4 Gesture, aphasia, and interaction

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1 Introduction

What is the scope of phenomena that have to be taken into account in order to describe how gesture is organized as intelligible action in human interaction? Here it will be argued that gesture as meaningful action is accomplished not by a speaker's hand alone, but instead through the relevant juxtaposition of a range of different kinds of semiotic materials which mutually elaborate each other.

The present chapter will probe the range of phenomena relevant to the organization of a gesture by looking at a rather special situation. Because of a massive stroke in the left hemisphere of his brain, Chil is able to speak only three words (Yes, No, and And).[1] However, he is able to supplement this vocabulary with limited gestures, and to understand much of what other people say.[2] His gestures have none of the syntax or other language properties of a sign language. Indeed, like his vocabulary, they seem more sparse and restricted than the gestures of people without brain damage. Despite these very severe restrictions on possibilities for expression through language, he is nonetheless able to engage in complicated conversation. How is this possible? By embedding the semiotic field constituted through his gesture in the talk and action of his interlocutors, Chil is able to both say something relevant and negotiate its meaning. His gestures do not stand alone, but instead count as meaningful action by functioning as components of a distributed process in which he creatively makes use of the language produced by others.

Crucial components of this process include (1) the embedding of gesture within a multi-party gesture space for the public constitution of meaning; (2) the placement of individual gestures within larger gesture sequences; and (3) interactive frameworks for tying talk to gesture, framing the semantic content of gestures within appropriate semiotic fields and negotiating their locally relevant meaning.[3] The present chapter's focus on socially organized frameworks for the accomplishment of meaning complements the psychological analysis of gesture found in many of the other chapters in this volume.

Chil's situation provides an opportunity to look in detail at a range of

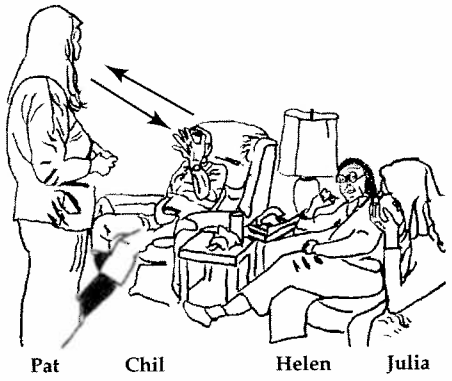

Figure 4.1.

different kinds of meaning-making practices that are relevant to the organization of gesture. It must be emphasized, however, that despite the uniqueness of the situation being examined, the practices being examined are generic ones that figure as well in the use of gesture by parties fully able to speak.

2 The sequence to be examined

Analysis in this chapter will focus on the use of gesture in a single extended sequence. Chil and his family are planning to go out for dinner. Chil is seated in a chair, and his daughter, Pat, is discussing arrangements with him. Chil's wife, Helen, and Pat's daughter Julia are seated on the couch to Chil's left (Figure 4.1).

The family agrees that all the five members present in the house will eat dinner at six o'clock (lines 1–5 in the transcript). The exchange that will be the focus of the present analysis then occurs. Chil participates in it by making a series of hand gestures with his left hand (his right hand and arm are paralyzed). In the following transcript, drawings of his handshapes are placed to the right of the talk where they were produced. A downward arrow indicates that Chil is ending his gesture and lowering his arm. To get some sense of the tasks posed for the family here, the reader is strongly encouraged to read through the transcript while using the changing handshapes to try and figure out what Chil wants to say.

3 Situating gestures in activity frames

With hindsight it is possible to see that Chil wants to invite two additional guests, Mack and June, to dinner. However, it takes intricate, temporally

1 Pat: So we'll see if they have a table for five.
2 Chil: Ye(h)s.
3 Helen: When? at six a clock?
4 Pat: °mm hmm
5 Chil: Yes.
• • •
6 Chil: Da da:h.
7 Pat: When we went with Mack and June.
8 We- we sat at a table
9 *just* as we came in the: fr-ont door.
10 *hh We sat with them. (.)
11 ┌There. ┌En then we-
12 Chil: └°mmm.└*Nih nih* duh **duh**. Da ***duh***.
13 Pat: So ***five*** of us can fit there.
14 (0.2)
15 Pat: ***Six*** a clock.
16 (1.0)
17 Pat: ***Five*** people,
18 Helen Sure.
19 Pat: ┌Its::
20 Julia: └Seven?
21 Pat: Seven?
22 a' clock?
23 (0.2)
24 Chil: No(h).

unfolding work for his interlocutors to discover this. Through most of this sequence Pat interprets any number higher than five as a proposal about the time for dinner (lines 15, 21–22, 25, 27), not the number of people who will be going. Investigation of the sequential structures that make it possible for the numbers displayed by Chil's gesturing hand to be reframed so that his invitation is eventually recognized is beyond the scope of this chapter (but

25 Pat: ***Six*** a clock.
26 (0.2)
27 Pat: ┌***Se***ven?
28 Helen: └°Seven people. Who┌ ('d they be)
29 Pat: └Five.
30 (1.0)
31 Helen: Seven people. ┌Who ***are*** they.
32 Pat: └That's six.
33 Julia: Two?
34 Pat: ┌Seven?
35 Chil: └Duh da ***dah?*** *((Chil Turns and Points Toward Helen))*
36 ***Ye:s.***
37 (0.2)
38 Pat: Invite somebody?
39 Chil: ***Ye:s.***
40 (0.2)
41 Pat: Mack en June?
42 Chil: Yes.
43 (0.2)
44 Pat: ***Oh:.***
45 (2.0)
46 Pat: ***OH:.***

see C. Goodwin, in press, for such analysis). It will be simply noted that in order to give Chil's handshapes appropriate meaning, his listeners must embed them in an appropriate activity (e.g., counting people versus specifying the time for dinner). Here this activity is made visible by the semantic structure of talk that the gesture is visibly tied to. Talk and gesture mutually elaborate each other. McNeill (1992) has analyzed such a conjunction as evidence for particular kinds of psychological processes within the mind of the individual producing the gesture (e.g., the genesis of an utterance within a growth point that is subsequently given shape in different ways by at least two semiotic media: language and gesture). In the present data the gesture and the talk that it is tied to are produced by separate individuals as part of

the process of accomplishing a locally relevant plan of action (going out to dinner). This provides some evidence for a social rather than a psychological motivation for the symbiotic relationship between talk and gesture. It is this ability to juxtapose into a larger whole the semiotic fields provided by gesture and language which makes possible the establishment of public, shared meaning such that courses of multi-party coordinated action can be successfully accomplished.

4 The interactive organization of Chil's gestures

For Chil, the accomplishment of meaning through gesture is a thoroughly social process, one that requires the intricate collaboration of others. Analysis will now focus on how Chil's gestures are shaped and organized as interactive processes. Phenomena to be examined will include the detailed articulation of his hand, differentiating groups of related hand movements from each other through systematic use of the arm presenting the gesturing hand, and the interactive organization of gesture space.

4.1 Securing orientation to the gesture

McNeill (1992: 86) defines gesture space only with reference to the body of the party producing the gesture. The present data allows us to expand his notion of gesture space and go beyond the body of the party making the gesture to focus on a multi-party interactively sustained space that provides a framework for common orientation and the production of meaning. The necessity of such a framework can be seen in a number of different ways in this sequence. For example, the place where Chil makes his gesture is organized not only in terms of his body, but also with reference to the position and changing action of his addressee. Thus, as can be seen in Figure 4.1 above, Chil places his gesturing hand squarely in Pat's line of sight. If Chil had been talking to Helen, the hand would have been placed quite differently. Gesture space is defined in terms of his interlocutor's body as well as his own.

Moreover, Chil changes the placement of his hand with reference to Pat's orientation. At the beginning of line 12 Pat is looking to her right toward Helen. Chil, who had been silent, holds up his hand in the 5-shape while producing an intonational tune (Figure 4.2). Chil's actions at the beginning of line 12 have the effect of drawing Pat's gaze to him.[4] Once she is looking at him, he raises his hand sharply into her line of sight, and this becomes the position used for gesturing throughout the remainder of the sequence. It would appear that his hand, initially in conjunction with his intonation melody, is performing two different, though interrelated, actions: first, requesting the orientation of an addressee (by announcing that he has

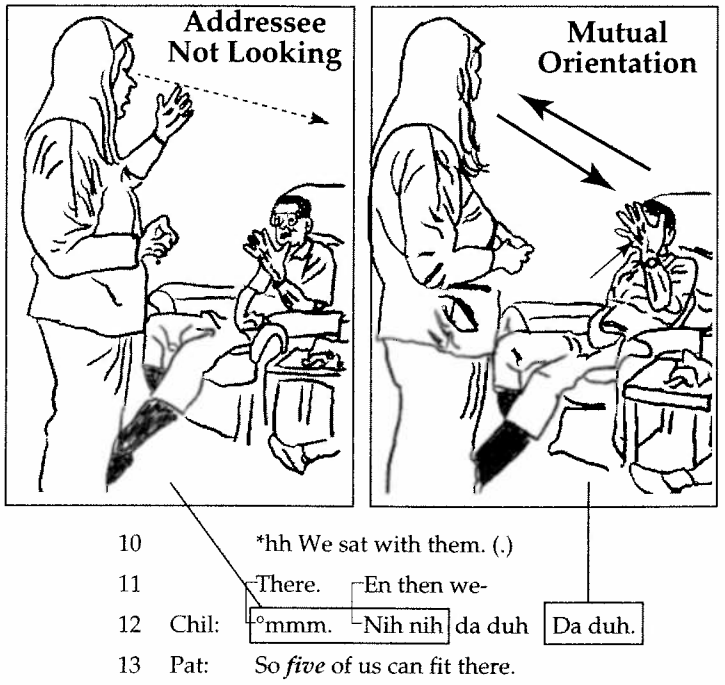

Figure 4.2.

something to say); and second, producing a meaningful utterance, here a sequence of gestures, once his interlocutor is visibly positioned to attend to it. The process that occurs here is structurally analogous to the way in which a state of mutual orientation is negotiated prior to the production of a coherent sentence in conversation. Parties who lack the gaze of a hearer produce phrasal breaks, such as restarts, to request such gaze, and speak coherent sentences only after they have the orientation of a hearer (C. Goodwin 1981: ch. 2).[5]

In sum, the relevant framework for the analysis of Chil's gesture is not his hand in isolation, or even the entire body of the party performing the gesture, but instead a multi-party participation framework organized so as to constitute a common focus of attention.[6]

4.2 Parsing movement into coherent sequences

To count higher than five, Chil, who has the use of only one hand, has to produce a sequence of gestures: first a full hand signaling five, and then a second handshape displaying additional digits. These hand gestures have to

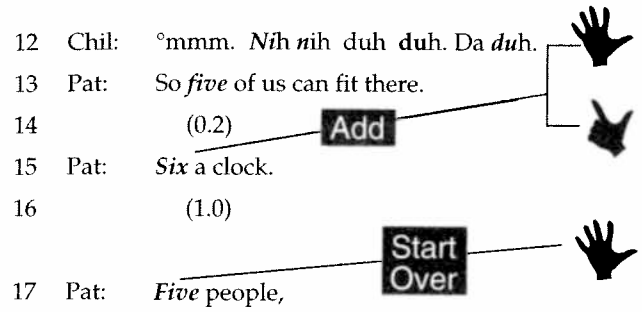

Figure 4.3.

be interpreted not simply as numbers, but as numbers to be summed. This process explicitly contrasts with something else that happens here: redoing the counting sequence. In this activity another handful of numbers is also displayed. But this is not to be seen as more numbers to be added to the existing sum, but instead as the beginning of another try at getting the meaning of the number right. Thus at line 17 Pat says not eleven (an additional five added to the six she produced in line 15) but "Five" (see Figure 4.3). The separate gestures have to be grouped into relevant sequences. Correct parsing has real consequences for subsequent action: to build an appropriate next move, Chil's interlocutor performs different kinds of operations on different sequence types. How are successive hand gestures grouped into relevant sequences? It might seem that this is an interpretive problem posed for the viewer of the gestures, that is, a mental act of classification. However, making visible coherent sequences, and disjunctures between sequences, is intrinsic to the embodied work of doing gesture. The visible movements of Chil's body provide Pat with the resources she needs to parse the flow of his gestures into the separate action packages she requires in order to build an appropriate response to them. How this is done will now be investigated in detail.

The gestures that are to be summed together are consistently done in a particular way: first the five is produced with all five fingers spread apart. Then, while holding the hand in approximately the same position in space, three of the extended fingers are closed. The constant position of the hand in space provides a unifying ground, a framework, within which the successive finger displays emerge as stages in a common activity.

This contrasts quite markedly with what happens when Chil signals that Pat's interpretation is wrong, and redoes the gesture. Here Chil rapidly drops his hand, thus dismantling the stage for the hand created by the position of the arm in space, and then raises it again. In essence the stage which

provides a framework for the perception of the hand is cleared, and a new stage is created. On such a stage a hand displaying numbers arrives as a fresh actor, one that is initiating a new counting sequence rather than adding to a sequence already in progress.

Why doesn't this new stage signal Pat to move to a new activity or topic? While dropping his hand and then rapidly raising it again Chil continues to stare intently at his interlocutor. The boundary between successive counting trials is thus embedded in a larger, unbroken framework of sustained focus on a continuing activity with a particular partner.

Rather than standing alone as self-contained units of meaning, Chil's handshapes are systematically informed by a nested set of hierarchical displays created by the rest of his body: first the movements of his arm which organize individual gestures into separate sequences; and second, his gaze (and the orientation of his upper body) toward an addressee, which establishes continuity across the different counting sequences made visible by his moving arm.[7]

4.3 *Frameworks for constituting meaning through gesture*

For normal speakers, gestures typically arrive accompanied by relevant talk. Moreover, the gesture and its lexical affiliate are not only produced by the same person, but are deeply intertwined in the development of a common structure of meaning (McNeill 1992). The accompanying talk not only provides a resource for analysts of gesture, who can investigate in fine detail the precise timing of the unfolding course of the gesture and the words it elaborates (Kendon 1983, 1994b; McNeill 1992; Schegloff 1984), but also for participants, who are easily able to find a relevant meaning in a speaker's moving hand. By way of contrast, the utterances of Chil being examined here are done entirely through gesture. Moreover, successful analysis of his gesture has real consequences for subsequent interaction. Within this process, establishing the meaning of a gesture is repetitively posed as a problematic practical task. The work done to accomplish this task throws into strong relief a range of procedures and resources used to organize gesture as a meaningful interactively sustained activity.

For descriptive purposes it can be useful to describe some of these structures in terms of a series of hierarchically embedded organizational frameworks.

- One can begin with specific handshapes. Rather than being merely expressive, Chil's handshapes are carefully organized to guide specific interpretations by their addressees.
- Second, rather than being static signs, Chil's gestures are constituted through patterns of gestural movement (Armstrong et al. 1995) which

simultaneously provide information about the operations recipients should perform on the handshapes thus framed. The hand making a display is placed and held in position by an arm. Rather than constituting a constant, amorphous ground to the meaningful figure formed by the hand, the arm is itself an important actor in the organization of Chil's gestures. Its movements delineate the boundaries of relevant sequences of gestures within a extended flow of handshapes. Such parsing of the stream of his visible activity is absolutely central to the successful accomplishment of the tasks his addressees are engaged in, since they must perform alternative types of operations (e.g., summing two numbers, as opposed to starting a count from scratch) on different arrangements of successive handshapes.

- Third, locating the lexical affiliate of a gesture does not constitute establishing its meaning. Wittgenstein (1958; see also Baker & Hacker 1980) argues that the meaning of a name is not its bearer (e.g., some version of the number five), but rather mastery of the practices required to use that sign competently in a relevant language game. Here multiple language games are at issue: first, the particular activity within which the practice of counting is embedded (i.e., time versus number of people); second, the larger projects within which an utterance such as "seven people" counts as a relevant move (e.g., a proposal that additional friends be included in the unfolding plans for dinner); and third, the frameworks and procedures that Chil and those around him deploy to make sense of his gestures in order to accomplish relevant courses of action.
- Fourth, the gesture space required for the analysis of what Chil is doing encompasses not only his own body, but also that of his addressee. Chil performs special gestural and vocal work to secure his interlocutor's visual focus on his hand, and consistently places his hand in her line of sight.
- Fifth, within this framework one party's talk can gloss and explicate another's gesture. The elements required to assemble the meaning of a gesture are distributed entities, existing in different media (the moving hand and the talk which elaborates it) and, in this case, in the activities of separate participants.
- Sixth, while an interactively sustained multi-party participation framework provides a stage for the coordinated display of gesture and talk, something more is required to constitute its meaning socially: sequential organization. Pat's glosses can be wrong. It is only through temporally unfolding processes of interaction that Pat and Chil establish a common vision of what is being said with the gesture. It is here that a range of disparate phenomena, including the talk and the visible body displays of separate people, are integrated into a common course of action.

5 Ecologies of sign systems and the communities they shape

In normal conversations, gestures frequently co-occur with talk by the party making the gesture. Since the talk carries much (though by no means all) of what is being said, it is on occasion possible for hearers to grasp the substance of an utterance while paying only passing attention to the accompanying gesture, or even ignoring it entirely.[8] By way of contrast, the utterances of Chil being examined here are done entirely through gesture, and thus must be attended to by at least one of his addressees. Chil adapts to his gestural utterances one of the basic procedures used by speakers in conversation to obtain the orientation of a hearer to an emerging strip of talk: securing the gaze of an addressee with a preliminary version of the gesture, and then redoing the gesture once mutual orientation has been established. Insofar as Chil's gestures have the status of full-fledged moves within conversation – that is, they do constitute his turns at talk – it is not at all surprising that resources used more generally to organize participation within the turn are now used to frame his gestures in ways that are not done for the gestures of participants able to speak.

The particular characteristics of the interactive community that emerge when he is a participant have other consequences as well. Despite some moves toward organizing relevant contrasts within a larger system, Chil's gesturing is not in any way comparable to the well-developed sign languages of the deaf,[9] or of speaking people prohibited from talking (Kendon 1988). Thus, his gestures are not organized into elaborate, hierarchically organized structures through syntactic processes. Moreover, unlike communication in a signing community, his interlocutors do not operate under his constraints, but instead use the full resources of talk-in-interaction. The work of Singleton, Morford & Goldin-Meadow (1995) suggests that one very strong constraint inhibiting the elaboration of syntactic relationships between hand movements, that is, the shift from isolated gestures to a signing system, is the way in which gestures remain parasitic on the structure of co-occurring spoken language. When speech is present, links between hand movements are provided by the talk and thus do not have to be built into the organization of the gestural stream. In Chil's case the issue is complicated by the question of whether damage to his brain would make syntax impossible under any circumstances. Nonetheless the work of Singleton and her colleagues leads to the very interesting possibility that the hybrid speech community that some stroke victims create with their interlocutors (e.g., one party using gestures and limited speech but tying that to the fully articulated language of others) might itself inhibit the elaboration of more syntactic organization in a stroke victim's gesturing system. Other social factors are at play here as well. Though half a million

people suffer strokes in America each year, and three million continue to live with disability because of such trauma, most strokes (over 70 per cent) occur in people over sixty-five years of age (Leary 1995). Unlike the situation with the deaf, which can affect the very young as well as the old, and where concerted political action has led to the formation of viable communities and relevant educational institutions, victims of stroke typically live out their lives disconnected from others in a similar state. Thus, instead of there being an active, well-developed speech community using a language like ASL together, and passing it on from generation to generation, the communication of stroke patients develops in thousands of small, isolated pockets, and the special adaptations each family creates die with the person who suffered the stroke.

Chil's use of gesture is by no means the same as that of a person with unimpaired language abilities. Nonetheless the resources that he and his interlocutors use are generic practices for the organization of gesture within interaction which are adapted to the specifics of his situation. Thus his gestures make use of the same semiotic resources (gesture tied to other meaning practices such as talk) used by normal speakers. However, in his case the talk is produced by someone other than the person performing the gesture (and thus has special characteristics – e.g., it is offered as a candidate understanding, with rising intonation). Chil's aphasia thus leads to a reorganization of the ecology of sign systems implicated in the production of gesture (e.g., assigning talk and gesture to separate parties) without however leading to a radically new type of gesture. The distributed work of tying together signs in different modalities that is required to constitute the meaning of a gesture is dramatically visible in Chil's case. However, it is present as well in the talk of parties who are able to speak. Indeed, much recent research on gesture has focused on its close ties to the structure of the talk which accompanies it (Heath 1992; Kendon 1994b; McNeill 1992). McNeill (1992) in his work on growth points has demonstrated how talk and gesture might emerge from a common source in the production of an utterance. However, quite independent of the psychological origin of such a relationship, the way in which a gesture and the talk it is tied to mutually elaborate each other constitutes a central arena for social practice in the organization of talk-in-interaction. It provides a key resource for participants faced with the task of making relevant sense out of the field of action embodied in a strip of talk and the co-occurring field of visible behavior in which it is embedded. Though gesture is typically treated as a transparent, seamless package, conversationalists can themselves deconstruct this unity for playful and other purposes. For example, the gestures being made by a speaker can be ridiculed by extracting them from her talk and then reattaching them to a new, incongruent strip of

talk (C. Goodwin & Goodwin 1992). Seeing a gesture as a meaningful display characteristically involves not just orientation to someone's moving hand, but rather ongoing synthesis and mutual calibration of quite disparate kinds of information emerging through time within different modalities for expression available to the human body lodged in interaction.[10] The way in which Chil's gestures are deeply embedded in the talk of those around him provides a tragic opportunity to probe basic procedures and frameworks deployed by parties in interaction to constitute meaning together.

Throughout each day of their lives members of Chil's family face as an ongoing practical problem the task of how to constitute shared meaning so that the courses of coordinated action that make up their life world can be accomplished. Such a task, which mobilizes language, gesture and social organization for the accomplishment of action within consequential settings, sits at the very center of what it means to be human.

NOTES

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1 For analysis of Chil's use of very limited language to co-construct intricate meaning by embedding his talk in the talk of his interlocutors, see C. Goodwin (1995a).

2 His medical records at discharge in 1981 report "severe expressive and moderate receptive aphasia, moderate dysarthria and verbal apraxia."

3 The original version of this chapter included analysis of all these phenomena. However, the space limitations of the present volume make it necessary to drop the third topic, i.e., description of the sequential structures used to interactively work out the meaning of Chil's gestures. This is a crucial topic, one that is too important to gloss over in a cursory fashion. For more complete description and analysis of this process, see C. Goodwin (in press).

4 For other analysis of how parties making gestures both work to focus the gaze of their recipients on the hand(s) making the gesture and redesign the gesture after its addressee visibly misunderstands it, see Streeck (1993, 1994). For discussion of research pertaining to the question of whether gestures in conversation are in fact communicative (a position that has been challenged by some psychologists), see Kendon (1994b).

5 It is interesting to note that in both situations the item used to solicit orientation is an incomplete version of the utterance or gesture that will constitute the substance of the proposed turn.

6 See Hibbitts (1995) for an analysis of the importance of multi-party participation frameworks for the organization of gesture in the legal system.
7 The way in which Chil uses his hand to bracket sequences of gestures is quite consistent with Armstrong, Stokoe & Wilcox (1995), who argue that the production of gesture involves not just the hand, but many other parts of the body, moving through time in organized action, and in particular the arms. Kendon (1990) has stressed the importance of seeing the body as a locus for hierarchical displays of orientation.
8 This does however mean, as some psychologists have suggested, that participants in ordinary conversation entirely ignore gesture. For analysis of how speakers reshape emerging action to take into account displays which have been made through gesture, see C. Goodwin (1980) and Kendon (1994a).
9 For especially interesting analysis of the development of syntax in a sign-language system, and the way in which such a system differs radically from not only gesture but also more primitive signing systems, see Kegl, Senghas & Coppola (in press); see also Morford & Kegl (this volume).
10 The web of meaning implicated in the organization of gesture does not stop at the actors' skins, but encompasses as well features of their environment and historically structured representations of many different kinds (maps, images, graphs, computer screens providing access to worlds beyond the immediate situation, etc.) which give meaning to gesture in a variety of different ways. See for example C. Goodwin (1994, 1995b, n.d.), M. H. Goodwin (1995), Heath (1992), Heath & Luff (1992), Hutchins (1995), Hutchins & Palen (1997), LeBaron & Streeck (this volume), and Ochs, Jacoby & Gonzales (1994).

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5 Gestural interaction between the instructor and the learner in *origami* instruction

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1 Introduction

Do people gesturally interact with each other? If so, how? Is there any consistent and more or less systematic change in the way one of the participants in a dyadic communication gesturally responds to her[1] partner as the latter participant's gesture changes? These are the questions which will be pursued in the present chapter.[2]

These questions have rarely been addressed in the field of gesture–speech research. Most studies have focused on the relationship between speech and gesture in single speakers, who are merely individual participants in the narrative settings as a whole.[3] The speakers have been analyzed independently of the interaction with the communicative partner. This paradigm, which can be called a narrator-centered paradigm, has raised many important questions and brought a variety of significant insights into the field. If gestural interaction between interlocutors can also be found, and if we can determine how partners gesturally interact, the present study will shed new light on the theory of spontaneous gestures to the extent that the model of gesture and speech should take into consideration *inter*personal factors as well as *intra*personal factors (Vygotsky 1962; McNeill & Duncan, this volume).

Some researchers have already begun paying attention to and describing the phenomena of gestural interaction in a broad sense in pursuit of the question of what the listener does in a narrative setting. As one may easily imagine, even in an experimental setting the listener is actively engaged in the communication by using non-verbal behavior, such as nodding and shaking her head, making facial expressions to show whether she comprehends what she has heard, and responding to what the narrator talks about by, for example, smiling. Some of these non-verbal behaviors may be accomplished in a quite subtle way, but all of them are very important in furthering – or even impeding – the dialogue. These non-verbal behaviors by listeners are, in turn, taken into consideration by the narrator in her performance of speech and gesture in the narration/instruction that follows.[4]