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Gesture in sign language discourse☆

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Abstract

An analysis of spoken language discourse cannot be limited to merely the words used in the discourse and their grammatical arrangement. It is well known, for example, that speakers commonly gesture as they speak. These gestures often provide either independent information or important clues needed for a clear understanding of the message of the speaker. Pointing at a book when saying 'this book' identifies the book being discussed. Without the deictic gesture, the particular book being described might not be identifiable. Other gestures may provide information which is complementary to the spoken words. In either case, the addressee must combine the grammatically coded spoken information with the gestural information to produce a message which incorporates both.

American Sign Language (ASL) is a language produced by gestures of the hands, face, and body. In general, these gestures have been analyzed as parallel to the gestures of articulators in the vocal tract. That is, they have been considered to be parts of the words and morphemes which make up grammatical constructions. Our analysis of a brief ASL narrative shows that, even in the case of a language produced by gestures of the hands, body, and face, the distinction between 'grammatically coded meaning' and non-grammatically coded 'meaningful gesture' is equally appropriate. That is, sign language discourse also consists not only of grammatically structured arrangements of signs, but also includes meaningful gestures. The interweaving of these two sources of meaning is so extensive in ASL that certain categories of signs are not normally produced without a deictic gesture.

1. Introduction

Discourse consists of more than just structured combinations of words and morphemes. In the case of two interlocutors trying to communicate, the physical context

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in which the communication takes place is significant, as are the vocal gestures which control pitch, loudness, and other vocal qualities. Physical gestures produced by the speaker constitute another highly significant and meaningful aspect of discourse. Historically, the significance of gestures which occur as part of discourse has been minimized in linguistic theory.[1] There is, nevertheless, a close, intertwined relationship between gesture and language (Kendon, 1972, 1980; McNeill, 1992). The most extensive and detailed description of this interrelationship can be found in McNeill (1992). McNeill demonstrates conclusively that gestures of various types are frequent in discourse and contribute meaning to the discourse. Further, the meaning contributed by gestures and the meanings contributed by spoken utterances must combine at some level in order for an addressee to understand the intended meaning of the speaker.

McNeill discusses several types of gestures, including iconic gestures, metaphoric gestures, beats, and deictic gestures. Iconic and metaphoric gestures are both pictorial. Iconic gestures present an image of something concrete while the metaphoric gestures present an image of an abstraction. A beat gesture involves the hand moving in time with the rhythmic nature of speech.[2] Deictic gestures are pointing gestures. In this paper we will focus on two highly significant and meaningful types of gestures: deictic gestures and constructed actions – a category of gestures which overlaps with iconic gestures. These gestures are highly significant in the discourse because both convey meanings not present in the linguistic signal.

1.1. Deictic gestures

The importance of deictic gestures can easily be seen in (1), uttered while pointing toward a pen.

(1) Is this yours?

The syntax of (1) indicates that it is a yes-no question. The deictic pronoun *this* refers to some proximal entity. The possessive pronoun *yours* describes a possessive relationship between the addressee and the entity to which *this* refers. The identity of the addressee is not part of the text nor is there anything in the linguistic content of (1) which specifically identifies a pen as the entity being referred to. The identity of the addressee would need to be determined based on the physical context. This would be a simple matter if there were only one other person present. If several potential addressees were present, then speaker actions, such as the direction the speaker is facing or the direction of eye gaze, would make the identity of the addressee clear. In addition, using means such as physically pointing toward the pen to indicate that the pen is the object being asked about is a crucial part of the meaning expressed by the speaker. Without the deictic gesture, the utterance would be

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[1] The significance of gesture is not minimized in cognitive treatments of discourse. See Langacker (1987: 61) for some discussion of this issue in the cognitive grammar framework.

[2] A beat gesture has also been called a 'baton' (Efron, 1941; Ekman and Friesen, 1969).

incomplete since the information needed to construct the intended meaning has not been expressed.

1.2. The notion of constructed action

McNeill showed cartoon clips to English speakers and later asked them to describe the events seen in the cartoon clips. What he found is that native speakers of English incorporated meaningful gestures in their descriptions of the events. In one of the cartoon clips, the cartoon character Tweety Bird dropped a bowling ball down a drainpipe. When describing that event, the speaker produced the words in (2).

(2) ... and Tweety Bird runs and gets a bowling ball and drops it down the drainpipe ...

During the two words *it down*, the speaker's two hands were configured as if holding and pushing down a large round object. Here the speaker is describing an event by grammatically encoding aspects of the event and also by illustrating aspects of that event through gesture.[3] McNeill refers to this type of gesture as 'iconic'. Note that the information which is grammatically encoded is not exactly the same as the gestural illustration of the action. McNeill describes the hands configured as if pushing down a large object. The gestural information is not merely recapitulating the same information which is grammatically encoded. The addressees' understanding of the event will depend on both the grammatically encoded information and the gestural information. McNeill demonstrates this by presenting specially constructed narratives to English-speaking subjects. The narratives were designed such that the information encoded by the gesture is not also grammatically encoded. In one instance, the narrator said, 'and he came out the pipe'. During the words *came out* the narrator performed an up-and-down bouncing movement. The phrase *came out* explains what happened, but provides no details as to how the event occurred. The bouncing movement of the hands conveys the information that he came bouncing out of the drainpipe. In the subject's re-telling of what she had just heard and seen, she said the following: 'and the cat bounces out of the pipe', while also making an up and down gesture during *bounces out*. This subject grammatically encoded the information which was solely contained in the gesture of the original narrative. What McNeill repeatedly found was that when the English-speaking subjects were asked to retell the events described in the specially constructed narrative, the gestural information became part of the retelling.

The use of gestures to illustrate the actions of another are not limited to spoken language discourse. For example, Liddell (1980: 56) observes that one of the options with adopting a role is a "pantomimic reenactment of an event". Winston (1992) describes: "the signer's adopting the pose or actions of the character and imitating

[3] For a fuller discussion of this example and the issue of grounded, blended spaces in spoken language discourse, see Liddell (in press).

them, either as mime or while signing about that character" (1992: 98–99). These types of gestures would certainly be described as iconic within McNeill's framework. In descriptions of ASL text, Winston (1991, 1992) and Metzger (1995) refer to such gestures intended to illustrate the actions of others as 'constructed action'. The idea is that just as constructed dialogue is not a direct copy of the speech being reported, but is the current speaker's construction of another person's speech (Tannen, 1986, 1989), constructed action is also not a direct copy of a character's actions. It is the narrator's construction of another's actions (Metzger, 1995).

2. Mental space theory

In order to understand the role of gesture in sign language discourse we will need a theoretical framework which will allow us to attempt to account for how deictic gestures and constructed actions are understood in discourse. Mental space theory provides this framework. Although the development of mental space theory originally concentrated on the solution to complex issues of reference and coreference, the theory of mental spaces provides a means of looking at these two gestural phenomena in a revealing way.

2.1. Mental spaces

Within the theory of mental spaces, and within cognitive linguistics in general, the meaning of sentences, and issues of reference and coreference in particular, do not take the form of logical representations and are not derived from formal, syntactic structures. Fauconnier proposes a cognitive theory in which **mental spaces** provide information needed for the understanding of reference and coreference. Mental spaces are not linguistic representations. They are meaningful mental representations of conceptions, things, events, etc. Mental spaces contain elements which speakers describe through their ordinary discourse whenever they talk. In mental space theory, understanding the meaning of an utterance is distinguished from understanding the meaning of a grammatical construction:

"A language expression E does not have a meaning in itself; rather it has a meaning potential, and it is only with a complete discourse and in context that meaning will actually be produced." (Fauconnier, 1997: 37)

In constructing the meaning of an utterance in context, the addressee not only has the task of understanding the grammatically encoded information, but must also create the appropriate mental spaces, containing the appropriate elements, to construct the intended meaning of the speaker in that context. A key component of this process involves determining which elements of which mental spaces the addressee believes the speaker is describing. For example, Fauconnier describes a situation in which Len believes Lisa has green eyes. In fact, Lisa's eyes are blue. This situation can be described by (3).

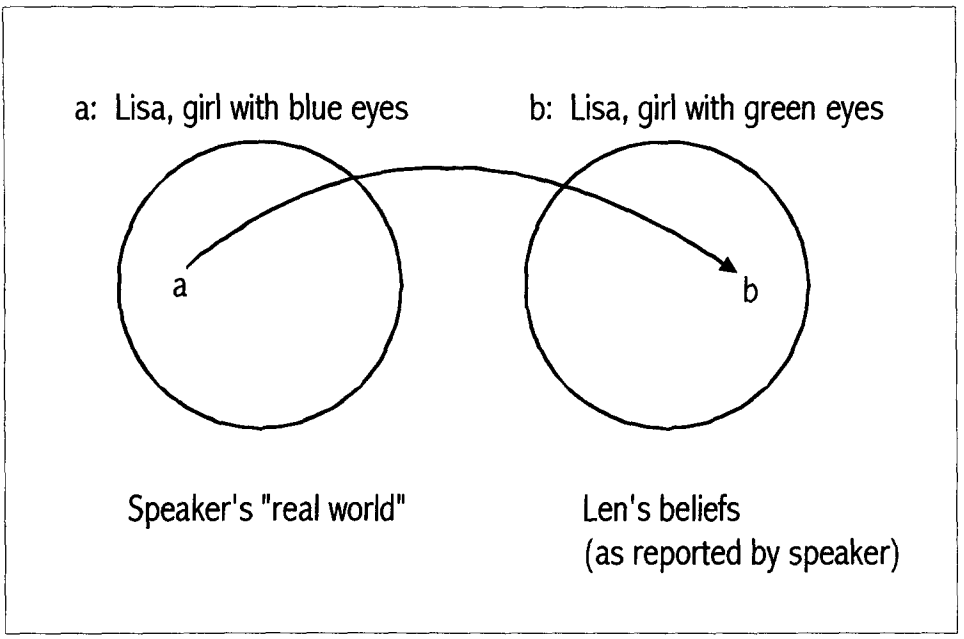

Fig. 1. The mental spaces relevant to example (2).

(3) Len believes that the girl with blue eyes has green eyes. (Fauconnier, 1985)

The two mental spaces needed to understand (3) are shown in Fig. 1. In the mental space on the left, the speaker's 'real world', Lisa has blue eyes. The mental space on the right represents Len's beliefs (as reported by the speaker). In this mental space Lisa has green eyes. The girl in the speaker's 'real world' is represented as element *a*. The girl in the mental space representing Len's belief is represented as element *b*. There is also a connector between the two mental spaces, connecting *a* and *b*. The connector allows the description of *a* to identify *b*. This is what happens in (3), where *the girl with blue eyes* describes *a*, an element of the speaker's 'real world'. Because of the connector between the two mental spaces, the description of *a* identifies the corresponding element *b* in the other mental space. This allows for a non-contradictory reading of (3). It is non-contradictory because the phrase *the girl with blue eyes* describes element a, which is not part of Len's beliefs. It is a description of the speaker's 'real world' which, through the connector, also identifies an element of the other mental space. Thus, there is no implication that Len believes that the girl has blue eyes and green eyes at the same time.

In the example above, mental spaces contain conceptual elements which are part of belief systems, ideas, etc. A speaker's representation of the current physical context can also be regarded as mental space (Lakoff, 1987; Liddell, 1995). What distinguishes it from the mental space described earlier is the ability to point toward its elements (Liddell, 1996). For example, while uttering, *Is this yours*?, a speaker

would be expected to indicate through some non-grammatical means (i.e., gesture) which thing in the immediate environment was being talked about. For example, the speaker could point toward a pen.

Liddell (1995) refers to a person's mental representation of their immediate environment as *Real Space* and refers to this type of mental space as a *grounded* mental space. The term *grounded* means that the entities in that mental space are located in a person's immediate environment. Suppose, for example, that there is a pen in front of a speaker, then the lights go out. The speaker would still be able to reach for the pen, even in the dark. In order to do this the speaker must have a mental representation of the pen and its location prior to the sudden darkness. This mental representation is Real Space. Part of the uniqueness of Real Space is that its elements are conceived of as having locations in the immediate environment. In general, the location of an element of Real Space is the same as the location of the corresponding physical entity in the real world. Occasionally, however, there are situations in which the element of Real Space and the corresponding physical entity in the real world are at different places. For example, in the sudden darkness the speaker would still know where the pen was when the lights went out and would know where to reach for it. If the pen had been taken away as soon as the lights went out, the location of the pen in the signer's mental space would no longer match the real location of the physical pen. Similarly, when viewed from the bank of a river, a real fish is not located in the same place as the fish in the viewer's mental representation of the fish in the river, due to the refraction of light. Someone using a spear to hunt for fish must learn to aim at a location different from the location of the fish in Real Space.

Signed discourse makes extensive use of Real Space. It is well known that pronouns and some types of verbs can be directed toward elements of Real Space. For example, if the sign TELL is directed toward the addressee, the meaning is not simply 'tell', but 'tell you'. Signers also construct and use other types of grounded mental spaces, as we will see below.

2.2. *Blended mental spaces*

Fauconnier and Turner describe a general cognitive process which they refer to as blending. It is a process that operates over two mental spaces as inputs. Structure from the two input spaces is projected to a third space, which they refer to as the blend. The blend inherits partial structure from each of the input spaces and also includes structure which belongs only to the blend. They use the following example of a philosopher speaking to a class to illustrate a blend.

> "I claim that reason is a self-developing capacity. Kant disagrees with me on this point. He says it's innate, but I answer that that's begging the question, to which he counters, in *Critique of Pure Reason*, that only innate ideas have power. But I say to that, what about neuronal group selection? And he gives no answer." (Fauconnier and Turner, 1996a: 113)

In this example, the speaker has created a world in which there is a debate between himself and Kant. In the blend the philosopher and Kant are together. Fauconnier and Turner observe that once the blend is established, the speaker operates within

that space as an integrated unit. Fauconnier and Turner (1994, 1996a,b) and Turner and Fauconnier (to appear, 1996) show that blending can provide a simple account of superficially complex syntactic phenomena as well as an understanding of metaphor. They also show that blending is fundamental to understanding the concept of meaning in language use.

We argue here that blends in which one of the input spaces is Real Space are essential in understanding everyday discourse in ASL. Such blends can be of at least two types. Signers can construct spatial representations in the 'signing space' ahead of them, or can imagine that real entities are present anywhere around them. This paper will focus on the latter use of space in the construction of an ASL narrative.

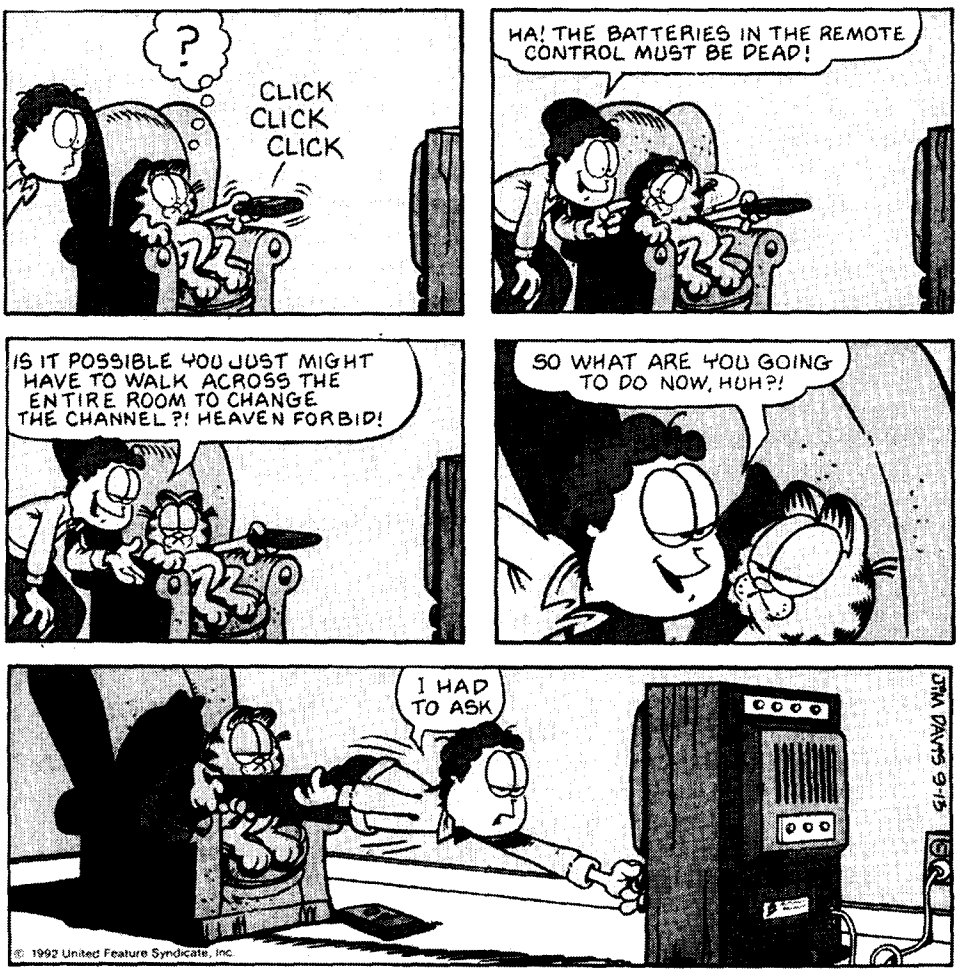

Fig. 2. The Garfield cartoon (Garfield, 1992, Paws, Inc. Reprinted with permission of Universal Press Syndicate. All rights reserved.).

3. The narrative

The narrative we examined was produced by a white, male, deaf, college-age native signer. The narrative was videotaped by a second white, male, deaf, college-age native signer and was prompted by the Garfield cartoon shown in Fig. 2. In the cartoon, Garfield notices that the television's remote control is not working, and his owner, Jon, chides Garfield about having to walk across the room to change channels. In the final panel, Garfield holds Jon toward the television and uses him as a 'human remote' to change the channels on the TV. Although based on that cartoon, the narrative produced is embellished with additional events and dialogue leading up to the final scene in which Jon is used as a remote control.

Although only 22 seconds in duration, this story illustrates several characteristics typical of ASL stories. It contains, for example, a number of examples of constructed dialogue. It also contains a large number of signs produced in places or directions different from their citation form in ways which contribute meaning in addition to their lexical meaning. In this story the way that signs are placed or directed in space provides key information necessary to understanding the narrative.

The glosses of the ASL signs used to produce the nine episodes in this story can be found in Fig. 3, and the translations can be found in Fig. 4.[4] Based on our analysis of the mental spaces employed by the signer, the narrative can be divided into nine episodes. This paper will focus on the nature of the grounded blends created, elaborated, and utilized in this story. Analysis will demonstrate that knowing which mental space is active, as well as its spatial structure, is not only crucial to making

(1) ONE CAT SIT LOOK-AT #TV LOOK-AT
(2) ONE OWNER O-F CAT 'SICK-OF-IT PRO (left) TAKE-OVER #TV TAKE-OVER EVERYDAY SICK-OF-IT'
(3) CL-1(walk-to) CL-X(press remote control)++, 'NOT WORK' CL-X(press remote control)++
(4) MAN, BELLY-LAUGH 'KNOW-THAT PRO REMOTE-CONTROL NOT WORK, B-A-T-T-E-R-Y REMOVE THROW-AWAY RECENTLY REMOTE-CONTROL'
(5) CAT LOOK-UP 'OH-SHIT' CL-X(press remote control)
(6) 'KNOW-THAT PRO MUST CL-V(legs-walk-to) CL-open-8(press buttons) PRO-1 TAKE-OVER CHAIR, SORRY'
(7) CAT CL-X(press remote control) [obscene gesture] 'SICK-OF-IT' CL-5(grab large entity and hold away from body)
(8) 'arms flail' 'index finger presses'
(9) CL-5 (hold large entity) 'get out of here' CL-5 (bring large entity back and toss it) 'that's done with' CL-X (2 legs sit) TAKE-OVER WATCH

Fig. 3. Glosses of ASL signs used in the nine episodes in the story.

[4] We use the ASL glossing conventions found in Appendix A.

(1) A cat was sitting watching TV.
(2) The owner of the cat thought, 'I'm sick of him (the cat) taking control of the TV everyday'.
(3) As the owner entered the room, the cat was pressing the remote control, but it didn't work.
(4) The man laughed. 'You (the cat) know that the remote control doesn't work. A little while ago I removed the batteries and threw them away.'
(5) The cat looked up at the owner. He thought, 'Oh shit' and pressed the remote control.
(6) 'You (the cat) know that you will have to get up and press the buttons on the TV. I will take over the chair. Sorry.'
(7) The cat was pressing the remote control, then directed an obscene gesture toward the owner. He (the cat) thought, 'I'm sick of it'. He grabbed the owner and held him out toward the TV.
(8) The owner's hands were flailing pressing buttons on the TV.
(9) While the cat was holding the owner, he thought, 'get out of here', brought the owner back and tossed the owner behind him. He thought, 'that's done with', sat back, kept control of the chair, and continued watching TV.

Fig. 4. Translations of the nine episodes in the story.

referential determinations, but is also crucial to a full understanding of all that the signer is expressing.

4. Constructed action

We introduced the concept of *constructed action* earlier as a way in which narrators are able to represent the behaviors of characters within a narrative by actually providing a visual example of the actions of the characters. The downward movement of the hands which accompanied 'and Tweety Bird runs and gets a bowling ball and drops it down the drainpipe' is an example of constructed action. In this particular example, the English speaker both describes and provides a visual example of the actions of Tweety Bird.

Examples of constructed action are plentiful in the narrative we examine. In Episode 8, for example, the signer presents a demonstration of the owner, as he is being held out toward a TV. He does this by adopting a facial expression which seems to show both surprise and dismay. He also flails his arms while leaning both his head and body very far forward, with his head eventually facing down. Next, the signer maintains the same body and head orientation and makes pressing movements with his index finger, as if pressing buttons on a TV. Episode 8 involves no signs. It is a fully gestural enactment of pressing buttons while being held out horizontally. The beginning of that gestural sequence is shown in Fig. 5b.

We begin with this example because it demonstrates two things. First, in producing a narrative, signers are able to not only produce signs, but to gesture. Secondly,

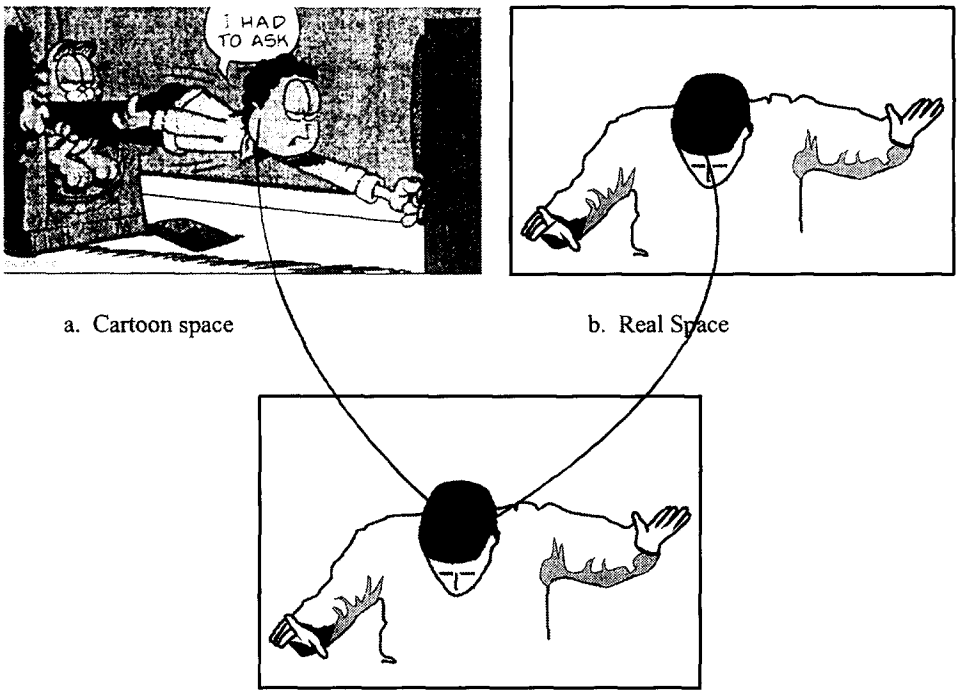

Fig. 5. Human remote control pressing buttons

it provides a very clear example of a grounded blended mental space. This is important because we will be making repeated us of the concept of a grounded blend throughout the remainder of this paper. One of the input spaces to the blend is the cartoon space in which Garfield is holding the owner out toward the TV (Fig. 5a). By 'cartoon space' we mean the signer's conception of the cartoon story, not the cartoon which prompted the story.[5] Fig. 5b is Real Space, containing the signer and his immediate surroundings. What creates the blend is the mapping of the owner onto the signer, shown in Fig. 5c. The blend contains a new element which is a blending of the owner from cartoon space and the signer from Real Space. The blended element is the-owner-as-represented-by-the-signer. This element is not the owner, since the owner is a cartoon character. It is also not simply the signer, since the signer is not being held out toward a TV. We will refer to this blended element as |the owner|.

In the grounded blend, we see |the owner| in a horizontal orientation with his arms extended. If bending over and extending the arms were merely the actions of the signer with no relation to the narrative, then leaning over and extending arms would be bizarre behavior. It only makes sense if the signer, in some sense, has become the

[5] We have used the actual cartoon to illustrate what the signer originally saw, but cartoon space exists only in the mind of the signer.

character in the story. In the analysis we present here, the signer partially becomes the owner by means of a grounded blend.

In the blend illustrated in Fig. 5c, |the owner| is being held by |Garfield| toward |the TV|. |the owner| is the only visible element of the blend. In spite of the invisibility, we know that |Garfield| is holding |the owner| out toward |the TV|, and we can see |the owner|'s actions since they are directly observable. This is a blended space because elements from cartoon space have been projected into Real Space. It is grounded because the elements have locations in the immediate space surrounding the signer.

In general, blended spaces are partial mappings from two spaces onto the blended space. The elements from cartoon space are not necessarily all projected into the blend. Similarly, not all elements of Real Space are part of the blend. That is, the signer produced this narrative while sitting near a friend. Although the friend was part of Real Space, the friend was not part of the blended space. In fact, the only part of the signer which participates in this particular blend is his upper torso, head and arms. If his lower body had been part of the blend, then we would understand that |the owner| was sitting on a chair rather than being held out toward |the TV|.

At the beginning of Episode 9 the signer presents us with a different image of the same scene. Fig. 6b shows that the signer's body is bent over forward as part of the

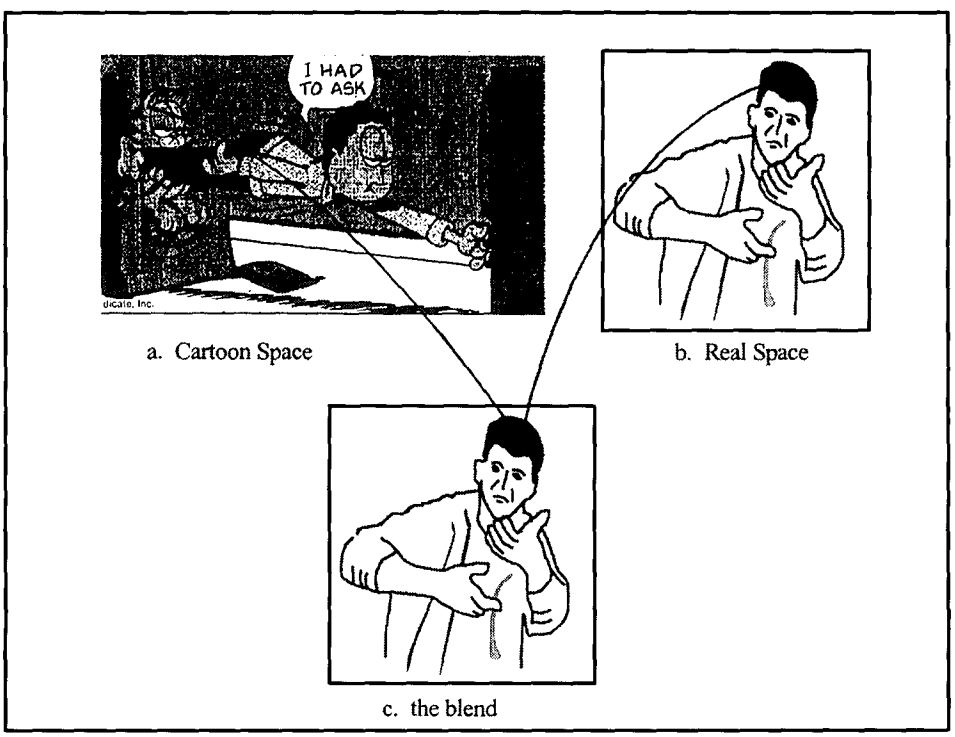

Fig. 6. |Garfield| holds |the owner| out toward |the TV|

classifier sequence showing |Garfield| holding |the owner| out in space toward |the TV|. This blend is quite different from the previous blend. In this blend, Garfield from cartoon space is blended with the signer from Real Space to create the blended element |Garfield|. In this blend, |Garfield| is holding |the owner| out toward |the TV|. We can see |Garfield|'s arms holding |the owner| and, in addition, there is a facial expression which appears to indicate that some effort was involved in holding the owner.

The configurations of the hands and arms and the facial expression indicating exertion are examples of constructed action since they are actions on the part of the signer intended to represent the actions of another. The grounded blend provides the physical context in which those actions are to be understood. In this example, the grounded blend involves projections from cartoon space onto Real Space. Garfield is projected onto the signer to create the blended element |Garfield|. The owner is projected from cartoon space into the space ahead of the signer, such that |the owner| is being held by |Garfield| out toward |the TV|.

In contrast to these two examples, constructed action can also co-occur simultaneously with the signer's narration of an event (Winston, 1993; Metzger, 1995). In Episode 4, the owner tells Garfield (on his left) that he has removed the batteries from the remote control and that the remote control will no longer work. Episode 5 begins with the sentence, CAT LOOK-UP. Fig. 7b shows that the signer produced the verb LOOK-UP while simultaneously shifting his gaze up and to the right.

What needs to be explained here is why the signer looked up and to the right while producing the verb. The answer is that when the owner was talking to Garfield, Garfield was seated in a chair to his left. We now have a seated Garfield responding to the owner, who is standing to his right. If Garfield were to look at the owner, he would have to look up and to the right. This is exactly what the signer does. Thus, the signer has created a grounded, blended space in which Garfield has been blended with the signer, and the owner has been blended with the space to the right of the signer. This blend is illustrated in Fig. 7, where |Garfield| is looking up and to the right toward |the owner|.

This blend illustrates a general point about blends. Blended spaces are partial mappings from the two input spaces onto the new, blended space. In this example, Garfield is partially mapped onto the signer. That is, Garfield has been mapped onto the signer's head and eye gaze and torso, but not his hands. This is illustrated in Fig. 7c, where |Garfield| is shown without any hands. We know that the signer's hands are still his own, because they are producing the narration of the event (CAT LOOK-UP). Thus, in this example, we have grammatically encoded narration as well as the visible, constructed actions of |Garfield| gazing upward and to the right at |the owner|.[6] Understanding the overall meaning intended by the signer will require integrating these two sources of information.

The sign following the sentence, CAT LOOK-UP, is the one sign expletive, 'OH-SHIT'. This could either be |Garfield|'s signed response, or |Garfield|'s thoughts at

[6] See Liddell (in press) for a discussion of the same phenomenon in spoken languages.

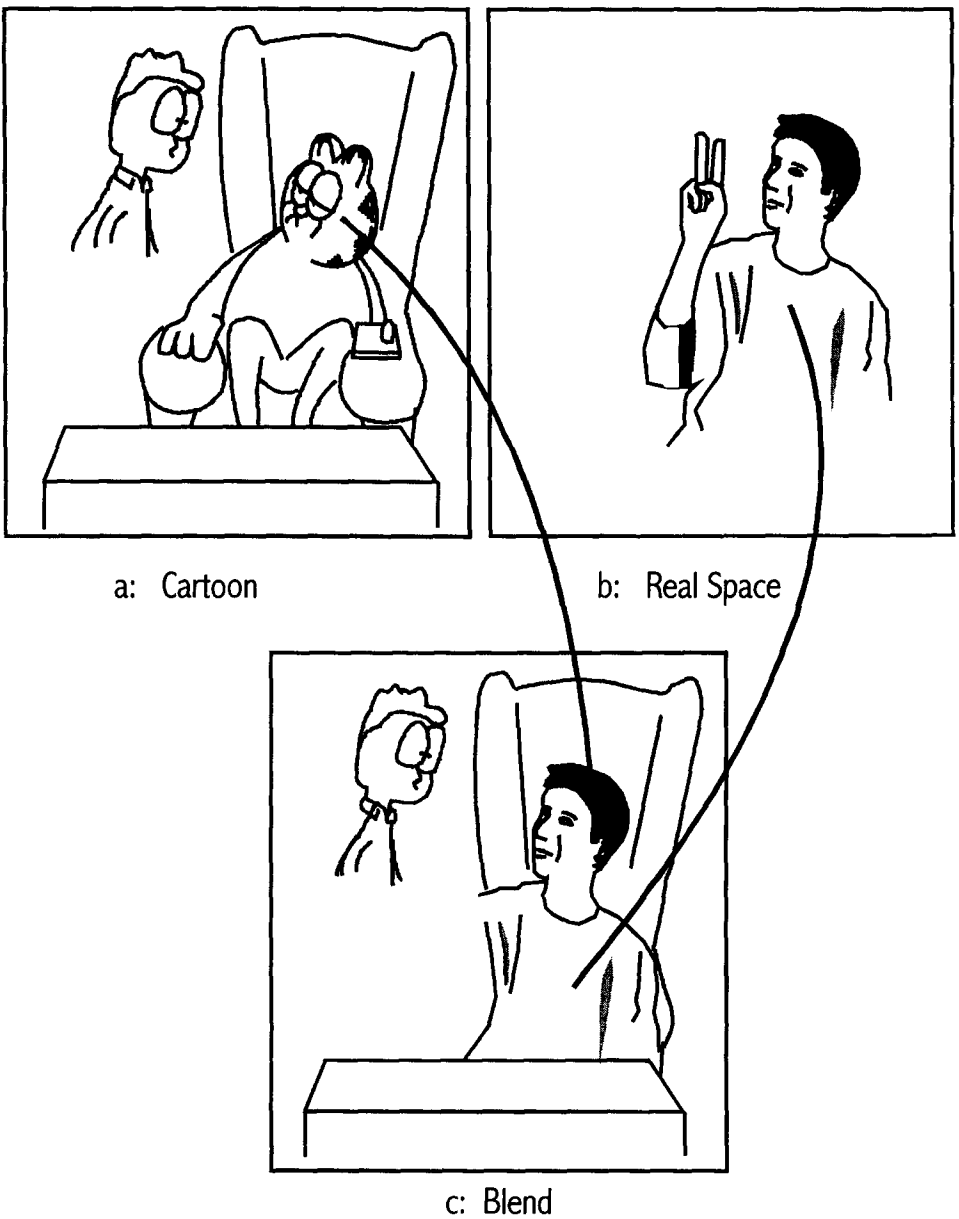

Fig. 7. The two input spaces and the blend

that moment. We have been unable to find a distinction between these two possibilities. Nevertheless, following Tannen (1986, 1989) we will treat both as examples of constructed dialogue. We would conclude, then, that the blend has changed. Now Garfield's 'hands' have been mapped onto the signer's hands. The signer is not pro-

ducing the expletive in response to forgetting what came next in the narrative. The expletive is |Garfield|'s.

It is interesting to observe that the cartoon characters in the original cartoon are not deaf and do not know how to sign. However, the characters in the blend, |Garfield| and |the owner|, may or may not be deaf, but, as we will see later, they do sign. Within a blend the entities or characters inherit properties from the parent spaces. The Garfield identity is inherited from cartoon space. The ability to carry on signed discourse is inherited from the signer's Real Space.

We began the examination of constructed action by looking at an unmistakable example in which |the owner| is shown to be horizontal, extends his arms and makes pressing movements with one of the extended hands (Fig. 5). We next saw an example of that situation, but the signer presented the actions of |Garfield| rather than the actions of |the owner| (Fig. 6). There were no simultaneous, accompanying signs and the signer's actions have to be treated as gestures representing the actions of another. We next moved to an example which is also easy to identify as constructed action, but which has accompanying signs (Fig. 7). We now move to an easily overlooked example of constructed action which occurred in the very first episode of this narrative.

Episode 1 describes Garfield watching TV. Beginning with the production of the sign SIT, and continuing until the end of the episode, the signer tilts his head markedly to the right and gazes outward as if watching something. During the next sign, LOOK-AT, the head is tilted even further to the right and the sign LOOK-AT is also directed outward in the same direction as the eye gaze (Fig. 8b). The signer's outward gaze provides an image of someone watching something. The message conveyed by the signs themselves is that a cat is watching TV. Thus, once again, we are provided with two sources of meaning – one from the production of the signs and the other from the image provided by gazing outward after signing the subject, ONE CAT. These two sources of meaning both relate to the same event in which a cat is watching TV. As in the previous examples, the image of |Garfield| watching |the TV| is part of a grounded, blended mental space. The two input spaces for the blend and the blend itself are illustrated in Fig. 8.

The signer tells us through narration that the cat is watching TV. The sign translated as 'look at' in Fig. 8b is directed straight ahead of the signer at about shoulder height. This tells us that |the TV| in the blend is straight ahead of |Garfield| at about shoulder height. |Garfield|'s eye gaze is also directed toward |the TV| in the same direction. Thus, we have two sources of information concerning the location of |the TV| in the blend. Had |the TV| in the blend been higher, the signer would have elevated both his gaze and the sign LOOK-AT to convey that information.[7]

[7] For readers familiar with the token and surrogate analysis proposed in Liddell (1995, 1996), the element labeled here as '|Garfield|' would be described as 'the surrogate Garfield'. The analysis of surrogates in those papers requires a separate surrogate space (also grounded), independent of Real Space. Those two spaces were conceived of as overlapping physically. The physical overlap between one of the surrogates and the signer was intended to accomplish what the blending does in the current analysis. The blending analysis proposed in Liddell (in press) is superior in two ways. It does not require the existence of a separate grounded surrogate space and it has the formal mechanisms to allow for multiple connections between spaces. Such connections will be illustrated as we proceed through the narrative.

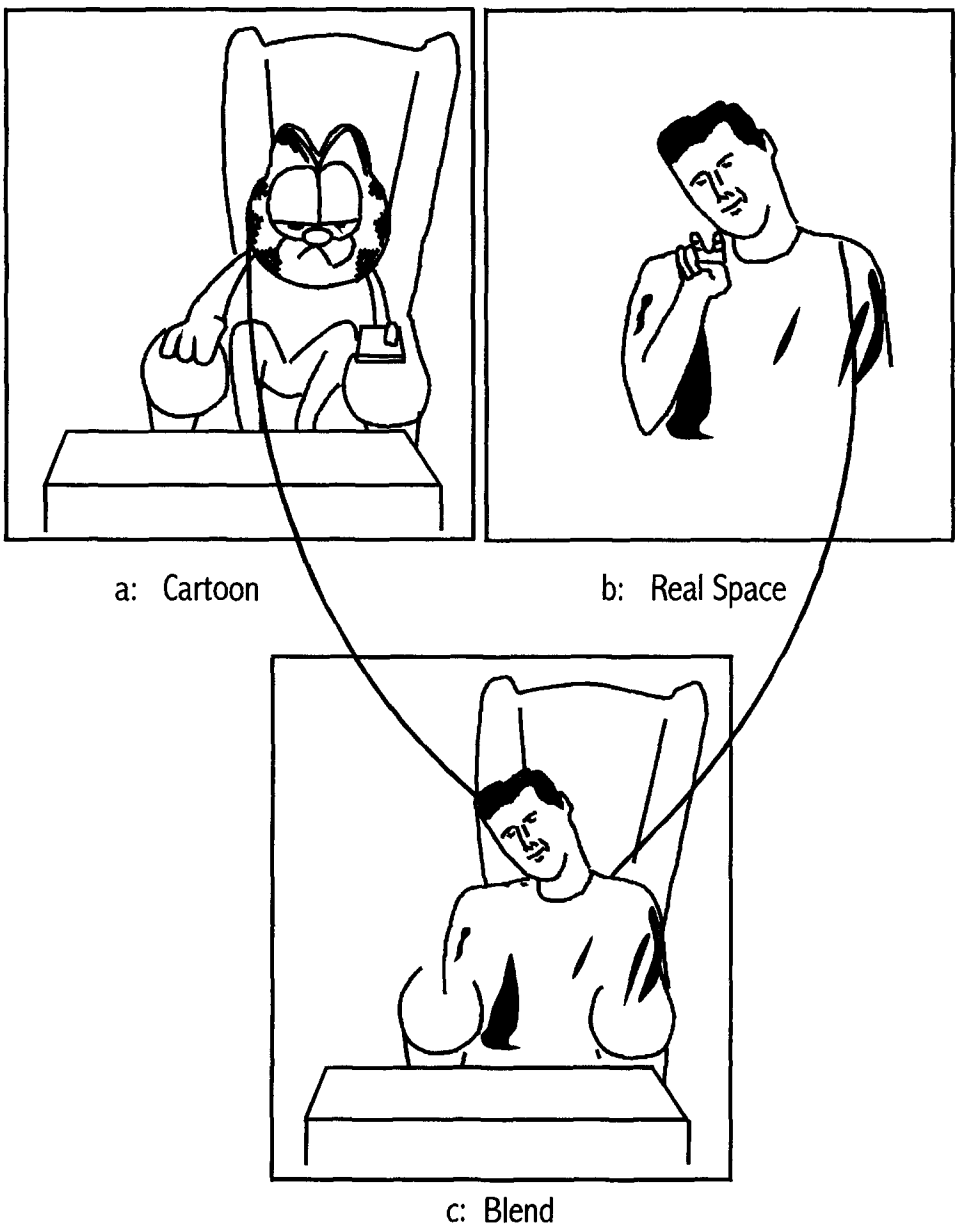

Fig. 8. The two input spaces and the blend

The most frequent type of constructed action seen in this narrative is the direction of the face and eye gaze. As we just discussed, the signer directs his gaze straight ahead in Episode 1 to illustrate |Garfield| watching |the TV|. In Episode 3 the signer directs his head and eye gaze forward to illustrate |Garfield| gazing at |the TV| while

pressing a remote control. In Episode 4, the signer gazes left to illustrate the gaze of |the owner| toward |Garfield|. In Episode 5, the signer looks up and to the right showing us |Garfield| looking up and to the right toward |the owner| (Fig. 7). In Episode 6 the signer gazes left to show us |the owner| gazing to the left toward |Garfield|. In Episode 7 the signer first gazes to the right to show |Garfield| looking toward |the owner| as he is picking him up, then gazing straight ahead as he is holding |the owner| out toward |the TV|. Finally, in Episode 9, the signer gazes directly ahead to show us |Garfield| watching |the TV|.

But constructed action is not limited to eye gaze. It could be an obscene gesture (Episode 7), a demonstration of |the owner| leaning over and flailing his arms (Episode 8), or gestures like the one meaning 'get out of here' (Episode 9). In fact, it is possible to view constructed discourse itself as a type of constructed action (Metzger, 1995). That is, the signer is constructing the utterances or thoughts of the character blended with the signer. Tannen (1989) argues that constructed dialogue is not an exact report of someone's real life utterance. Similarly, the larger category of constructed action is not an exact demonstration of someone's real life actions. Within the blended context, the constructed actions are those of the character in the blend, as opposed to those of the character in the original cartoon. The various types of constructed action found in this narrative are summarized in Table 1.

Table 1
Types of constructed actions and their significance

Types of constructed actions	What they indicate
Articulation of words or signs or emblems	What the |character| says or thinks
Direction of head and eye gaze	Direction |character| is looking
Facial expressions of affect, effort, etc.	How the |character| feels
Gestures of hands and arms	Gestures produced by the |character|

With no evidence to the contrary, we will assume that each of the types of constructed actions in Table 1 can appear independently of the others. For example, it is not uncommon to find gestures without simultaneously accompanying speech. It is also possible to have constructed articulation of signs/words without any other types of constructed action. We see this in Episode 2. In Episode 1 we see constructed eye gaze without constructed dialogue. In Episode 8 we find constructed actions without any linguistic production whatsoever.

Constructed actions provide a visual message. In order to fully understand the significance of the visual message, the addressee must construct the appropriate grounded blend. In order to construct the appropriate grounded blend, the addressee must understand the visual message. This sounds like a paradox, but the solution is not complicated. The addressee would first have to understand that constructed action was taking place. Given that it is understood as taking place, the next step is to understand what that constructed action is. This helps in determining who has blended with the signer. Knowing both the activity and the performer puts the

addressee in a position to fully understand the significance of the grounded blend, and hence, the narrator's intended meaning.

We will go through Episodes 4 and 5 to illustrate this point. In Episode 4, the signer begins by mentioning the subject, MAN. The signer then leans right, rotates his head and gaze to the left, and smiles as he signs the predicate BELLY-LAUGH. The addressee sees the constructed actions (gazing and smiling) and associates it with the only man in the narrative, |the owner|. This allows the addressee to construct a grounded space in which |the owner| is looking left and laughing. We know that previously |Garfield| discovered that the remote control wasn't working. Hence, we presume |the owner| observed the incident, since he is now looking to the left and laughing. This also allows the addressee to place |Garfield| to the left of |the owner|. The next episode begins with the signer leaning left and looking up and to the right, with no mention of any characters. Again, this is easily recognized as constructed action. The only character with someone to the right is |Garfield|. Hence the constructed action can easily be seen as |Garfield|'s.

4.1. Grammatical accounts of constructed action

The analysis of constructed actions presented above treats constructed action as a highly significant, even essential part of ASL discourse. We do not, however, treat constructed action as part of a syntactic representation of individual sentences. In our analysis, constructed action is part of a gestural rather than a grammatical code. Some of the head tilts, body shifts, and eye gaze behaviors we analyze as constructed actions have been previously analyzed as part of the grammatical representation of sentences. We will examine the extent to which these analyses are compatible with our data in the sections below.

4.1.1. The POV analysis of 'role shifting'

The term 'role shifting' is used in ASL analyses to describe signing in which the signer takes on the role of one of the characters in a narrative, usually in the context of constructed dialogue. Lillo-Martin (1995) proposes an analysis of role shifting in which shifting the body is the physical manifestation of a complement taking point of view predicate (POV). In the POV analysis of (4), our Episode 2, ONE OWNER O-F CAT would be the subject of a POV predicate.

(4) ONE OWNER O-F CAT (POV) 'SICK-OF-IT PRO (left) TAKE-OVER #TV TAKE-OVER EVERYDAY SICK-OF-IT'

The reported thoughts of the owner would be the complement of POV. While POV is not part of our analysis, we have placed POV in (4) where it would appear in a POV analysis. Semantically, POV has the effect of a change of reference in 1st person pronouns or 1st person verb agreement. Lillo-Martin claims that if PRO-1 is embedded within the complement of POV, it becomes logophoric. By this she means that it refers back to the subject of the matrix clause (i.e. the subject of POV) rather than to the speaker. This particular characteristic does not apply to (4) since there are

no first person pronouns. In addition, it "affects the interpretation of the sentence by presenting it from a particular referent's point of view", (Lillo-Martin, 1995: 158). Presumably, this would mean that the constructed dialogue is presented from the point of view of the owner. This aspect of the POV analysis is consistent with our analysis.

POV is claimed to be a predicate that reflects agreement with its subject by being "produced in the location of the subject by moving the body to that location", (Lillo-Martin, 1995: 161). In other words, if a referent had been set up in space to the left and ahead of the signer, the agreement would be reflected by moving the body to the left. Additionally, she states that POV may be realized by shifting the shoulders forward or backward, changing the eye gaze, head movement, indexing (e.g. with a pronoun), and/or adopting the facial expression of the participant whose point of view is being expressed. In this analysis, the complement-taking POV predicate is claimed to have any of the above-mentioned alternate forms.

In (4), however, there is a problem. Although the POV analysis lists numerous possible realizations of the POV predicate, none of those are present in (4). Thus, although we have the right environment for the POV predicate (i.e., the constructed thoughts of the owner), there is no phonological realization of POV. Assuming that POV is there to take the constructed dialogue as a complement, we would have to conclude that the complement taking POV predicate also has a phonologically empty realization.

Episode 6 presents us with an opposite problem. Instead of no realization of POV, we find multiple realizations of the POV predicate. We have divided (6) into three sentences. Lillo-Martin notes that reference shifting can extend beyond just a single clause. She proposes that either each new sentence is subordinate to a new POV predicate with a null subject, or alternatively POV is not repeated, but there is a repeated operator with a discourse link to an earlier operator. The details of the physical manifestation of a repeated operator without a repeated POV are not stated. Accordingly, we will discuss whether our data fits with a repeated POV analysis.[8] The understood subject of POV in each case would be the reported speaker (the owner). Since the subject of POV is the same, we would expect that the way the head or body is shifted throughout POV would also be the same "because the physical manifestation of POV continues to be represented" (Lillo-Martin, 1995: 163). Table 2 shows the configuration of the signer's head and body at the beginning of each of the three sentences.

The way the signer positions his head and body throughout this episode is inconsistent with the POV analysis since there is no consistency in either head or body rotation across the three sentences. Even if a POV analysis with an open-ended number of realizations of POV were acceptable, we would still expect the signer to pick one of those possibilities and stick with it. We don't see that here.

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[8] If one were to assume to correctness of the Lillo-Martin analysis of POV and the Bahan analysis of agreement which we discuss later, then there should be some interaction between the nonmanual requirements of agreement and the nonmanual requirements of POV. Lillo-Martin does not address this issue in her proposal for a POV predicate.

Table 2
Head and body positions during the three sentences in Episode 6

Sentence	Head	Body
1	tilt: slightly down rotate: –	tilt: left rotate: –
2	tilt: right rotate: left	tilt: right rotate: left
3	tilt: – rotate: right	tilt: left rotate: –

While we agree that most of the types of body leans, head shifts, and changes in eye gaze mentioned as part of the POV analysis can accompany a shift, we also find a highly similar situation with spoken languages. A shifted situation such as constructed dialogue can be accompanied by vocal gestures which control pitch, loudness, voice quality, aspects of prosody, pacing, and accent (Tannen, 1989), as well as visible gestures which include posture, facial expression, gestures of the hands, and eye gaze (Liddell, in press). The fact that such things are important does not necessarily make them predicates or even grammatical elements of any kind. For example, (5) involves constructed dialogue. During the constructed dialogue the vocal pitch might be raised to indicate that the words of the witch are being spoken. The change in vocal quality would take place after the word *said*. Based on examples like (5), one could construct an argument that English also has a complement-taking POV predicate. The fact that the vocal change occurs after *said* could be used to argue that there is a POV predicate in that location.

(5) And then the witch said, 'I want you kids to help me put food in that kettle over there'.

In this analysis, which we see as parallel to the POV analysis, one could also claim that first-person pronouns in the complement of POV were logophoric. That is, the pronoun *I* in (5) no longer refers to the speaker, but to the witch, the subject of the complement-taking POV predicate. Notice that this too leads to an open-ended number of realizations of POV for English. One could change not only pitch, but also quite a large number of vocal characteristics to indicate the identity of the individual whose words were being constructed. Even stuttering or a German accent would become complement-taking predicates of English. While we recognize the pragmatic importance of such vocal shifts, we are reluctant to claim that a high-pitched voice, stuttering, or a German accent are complement taking predicates of English. We are suggesting instead that these behaviors carry out pragmatic functions related to the actions of the blended character and help the addressee construct and understand the mental spaces. In our analysis of grounded, blended mental spaces, the constructed actions of the signer carry out the same functions.

4.1.2. Shifted attribution as an aspect of 'Role Shifting'

Engberg-Pedersen (1995) identifies three distinct properties associated with role shifting. She calls them 'shifted locus', 'shifted reference', and 'shifted attribution of expressive elements'. Shifted locus refers to a situation in which loci are set up in the signing space, then later shift, typically as a result of role shifting. In our view, shifted locus does not occur in this narrative because the signer does not set up any loci in the signing space and we will not discuss this aspect of her analysis here. By shifted reference she means that pronouns like PRO-1 ('me') do not always refer to the signer. This occurs in Episode 6, where the first-person pronoun, PRO-1, is uttered by the signer, but the sign refers to the owner. Her account describes such signs as shifters which refer to the quoted sender of the message.[9] She describes shifted attribution of expressive elements as, "manual as well as nonmanual elements expressing the 'central character's' attitude and emotions", and she demonstrates that shifted attribution occurs both in direct and indirect speech. Her description of Danish Sign Language describes ASL equally well. We see examples of this throughout this narrative, regardless of whether the signing is direct or indirect speech. Examples include |Garfield|'s gaze in Episodes 1, 3 and 5; an expletive in Episodes 2 and 5; and |the owner| gazing toward |Garfield| in Episode 4. Our analysis of constructed action is consistent with Engberg-Pedersen's description of 'shifted attribution of expressive elements'. We are attempting to provide an explanation for how that attribution occurs. In our analysis the attribution results from the creation of a grounded blend. Within the context of the blend, the actions of the signer demonstrate the attributes of the character blended with the signer.

4.1.3. The RPM analysis of head and body shifts

Kegl (1985) proposes that there is a grammatical morpheme called a Role Prominence Marker (RPM), realized phonologically as a slight shift in the signer's head and/or torso toward the location established in the signing space associated with the subject of the verb. The function of the RPM is to identify the grammatical subject of the sentence as the person (or personified animate or inanimate object) with whom empathy is established. Episode 1 provides a candidate head tilt for the RPM analysis. Recall that this is the first episode describing either the cat or the owner. The entire episode is shown in (6).

(6) ONE CAT SIT LOOK-AT #TV LOOK-AT

As we described earlier in Fig. 8, during the sign LOOK-AT, the signer tilts his head markedly to the right and directs the sign LOOK-AT outward in the same direction as his eye gaze. Like the POV analysis, the RPM analysis depends on the establishment of spatial loci ahead of the signer. In the RPM analysis, tilting the head to the right in (6) is interpreted as an overt grammatical signal that the signer is showing empathy with the subject of the verb LOOK-AT. In order to do this, there must be a

[9] See Liddell (in press) for an extensive discussion of shifters and grounded blends in spoken and signed language.

point in space ahead of and to the right of the signer associated with Garfield. Since the point in space is to the right of the signer, the signer tilts his head to the right to mark empathy with Garfield. The difficulty here is that this is the first episode of this narrative and Garfield has not been set up in the right side of the signing space. We could suppose that leaning the head to the right created such a locus. This might account for why the head tilts during the first episode, but during the entire narrative, no verb or pronoun is directed toward the right to refer to Garfield. On the contrary, when the owner produces pronouns to refer to Garfield, the pronouns are directed toward the left.[10] In other words, the only reason for supposing that there might be a point in space to the right associated with Garfield is to provide a justification for the head leaning to the right in this episode. We find the same problem throughout the narrative, since the signer does not establish points in space to lean the head and/or torso toward. We discuss this issue more fully in 4.2.

4.1.4. An agreement analysis of head tilt and eye gaze

Bahan (1996) proposes that signers mark verb agreement by tilting the head. In addition, he proposes that the direction of the eye gaze marks object agreement. In this analysis, abstract syntactic features related to agreement become associated with a locus in space. The head tilts toward one spatial locus to mark agreement with the subject. Eye gaze is directed toward the locus associated with the agreement features of the object. Like the RPM analysis, the subject agreement analysis also requires a locus associated with Garfield set up on the right side of the signing space – and we found no evidence that there was such a locus. The primary difference between the RPM analysis and the subject agreement analysis is in the proposed meanings of the two grammatical markers. One claims that the head tilt shows empathy while the other claims it marks subject verb agreement.

In Bahan's analysis, eye gaze is claimed to be a grammatical marker of agreement between the verb and its object. In (6), repeated below, the signer leans his head to the right and directs his eye gaze forward. His eye gaze direction matches the direction of the sign LOOK-AT. In an agreement analysis, both the sign LOOK-AT and the eye gaze would be directed toward a locus in space associated with the object of the verb.

(6) ONE CAT SIT LOOK-AT #TV LOOK-AT

Padden (1988) proposes a three-way distinction among ASL verbs. According to her analysis, plain verbs do not use space, while both inflecting verbs (also called agreement verbs and indicating verbs) and spatial verbs do use space. Inflecting verbs are directed toward locations associated with subjects and objects and spatial verbs move with respect to locations and directions, but do not point at locations associated with subjects and objects. Bahan adopts this analysis of ASL verbs. In this categorization, the sign LOOK-AT is an intransitive, spatial verb. The direction

[10] The use of pronouns and other deictic signs will be analyzed in the next section.

in which the sign points indicates the direction of the looking, but does not mark or agree with an object since it has no object. As a result, a marker of object agreement does not belong on this verb. But the signer's eye gaze nevertheless matches the direction of the sign LOOK-AT.

Janis (1995) proposes that it is not necessary to make this type of division among ASL verbs, but rather that there are two types of controllers of verb agreement: locative and non-locative. In this analysis, LOOK-AT would have a locative controller of agreement.[11] This analysis would apply to the direction of the fingertips of the sign, but not the eye gaze. Bahan's analysis claims that eye gaze marks agreement with the object, and regardless of the type of controller, LOOK-AT is intransitive. Thus, there is still no account for the direction of the eye gaze in this example.

Even though the object agreement analysis does not apply in this example, there is a significant use of eye gaze. Our analysis based on constructed action and grounded blended spaces treats this example no differently from the other examples of using the narrator's eye gaze to show a character's eye gaze that we describe in this narrative.

A similar example occurs in Episode 7. The signer first signs CAT then looks up and to the right while signing CL-X (press remote control), which is directed straight ahead. Like the sign LOOK-AT, the classifier predicate CL-X (press remote control) is also intransitive. It can also be directed in limitless ways to show the direction in which the remote control was pointed. This example is slightly more complicated than the previous example since two different directions are involved. The hand is directed straight ahead toward |the TV|. The eye gaze is directed upward and to the right toward |the owner|. Once again, the object agreement analysis of eye gaze would not apply here since the classifier predicate is intransitive. The locative controller analysis proposed by Janis would be meant to apply to the direction of the sign, but the eye gaze does not match the direction of the sign. The grounded blend analysis treats the eye gaze in this example as constructed action, showing |Garfield| gazing up and to the right toward |the owner| as he presses the remote control, directed toward |the TV|.

Naturally, we can't use intransitive verbs to evaluate object agreement. To look at cases where one would expect object agreement, we will examine the four uses of the transitive verb TAKE-OVER in this narrative. These four instances occur in examples (7)–(9). Above each instance of the verb we have placed the direction the signer's head tilts and the direction of the signer's eye gaze. In (7) the subject of TAKE-OVER is a pronoun directed toward the left, referring to Garfield. According to either the subject agreement analysis or the RPM analysis, the signer should tilt his head toward the location in space associated with the subject of the verb. Here the subject of the verb TAKE-OVER is on the left. Therefore the head should tilt

[11] Describing the way spatial signs can be directed as 'locative agreement' gives it a grammatical status which, in our opinion, is unwarranted. The locative agreement analysis requires an 'agreement marker' which is a combination of a spatial locus and a locative morpheme. An analysis in which an 'agreement marker' is partially composed of a spatial locus encounters the same problems as other analyses giving grammatical status to spatial loci. This issue is discussed in detail in Section 5 below.

toward the left during the verb TAKE-OVER. During the first instance of the verb the head tilts to the right. During the second, the signer's whole body is slightly tilted to the left with the signer's face and eye gaze facing slightly to the right. In (8) the subject of TAKE-OVER is first person, but the head is tilted toward the right. In (9) the subject of TAKE-OVER is an understood Garfield and the head is tilted to the right. This is the wrong direction for Garfield, who was referred to with a pronoun directed toward the left in an earlier episode. In these examples, there is no consistent use of head tilt toward a spatial locus associated with the subjects of the verb.

		tilt: right	tilt: slightly left
		gz: straight/left	gz: up and right
(7)	PRO (left)	TAKE-OVER #TV	TAKE-OVER EVERYDAY SICK-OF-IT (Episode 2)

		tilt: right
		gz: left
(8)	PRO-1 TAKE-OVER CHAIR, SORRY (Episode 6)	
	tilt: right	
	gz: straight	
(9)	TAKE-OVER (Episode 9)	

We will now examine the signer's eye gaze to see if the eye gaze is directed toward the spatial location associated with the object of the verb. In (7), the signer is talking about taking control of a TV. Since the TV does not move, the eye gaze as a reflection of object agreement should be the same in both cases. During the first instance of TAKE-OVER in (7) the signer's eye gaze is straight ahead or slightly left. During the second instance, his gaze is directed slightly upward and to the right. In (8) the signer is talking about taking over a chair. The signer's eye gaze is directed toward the left. We see this as the location of the chair in a blended space, so eye gaze is appropriately directed toward the left in this case. In the final instance of TAKE-OVER, the signer is also talking about taking control of a chair. This time, however, the chair is being sat upon.[12] The sign is made toward |the chair| being sat upon by means of a downward motion of the hands. The eye gaze, however, is directly ahead rather than downward toward |the chair|.

In sum, we are unable to find support for either the RPM or the agreement analyses in our data. Even if a spatial account could be found in which the head tilts were in the right directions and the eye gaze was directed toward the right locus, the meanings or grammatical functions proposed under these two grammatical analyses

[12] For this set of examples, we are describing the locations of entities in grounded blends. That is, when the signer is blended with the owner, |Garfield| and |the chair| are both to his left. When the signer is blended with Garfield, the chair is beneath him. We are able to talk about the locations of these entities because the signer makes these locations apparent by either his actions or the way verbs or pronouns are directed. He does not once 'set up' any entities in the signing space as required by the RPM and agreement analyses.

do not account for the meanings being expressed here. Our analysis claims that the addressee is presented with some structured grammatical elements (e.g. sentences, clauses, phrases, etc.), constructed action, and grounded, blended mental spaces which provide the basis for interpreting that constructed action. A comparison of these two approaches can be found in Tables 3 and 4.

Table 3
Analysis based on spatial loci and no gesture

Grammatical units	Meaning
CAT SIT LOOK-AT #TV LOOK-AT	a. 'The cat was looking in the direction of a TV.' b. 'The cat was looking in the direction of a TV (signer empathizes with subject and subject has role prominence).'

Table 4
Analysis based on grounded blends and gesture

Grammatical units	Meaning
CAT SIT LOOK-AT #TV LOOK-AT	'The cat was looking in the direction of a TV.'
Mental spaces	**Significance**
Real Space: A person's conception of their immediate surroundings.	Provides the narration (grammatical units). Provides physical elements and space for the blend.
Cartoon Space: The cartoon event the signer is communicating to the addressee	This is the mental space which the signer is communicating information about and which the addressee is constructing.
Blended Space: The conceptualized space in which the signer partially becomes Garfield, sitting on a chair watching a TV.	This is one of the means by which the signer communicates information (indirectly) about Cartoon Space. It provides a partially visible representation of events being described.
Pragmatic and conceptual issues	
Gestural parts of LOOK-AT	Placement shows who is looking: |Garfield| Direction shows 'looking' was directly outward.
Signer places his head behind the hand signing LOOK-AT and gazes in the same direction.	This tells the addressee that the signer has constructed a blend between himself and Garfield, and visually shows the addressee what |Garfield| is doing.
Signer shows direction of looking, then mentions the TV.	This allows the addressee to place |the TV| in the addressee's constructed blend ahead of |Garfield|.

In the spatial locus analysis, summarized in Table 3, the signer leans to the right to show agreement with a spatial locus associated with Garfield in the space ahead of the signer. The locus associated with Garfield is arbitrarily placed and tells us nothing about the physical setting in the cartoon. Similarly, a TV locus would also

be arbitrarily placed, and the direction of the verb LOOK-AT (if it were transitive) would only serve to tell us that LOOK-AT agrees with the TV as object. We have described this as meaning 'a' in Table 3. In the RPM analysis, tilting the head shows empathy between the signer and the subject of the sentence, and marks the subject as having role prominence. This is meaning 'b'.

In our analysis, there is a message provided by grammatical units and a message produced by the grounded blend and the signer's ability to illustrate |Garfield|'s actions in the blended space and to direct the sign LOOK-AT toward |the TV| in that grounded blend. Understanding the structure of the grounded blend is a pragmatic issue, as is understanding the relationship between the signs produced and the blended space. Additionally, the two messages must also be integrated into a single coherent message. In the competing analyses, there are no comparable pragmatic issues since virtually everything the signer does is interpreted as the realization of grammatical units.

In the examples we have described, the signer is demonstrating |Garfield|'s looking (a constructed action) by looking outward (or up and to the right) himself. Although not present in this example, in some instances of this type of behavior the signer will also include facial expressions appropriate for showing the surprise, anger, irritation, etc., of the character whose actions are being depicted (Liddell, 1980; Engberg-Pedersen, 1995). In the blend analysis, such expressions are expressions of the blended character and no new devices need to be created to account for their significance. What we are claiming then, is that the signer provides both grammatically encoded meanings and gestural demonstrations.

4.1.5. The 'Projected Body Pronoun' as a spatial element

Let us consider an additional example which contrasts a purely grammatical versus a pragmatic analysis of a spatial phenomenon. Kegl (1976) proposes an entity which she refers to as a 'projected body pronoun'. A projected body pronoun is a member of a subclass of pronouns which are realized as a set of points in space. She also describes the signer's own body as 'signer's body pronoun'. Thus, in a signing sequence in which the signer mimics placing earrings on her aunt, the signer's body is analyzed as the subject of the verb PUT-ON-EARRINGS and the projected body pronoun (the aunt) is analyzed as the object of the verb. The meaning given for this sequence is, 'I put earrings on her'. This purely linguistic treatment of this phenomenon contrasts in several ways with our analysis. First, we claim no grammatical status for either the signer's body or the imagined aunt ahead of the signer. We can imagine no sense in which either the signer's body or the imagined body are pronouns. Second, we are claiming that in such a situation, the signer is creating a grounded blend – an alternate physical context in which the (possibly) classifier-based demonstration of placing an earring is to be understood. This is a conceptual context, parallel in some ways to a real physical context in which one person might use another person to demonstrate putting on an earring (i.e. 'Here is what I did', followed by a demonstration with a real person). Note that when the speaker does this, neither the speaker nor the person receiving the earring are pronouns. Also note that since we are talking

about the conception of the aunt's body being ahead of the signer, rather than a pronoun being ahead of the signer, it makes sense to talk about the top of the entity's head, the entity's eyes, side of the head, ears, etc. It makes much less sense to talk about the top of a pronoun's head, the pronoun's eyes and ears, etc. Thus, while our analysis easily accounts for things like relative height differences, nearness, distance away from the signer, in a natural, conceptual way, trying to account for the same information by treating spatial entities as linguistic elements does not.

4.2. More about spatial representations

The POV analysis, the RPM analysis, and the agreement analyses are all based on the assumption that loci are set up in the signing space. Both types of analyses would have to claim that the signing space was structured with Garfield and the owner (or features related to Garfield and the owner) being associated with spatial loci. One possibility is shown in Fig. 9.

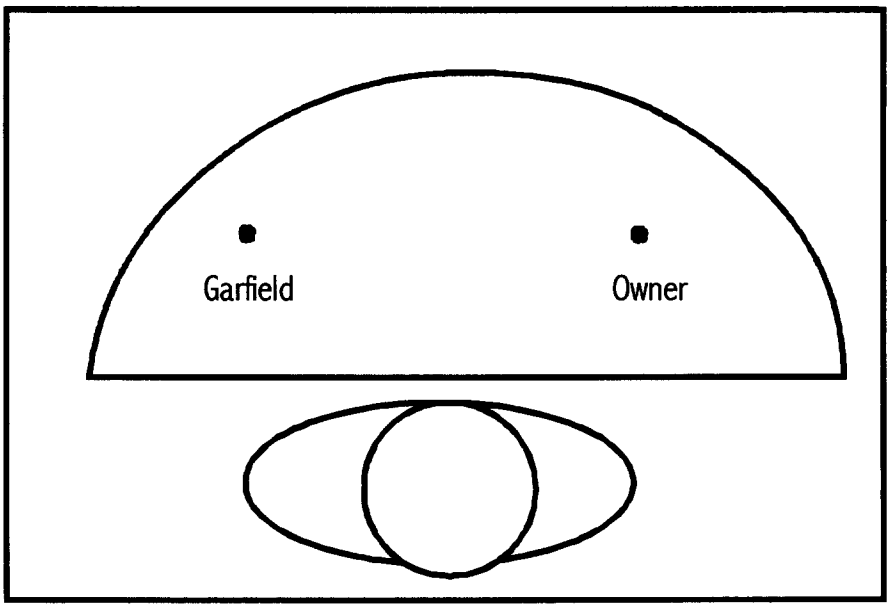

Fig. 9. One possible spatial locus arrangement.

The idea here is that there are two arbitrarily placed points in space, separate from the signer, which represent the two characters in the story. When the signer needs to show subject agreement with the owner, he leans right, thereby "moving the body to that location" (Lillo-Martin, 1995). When Garfield is the subject, the signer would lean to the left.

We do not dispute that the signer moves his body leftward or rightward in these episodes. Our claim is that the two characters in the narrative were never associated with spatial loci as illustrated in Fig. 9 (or the opposite configuration with Garfield on the right). In fact, we would argue that neither Garfield nor the owner were set up in the signing space either together or individually, either ahead of, to the left of, or to the right of the signer. This is an important point. Yes, |Garfield| is conceived of as being to the left of |the owner| in Episodes 2, 4, and 6. This is not the same as saying that |Garfield| is conceived of as being to the left of the signer. The distinction here is between what is conceptual and what is physical. Physically, Real Space and the blend are in the same place. In that sense, what is to the left of |the owner| is also to the left of the signer. Conceptually, however, Garfield was never set up in space to the left of the signer. In other words, the physical placement of |Garfield| in the blend is not a syntactic convenience in which an association is made between a piece of space and a referent in order to allow the signer to make reference to a non-present entity. The blends in this narrative are physical conceptualizations of scenes in which one of the characters is blended with the signer and other elements of the scene have physical placements with respect to the first blended character. In other words, the only time that |Garfield| is to the left of the signer is when |Garfield| is to the left of the signer as |the owner|. In this narrative, there is never a case where the signer AS SIGNER has either Garfield, the TV, or the owner associated with a locus in space ahead of him.

Also, in none of these cases are we talking about a locus in space. In both blends we are talking about an invisible, conceived-of-as-present referent, rather than a point in space. In this narrative, the signer as narrator never points to a spatial locus ahead of him to refer to either the owner or Garfield. Within the blends, the two characters are never in the space ahead of the signer at the same time. In our analysis, when the signer is blended with one of the two characters, the other character is imagined as full-sized, three-dimensional, and either standing or sitting in a chair (depending on the character).

We are still left with the question of why the signer tilts his head to the right in Episode 1, where Garfield is described as watching TV. In our view, the signer tilts his head to the right in order to match his own eye gaze direction with the direction of the fingertips of the sign LOOK-AT. In order to do so, the he places his head behind the back of the hand by leaning his head to the right, then gazes in the same direction that the fingertips are pointing. The rightward leaning of the signer's head is a consequence of placing his head behind the sign. In order to do so, he must lean his head to the right. It is not intended to mean that Garfield was leaning his head to the right.[13]

[13] Leaning the head to the side can have different functions in different contexts in ASL. We do not wish to generalize from this one example, to all instances of head tilting. We are only claiming that in this example, the head leaning is a consequence of putting the head behind the sign. An alternative which signers do not utilize would be to place the sign directly in front of the eyes so that the head does not have to move.

4.3. Toward a unified description of these gestural phenomena

In the Role Prominence Marker, subject-object agreement markers, and Point of View predicate analyses, highly similar physical actions are described as carrying out very dissimilar grammatical functions. For example, a slight shift in the body or shoulders would, in the right context, be interpreted as a complement taking POV predicate. In another context the very same physical actions could be interpreted as a role prominence marker or an agreement marker. A role prominence marker and a POV predicate have nothing in common semantically. They carry out completely different grammatical functions.

In our analysis of this narrative, we do not find these proposed grammatical distinctions. Episode 4 begins with the sentence, MAN BELLY-LAUGH. During the sign MAN the signer's body is oriented very nearly straight ahead. The signer's head and eye gaze are oriented slightly down. By the time the verb is produced, the signer is leaning to the right and has rotated his head and eye gaze to the left as shown in Fig. 10b. This body configuration would be analyzed as an example of a Role Prominence Marker. Immediately following BELLY-LAUGH, and without changing body configuration, the signer begins the constructed dialogue of the owner ('KNOW-THAT PRO REMOTE-CONTROL NOT WORK, B-A-T-T-E-R-Y REMOVE THROW-AWAY RECENTLY REMOTE-CONTROL'). Now, exactly the same body position, head orientation, and eye gaze would be analyzed as the complement taking predicate, POV.

The same situation arises in Episode 5, CAT LOOK-UP 'OH-SHIT' CL-X (press remote control). During the sign CAT the signer has begun to lean to the left and has also begun rotating his face to the right. By the time the verb is produced, he has arrived at the configuration shown in Fig. 7b. Here the leftward lean and orientation of the face and gaze to the right and up would be treated as an example of the Role Prominence Marker. Immediately following this sign, with no change in the orientation of the gaze, face, or body, the signer produces the constructed thoughts of Garfield. Now that physical configuration would be treated as the Point of View Predicate. Immediately following the constructed thoughts of Garfield, and again with no change in head or body orientation, the signer produces a classifier predicate, describing Garfield pressing a remote control directed toward a TV. Now the same body configuration would be analyzed as a Role Prominence Marker.

In our grounded, blended space analysis of eye gaze in this narrative, the functions of eye gaze, body tilts, rotations, and facial expressions do not change.[14] In Episode 4 the signer gazes to the left as a means of demonstrating |the owner| looking at |Garfield|. The lean to the right and the rotation to the left are clues to help identify |the owner|. The blend exists during both the narration and the following constructed dialogue. That is, during both the narration and the constructed dialogue, the signer is presenting us with an image of |the owner| gazing at |Garfield|. In the next episode,

[14] We are not claiming that all instances of directing eye gaze in ASL are accounted for by constructed action. The use of eye gaze we discuss in this narrative, however, is accounted for by constructed action.

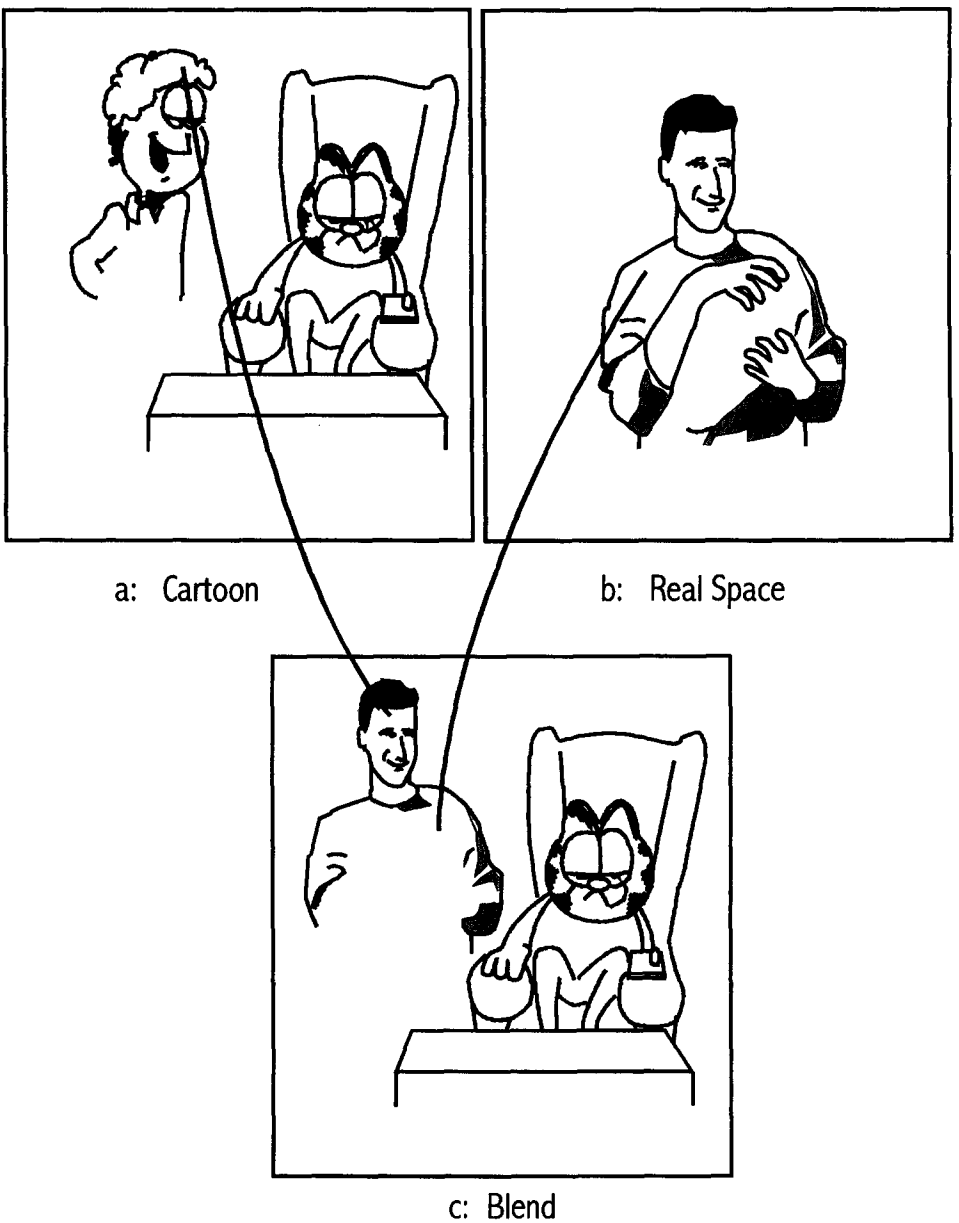

Fig. 10. Narration with the sign BELLY-LAUGH.

the signer utilizes another grounded blend in which (at least) his head and eye gaze have blended with Garfield to become |Garfield|'s head position and eye gaze. During the narration and the constructed dialogue, the signer's head position and eye gaze are illustrating |Garfield|'s actions. The same applies to the final classifier pred-

icate in which |Garfield| is pressing a remote control. The rightward gaze shows that |Garfield| is still looking at |the owner| while pressing the remote control.

In the next section we will analyze the deictic gestures in the narrative within the blended space model. We will also contrast our analysis with existing analyses of deixis and space in other models.

5. Deictic gestures

If you ask a signer to produce the sign meaning, 'tell', it is likely to be produced by directing the sign directly outward from the body. This is the citation form of the sign. Some verbs, however, are capable of being directed in ways which differ from their citation form. For example, if the verb TELL in the sentence YESTERDAY FATHER TELL, is directed toward an individual on my left, the intended meaning is 'yesterday father told that person (on my left)'. Thus, the way the verb TELL is directed provides crucial information about how the verb and the sentence are to be interpreted.

The 29 verb tokens we have identified in this narrative are listed in three columns in Table 5. The verbs in Columns 1 and 2 were produced in their citation form locations. The verbs in Column 1 are called 'plain verbs' since they are not capable of being directed spatially (Padden, 1988). Those in Column 2 are capable of being directed spatially, but these specific tokens were not. Those in Column 3 were directed or placed in ways which differed from their citation form. Thus, 19 of the 22 verb tokens capable of being directed spatially, were spatially directed.[15]

The non-first person pronoun, PRO, also has the ability to be directed toward entities present or 'set up' in space.[16] It is produced with a '1' handshape with the palm directed toward the side and is produced with an outward movement followed by a hold. In Episode 2 the signer as |the owner| faces more or less straight ahead and directs PRO slightly to the left. The sign refers to Garfield, and has a third person interpretation and would be translated into English as 'he'.[17] In Episode 6 the signer faces to the left and directs PRO downward at about a 45° angle and more or less directly outward from his rotated torso. In this case the sign also refers to Garfield, but in Episode 6 it means 'you'. The difference between these two instances of PRO are not lexical. That is, directing PRO down and to the left does not make it second person, with the meaning 'you'. Neither does directing the sign PRO outward and to the left make it third person, with the meaning 'he'.

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[15] For the purposes of this paper we will not distinguish between verbs with lexically fixed handshapes, orientations and movements and classifier predicates. The classifier predicates are recognizable in our glosses since they all begin with CL-.

[16] Meier (1990) argues that ASL does not distinguish between 2nd person and 3rd person in its pronominal system. We will not reiterate the details of Meier's argument here.

[17] The ASL pronoun is gender neutral and there is no English word to express this meaning. We selected 'he' as the most appropriate English pronoun.

Table 5
Spatial use of verbs and classifier predicates in this narrative

Episode	Not spatially directed		Spatially directed
	Not capable of being spatially directed	Capable of being spatially directed	
1		SIT	LOOK-AT LOOK-AT
2	SICK-OF-IT SICK-OF-IT	TAKE-OVER TAKE-OVER	
3	WORK		CL-1 (walk) CL-X (press remote control) CL-X (press remote control)
4	BELLY-LAUGH KNOW-THAT WORK		REMOVE THROW-AWAY
5			LOOK-AT CL-X (press remote control)
6	KNOW-THAT		CL-V (legs walk to) CL-open-8 (press buttons) TAKE-OVER
7	SICK-OF-IT		CL-X (press remote control) CL-5 (grab large entity and hold away from body)
9			CL-5 (hold large entity) CL-5 (bring large entity back and toss it) TWO-LEGS-SIT TAKE-OVER WATCH

Such facts about the use of space in ASL are widely known and not in dispute. Using such signs without directing them spatially would not be regarded as proper ASL. The long-standing view within sign language linguistics is that features of the grammar of ASL direct the hands spatially. Below we will review two closely related proposals for how this might be accomplished.

5.1. Proposals involving spatial loci

Klima and Bellugi (1979) propose that verbs and pronouns are directed toward loci on a horizontal plane ahead of the signer, at about the level of the abdomen. This spatial system is supposed to work as follows. If a sign is intended to refer to someone or something present, then the sign is directed toward a locus on the horizontal plane between the signer and the person or thing. That is, if a signer directs the sign TELL toward a locus between the signer and the addressee, it will mean 'tell you'. If the entity is not present, then an arbitrary locus on the horizontal plane can be associated with that entity. From then on, signs directed toward that locus will refer to the entity associated with that spatial locus.

Kegl (1985) proposes a treatment of loci in the signing space which has some similarities to the proposal made by Klima and Bellugi. In this proposal, as in Klima and Bellugi's proposal, an entity becomes associated with a spatial locus. Signs are subsequently directed toward that locus in order to refer to the entity associated with that locus. Her proposal differs from Klima and Bellugi's proposal in that loci are not restricted to the horizontal plane. In addition, Kegl describes an unlimited number of possible spatial loci, each of which is claimed to be a morpheme.

Lillo-Martin and Klima (1990) also argue that there are an unlimited number of possible ways for a pronoun to be directed. They describe a point in space as a referential locus (R-locus). They state (1990: 192) that for present referents, "the location of the referent itself determines its R-locus". They also state (ibid.) that for present referents, "the pointing is directed toward that referent". The first statement suggests that there is an R-locus separate from the present entity and that the sign will be directed toward that R-locus. The second statement does not mention the R-locus and states that the sign is directed toward the present entity. The two statements appear to contradict one another, but there may be a way to interpret these statements such that both are true. Suppose, for example, that the referent is located to the right of the signer. This would determine the location of an R-locus to the right of the signer, between the signer and the present entity. By pointing to the right toward the R-locus, the signer is also pointing to the right toward the referent. We will assume that this is what Lillo-Martin and Klima intended.[18] For referents which are not present, an R-locus in the signing space is associated with the referent. Signs which are directed toward such an R-locus will make reference to the entity associated with that R-locus.

In their formal syntactic analysis, a pronoun would be marked with an R-index. These are the familiar subscripts used in syntactic representations to indicate coreference. Nominals with the same subscript are coreferential. Those with different subscripts are not. At the phonological level, the R-index is realized phonologically as the R-locus associated with the R-index.

Liddell (1995, 1996) presents data showing that, in general signs are not directed toward single points. For example, each individual verb which uses space in ASL, if directed toward a person, has a particular part of the body that it is directed toward. A sign at the highest level would be directed toward another person's forehead. A sign at the lowest level would be directed toward a person's abdomen. In addition, there are verbs directed at other parts of the body between the forehead and the abdomen. Thus, there could be no single point toward which all signs are directed when referring to a single individual. But, for the sake of argument, let us suppose that the analyses above are actually consistent with what signers do.

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[18] By interpreting the phrase, 'the location of the referent itself determines its R-locus', a bit more loosely, one could interpret the statements to mean that when the entity is present, the entity itself becomes an R-locus. In this case, the sign just points at the present entity. If this is what was intended, then the notion of an R-locus for present referents simply disappears. The signs are simply directed toward the entity. This interpretation would be consistent with the analysis in Liddell (1995, 1996) and in this paper.

In an analysis of any linguistic phenomenon, one expects a description of the meaning encoded by each form and a description of the phonological features used to express that meaning. In these three proposals about space in ASL we have neither a description of the meanings of the spatial loci nor a phonological description of their forms. The spatial loci come to have meanings (or entities) associated with them in discourse. These analyses do not state whether there is any inherent meaning associated with these loci. On the phonological side, all three proposals above concerning spatial loci share a common problem. None of them describe any phonological features capable of implementing their proposals. Presumably, an entity becomes associated with one of a potentially infinite set of spatial loci. Phonological features associated with that locus (or morpheme or R-locus) become part of the phonological specification of the pronoun or verb directed toward that locus. That is, the unique phonological features associated with that particular spatial locus become part of the phonological specification of the particular sign directed toward that locus. The phonological consequences of this statement would seem to be that some potentially large number of distinct phonological features would be needed to capture this unlimited number of articulatory distinctions. No one has proposed such a phonological system for ASL. In fact, no one has proposed ANY phonological system capable of describing the 'use of space' in ASL.[19] This means, that as these proposals stand, none are able to phonologically describe the directionality of even a single sign which uses space.

5.2. *A mental space proposal for deictic signs*

Let us return to the beginning of the narrative where the signer describes Garfield watching TV. He produced the six signs shown in (10).

(10) ONE CAT SIT LOOK-AT, #TV, LOOK-AT.
'A cat was sitting watching TV.'

Recall that in this episode the signer provides the audience with an image of someone watching something. He does this by placing his head behind the hand producing the sign LOOK-AT and gazing in the same direction the fingertips are pointing. We described this as an example of constructed action. Our analysis depended on the existence of a grounded, blended mental space. In that grounded blend, Garfield is mapped onto the signer to produce the blended entity |Garfield|. Because of the blend, the looking action of the signer as |Garfield| is understood to

[19] There have been several proposals for phonological systems capable of describing the handshapes, movements, body locations and orientations of the hands. Attempting to describe signs using space is another matter. Liddell and Johnson (1989), for example, attempted an analysis of space involving seven vectors radiating away from the signer, a number of horizontal planes, and four distances away from the signer. Using vector, plane, and distance features, the proposed system was able to phonologically define more than a hundred points in space ahead of the signer. In the end, even this elaborate spatial grid feature system was not adequate because there are simply too many possible ways to direct or place the hand.

be a representation of the looking action of Garfield. Part of that blend included a |TV| ahead of the signer. The very same blend also provides an explanation for the deictic nature of the sign LOOK-AT. The sign LOOK-AT is directed straight ahead of the signer at about shoulder height toward |the TV| in the blend. Had |the TV| in the blend been higher, the sign LOOK-AT would have also been directed higher. The mechanism for directing the sign LOOK-AT toward |the TV| does not depend on phonological features. We have already discussed the fact that no such set of features exists. Liddell (1995, 1996) proposes that the mechanism for directing deictic signs in ASL is the human, cognitive ability to point at things. That is, the signer knows where |the TV| is in the blend and points the sign LOOK-AT in that direction.

The same explanation applies to all the deictic signs in this narrative. In every case the signer creates a grounded blend and then directs signs toward the appropriate elements within the blend. Recall that in Episode 2 the signer directs the sign PRO slightly to the left while his body was facing more or less straight ahead. The sign refers to Garfield, and has a third person interpretation and would be translated into English as 'he'. In Episode 6 the signer uses PRO to refer to Garfield, but this time he faces to the left and directs PRO downward at about a 45° angle. The grounded blends explain the difference in these two cases. In the first case the signer is blended with the owner, who is not near Garfield. In the blend, |the owner| points in the direction of |Garfield|, who might be some distance away or maybe in the next room. Under these circumstances it would have been inappropriate to point downward since |Garfield| wasn't there. In Episode 6, the signer is in a blend in which the signer as |the owner| is standing next to a seated |Garfield|. Since |Garfield| is now downward and to the left of the signer as |the owner| in the blend, it is expected that the sign PRO be directed downward and to the left toward |Garfield|. Exactly the same analysis applies to all the deictic verbs in Table 5. In every case, the sign is directed toward the appropriate element of a grounded blend.

5.3. Why deictic gestures are to be expected

We have argued above that the ASL pronoun PRO and some classes of ASL verbs are directed toward entities in grounded, blended mental spaces by means of the human, cognitive ability to point at things. This might make sign language seem very different from spoken language. In fact, we will argue below that the two are remarkably similar. In order to see the parallels, we will need to take another look at spoken language discourse.

We will examine what happens in spoken language discourse when entities being talked about are physically present. For example, consider a situation in which a speaker is wearing a ring and wants to talk about it. The sentence in (11) expresses information about the ring, but by itself, does not provide sufficient information to identify the particular ring being discussed. In addition to speaking the words, we would expect the speaker to produce a deictic gesture of some sort which makes clear which ring is being talked about. Simply wearing the ring would not be suffi-

cient to direct the addressee's attention to the ring.[20] That gesture might take the form of raising the hand with the ring into the line of sight of the addressee, pointing at the ring, gazing at the ring, etc. This is similar to the first example we discussed in this paper, 'Is this yours?' The question is clearly about some proximal entity, but it is still incumbent on the speaker to identify, typically through gesture, which entity is being talked about.

(11) This ring was made in Bangkok.
(12) I'll take one of those.

A store clerk would be puzzled by the statement in (12) if there were no accompanying deictic gesture. Similarly, consider a face to face conversation where the speaker says (13). It is difficult to imagine how this statement could be made felicitously without a deictic gesture. Without the gesture, the addressee would have no idea where to put the coat.

(13) Just put your coat over there.
(14) a. Have you been to the new mall on Connecticut Avenue?
b. No, I've never been over there.

The question-answer sequence in (14a) also contains the phrase 'over there', but no deictic gesture is either expected or appropriate. The difference between these two uses of the phrase 'over there' is that in (13), *over there* refers to a place in the immediate environment of the discourse, while in (14), *over there* refers to some location outside the immediate environment of the discourse. The presence of the entity in the immediate environment makes a difference as to whether or not the speaker uses a deictic gesture as the phrase is uttered. In general, discourse about things which are physically present and perceivable to both the speaker and addressee are gestured toward as they are described linguistically (Liddell, 1996).

The sentence in (15) seems at first glance to be odd or even contradictory. This is because the words are out of context and there is no description of accompanying deictic gestures. In context, and with accompanying gestures, this is a perfectly normal utterance.

(15) You are intelligent, but you are even more intelligent.

The key to understanding this utterance is that there are two different addressees. The first 'you' refers to one person and the second 'you' refers to another. This is easily accomplished by means of a deictic gesture toward the first addressee dur-

[20] What is sufficient to draw attention to an article of clothing or jewelry being worn would depend on the nature of the individuals involved and the nature of the clothing or jewelry. A hat with a flashing light on it might by itself be sufficient to allow one to say, 'this hat ...', without an accompanying gesture.

ing the first *you* and a deictic gesture toward the second addressee during the second *you*.

In the preceding examples, we have been talking about the use of deictic gestures in spoken language discourse when the entities being described are in the immediate physical environment of the speaker and addressee. We will now examine what Levinson (1983) refers to as deictic projection, in which the deictic center is shifted to a time and location other than that of the speaker. Recall that Real Space is the mental space representation of the immediate environment. Let us now put the generalization about spoken language discourse into the mental space framework. When the topic of spoken language discourse includes entities in Real Space, we should expect deictic gestures toward those entities (Liddell, 1996).[21] The deictic gestures fulfill two functions. First, the presence of the gesture is a signal that the entity being described is in Real Space. This simplifies the task of the addressee in constructing the meaning intended by the speaker. Secondly, the direction of the deictic gesture leads to the actual entity being described. The addressee needs only to note the direction of the deictic gesture and follow that direction to discover the entity being described. This is a highly significant and highly efficient means of determining which entity is being described.

Users of sign language are faced with the same task of determining which entities are being talked about in the discourse. Consider the use of the pronoun PRO, when directed toward a person other than the addressee in (16).

(16) PRO RECENTLY BUY HOUSE

The sign PRO would be directed at the chest of the individual who bought the house. The sign PRO is the ASL singular pronoun and is produced with a straight outward movement followed by a hold. The handshape for this sign is a '1' handshape and the hand is oriented with the palm facing to the side. These aspects of the sign are all easily describable using phonological features from any of a number of phonological systems for ASL (*inter alia*, Liddell and Johnson, 1989; Sandler, 1989; Brentari, 1998). The direction in which the finger points and the hand moves, however, is not describable using such features. The pointing aspect of the sign is a deictic component of an otherwise fully phonologically describable sign (Liddell, 1996). In other words, in normal discourse, the sign PRO is a grammatical entity with a superimposed deictic, gestural component.

A spoken language analogy with a deictic gesture overlaid on the articulation of linguistic features might involve producing the first consonant sound of the word 'this' while simultaneously pointing the tongue at the entity being described. In such a case, the articulatory system would be producing the word and the tongue would be making a simultaneous deictic gesture. This does not occur in spoken English or

[21] There are obvious exceptions to this generalization. When a speaker says 'I' or 'me', there is no need for a deictic gesture, though they sometimes occur.

other spoken languages that we know of.[22] Part of the explanation, no doubt, lies in the fact that spoken language is produced by actions of the vocal tract while deictic gestures are normally produced by actions of the eyes, face, hands, and arms. It is quite easy to do both by means of independent body parts. This is not the case with a signed language. The body parts involved in producing signs are the same as the body parts used in producing deictic gestures. Sign languages have developed in ways which allow the linguistic signs and deictic gestures to combine without interfering with the ability to recognize the linguistic sign.

Levinson (1983), following Fillmore (1971), describes instances of gesture combined with speech as gestural usage of deictic words. Interestingly, he does not limit his discussion of gestural usage to non-vocal gestures. He provides examples such as, 'Harvey can only speak about *this loud*', where there is a vocal gesture integrated with the articulation of linguistic features. This integration of vocal gesture and vocal articulation of linguistic features is very similar to the integration of a deictic gesture and the articulation of linguistic features in the ASL examples we described previously.

Now we turn to the issue of pointing at things which are part of grounded, blended, mental spaces. We will begin with an example involving spoken language. Consider a situation in which small model ships are placed in a formation on a large tabletop map of some islands and the surrounding ocean. Let's suppose, in addition, that one of the ships on the map is said to be the Enterprise. Once there is a mapping of entities onto the models, a grounded blend has been created. Thus, for the purposes of those present, the model has taken on a new value. As evidence for this, one sailor could point at the model ship and ask another either of the questions in (17).

(17) a. Wasn't that just on the floor a minute ago?
b. Didn't you serve on that ship?

In spite of the fact that the person asking the question points at the model in both cases, only the question in (17a) refers to the model as a physical entity. The question in (17b) asks about the actual ship which the model represents. For the purposes of this brief discourse, the blend allows the sailor to talk about the actual ship by pointing at something which is not the actual ship. In other words, the grounded blend gives the actual ship a presence in the immediate environment. This is exactly what creating grounded blends in ASL discourse does. By 'setting things up in space' the signer creates a blended entity, even if the blended element is only an area of space ahead of the signer. It is not significant whether the blended element is visible (i.e., the signer as |the owner|) or an invisible area of space (|Garfield| downward and to the left of |the owner|). Both are present for the purposes of the discourse.

The key point here is that grounded blends make things that are not really present, present. Said in another way, things may be present because they are physically present, or they may be present because a grounded blend makes them present concep-

[22] We have heard of societies where the lips are used for pointing, but we do not know if the lips perform such pointing during speech.

tually. In either case, when signs are directed at those things, they are pointing at something which is present.

In sum, deictic gestures play exactly the same role in sign language discourse as they do in spoken language discourse. They signal the addressee that the element being described is present and they point at it.

6. Conclusion

Prior to the work of Stokoe (1960), everything about sign languages was considered to be gestural and non-linguistic. By the time ASL was demonstrated to be a real human language, virtually all the gesturing done by the hands was considered linguistic and much of the nonmanual aspects of signing were also considered linguistic. Recent analyses of head and body tilts and rotations have also viewed these behaviors as the realization of grammatical elements.

In this narrative we examine the relationship between gestures and grounded, blended spaces. Every episode in the narrative contains examples of constructed action whose interpretation depends on a grounded blended space. The constructed action could take the form of constructed dialogue, gestures of the head and eyes, facial expressions, and other types of gestures produced by the hands and body, and combinations of these. Frequently it would be unclear whose dialogue is being constructed or whose actions are being represented without the contextual information provided by the grounded blend. In addition, ASL pronouns and some of its verbs must be directed toward either real things or conceptual entities in space. Eight of the nine episodes contain at least one sign directed toward some element of the grounded, blended space. Without knowing which blended space is active, the directionality of signs is not interpretable.

It goes without saying that physical context is a key pragmatic feature in the interpretation of linguistic utterances, regardless of the language being employed. One of our central arguments in this paper is that grounded blends provide a new physical context for the sign language utterances. They are part of the context since entities from mental spaces become associated with parts of the actual physical context through blending. That context might include the character blended with the signer, or it might include other entities conceived of as present. The presence of these entities enriches the narrative by providing spatial information not available in the text. In particular, addressees are able to witness the constructed action happening right before their eyes.

It has long been known that spoken language discourse is not limited to words and their grammatical arrangement. Our analysis of this narrative indicates that the same is true of sign language discourse. We find dual messages in ASL provided by gesture and language. The existence of these dual messages strongly suggests a level of cognitive organization in language use higher than the grammatical level in which the two meanings are integrated. Thus, the simultaneous presence of gesture and language is not uniquely a spoken language phenomenon.

Appendix A: Transcription conventions

ALL CAPS	Used for English glosses of any signs
HYPHENATED-WORDS	Represent a single sign
W-O-R-D	a fingerspelled word
#CAPS	Used for lexicalized fingerspelled sequences
PRO-1	1st person singular pronoun
PRO (left/right)	2nd or 3rd person singular pronoun, (left/right) indicates the general pointing direction of the pronoun
CL-handshape symbol()	Classifier predicate produced with specific handshape (general meaning expressed)
'CAPS'	Constructed dialogue
'lower case'	Translations/glosses of non-linguistic gestures
SIGN++	Multiple repetitions of the sign

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