LUND UNIVERSITY

Giving language a hand: gesture as a cue based communicative strategy *

Gullberg, Marianne

1995

Giving language a hand: gesture as a cue based communicative strategy

Marianne Gullberg

Introduction

All accounts of communicative behaviour in general, and communicative strategies in particular, mention gesture[1] in relation to language acquisition (cf. Faerch & Kasper 1983 for an overview). However, few attempts have been made to investigate how spoken language and spontaneous gesture combine to determine discourse referents. Referential gesture and referential discourse will be of particular interest, since communicative strategies in second language discourse often involve labelling problems.

This paper will focus on two issues:

1) Within a cognitive account of communicative strategies, gesture will be seen to be part of conceptual or analysis-based strategies, in that relational features in the referents are exploited;

2) It will be argued that communication strategies can be seen in terms of cue manipulation in the same sense as sentence processing has been analysed in terms of competing cues. Strategic behaviour, and indeed the process of referring in general, are seen in terms of cues, combining or competing to determine discourse referents. Gesture can then be regarded as being such a cue at the discourse level, and as a cue-based communicative strategy, in that gesture functions by exploiting physically based cues which can be recognised as being part of the referent. The question of iconicity and motivation vs. the arbitrary qualities of gesture as a strategic cue will be addressed in connection with this.

Comprehension and production

Cues and cue-based comprehension

Sentence processing or understanding can be seen in terms of associations between form and meaning with different weights assigned to each one. A

---

[1]Gesture is narrowly defined throughout this paper as any movement of the arms and/or hands.

strong or heavy association is likely to result in the same or 'right' interpretation frequently. A number of cues will help indicate these associations. The notion of competition between different sources of information has been exploited in a model of purely linguistic sentence comprehension within the framework of the Competition Model (e.g. MacWhinney 1987; 1989). It has been used to explore variation in language behaviour, sentence processing in learner language, in bilinguals, in aphasia, etc. Cues to interpretation combine or compete in discourse and at every moment a decision has to be made as to what or who the referent is – what the message is. When interacting, cues form clusters which are related to and conditioned by other clusters and certain cues demand certain other cues for optimal interpretation. Note that the key word here is optimal. What distinguishes this from traditional feature analysis, subcategorisation frames, and the like, is the connectionist/associationist[2] view that there is no fixed outcome of the weighting of cues in conflict or in co-operation, but that the best possible interpretation at any given moment will be the result of weighting clusters for or against a certain interpretation. Interpretation is not rule-based, but probabilistic. This helps explain variation in language use and how we deal with it, why we understand anomalies or creative language like *do a Napoleon for the camera* (Clark & Gerrig 1983), etc.

Recently it has been suggested that discourse phenomena might also be treated in terms of cues. St. John 1990 has simulated comprehension of a text using a construct called cue-constraint satisfaction, where interrelated cue-clusters condition each other. At discourse level, cue-clusters can be assumed to help resolve co-reference problems, e.g. cues may cluster to indicate the likely referent, and the strongest cluster will successfully designate the referent. This is a convenient way of handling what has been referred to as 'context' or 'world knowledge' related problems. Scripts, frames and conceptual structures (Brachman 1977; Minsky 1975; Schank & Abelson 1977) are all constructs trying to deal with what Tannen calls *our expectations of the world* (Tannen 1993). So far, only a limited set of cues have been investigated: lexical/semantic information, word order, morphology and prosody. When introducing cue-based comprehension at discourse level, however, cues related to world knowledge will have to be introduced. What constitutes a cue in

---

[2]The term 'connectionism' will be avoided here since it has come to be associated essentially with neural networks and computer simulation of learning. The term 'associationist' is used to indicate that the underlying assumptions of connectionism are referred to: a non-rule based system where competing sources of information or cues are weighed and the outcome of the competition is probabilistically calculated (cf. MacWhinney 1989).

Table 1. Cognitive accounts of communicative strategies.

	Nijmegen	*Bialystok*
conceptual/analysis	description, circumlocution, mime	circumlocution, paraphrase, transliteration, word coinage, mime
linguistic/control	borrowing, foreignization, transliteration, word coinage, ostensive definitions (gesture)	language switch, appeal for assistance

discourse? There is an obvious risk that everything and anything is labelled as a cue, since we as interlocutors rely on a great number of information sources – socially related phenomena like social position, emotional and or psychological phenomena, voice quality, etc. Gesture, however, is an obvious candidate for a cue, since it occupies a privileged position between world knowledge and language which can be seen as a sort of prosodic feature. It encodes world knowledge and relates it to linguistic expressions.

How, then, can an account of language processing relate to accounts of language production in terms of communicative strategies?

Communicative strategies
Recently, research on communicative strategies has come to focus on underlying cognitive processes, removing definitions and taxonomies from surface linguistic form in order to avoid the confusing multitude of categories hitherto seen in this field. The Nijmegen group (Kellerman 1991; Poulisse et al. 1990) uses a binary classification system based on conceptual and linguistic strategies, whereas Bialystok 1990 labels her categories as analysis- and control based strategies. The conceptual/analysis-based strategies imply the manipulation of the intended concept: "[they] convey the structure of the intended concept by making explicit the relational defining features." (Bialystok 1990:133). Linguistic or control-based strategies, on the other hand, consist of the manipulation of form while keeping the intention constant. This is achieved through selective attention to competing information. These two binary systems result in similar surface phenomena (see Table 1).

Phenomena like description, circumlocution, paraphrasing, and mime are all the result of the same underlying process where the relational features in the referent are manipulated. Referents are assumed to consist conceptually of clusters of features which can be exploited linguistically to determine the referent. Borrowing, foreignisation, code switching, etc., result from selective attention to or control of competing information sources or cues, where the expressive means rather than the features in the referent have been revised.

The feature clusters particular to a referent might be thought of as cues in the sense introduced above. They are properties in the referent, or properties which we as interlocutors believe referents to have in the physical world or in discourse. Why rename these properties? First, by labelling referent properties as cues rather than features, we emphasise the view that these cues might compete or combine to focus on particular aspects of a referent or how a referent functions in the world or in discourse. The choice of features to be focused on is in some sense arbitrary and depends on which cues are available, and how they relate to each other, and to other cues present. Second, by using the term cue and relating it to competition, a connection can be made between language production and comprehension if both processes are seen as the result of cue manipulation. In production, there is competition between intention and means of expression (linguistic, prosodic, gestural, etc.), between features/cues to be selected, and between channels of communication. In comprehension, there is competition between all the incoming cues.

The reason communicative strategies work, then, is that we can rely on our interlocutors to collaborate in the process of identifying referents and recognising the knowledge encoded both in language and in gesture, knowledge which we will see in terms of cues. We are suggesting that strategic behaviour can be seen as the process of manipulating all available cues at discourse level, both in terms of analysis and of control, with the aim of aligning the expectations of the interlocutors. The right cue-clusters have to be triggered or activated in the interlocutor for interpretation to take place such that understanding is seen as the weighting of all incoming cues. So far, only purely linguistic cues have been considered in this kind of framework. We are suggesting that the study of gesture might offer insight into how cues to discourse referents are manipulated, since gesture in itself functions as an important cue to interpretation in discourse. In the accounts above, mime is seen as a surface realisation of conceptual or analysis-based strategies. We will discuss below how this view can be modified.

On the basis of a study of story-retelling in both NNS and NS discourse, we shall investigate how gesture functions as a cue-based communicative strategy in determining discourse referents.
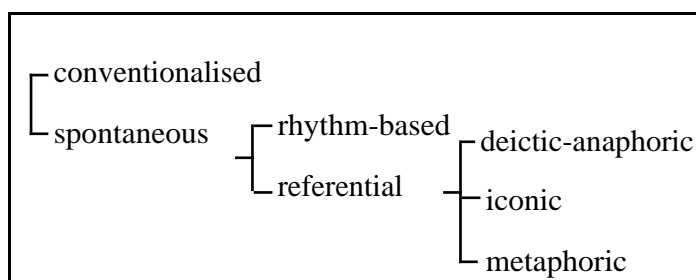
Figure 1. Gesture classification

Gesture

The data

This paper is based on video-recorded experimental dyadic interactions between a native speaker of Swedish engaged in conversation with (a) another native speaker of Swedish, and (b) a native speaker of French. The test subject, A, was asked to perform a narrative task in his first language (L1), Swedish, and then in his second language (L2), French, both times with a native speaker as partner. The task consisted of the retelling of a short cartoon, and the conversational partners were instructed to ask for as many clarifications or further explanations as needed to understand the story. The setup permitted a direct comparison of A's overall communicative behaviour in L1 and L2 with particular focus on gestural behaviour. The material has been analysed for communicative work performed by gestures in second language discourse (see Gullberg 1993 for coding procedures, etc.).

Gesture classification

A large body of literature deals with more or less fine grained classification of gesture, all of which owes much to Efron [1941] 1972, Ekman & Friesen 1969 and Birdwhistell 1970. The classification adopted here, however, is a modification of the system employed by McNeill 1992 and is based on the categorisation shown in Figure 1.

   A general distinction is made between conventionalised and spontaneous gestures. Conventionalised gestures are lexicalised and have propositional content of their own and, as such, often replace speech all together. Examples of this category are the notorious 'zero'-signs, V-signs, various obscene gestures, etc., which are culture-specific and need to be learnt like any other linguistic sign in a new speech community (cf. Morris et al. 1979). Spontaneous gestures, on the other hand, get their propositional content from the context and the accompanying speech. They can be rhythm-based beats, in which case they follow the prosodic prominence and grouping patterns of the

spoken language (for synchronisation studies, cf. McClave 1994). The group of gestures which interests us here, however, is referential gestures, which are defined as gestures which in some sense are related to referents in the world or discourse world. Deictic-anaphoric gestures (DA) place referents in time and space and help disambiguate subsequent references to the same entities. DAs generally consist of simple, small pointing gestures and are distinguished from beats by a direction parameter. Truly content-oriented gestures are either iconic (I) or metaphorical (M)[3]. We shall see below that the category labels 'iconic' and 'metaphorical' are in fact motivated in some sense. In this paper, we shall focus on monomorphemic referential gestures (iconic, metaphorical and deictic-anaphoric in the classification above).

Gesture and language – gesture as a cue in discourse
Why and how do gestures function as communicative help, in production and in comprehension? Why and how do they help determine discourse referents? What is the relationship between language and gesture?

Within cognitive semantics it is argued that "we typically conceptualize the nonphysical in terms of the physical" (Lakoff & Johnson 1980:59). World knowledge is seen as originating in physical experience paired with an imaginative faculty. This imaginative faculty allows for extension or inclusion of new instances using family resemblance, metonymy, metaphor, etc. If physical world knowledge is assumed to be visually encoded in gesture (for a cognitive account of visual knowledge see Pinker 1984), then the simple answer to the first question above is that gestures function as a communicative strategy because they are recognised as referring to objects in the world, depicting or illustrating physical properties in the referents. In this sense, gestures are motivated and by giving discourse physical properties motivated by properties in the referents, the link between referent or world and language is tightened.

This is all very well for physical objects. Most discourse referents, however, are abstract. Are gestures connected to abstract referents less motivated or completely arbitrary or totally unrelated to the discourse referents?

The question of how language and gesture are connected is still debated. Kendon 1983 claims that gestures take priority over speech, whereas Schegloff 1984 sees speech as primary since gesture seems to be organised

---

[3]A distinction has to be made, of course, between metaphor in literature, and metaphor as a creative linguistic device where something is described in terms of something else. It is used here in the latter sense.

with regard to language rather than the other way around. A third view is represented by McNeill (McNeill 1985; 1992; McNeill & Levy 1982) who argues that gesture and speech have a common conceptual/computational origin and that they therefore are equally parallel in propositional content and pragmatic function. Support for these assumptions comes from distributional data. It has been shown that spontaneous gestures do not occur randomly, in neither L1 nor L2 discourse, but have a distribution which is clearly related to that of linguistic items. They either occur (a) before the linguistic item, (b) during silences of word retrieval, or (c) they coincide with the linguistic correlate (cf. Schegloff 1984).

Do you see what I mean?
The referential quality of these gestures, the signifier~signified relationship or parallel propositional content between language and gesture, is supported by data from NS/NNS conversation where compensatory gestures occur during silence and word retrieval in NNS discourse. Gestures appear as turn holders but in this case as an obvious part of a communicative strategy, requesting lexical help. The fact that the NS recognises the concept or referential content behind the gesture and eventually gives the NNS the word he is looking for, indicates that the gesture does refer to a thing in the world, or at least in the discourse world shared by the two interlocutors, and furthermore that the referent has properties which can be physically and visually encoded and recognised.[4]

```
(1) 6A: eh de mettre un eh              6A: uh to put a uh
              I=                                 I=
    7B:        une affiche?         7B:        a poster?
    7A:               eh            7A:               uh
                 =I=                              =I=
    8B: une pancarte?              8B: a card?
    9A: ah non eh                  9A: oh no uh
          =I=                            =I=
    10B:        une photo?         10B:        a photo?
    11A: un photo ou               11A: a photo or
          =I=     M                       =I=    M
    12B:        une peinture?      12B:        a painting?
    11A:              =I           11A:              =I
    13A: une peinture              13A: a painting
               I                             I
    14B: un tableau?               14B: a picture?
    15A:       avec une cadre   1  5A: with a frame
               I                             I
```

| 16B: un tableau | 16B: a picture |
| 17A: un tableau oui | 17A: a picture yes |

Typically, size and shape are exploited. The NS sees the NNS's hands outlining the size and shape of a rectangle in space and, in his attempts to provide the lexical item looked for, negotiates possible referents.

The link between signified and signifier in spoken language is seen as arbitrary and therefore symbolic. Sign language is now recognised as having the same symbolic status as spoken language. However, the iconic or mimetic qualities complicate the question of whether or not gestures are motivated or arbitrary symbols. 'Motivated' is often used as an equivalent to iconic, i.e. gestures that are transparent in their depiction or enactment of entities in the world are referred to as motivated, whereas more obscure gestures are seen as arbitrary. The problem has a parallel in sign language where iconicity and mimetic devices play an important part, but only as a complement to a lexical core of highly conventionalised signs where the iconic element has been lost (see Frischberg 1975; Klima & Bellugi 1979; Marschark 1994; Stokoe 1972).

Naïve observers can rarely guess what signs in sign language mean. The process of grammaticalisation in sign language moves signs from the motivated end of a continuum (Kendon 1983) to the arbitrary end, in that any part of an originally iconic sign can be arbitrarily focused for stylisation. Different sign languages focus on different features of 'tree', as can be seen in Fig. 2.

In spontaneous gestures for concrete referents, iconic qualities like size, shape etc. are easily recognised. However, which 'relational features', which properties are going to be singled out, is a matter of arbitrary choice. It has recently been suggested that spontaneously occurring gestures and sign language are qualitatively different in that signs can be separated from gestures in the communication of deaf individuals (Marschark 1994). The difference lies partly in the level of conventionalisation of iconic qualities. The more spontaneous or less conventionalised the gesture, the more iconic it is likely to be. This is well illustrated in (1) above.

Interestingly enough, abstract referents are mapped in the same way:

(2) 33B: ehm mais le message   33B: uhm but the message
                          M   M
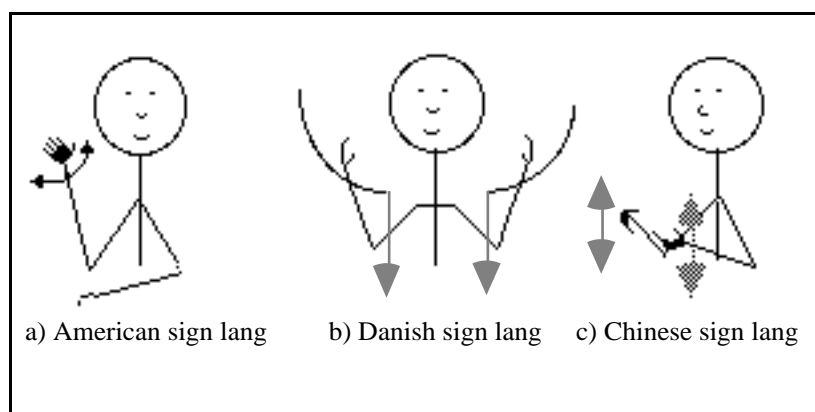   qu'est-ce que c'est   what is it

Figure 2. The sign for 'tree' in different sign languages (adapted from Klima & Bellugi 1979:21)

An entity is being held up in both hands in front of the speaker and 'message' is treated as a physical object in gestural space. An abstract referent is being treated as if it had the same properties to be encoded and recognised as an actual physical entity. This metaphorical quality in gesture has been documented a number of times (e.g. McNeill & Levy 1982).

The cues

Which properties are encoded? Without engaging in a detailed feature analysis of hand configuration (Calbris 1990; McNeill & Levy 1982), it is still possible to distinguish a set of fundamental gestural cues exploited to encode a few basic semantic elements. The visual channel naturally limits the number of elements to be visualised. The set of cues include mass or entity, with size, shape, weight, whole/part relationships as the most important manifestations; these can be classified either as figure or ground components (Talmy 1985). Wallin found figure, i.e. the object moved with regard to something else, to be represented by fingers or hands in signs, whereas ground, or the element with regard to which the figure-object moves, to be represented by the passive hand, a location on the body, or a location in space in front of the signer. The data on spontaneous gesture shows that ground is represented in much the same way, and often includes what we have called deixis. Deixis is a complex cue, however, since it serves at least two purposes in gesture: (1) identifying ground or the location in space, and (2) the more linguistically deictic purpose of identifying a referent with regard to the prior context/cotext or discourse world, rather than with regard to the real world (Anderson & Keenan 1985). In addition, the context conditions the anaphoric element. Movement or motion, finally, includes path or trajectory as a subfeature, or source/goal.

Table 2. Nouns and co-occurring gestural features

N_{concrete}	N_{abstract}
+MASS	+MASS
±shape	−shape
±size	−size
±weight	+weight
±MOVEMENT	±MOVEMENT

Gestures correspond to different types of linguistic affiliates: to single linguistic items or, more globally, to the propositional content of a full utterance, especially if the utterance expresses doubt, hesitation, resignation or the like. This polymorphemic or holistic encoding of propositional content is a phenomenon which can be found in sign language as well as in spontaneous gesture (cf. Wallin 1994). The parameters listed above essentially correspond to single linguistic items but as such, they are distributed over various linguistic categories. For nouns the most frequent parameters are shape, size, whole/parts, deixis, and motion/movement. The movement parameter is often specified for direction, encoding source and goal. Note that these parameters are valid for concrete as well as abstract nouns. Abstract nouns typically encode mass or entity which can be handled as objects, but usually with less distinct shape. Typically, the shape of abstract entities is indicated simply by holding the hand(s) cupped as if something were lying in them. In Table 2 the most likely elements to be gesturally encoded for concrete and abstract nouns are listed. As can be expected, the mass feature is more diversified for concrete nouns in terms of how it is illustrated, whereas the main element encoded for abstract nouns seems to be weight and/or movement. Weight simply indicates that something is in fact an object.

These features can be said to define certain gestures as iconic since they are what enable recognition. However, the fact that the same features are used for abstract nouns and verbs, or concepts that have no physical presence to recognise, supports the claim in cognitive semantics that the abstract is given physical properties conceptually. It also justifies the category label 'metaphorical gestures', since what we are seeing is precisely the same features being transferred from concrete to abstract concepts and being visualised in their gestural correlates.

In the case of verbs, the main parameter is motion/movement with the same value of direction or source/goal as for nouns. Quite frequently, an object is also encoded with the qualities enumerated above for nouns, which seems to

suggest valence properties or an argument structure. This is quite clear for gestures appearing with verbs like *recevoir* 'receive', where the two cupped hands are moved from a point in space in front of the speaker to a point close to the body. Not only transitive verbs involve what appear to be entities. With the verb *voir* 'to see', it is curious to note (1) that there is a pointing gesture indicating movement of an entity along a trajectory, and (2) that the movement is away from the eye rather than towards it. This might suggest that vision as such is metaphorically treated as an entity (beam or ray) emanating from humans – a thoroughly anthropocentric view.

Gestures for states, finally, are quite complex. The change of state can be seen as metaphorical motion or movement (cf. Talmy 1985). Hesitation (or negation) often involves manipulation of entities in terms of weighing or stopping. Cupped hands weighing something up and down or the palm of a hand held up in front of the body to fend something off are common gestures for these states. Deixis is another important feature for gestures depicting states. Often the ground is indicated by pointing gestures before the movement takes place.

Physical discourse – gestural encodings

Typically, the size and shape of the noun looked for are mapped in gesture as was seen in (1) above for *tableau* 'picture'. The hands were moving, outlining a fairly large rectangle in space. The same is true for nouns like *cadre* 'frame'. *Marteau* 'hammer', is mapped using both the mass/entity feature and a whole/part relationship in that one hand is gripping what appears to be the handle. In this case, the movement feature is also included so that the gesture does in fact have a mimetic component. The various labels used to designate illegible writing – *l'arabe* 'Arabic', *écrit* 'writing', *arabiskliknande krumelur* 'Arabic-like doodle', *teckning* 'drawing' – all encode entity, namely the shape of the result of writing. Maybe the instrument for writing should be seen in the index movement. It is interesting to note the cultural embedding of this gesture and the world knowledge it represents – the direction of the gesture is invariably left-to-right in spite of what is known about Arabic writing. Furthermore, prototypical writing is still done with pens.

We have seen that abstract referents are mapped in the same way (2). In the case of 'message', an entity or mass was being held up in both hands in front of the speaker, and 'message' was metaphorically seen as an object mapped in gestural space. Size and shape are not present here, only a weight feature. This corresponds well to the 'thought-as-object' metaphor (Lakoff &

Johnson 1980). The same is true for *façon* 'way', and *mot* 'word'. *Mot,* and the corresponding *dire* 'say, speak', and *svära en ramsa* 'swear', also contain a movement feature away from the mouth. *Ljud* 'sound', on the other hand, displays a movement feature towards the ear. The senses appear to be mapped as entities with a movement component – *voir* 'see', had a movement away from the eye. The latter two correspond quite well to normal expectations, whereas the mapping of sight as something coming from the person seems less natural. The direction of these movements can be assumed to be arbitrary, however, such that the entity with movement parameters are the important features, rather than the direction. However, the fact that both mass and movement are mapped in all these cases provides interesting support for the idea of conceptual structures based on physical qualities.

Motion/movement is a very important feature present in noun gestures as well as all verb-related gestures. *Arriver* 'arrive', and *aller à l'étranger* 'go abroad', both contain figure, ground and a trajectory, in that the hand (figure) moves away from the body (ground) and comes to a halt some way away from the body. Interestingly, the direction away from the body seems to indicate the perspective in the narrative. The main character goes away from his home and arrives in a foreign country removed from the origin in the discourse world. The figure, therefore, represents the main character. Perspective, then, is another aspect of deixis encoded in gesture (cf. Talmy 1985 on 'personation' in sign language). Verbs like *sourire, le* 'smile', contain deictic elements pointing to ground (the mouth) and then movement taking place on that location (fingers suddenly spread or the index moving left and right) so that a change of state can be seen as a metaphorical movement (Talmy 1985)

.

More physical discourse – deictic-anaphoric gestures
The deictic element is very important in all types of gesture. We have seen how pointing serves to identify ground. Deictic-anaphoric gestures (DAs) play a vital part in the formation of a gestural or physical discourse world in which various discourse referents can be disambiguated, and in that sense they are essential to a description of gesture as a communicative cue in discourse. Discourse referents, people, objects, and places are placed in space as indices and the same point in space is later referred back to. Mapping out the

discourse world in space enables interlocutors to 'see' coreference, e.g. Discourse referents have positions on this map and linguistic and computational notions like 'stack retrieval' may thus be avoided.

The collaborative side of reference is particularly obvious in the use of these gestures. Interlocutors have their respective gestural spaces, but, when engaged in joint construction of a discourse world, the gestural space also becomes common, such that DAs placed to the left in one interlocutor's space are referred to by DAs to the right by the other interlocutor, i.e. to the same point in the common gestural space. In the data, this is particularly obvious when the NS makes a metalinguistic comment about the confusingly homophonous personal pronouns in French *il* 'he', and *ils* 'they':

(3) 24B: ah c'est ça je n'ai pas compris 24B: oh that's it I didn't understand
  quand vous avez dit il je ne savais pas when you said he I didn't know
     DA   DA
  s'il s'agissait des personnes rencontrées if it was a question of the people he met
   DA   DA
  ou s'il s'agissait de [] de l'homme qui or if it was a question of [] of the man who
    DA   DA
  est le personnage principal   is the principal character

The first DA is ipsilateral to the NNS's positioning of the main character and the second is ipsilateral to the NNS's position for 'other people'. Note that these DAs refer to pronominal discourse referents and stand in as dummies, and that these concepts contain no inherent directional aspect, so that the positioning in space is entirely arbitrary. Once it has been done, however, the position does not change during discourse (although it might if the discourse referent is said to be moving). In general, the pronominal discourse referents have been introduced by an NP which is then positioned, but not always.

(4) 4A: il raconte eh rencontre plusieurs gens 4A: he tells uh meets many people
   DA   DA   DA   DA

(5) 1A[5]: öh jaha [] ja de eh handlar om en man 1A: uh well [] well it is about a man
          DA   DA

Qualities in discourse referents such as 'sameness' can also be mapped by DAs:

(6) 21A: et il et lui il dit le même chose 21A: and he and he he says the same
        DA   DA
  que tous les autres   thing as all the others

---

[5] A = NS of Swedish in the NS/NS dyad.

The sameness is indicated by locating the mentioned object at the same point in space as something previously referred to. Again, this supports the claims regarding the thought-as-object metaphor.

Motivation revisited

Coming back to the question of motivation, then, it is clear that there are different types of motivation. The semantic cues encoded visually relate to different sets of referents. On the one hand, there is motivated gesture which relates to referents in the real world. Iconic cues such as mass, shape, size, movement, etc., correspond to what we know about referents and their properties in the physical world. The fact that the same cues are used to visualise referents without physical properties supports the assumption made within cognitive semantics that abstraction is cognitively handled as having physical properties as well, and that this is shown in metaphor. In fact, metaphorical gesture can be seen as cognitively motivated.

A second kind of motivation in gesture is related to the discourse world itself, mapped in deictic-anaphoric gesture which helps create a physical discourse world with a degree of convention. Positions in space will be associated with the same referent throughout a discourse and thus be momentarily conventionalised.

If it is assumed that a referent has a pool of semantic cues to pick from for illustration, then the question of why certain features are chosen arises. There is an arbitrary element in the choice of which cues are to be given physical properties. Again a simple answer lies in the cues which are most likely to achieve understanding. To understand and be understood is particularly important in NNS/NS discourse since a NNS relies on the NS to help keep the communication going. Clark & Wilkes-Gibbs 1986 have pointed out that different levels of understanding are required in different situations. The difference is inter- and intra-individual, and related to issues of control and/or consciousness.

Gestural cue clusters as communicative strategies

We have seen how gesture encodes conceptual features, giving them physical properties. As such, gesture indeed exemplifies the conceptual or analysis-based strategies. However, in the two cognitive accounts above, a distinction is made between mime and ostensive definition/gesture. The difference is said to be that "mime attempts to convey important features and functions while ostensive simply points, much in the same way switching language does."

(Bialystok 1990:111). This distinction is far from clear. We argue that all referential gestures exploit relational features in the referents, as we have seen, and that those features can be assumed to be part of the conceptual structure. The distinction is therefore an artificial one, as much based on surface phenomena as earlier strategy classification was based on surface linguistic form. There is no qualitative difference between mime and other referential gestures, but rather a quantitative difference in terms of the number of cues combined in one gesture. The more features combined, the more mimetic the gesture. The fact that visual cues do not have to be linear in presentation enables holistic encoding, which can nevertheless be seen to consist of smaller parts. Therefore, the distinction between mime and other referential gestures is not a dichotomy, but rather a continuum.

Although referential gestures are basically part of conceptual or analytical strategies, as we have seen, it might be argued that they are also part of the control processes. In control-based strategies, consciousness becomes an issue and it seems likely that, just as with other linguistic phenomena, gesture is more or less conscious depending on fluency, didactic ambition of the interlocutors, etc. As a strategy to solicit lexical help in cases of learner language, gesture is certainly very conscious. The same is probably true for gesture in Foreigner Talk and hence, it includes a strong control element in that the choice of features is important in the process of making the interlocutor understand (1). Less conscious gesticulation can be assumed to correspond to a less conscious manipulation of the referent and a less careful choice of features. However, more empirical studies with task related data are needed in order to determine the role of consciousness in this respect.

An important claim within this process-oriented view is that "[s]trategies are a normal and fundamental aspect of ordinary language processing" (Bialystok 1990:146) and that referential discourse is achieved through collaboration and negotiation of the referent (cf. Clark & Wilkes-Gibbs 1986). Strategic behaviour, in terms of selective attention and a joint effort on the part of both interlocutors, is part of native as well as learner language use. That this is so has been convincingly demonstrated elsewhere (e.g. Clark & Gerrig   1983;   Markovà   &   Foppa 1990)

and the present data support this claim. In the NS/NS dyad, referential gestures are used in the same manner as in the NNS/NS dyad:

(7) 8A[6]:ja eh de e en eh en arabiskliknande   8A: well uh it's an Arabic-like
                                    I   I
      =krumelur som ser eh [] som ser lika   =doodle which looks uh looks
      =dan ut som det han trodde var eh   =the same as what he thought
      =DA   DA
      =betydde goddag   =was uh meant hello
                       B   B

Cues are assumed either to combine or to compete. Linguistic and gestural cues are generally not in competition, but combine to form cue clusters which will help determine the referent. If there is no competition, the gestural channel is conscious. If, however, there is no linguistic cue or a defect cue, as might be the case in second language discourse, then the gestural channel and the gestural cue become highly conscious, just as is the case when linguistic performance is hindered. The gestural cues are exploited, based on conceptual features. Seeing conceptual features as being mapped onto gesture is one way of allowing gesture to become a structured cue.

This can be seen in (1) above, where the importance of triggering the right cue cluster is essential to the NNS, who needs to align the expectations of his interlocutor with his own in order to be able to rely on further assistance in the referring process. In (1) the features exploited to indicate 'picture' are too general to be of any help, as the referent wanted is quite specific. In this case, therefore, we see a case of extensive negotiating before the referent is agreed upon. The same type of negotiating is seen in the metalinguistic comments in (3), where a gestural cue is used to disambiguate and resolve a problem of competing cues at the linguistic level. The NS has had a problem with the NNS discourse where an intended plural pronoun, *ils* 'they', has been accompanied by singular verb morphology[7,8]. The competition is manifested by other expressions of plurality, e.g. *tous les autres* 'all the others'. The deictic-anaphoric gestures give clear discourse-related cues as to the correct interpretation. This double capacity of referring to referents and their qualities in the real world as well as to discourse referents makes gestural cues a very

---

[6]See footnote 5.

[7]In general the singular/plural distinction cannot be heard on the verb in French. However, the NNS has unfortunately chosen verbs where this distinction can or should in fact be heard:

NNS: tout il il **dit** toute les mêmes choses (norm: ils **disent** tous les mêmes choses);
NNS: ah non c'est c'est c'est tous les autres qui eh lui **a** dit (norm: c'est tous les autres qui lui **ont** dit).

[8]It is interesting to note the NS's reliance on verb morphology despite the other indications of intention. This is in accordance with findings from experimental studies conducted within the Competition Model framework. Results indicate that in the absence of clitic pronouns, adult NSs of French rely primarily on verb morphology to identify the subject in a sentence (Kail & Charvillat 1986; McDonald & Heilenman 1991).

powerful tool as a communicative device. By exploiting semantic features it also makes them a structured tool by which interlocutors can manage discourse.

Summary

Communicative strategies exploit all sources of information available. Interlocutors use gesture as a communicative strategy by pairing gestural cues with linguistic cues, deciding on the most likely discourse referent.

Itself a source or cue, gesture encodes world knowledge of referents and their properties, using a small set of underlying elements to give concrete as well as abstract referents physical presence in discourse. Iconic cues straightforwardly encode size, shape, etc., of referents; metaphorical cues map physical properties onto abstract referents, thus giving them body in discourse, facilitating interpretation; deictic-anaphoric cues, finally, position referents in discourse space in front of and between interlocutors, so that gestural space becomes a physical replica of discourse space. These physical cues interact with linguistic cues and other situationally related cues.

As a communicative strategy, gesture can be seen as manipulation of competing cues in order to align interlocutors' competing expectations of what is being said. As such, gesture is a strategy essentially based on analysis in Bialystok's terms, but it can be argued that in terms of choice of expression, gesture is also part of control-based strategies.

Seeing communicative strategies as manipulation of competing sources of information or cues enables us to use the same descriptive and theoretical framework for both production and perception or understanding. The same process of cue manipulation underlies both the encoding on the part of the speaker, and the decoding by the interlocutor. Cues are manipulated on the speaker's side in order to align interpretative expectations or to trigger these same cues in the hearer. Decoding of gestural cues depends on world knowledge combined with interactional knowledge.

References

Anderson, S. R. & E. L. Keenan. 1985. 'Deixis'. In T. Shopen (ed.), *Language typology and syntactic description* Vol. 3, 259-308. Cambridge: Cambridge University Press.

Bialystok, E. 1990. *Communication strategies. A psychological analysis of second-language use.* Oxford: Blackwell.

Birdwhistell, R. L. 1970. *Kinesics and context.* Philadelphia: University of Pennsylvania Press.

Brachman, R. J. 1977. 'What's in a concept: structural foundations for semantic networks'. *International Journal Man-Machine Studies* 9, 127-52.

Calbris, G. 1990. *The semiotics of French gestures*. Bloomington: Indiana University Press.

Clark, H. H. & R. J. Gerrig. 1983. 'Understanding old words with new meanings'. *Journal of verbal learning and verbal behavior* 22, 591-608.

Clark, H. H. & D. Wilkes-Gibbs. 1986. 'Referring as a collaborative process'. *Cognition* 22, 1-39.

Efron, D. [1941] 1972. *Gestures, race and culture*. The Hague: Mouton.

Ekman, P. & W. V. Friesen. 1969. 'The repertoire of nonverbal behavior: Categories, origins, usage, and coding'. *Semiotica* 1, 49-98.

Faerch, C. & G. Kasper. 1983. *Strategies in interlanguage communication*. New York: Longman.

Frischberg, N. 1975. 'Arbitrariness and iconicity: Historical change in American Sign Language'. *Language* 51, 696-719.

Gullberg, M. 1993. 'The role of co-verbal gestures in second language discourse – A case study'. In *Working Papers* 40, 49-70. Lund: Dept. of Linguistics, Lund University.

Kail, M. & A. Charvillat. 1986. 'Linguistic cues in sentence processing in French children and adults from a crosslinguistic perspective'. In I. Kurcz, G. W. Shugar & J. H. Danks (eds.), *Knowledge and language*, 349-74. Amsterdam: North Holland.

Kellerman, E. 1991. 'Compensatory strategies in a second language: a critique, a revision, and some (non-)implications for the classroom'. In R. Phillipson et al. (eds.), *Foreign/second language pedagogy research,* 142-61. Clevedon: Multilingual Matters.

Kendon, A. 1983. 'Gesture and speech. How they interact.'. In J. M. Wiemann & R. P. Harrison (eds.), *Nonverbal interaction*, 13-45. Beverly Hills: Sage Publications.

Klima, E. & U. Bellugi. 1979. *The signs of language*. Cambridge, MA: Harvard University Press.

Lakoff, G. & M. Johnson. 1980. *Metaphors we live by*. Chicago: Chicago University Press.

MacWhinney, B. 1987. 'The competition model'. In B. MacWhinney (ed.), *Mechanisms of language acquisition*, 249-308. Hillsdale, N. J.: Erlbaum.

MacWhinney, B. 1989. 'Competition and connectionism'. In B. MacWhinney & E. Bates (eds.), *The crosslinguistic study of sentence processing*, 422-57. Cambridge: Cambridge University Press.

Markovà, I. & K. Foppa. 1990. *The dynamics of dialogue*. New York: Harvester Wheatsheaf.

Marschark, M. 1994. 'Gesture and sign'. *Applied Psycholinguistics* 15, 209-36.

McClave, E. 1994. 'Gestural beats: the rhythm hypothesis'. *Journal of psycholinguistic research* 23, 45-66.

McDonald, J. L. & L. K. Heilenman. 1991. 'Determinants of cue strength in adult first and second language speakers of French'. *Applied Psycholinguistics* 12, 313-48.

McNeill, D. 1985. 'So you think gestures are nonverbal?'. *Psychological Review* 92, 271-95.

McNeill, D. 1992. *Hand and mind*. Chicago: Chicago University Press.

McNeill, D. & E. Levy. 1982. 'Conceptual representation in language activity and gesture'. In R.J. Jarvella & W. Klein (eds.), *Speech, place, and action. Studies in deixis and related topics*, 271-95. Chichester: John Wiley.

Minsky, M. 1975. 'A framework for representing knowledge'. In P. H. Winston (ed.), *The psychology of computer vision,* 211-77. New York: McGraw-Hill.

Morris, D. et al. 1979. *Gestures, their origins and distribution.* London: Cape.

Pinker, S. 1984. 'Visual cognition: An introduction'. In S. Pinker (ed.), *Visual cognition*, 1-63. Cambridge, MA: MIT Press.

Poulisse, W., T. Bongaerts & E. Kellerman. 1990. *The use of compensatory strategies by Dutch learners of English*. Dordrecht: Foris.

Schank, R. S. & R. P. Abelson. 1977. *Scripts, plans, goals and under-standing: An inquiry into human knowledge structures.* Hillsdale, NJ: Erlbaum.

Schegloff, E. A. 1984. 'On some gestures' relation to talk'. In M. Atkinson & J. Heritage (eds.), *Structures of social action*, 266-296. Cambridge: Cambridge University Press.

St. John, M. F. 1990. 'The story Gestalt - Text comprehension by cue-based constraint satisfaction'. *Technical Report, UCSD Dept. of Cognitive Science* 9004.

Stokoe, W. C., Jr. 1972. *Semiotics and human sign languages.* The Hague: Mouton.

Talmy, L. 1985. 'Lexicalization patterns: semantic structure in lexical forms'. In T. Shopen (ed.), *Language typology and syntactic description* Vol. 3, 57-149. Cambridge: Cambridge University Press.

Tannen, D. 1993. 'Introduction'. In D. Tannen (ed.), *Framing in discourse*, 3-13. Oxford: Oxford University Press.

Wallin, L. 1994. *Polysyntetiska tecken i svenska teckenspråket*. Stockholm: Inst. för Lingvistik, Avd. för teckenspråk, Stockholms Universitet.