

# Language and Gesture

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*Edited by*

David McNeill

*University of Chicago*

## Introduction

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*David McNeill*

*Departments of Psychology and Linguistics, University of Chicago*

### 1 Introduction

The word ‘gesture’ needs no explanation. Yet how we use the term in this book is liable to be misunderstood. We are discussing a phenomenon that often passes without notice, though it is omnipresent. If you watch someone speaking, in almost any language and under nearly all circumstances, you will see what appears to be a compulsion to move the hands and arms in conjunction with the speech. Speech, we know, is the actuality of language. But what are the gestures? This book aims to answer this question, at least in part.

It is useful to introduce a set of distinctions to help situate our question. In the process, we will clarify the subject matter of this book and simultaneously sharpen the sense of the word ‘gesture’ with which we are concerned.

### 2 The nature of the phenomenon: four continua

I have put this title into the plural because there are several dimensions on which we need to distinguish movements that are equally well called ‘gestures’. The labels for the points along the continua – “gesticulation,” “pantomime,” “emblem,” and “sign language” – were first defined by Kendon (1982). They were lined up on a continuum termed “Kendon’s continuum” by McNeill (1992). That single continuum is now subdivided into four continua, each an analytically separate dimension on which the types of gestures above can be differentiated.

#### 2.1 *Types of gesture*

It will be helpful in the following to have specific examples of gestures at each of the points on Kendon’s continuum.

An example of *gesticulation* is “he grabs a big oak tree and **bends** it way back” (McNeill 1992). Before making the gesture the speaker had moved his right hand forward and slightly upward while opening his hand into a kind of C-shaped grip; all of this was preparation. The gesture then took

place during the boldface stretch, with the hand appearing to grasp something and pull this imaginary tree back and down.

*Pantomime* is difficult to define, but generally means a significant gesture without speech, a dumb show (to paraphrase the *OED*). It's a movement, often complex and sequential, that does not accompany speech and is not part of a gesture 'code'. A simple example would be twirling a finger around in a circle after someone asks, "What is a vortex?"

An example of an *emblem* is the OK sign – made by forming a circle with the forefinger and thumb in contact at their tips, while the rest of the fingers extend outward – used for expressing approbation.

An example of an ASL *sign* is TREE – the dominant arm extended upward at the elbow, the fingers extended outward (a 5-hand), and the hand rotating back and forth at the wrist. The subordinate hand is extended flat and prone under the dominant-hand elbow. This sign iconically depicts a kind of schematic tree – trunk, leaves fluttering in the wind, and ground – but the iconicity is conventionalized and constrained, as will be explained below.

## 2.2 The continua

With these examples in mind, we can look at how the different kinds of gestures actually differ. The most concrete dimension is defined by the relationship of the gesture to speech:

### 2.2.1 Continuum 1: relationship to speech

Gesticulation	→	Emblems	→	Pantomime	→	Sign Language
obligatory		optional		obligatory		ditto
presence of speech		presence of speech		absence of speech		

The bends-it-back gesture is meaningful only in conjunction with the utterance of "bends it back." The OK emblem can be made with speech or not. Pantomime, by definition, does not accompany speech (lack of speech is therefore trivial). With sign language, while it is possible to produce signs and speak simultaneously, doing so has a disruptive effect on both speech and gesture. Speech becomes hesitant and sign performance is disrupted at the level of the main grammatical mechanisms of the language that utilize space rather than time for encoding meanings (Nelson et al. 1993).

Associated with the speech continuum is another continuum that reflects the presence vs. absence of the characteristic semiotic properties of a linguistic system. This is a second continuum on which gesticulation and sign language hold down the extremes, while pantomime and emblem have exchanged places:

### 2.2.2 Continuum 2: relationship to linguistic properties

Gesticulation	→	Pantomime	→	Emblems	→	Sign Language
linguistic properties absent		ditto		some linguistic properties present		linguistic properties present

The "bends it way back" gesture lacks all linguistic properties. It is non-morphemic, not realized through a system of phonological form constraints, and has no potential for syntactic combination with other gestures. We can demonstrate the inapplicability of linguistic properties through a thought experiment. Imagine another person saying the same thing but with "it" meaning the corner of a sheet of paper. Then, rather than the hand opening into a grip, the thumb and forefinger would come together in a pinch; rather than the arm moving forward and slightly up, the pinching hand would be held slightly forward and down; and rather than pull the arm back, the pinching hand would rotate. Also, this gesture would naturally be performed with two hands, the second hand 'holding' the paper that is being bent back. That is, none of the form properties of the first gesture would be present in the second gesture, bends-it-way-back though it is. Neither gesture in fact obeys constraints within a system of forms; there are only constraints that emerge from the imagery of bending itself. The hand shape and position are creations of the moment that reflect the speaker's imagery – of a character from a story reaching up and forward to pull back a tree, of someone turning down the corner of piece of paper. The ASL sign TREE in contrast *is* constrained by the phonological properties of the ASL language system.<sup>1</sup> The 5-shape is one of the standard shapes of the language; the sign could not be formed and remain intelligible with a hand shape that is not part of the language. While the 5-shape has recognizable iconicity, it is a standardized selection of iconic features that other sign languages, with signs equally iconic, do not use (Danish Sign Language traces an outline of a tree). And the sign is what Okrent calls "non-specific", in that it is used equally well for all kinds of trees and tree shapes, not just trees with long bare trunks and fluttering leaves.

Pantomime, like gesticulation, does not seem to obey any system constraints (not considering theatrical pantomime, which does have its own traditional forms and rules: Fischer-Lichte 1992). The vortex could be exhibited by twirling a finger or rotating the whole hand, and neither would be unintelligible or seem to be a violation of a system constraint.

Emblems, on the other hand, do show system constraints. There are differences between well-formed and not-well-formed ways of making the gesture. Placing the middle finger on the thumb results in a gesture with some kind of precision meaning, but it is not recognizable as the OK sign.

The OK gesture, like a word, is constrained to assume a certain ‘phonological’ shape. Yet these constraints are limited and don’t by any means amount to a full language. There is no way to reliably reverse the OK sign, for example. Forming it and waving it back and forth laterally (another emblem that, on its own, signals negation) might convey “not OK,” but it also might be seen as meaning the opposite of negation – waving the hand could call attention to the OK sign, or suggest that many different things are OK – a flexibility that is basically not linguistic in character.

Comparing Continuum 1, ‘speech present’ – ‘speech absent’, with Continuum 2, ‘linguistic properties absent’ – ‘linguistic properties present’, we see one of the basic facts of gesture life: the gesticulations with which speech is obligatorily *present* are the least language-like; the signs from which speech is obligatorily *absent* have linguistic properties of their own. This is not so paradoxical as it may seem. It reveals that ‘gesture’ has the potential to take on the traits of a linguistic system. This is the conclusion of thirty years of investigation of the sign languages of the deaf (see, for example, the collection of papers in Emmorey & Reilly 1995). It is also the conclusion of research on the deaf children of hearing, non-signing parents. These children are exposed to neither a sign language nor speech, and they develop their own means of gestural communication that manifests a number of important linguistic properties, such as a lexicon and basic syntax (Goldin-Meadow & Mylander 1984). In effect, their gestures move to the right of the continuum. The conclusion is that nothing about the visual–manual modality *per se* is incompatible with the presence of linguistic properties.

The comparison of the first and second continua also shows, moreover, that when the *vocal* modality has linguistic system properties, *gesture*, the manual modality, does not take on these properties. And, when it does not, speech tends to be an *obligatory* presence with the gesture. This is certainly one of the more interesting facts of gesture reality, and one that looms large in the chapters of this volume. It implies that speech and gesture combine into a system of their own in which each modality performs its own functions, the two modalities mutually supporting one another. The chapters in this volume operate on this premise and describe in detail the functions of speech and gesture across many languages and speakers.

### 2.2.3 Continuum 3: relationship to conventions

Gesticulation	→	Pantomime	→	Emblems	→	Sign Language
not		ditto		partly		fully
conventionalized				conventionalized		conventionalized

*Convention* means that the forms and meanings of the gesture meet some kind of socially constituted group standard. It is because our perception is

ruled by convention that only forefinger and thumb contact are recognizable as OK. At the gesticulation end of the continuum, in contrast, lack of convention is an attribute *sine qua non*. The bends-it-way-back gesture is conventional only in the broadest sense (e.g., that gesturing is acceptable in storytelling contexts). There are no conventions telling the speaker what form bending back is to take. The TREE sign, however, *is* constrained by the conventions of ASL. It must meet form standards according to which only an upright arm with an extended 5-hand is TREE.

2.2.4 *Continuum 4: character of the semiosis.* The fourth continuum concerns the semiotic differences between gesticulation and sign. This dimension also shows the richness that comes from combining gesticulation with speech into a unified speech–gesture system, a system that places contrasting kinds of semiotic properties in one vessel (in what sense sign–gesture systems might also exist is a topic of much current interest; for discussion, see Liddell’s chapter).

The semiotic continuum is the following:

Gesticulation	→	Pantomime	→	Emblems	→	Sign Language
global and		global and		segmented		segmented
synthetic		analytic		and synthetic		and analytic

*Global* refers to the fact that the determination of meaning in a gesticulation proceeds in a downward direction. The meanings of the ‘parts’ are determined by the meaning of the whole. This contrasts to the upward determination of the meanings of sentences. In the bending-back gesture, we understand from the meaning of the gesture as a whole that the hand (one of the ‘parts’) equals the character’s hand, the movement (another part) equals the character’s movement, and the backward direction (a third part) equals the character’s backward movement. These are not independent morphemes. It is not the case that the hand in general means a hand or movement backward must always mean movement in that direction (cf. Özyürek’s chapter). In speech, on the other hand, the event of the character bending back the tree was constructed out of independently meaningful words or segments organized according to a standardized plan or syntax. The top-down global semiotic of gesticulation contrasts with this bottom-up mapping of the sentence. The linguistic mapping is *segmented*. The OK sign is also segmented in that it can convey approbation only when a critical ‘segment’ (contact of the forefinger and thumb) is present. Pantomime, on the other hand, appears to be global. The twirling finger is understood to be a swizzle stick because the gesture, as a whole, has the meaning of a vortex. ASL signs are clearly segmented in their semiotic principles.

*Synthetic* refers to the fact that a single gesticulation concentrates into one symbolic form distinct meanings that can be spread across the entire

surface of the accompanying sentence. The single bends-it-way-back gesture displayed the actor, his or her action, and the path of the tree acted upon. In the accompanying sentence, these same semantic functions were spread across the surface – “he,” “bends,” “back,” and “way.” The mode of the sentence was analytic. Like English, ASL is also analytic. Emblems, on the other hand, are synthetic, like gesticulations. The OK meaning in spoken form could have scope over a full surface structure (“a job well done,” for example). Pantomime may also be analytic, though the lack of definition of pantomime makes the attribution uncertain. The twirl of the vortex gesture is the translation of a lexical term, which suggests analyticity. Moreover, if one enacts an entire sequence of taking a pot, pouring in a liquid, and stirring it, the ‘vortex’ gesture refers to one step of this sequence, not the whole. The issue of whether gesticulations characteristically map onto single lexical items or are not so constrained, however, is a matter of some dispute (see the chapters by Kita, de Ruiter, and Krauss et al.).

### 2.3 Summary of differences along the continua

*Gesticulation* accompanies speech, is non-conventionalized, is global and synthetic in mode of expression, and lacks language-like properties of its own. The speech with which the gesticulation occurs, in contrast, is conventionalized, segmented, and analytic, and is fully possessed of linguistic properties. These two contrasting modes of structuring meaning coexist in speech and gesture, a fact of profound importance for understanding the nature of thought and language in general, and how they function in communication.

*Signs* in ASL, like words in speech, are conventionalized, segmented, and analytic, and possessed of language properties, while they are obligatorily not performed with speech. The presence or absence of speech with gesture is thus correlated with the absence or presence of conventional linguistic properties.

*Emblems* are at an intermediate position on the various dimensions of contrasting gestures. They are partly like gesticulations, partly like signs. For many individuals, emblems are the closest thing to a sign ‘language’ they possess, although it is crucial to emphasize the *non*-linguistic character of these gestures: the lack of a fully contrastive system and the lack of syntactic potential.

*Pointing* requires special mention. It has a form that is standardized within a given culture. Thus, in North America the standard form for pointing is the G hand shape (the index finger extended, the other fingers curled in), but in other societies one might use two fingers or an entire hand. At the same time, however, the prescribed form of pointing is not required for the

pointing act to take place – the two-fingers or full-hand alternatives would definitely be understood as pointing in North America. Thus, pointing is less constrained than the OK sign, for instance. In some contexts the presence of speech with pointing may seem obligatory (de Ruiter, this volume) but pointing is fully interpretable without speech as well. The chapter by Haviland analyzes the semiotic foundations of pointing and describes in detail its use in two cultures where it is an integral part of linguistic performance – in one case because the coding of directionality is obligatory in the language, in the other because such coding is outside the normal resources of the language (neither culture is North American).

### 2.4 Non-redundancy of speech–gesture combinations

Considering the gesticulation end of the semiotic continuum, the bending-back gesture added a global-synthetic version of an event that was also described analytically in speech. In this co-expressed manifestation of the event, however, the gesture is not merely a global version of the analytic sentence. In bending back with a single hand, the gesture *displayed* what was, at most, only implicit in speech – that the object bent back was fastened at one end. “Bends it” could equally describe bending an object held at both ends, as it did in the paper-folding example. The addition of “way back” could conceivably be said to *implicate* an object fastened at one end. But this is not a demonstration of the fact: only the gesture does that. The preceding clause said the object was an oak tree, but this was presupposed, not encoded in the linguistic choices of “bends it way back.” The gesture, on the other hand, did encode it and provided a continuation of this fact as a discourse reference. It is the one-handedness of the bends-it-back gesture, moreover, that excluded the possibility of bending back the corner of a sheet of paper. In general, speech and gesture can jointly express the same core meaning and highlight different aspects of it. Together speech and gesture present a more complete version of the meaning than either accomplishes on its own.

## 3 The current volume

### 3.1 Background

This book is a harvest of papers from a conference (“Gestures Compared Cross-Linguistically”) on the role of gesture in the mechanisms of language and language use – the first conference on this topic ever held, to our knowledge. The conference took place in conjunction with the 1995 Linguistic Institute at the University of New Mexico, Albuquerque. None of the

current form of the chapters, however, is as presented at the conference, and this volume is not a proceedings. All chapters have been invited because of the importance of the research they present for understanding the gesture topic. All of the chapters were written and submitted after the conference, and most were written during the 1996–97 year. Thus, the chapters have been written to appear in this book, and are current. Collectively, they cover many of the areas of contemporary gesture research. The book has a strong cross-linguistic and cross-cultural component, with chapters describing speech-synchronized gestures by speakers of Mayan, Australian, East Asian, and non-English European languages, along with many observations of English.

### 3.2 *Topics covered*

A neurological dimension is added in the chapters by Goodwin (gestures of a patient suffering aphasia) and Mayberry & Jaques (gestures during severe stuttering bouts).

An ontogenetic dimension is added in the chapter by Butcher & Goldin-Meadow (genesis of gesture–speech synchrony).

Several chapters are concerned with what can be called the ‘psycholinguistics’ of gesture – the implications of gestures at the gesticulation end for understanding the cognitive processes underlying speech and speech production.

Another group of chapters discusses the implications for modeling the speech process of taking into account the co-production of speech and gesture. There is in this section both agreement and disagreement – agreement that modeling is a desirable goal, disagreement over whether any steps toward this goal have been successful.

### 3.3 *Antecedents*

The modern study of gesture has seen a twofold shift away from a long tradition dating from Roman times of emphasis on rhetorical gestures (Quintilian wrote a treatise on gesture for the instruction of orators in first-century Rome) – the mannered performances of orators, with the hands and body comprising more or less deliberate gestured embellishments on spoken public performances. For sketches of the history of gesture studies, see Kendon (1982) and McNeill (1992).

With the first shift, commencing with Efron (1941) in the 1930s, gestures have come to be studied in life, as they occur spontaneously during conversation and other discourse modes. This new approach has been greatly enhanced – one might say made possible – by the advent of slow-motion

film and now video, without which the careful study of gesture in relation to speech and thought would scarcely be possible. All the contributions to this book draw from modern audio-video recordings.

In the second shift, commencing with Kendon in 1972 and continuing with ever increasing vigor to the present day, gestures are regarded as parts of *language itself* – not as embellishments or elaborations, but as integral parts of the processes of language and its use. The development of this line offers new insights into the nature of speaking, thinking, remembering, and interacting with words in a social context. The chapters in this book all take the point of view that language and gesture are integral parts of a whole and present state-of-the-art descriptions and analyses of this multimodal unit that is considered as language itself.

### 3.4 *Current state of the field*

Within the modern consensus there are, naturally, differences, and in the book there are several distinct approaches with interesting theoretical tensions between them; and several of the chapters are concerned to define these differences and to suggest what can be done to overcome them. The formal structure of the book – sections on action, on thought, on models, and on signs – in part is intended to highlight the different approaches.

1. One tradition seeks to understand the function of gestures in contexts of social interaction. Gestures are instruments of human communication in this approach, and the point of view is interpsychological. The chapters in part 1 represent this approach.

2. Another tradition is that of cognitive psychology. Here the goal is to understand the origin of gestures and their interrelations with speaking in the realtime mental processes of individuals. The point of view is intrapsychological. The chapters in part 2 cover this approach.

3. A third approach is modeling. Here the goal is to outline a computational model of gesture–speech performance. The chapters in part 3 take up this question. This section, in particular, lends itself to focused controversy, and the three authors agreed to write comments on each other’s chapters in which the focus is on possibilities of synthesizing their seemingly conflicting positions on this topic.

4. The final part describes ways to make the transition from gesticulation to sign. The chapters here in effect tie together the two ends of the continua above and are an appropriate way to conclude the entire work.

In summary, this book aims to provide state-of-the-art contributions across a wide range of approaches to language and thought as informed by the study of gesture, and to present these contributions side by side where they can be related to each other.

NOTE

1 I am grateful to Arika Okrent for this example and analysis.

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