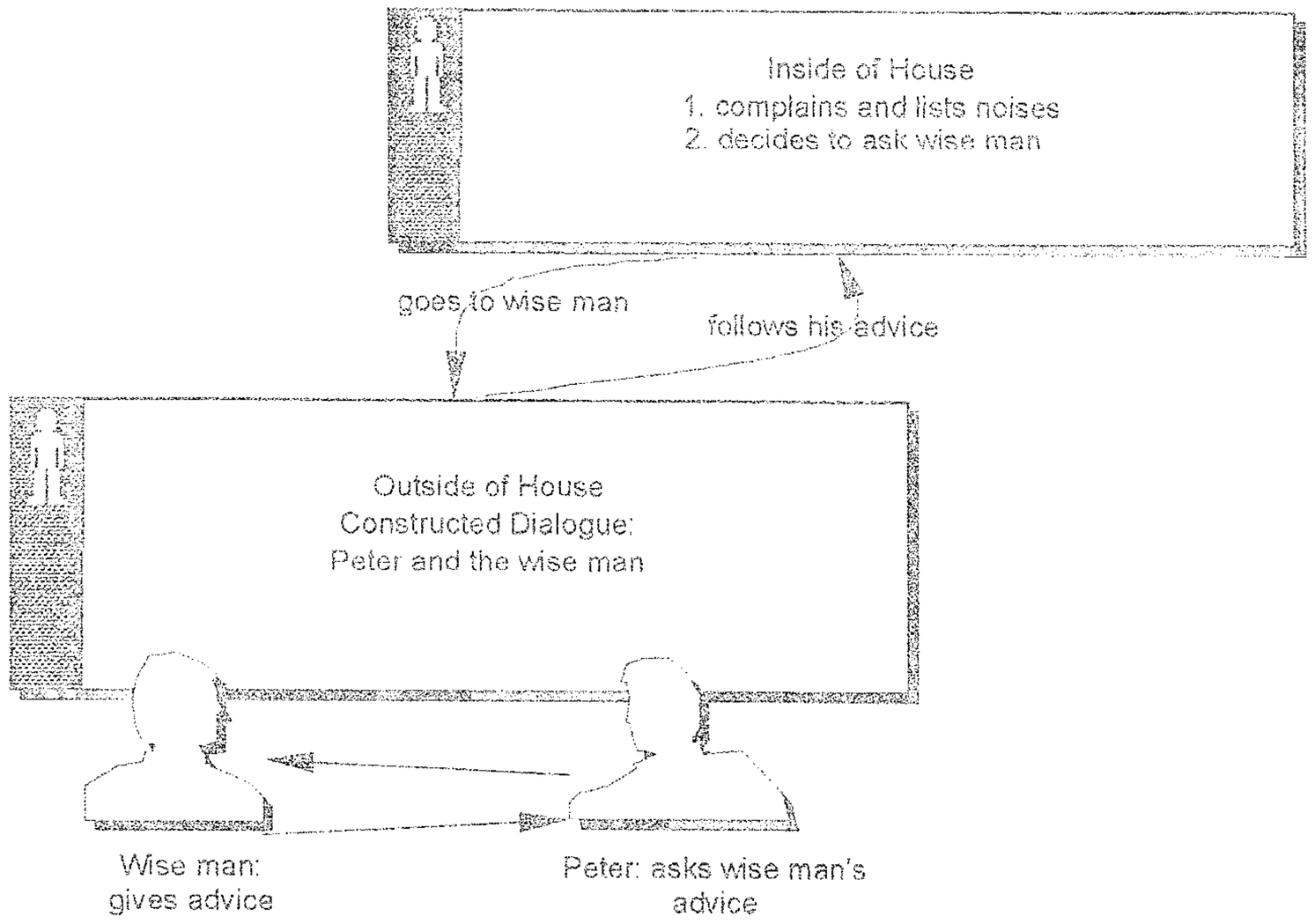

FIGURE 3. *Two Main Spaces*

ellipsis, Ms. Daniels uses constructed action, employing a CL:1 to build this scene for the audience.

Once in the outside-of-house space, Ms. Daniels shifts to constructed dialogue as Peter gets advice, the same involvement strategy the author used. Ms. Daniels maps Peter referentially on the left (nondominant) side and the wise man on the right (dominant) side.[10] As Peter explains his problem, Ms. Daniels reuses the main refrain pattern (first introduced inside the house) within the outside-of-house space, relating the visit to Peter's noise problem. The main refrain is embedded within Peter's constructed dialogue, illustrating the complex overlapping of spatial frames common in ASL spatial mapping. During the constructed dialogue, the wise man provides counsel and Peter questions it ("What good is a cow?"). Ms. Daniels interprets this question as Peter's inner dialogue while in the outside-of-house space. She then shifts to constructed action, showing Peter actually searching for, finding, and taking home the first

10. This follows patterns of constructed dialogue found by Winston (1993) with old information (Peter) being placed on the nondominant side and new information (the wise man) on the dominant side.

animal, the cow. Again, this is an involvement strategy that utilizes ASL spatial mapping; the story's author used ellipsis to imply all of this.

As Peter returns to the inside-of-house space, Ms. Daniels also shifts back to the more central inside-of-house map she created earlier. Ms. Daniels actually shows the cow entering the house space (as do all the animals in turn), an event that would normally not happen. However, the point of this section of the story is the noise itself, so when the cow enters the house, its mooing is added to the earlier house sounds. The cow is not located in any particular spot in the house, but the signing of the mooing, like the signing of the house noises, fills the entire space. Ms. Daniels uses both hands to alternately spell *moo* on each side. Although the choice of handshape is not a compact one (and thus not as poetic as the rhymes for the house noises), it uses movement alternation that is poetic and rhythmic and echoes the spatial structure of the main refrain.

Another repetition within this space is the transposition of the main refrain with the new, added lines; in the English story, each animal and its sound are added first, followed by the old information and finally the main refrain each time. In the ASL rendition, the main refrain occurs first, then each animal is added in order. The animals are not placed in any given spot in the house; they are simply signed within the inside-the-house space. Ms. Daniel's rhythm and rhyme are established by first repeating the more consistent main refrain (the old information), then adding the less poetic, new information. This pattern is repeated throughout the story.

CYCLE: REPETITION OF SPATIAL MAPS AND VISUAL PATTERNS

After this initial cycle of inside, outside, inside, the English story repeats. Likewise, Ms. Daniel's use of inside and outside space repeats, as does her use of the various spatial structures she has created. After showing Peter complaining about the added noise of the cow, she once again leaves the inside-of-house space and portrays a second dialogue with the wise man about the raucous house in the outside-of-house space.

She then shifts to inner dialogue with Peter, accepting the wise man's advice, then to constructed action to carry it out, bringing the animals home, and entering the inside-of-house space, where, once again, their relative locations become irrelevant, and only the fact that they are noise producers is pertinent. They are each shown with the signing filling up much of the space, often with two hands where one would be expected,

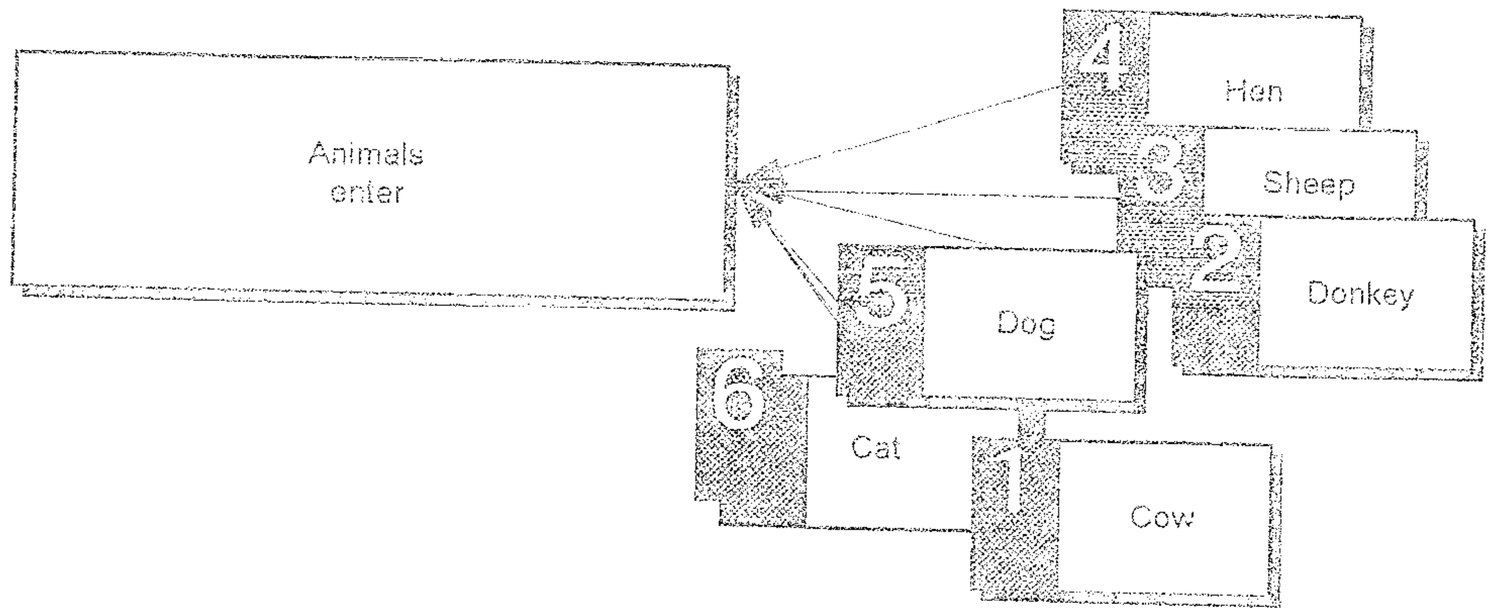

FIGURE 4. *Animals Entering the House*

either simultaneously or alternatingly. Again this pattern of handedness constitutes a rhyming pattern in ASL (Valli 1993).

As part of the cyclical pattern, the animals enter and then exit the house. Their entrances and exits provide further evidence that the mapping of the inside-of-house space is intended to portray a prototypical house rather than a specific location. The animals are brought from the outside-of-house space, and all are entered through a door on the center front left (nondominant) space (Figure 4). However, when they are evicted, they leave to the rear of the space, three to the left rear and three to the right rear, in a pattern of 2, 2, 1, 1 (Figure 5).

The spatial exit points do not correspond with the entrance points. It is doubtful that the old man intentionally threw the animals out in a specific pattern (or that this old house had three doors all leaving from the same room: one, an entrance, and two, exits). It is more likely that the signer is establishing that the entrance and exit of the animals have two clearly separate functions in the story, each signifying a different point. The entrance of the animals marks the addition of noise and the escalation of the problem. Their exit marks the solution to the problem; thus they are mapped differently in the space. (It is certainly possible in ASL to have the animals leave through the same "door" that they entered, but this physical mapping of space is irrelevant to the point of the story.)

Ms. Daniels adds two other prosodic features in the exiting of the animals, that of handshape and movement rhyme. When the wise man is telling Peter to let the animals go, Ms. Daniels begins the refrain with "Let the cow go," signing COW, SEND-AWAY. The sign SEND-AWAY is made with the open B handshape and is signed with the nondominant, left hand only.

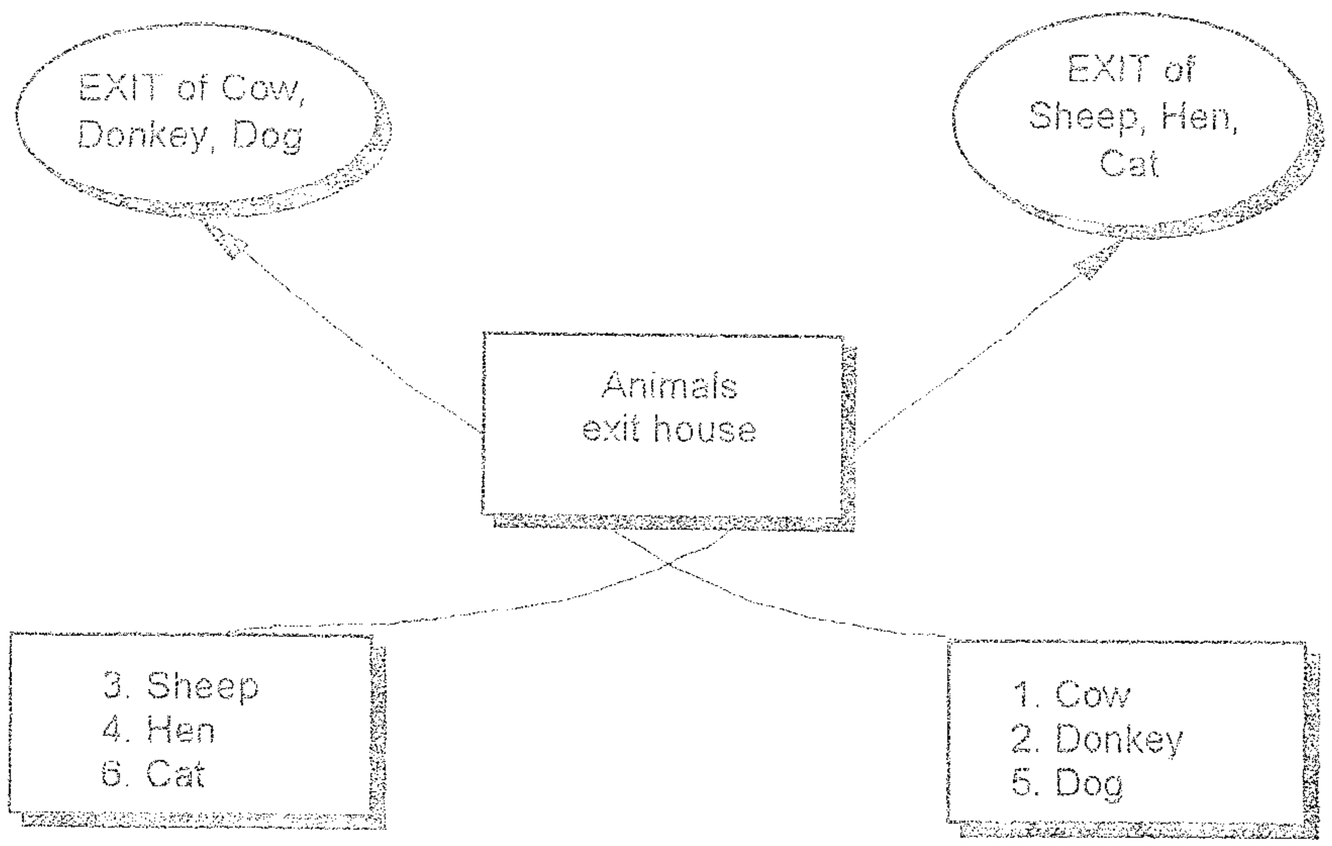

FIGURE 5. *Animals Exiting the House*

The next line of the refrain repeats this syntactic structure, DONKEY, SEND-AWAY, but this time SEND-AWAY is signed by the dominant, right hand only. Ms. Daniels alternates the nondominant/dominant shift for each of the animals, ending on the dominant side. This handshape repetition and the movement alternation creates a striking visual impact within this outside-of-house space.

When Peter returns to get rid of the animals, Ms. Daniels continues this visual pattern to a certain extent but becomes more involved with the constructed action of throwing out the animals and less involved with the handshape and movement rhyme. However, she does use the sign SEND-AWAY toward the end of each animal's exit; furthermore, she employs some alternation of hands, although it is not as striking as in the wise man's original signing. In this section Ms. Daniels focuses more on the detail and imagery of the constructed action of throwing out the animals than on the poetic structures of rhyme.

This structured use of space—from inside to outside and back again—is repeated throughout the story, setting up the recurrent pattern of Peter complaining, getting advice, and following advice. Each of these themes is treated differently in space, but the spatial structure for each theme is repeated several times.

Not only is each separate use of space repeated in order to structure the initial story, but the overall pattern of spatial mapping and prosody is also

repeated, in, out, in, out, with the more prosodic, poetic use of space occurring inside the house (the refrain) and the more normal use of referential space outside the house to indicate Peter's actions. This shifting from poetic to normal also creates a rhythm that involves the audience, helping them process the story easily and enjoyably.

CONCLUSIONS

Analysis of the use of space both for spatial mapping and for prosody demonstrates that the entire ASL narrative is divided into two main discourse spaces and that these are further chunked by subspaces that map subtopics in the narrative. The signer uses space to map topics or main points of the story for her audience, mapping concepts such as "inside the house" and "outside the house" without regard to any actual concrete physical description.

A comparison of involvement strategies and linguistic features the author and the signer use shows the importance of the use of space in ASL storytelling (Table 2).

Spatial structuring occurs throughout the ASL story. Each segment of the ASL story incorporates some form of spatial mapping to create involvement by the audience. Whereas the introduction of the main character in the English version uses imagery and detail to create involvement, the ASL version incorporates use of space in the constructed action that describes the character.

The discourse location (inside the house) in the original English version creates involvement through imagery and detail; the ASL version introduces a spatial map that bounds the inside-of-house space, including the noises that fill it during the story. This space is further patterned spatially through prosodic ASL rhyme features of open handshapes, usually "B" and rhythm of movement in the sweeping pattern created as part of the four original noises. And, whereas the original English uses inner dialogue and ellipsis to show Peter's dilemma, the ASL version incorporates the spatial structures of inner dialogue and constructed action.

The outside-of-house location is established through narration, constructed dialogue, and ellipsis in the English; the ASL is spatially structured with constructed action, constructed dialogue, and inner dialogue. The conclusion of the English version includes inner dialogue to create involvement; the ASL rendition uses the spatial structure of inner dialogue

TABLE 2. *English and ASL Involvement Strategies in Relation to Story Structure*

Story Structure	Involvement Strategies	
	English	ASL
Introduction of main character, Peter, and his house	Imagery and detail	Referential spatial map: constructed action and narration
Inside of house	Imagery and detail	Referential spatial map: bed, floor, leaves, teakettle
House has many noises	Rhyme	Rhyme: handshape Rhythm: movement contour
What to do?	Inner dialogue and ellipsis	Referential spatial map: inner dialogue and constructed action
Outside of house		
Goes to wise man	Narrative	Referential spatial map: constructed action
Gets advice	Constructed dialogue	Referential spatial map: constructed dialogue
Follows advice	Narrative and ellipsis	Referential spatial map: inner dialogue and constructed action
Repeat basic structure five times	Repeated	Repeated
Inside of house: problem resolved	Inner dialogue	Referential spatial maps: inner dialogue and narration

alternating with narration. Each spatial map, like the English structures, is repeated throughout the story, providing clear indications of the story's structure. The entire structure of the ASL version is spatially mapped.

Each segment of the story utilizes space for its production, shifting among different features of space at various points but always repeating the same strategies in space for the same functions. In the ASL story these spaces map ideas and conceptual entities rather than concrete entities and locations. The signer uses rhythmic and rhyming features of ASL to mold the visual impact of this space. She uses movement contours to define the space, continuous movement to create a rhythm, and repeated movement and rhythm to create a rhyming in the story. This manner of rhyming serves all the purposes of rhyming in any language. It gives rise to a form that can easily accept new information; it helps the audience process the boundaries and the meaning of the chunk more easily; and it creates an interesting, pleasurable experience for the audience, generating involvement by helping them formulate meaning (e.g., expectations of what comes next, predictions of the story's outcome, suspense regarding the series of events). It also involves them by building a repeated visual pattern in the same way that spoken patterns of rhythm and rhyme create a sense of music for hearing audiences. These visual patterns are pleasing to see, especially when they help to add meaning to the story. These patterns, however, occur within a space, adding rhythm and rhyme because they are consciously repeated to produce that effect. They may occur within a referential space, but they are not themselves referential.

Effectively translating a story in ASL requires the same types of spatial chunking that other ASL discourse requires. The signer of this story created visual maps in the space to guide the audience through the main topic and subtopics, repeatedly using these spatial structures in her ASL rendition to produce rhythm and rhyme. The rhythm and rhyme are part of the original and must be part of the translation if the goal of the storytelling is to match the author's aim: to create involvement for the children through the use of sense making and pattern making, regardless of the language. Spatial mapping is an integral part of the entire structure of the ASL version of the story. It helps the audience understand the story through involvement, both in the development of meaning and the enjoyment of the story's form. An understanding of these spatial structures is essential for the production of coherent meaning in ASL.

IMPLICATIONS

This analysis is a preliminary study of the spatial structures used as involvement strategies in a single translated story. As such, it is difficult to draw conclusions about space and its general functions in ASL. However, as one of many case studies, it can add to the growing understanding of the discourse patterns of space in ASL. It corroborates the claim that spatial structures are essential to the discourse structure of ASL and provides an example of the pervasive nature of spatial mapping in the production and comprehension of the language.

Spatial mapping and spatial structures in ASL are a foundation of ASL discourse. More research about the functions of spatial structuring and visual patterns in ASL will add valuable and much needed knowledge in many areas. This research raises many questions for anyone studying ASL, either in the field of linguistics or as a student of ASL as a first or

second language. Second language learners include the ever growing group of interpreters who are enrolled in interpreter education programs. It is essential for them to be able to understand the subtle distinctions in meaning of different spatial mappings created by ASL signers; it is equally essential for them to be able to produce coherent ASL renditions that include appropriate spatial structures when interpreting from English to ASL.

Teachers of Deaf students are another group of second language learners who, like interpreters, need to be able to understand and produce the subtle distinctions of spatial structures. Most teachers of Deaf students are hearing speakers of English who have learned some amount of signing or ASL through courses in their university programs and perhaps interaction with the Deaf community. As language models for many Deaf children, they can provide a complete language model only if they themselves are fluent in ASL. Any signed communication method used without spatial structuring will be incomplete and ineffective as a language model.

Parents of Deaf children are another group of second language learners of ASL. Most Deaf children have hearing parents who must learn to communicate visually with their children. An understanding of the visual nature of ASL and the spatial structures necessary to produce coherent, meaningful messages is indispensable in their communication with their Deaf children.

An understanding of the spatial structures of ASL is also essential in the field of linguistics. Much research in spatial structures in ASL has focused on the morphological and syntactic functions of space. In order to produce a coherent and complete account of the functions of space in ASL, the discourse spatial structures must also be accounted for. Further research in that area of spatial structures at the discourse level will contribute to a full account of the linguistic structure of ASL.

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