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For those who want to treat language as a generative system for objectively describing the world, deixis is one hell of a big black fly in the ointment. Deixis introduces subjective, attentional, intentional and of course context-dependent properties into natural languages. Further, it is a much more pervasive feature of languages than normally recognized, and is theoretically puzzling in many regards. All this makes difficult a tidy treatment within formal theories of semantics and pragmatics. Deixis also seems critical for our ability to learn a language, which philosophers for centuries have thought to be closely linked to the possibility of ostensive definition. Despite this theoretical importance, the subject is – as far as empirical investigations go – one of the most understudied core areas of pragmatics, and we are far from understanding the boundaries of the phenomena, and have no adequate cross-linguistic typology of most kinds of deictic expression. This article does not attempt to review either all the relevant theory (see e.g. the collections in Davis 1991, Section III, or Kasher 1998, Vol. III) or all of what is known about deictic systems in the world’s languages (see e.g. Anderson & Keenan, 1985, Diessel 1999). Rather, an attempt is made to pinpoint some of the most tantalizing theoretical and descriptive problems, to sketch the way in which the subject interacts with other aspects of pragmatics, and to illustrate – through concentration on demonstratives – the kind of advances that could be made with further empirical work.

A word on terminology: I will use the terms ‘deixis’ and ‘indexicality’ pretty much co-extensively – they simply come from different traditions (Bühler 1934 and Peirce 1955) and have become associated with linguistic and philosophical approaches respectively. But I will make this distinction: indexicality will be used to label the broader phenomena of contextual dependency, and deixis the narrower linguistically-relevant aspects of indexicality.

1.0 Indexicality in communication and thought

Students of linguistic systems tend to treat language as a disembodied representational system which is essentially independent of current circumstances, that is, a system for describing states of affairs in which we individually may have no involvement, like the first three minutes of the universe. It is these properties of language that have been the prime target of formal semantics and many philosophical approaches to language – and not without good reason, as they appear to be the exclusive province of human communication. The communication systems of other primates have none of this “displacement” as Hockett (1958: 579) called it. For example, vervet monkeys produce four kinds of alarm calls, signalling snake, big cat, big primate or bird of prey. But when the vervet signals BIG PRIMATE – it goes without saying that it means RIGHT HERE, RIGHT NOW, RUN! Indexicality is an intrinsic property of the signals, indeed it is an essential part of their adaptive role in an evolutionary perspective on communication – animals squeak and squawk because they need to draw attention to themselves or to some intruder (Hauser 1997).

The question naturally arises, then, whether in studying indexicality in natural languages we are studying archaic, perhaps primitive, aspects of human communication, which can perhaps even give us clues to the evolution of human language. Jackendoff (1999) has argued that some aspects of language may be residues from ancient human communication systems, but he curiously omits deictics from the list. There would be reasons for caution, because indexicality in human communication has some special properties. For example, take the prototypical demonstrative accompanied by the typical pointing gesture – there seems to be no phylogenetic continuity here at all, since apes don't point (see Kita, *in press*). Secondly, unlike the vervet calls, the demonstrative can referentially identify – as in *that* particular big primate, not *this* one. More generally, one can say that whereas other animals communicate *presupposing* (in a non-technical sense) the 'here and now', as in vervet alarm calls, humans communicate by *asserting* the relevance or non-relevance of the 'here and now'. Thirdly, even our nearest animal cousins lack the complex, reflexive modelling of their partners' attentional states, which is an essential ingredient in selective indexical reference – this is why apes cannot 'read' a pointing gesture (see Povinelli *in press*).

But if the phylogenetic continuities seem to be missing, perhaps the ontogenetic priority of deixis will be clear. Indeed, human infants invariably seem to point before they speak (see Clark 1978, Butterworth 1998, Haviland *in press*, although a certain amount of caution is in order, since we have little cross-cultural evidence here). Philosophers have long supposed that indexicality is the route into reference – as John Stuart Mill argued, how could you learn a proper name except by presentation of the referent? The view was

refined by Russell who made the distinction between what he called logically proper names (like *I, this*), which require such ostensive learning, and disguised descriptions, like *Aristotle*, which mercifully don't. Linguists have argued similarly, that deixis is the source of reference, i.e. deictic reference is ontogenetically primary to other kinds (Lyons 1975). But the actual facts concerning the acquisition of deictic expressions paint a different picture, for the acquisition of many aspects of deixis is quite delayed (Tanz 1980, Wales 1986), and even though demonstratives figure early, they are often not used correctly (see Clark 1978). This is hardly surprising because, from the infant's point of view, deixis is as confusing as a hall of mirrors: my "I" is your "you", my "this" is your "that", my "here", your "there", and so forth. The demonstratives aren't used correctly in English till well after the pronouns "I" and "You", or indeed till after deictic "in front of"/ "in back of", that is not till about 4 (Tanz 1980:145).

Apart from this oscillation of point of view, there's another reason that deixis in language isn't as simple as a vervet monkey call signalling BIG PRIMATE RIGHT HERE NOW! The deictic system in language is embedded in a context-independent descriptive system, in such a way that the two systems produce a third which is not reducible to either. Or, to use Peirce's terminology, in language we have an *intersection of the indexical plane into the symbolic one* – it's a folding back of the primitive existential indexical relation into symbolic reference, so that we end up with something much more complex on both planes: on the one hand symbolic reference is relativized to time, place, speaker, and so on, so that a sentence like "John will speak next" is true now, not later, and on the other indexical reference is mediated by symbolic meaning, so that a phrase like "This book"

can't be used to point to this mug. The true semantical complexity of this emergent hybrid system is demonstrated by the well known paradoxes of self-reference, which are essentially introduced by indexical reference. Consider the 'liar paradoxes' of the Cretan variety, as in "This sentence is false", which of course is true only if it false, and false only if it is true: the paradox resides in what Reichenbach called 'token-reflexivity', which he considered to be the essence of indexical expressions. There is still no definitive solution to paradoxes of this sort, which demonstrates the inadequacy of our current metalinguistic apparatus (but see Barwise and Etchemendy 1987 for a modern attempt to resolve this, using the Austinian notion of a proposition, which involves an intrinsic indexical component).

Indexical reference also introduces peculiar complexities into the relation between semantics and cognition – that is, into the relation between, on the one hand, what sentences mean and what we mean when we say them and, on the other hand, the corresponding thoughts which they express. The idea that the relation between meaning and thought is transparent and direct has been a guiding light in many branches of linguistic inquiry, from Whorfian linguistics to Ordinary Language Philosophy. But as Frege pointed out over a century ago, indexicals are a major problem for this particular presumption. He of all people was particularly keen to identify sense and thought, but demonstratives and deictic expressions more generally stood in the way:

If someone wants to say the same today as he expressed yesterday using the word 'today', he must replace this word with 'yesterday'. Although the thought is the same its verbal expression must be different so that the sense, which would

otherwise be affected by the differing times of utterance, is readjusted. The case is the same with words like ‘here’ and ‘there’. In all such cases, the mere wording as it is given in writing, is not the complete expression of the thought, but the knowledge of certain accompanying conditions of utterance, which are used as means of expressing the thought, are needed for its correct apprehension. The pointing of fingers, hand movements, glances may belong here too. (Frege [1892] 1967:24).

In the end, he is led to say that demonstratives, and the pronoun *I* in particular, express thoughts that are incommunicable! Frege found that demonstratives introduced some special problems for the theoretical stance he wanted to adopt (see Perry 1990 for explication), but the general issue is easily appreciated. The question is: what exactly corresponds in thought to the content of a deictically anchored sentence? For example, what exactly do I remember when I remember the content of an indexical utterance? Suppose I say, sweating it out in Clinton Hall at UCLA,

(1) “It’s warm here now”

and suppose the corresponding thought is just plain ‘It’s warm here now’. In that case, when I recollect that exact same thought walking in Murmansk in February, I will be thinking something false, something that does not correspond to the rival Murmansk thought, namely ‘It’s bone-chilling cold here now’. So in some way or other the sentence-

meaning with its deictics has to be translated out into a deicticless UCLA-specific thought. A candidate thought would be:

(2) 'It be warm (over 30 degrees C) at 3.00 p.m. on July 6th 2001 in room 327 in Clinton Hall on the UCLA campus'.

Then when I inspect this thought in Murmansk in February it will look just as true as it did on July 6th 2001 in Clinton Hall. But unfortunately, this doesn't seem to correspond to the psychological reality at all – that's just not what I thought! I might not even know the name of the building, let alone the room number, and perhaps I have failed to adjust my watch for jet lag and so think it is July 7th. So we cannot cash out indexicals into absolute space/time coordinates, and retain the subjective content of the thought corresponding to the utterance (1). Well, what about saying that the corresponding thought is just 'It is warm here now' but somehow tagged with the time and place at which I thought it? Then walking in Murmansk I would think 'In the first week of July somewhere on the UCLA campus I had the thought 'It is warm here now''. That seems subjectively in the right direction, but now we are into deep theoretical water, because now the language of thought has indexicals, and in order to interpret *them* we would need all the apparatus we employed to map contexts into propositions that we need in linguistics, but now reproduced in the *lingua mentalis*, with a little homunculus doing all the metalinguistic work. Worse, when we ultimately cash out the indexicals of thought into a non-indexical mental metalanguage of thought to get the proposition expressed, we will have lost the

subjective content again (or alternatively, we will have an infinite regression of indexical languages). So we haven't reduced the problem at all.

So what does correspond to the thought underlying an indexical sentence? It's a reasonable question to ask of your friendly neighborhood psychologist, but he will be as puzzled as you (see Miller 1982). The source of the conundrum seems once again to be the peculiar hybrid symbolic/indexical nature of language – it seems easy enough (in the long run anyway) to model the objective content of symbolic expressions, on the one hand, and pure indexical signals like Vervet monkey calls on the other, but something peculiar happens when you wrap the two up in one.

2.0 The challenge of indexicality

On the face of it, deixis is the study of deictic or indexical expressions in language, like *You, now, today*. It can be thought about as a special kind of grammatical property, in turn instantiated in the more familiar grammatical categories of person, tense, (deictic) place, and so on. In the body of this article, I will follow this conservative division of the deictic field, because there is a great deal to be said about the way in which linguistic expressions build in properties for contextual resolution. But it is important to realize that the property of *indexicality* is not exhausted by the study of inherently indexical expressions. For just about any referring expression can be used deictically, as illustrated by the following examples:

- (3) *He* is my father (said of man entering the room)
- (4) *Someone* is coming (said ear-cocked to a slamming door)
- (5) *The funny noise* is our antiquated dishwashing machine (said pointing chin to kitchen)
- (6) What a *great picture!* (said looking at a picture)

In most of these cases some kind of gesture or pointed gaze is required, and we may be tempted to think that a demonstration is the magic ingredient, as in the following cases where the demonstration replaces a linguistic expression altogether:

- (7) The editor's sign for 'delete' is (followed by written demonstration)
- (8) He is a bit (index finger to forehead, indicating 'mad')

But this is not a necessary feature:

- (9) *The chairman* hereby resigns (said by the chairman)
- (10) *He* obviously had plenty of money (said walking through the Taj Mahal)
(after Nunberg 1998)

So what exactly is the property of indexicality? If we go back to inherently deictic expressions like the demonstrative pronoun *this*, what is striking of course is that the referent is provided, not (or not primarily) by the semantic conditions imposed by the expression, but by the context, for example, the speaker may be holding up a pen. It is

the obvious semantic deficiency of *this* that directs the addressee's attention to the speaker's gesture. In a similar way, the semantic generality of *he* without any prior discourse context (as in (3) or (10)) forces a contextual resolution in the circumstances of the speech event. In this respect, there is a close relation between exophora and anaphora – in both cases we have contextual resolution of semantically general expressions, in the one case in the physical space-time context of the speech event, and in the other in the ongoing discourse (Levinson 2000:268ff). Third-person referring expressions which are semantically deficient, in the sense that their descriptive content does not suffice to identify a referent, invite pragmatic resolution, perhaps by default in the discourse, and failing that in the physical context.

But semantic deficiency can't be the only defining characteristic of indexicality. After all, there is a cline of self-sufficiency that one could define over referring expressions like *he*, *the man*, *the short man*, *George*, *the President*, *the first President of the USA to be the son of a President*, etc., and unambiguously identifying descriptions are the exception rather than the rule in natural language usage. Semantic deficiency or vacuity is resolved through the kind of mutual windowing of attention best exemplified by the *what-it's-name* phenomenon, where the speaker says *I just saw what's-his-name* expecting the addressee to be able to guess who (for the mechanism see Schelling 1960 and Clark 1996). Although such a narrowing of possibilities relies on mutual attention to mutual knowledge, which is part of the context of course, to label such phenomena 'deictic' or 'indexical' would be to render the label too broad to be useful. No, the critical feature that picks out a coherent field is precisely the one that C. S. Peirce outlined, namely an

existential relationship between the sign and the thing indicated – so that when *he* is said in the Taj Mahal, or *this* is said when holding a pen, the sign is connected to the context somewhat like smoke is to fire (although, admittedly, in a less causal manner). How? The magical ingredient is the direction of the addressee’s attention to some feature of the spatio-temporal physical context (as in the case of *this* said holding the pencil), or the presumption of the prior existence of that attention (as in the *he* said in the Taj Mahal). Indexicality is both an *intentional* and *attentional* phenomenon, concentrated around the spatial-temporal center of verbal interaction, what Bühler called the deictic *origo* (Bühler 1934).

Which brings us to gesture. Obviously enough, gesture is one way of securing the addressee’s attention to a feature of the environment. In philosophical approaches to language, ostension, or gestural presentation has been thought to be crucial for language learning (try teaching the word “ball” to a 2 year old without the presence of a ball), but as both Wittgenstein and Quine have pointed out, pointing is hardly the innocent self-explanatory device that J. S. Mill for example imagined – when I point at a river and say “This is the Thames”, I could after all be pointing to one square kilometer of map-grid, or just the left bank, or the sun sparkling on the ripples, or even the cubic metre of water just then flowing past my index finger on its way to the sea (Quine 1961: Ch. 4, Wittstein 1984). Pointing works just like inadequate descriptions work, namely through the exercise of a Schelling coordination problem – I plan to pick out with a gesture just what I think you’ll think I plan to pick out, given where we are and what we are doing. The reflexive phrasing here connects of course to Grice’s (1957) theory of meaning, in which

when I point and say “I mean that” I intend to invoke in you a referent-isolating thought just by virtue of your recognizing that that is what my intention is (Schelling just provides the mechanism whereby this may happen). In this way gesture – and arguably deixis in general – is crucially intentional: you cannot say “False!” to my utterance “I am referring to *that*”. Deictic gestures do seem to be a special kind of gesture, for example they are made further from the body than other kinds of gesture (McNeill 1992:91), and we now know something about their universal bases and cross-cultural variation (Kita, (ed.) in press.). But the role of gesture, and its presence or absence, is a much more complicated business than the philosophers suggest, often imagining, for example, that demonstratives always come with gestures (see e.g. Lewis’s (1972:175) coordinate for ‘indicated objects’). Not only can gestures be reduced to directed gaze or a nod of the head (or in some cultures to a pursing of the lips – see Enfield *in press*), they may be rendered unnecessary by the circumstances (consider “What was that?”, said of a noise, or “This is wonderful” said of a room). As Fillmore pointed out, demonstratives typically have two uses – *this city* resists a gesture (symbolic usage), just as *this finger* requires one (gestural usage), while there are specific expressions (like presentatives or American *yea* in *yea big*) that always require gestures.

To sum up so far: indexicality involves what Peirce called “the dynamical coexistence” of an indexical sign with its object of reference. It is normally associated with linguistic expressions that are semantically insufficient to achieve reference without contextual support. That support is provided by the mutual attention of the interlocutors and their ability to reconstruct the speaker’s referential intentions given clues in the environment.

One such clue is gesture or gaze, which then becomes a part of the indexical sign. All this may seem coherent, but it does not suffice to establish clear boundaries to the phenomena. One problem is what Bühler [1934] (1982:21ff) called *Deixis am Phantasma* ('deixis in the imagination') in which one imagines oneself somewhere else, and shifts the deictic origo by a series of *transpositions*. Suppose I try to describe to you where I left the book, and I say "Go into my room, face my desk, and it's right here on your left hand side". Much deixis is, as Fillmore puts it, relativized to text, as in reported speech, or as in the opening line of one of Hemingway's short stories: "The door of Henry's lunchroom opened and two men came in", where Henry has become the deictic origo. (Bühler imagined that the gestural aspects of transposed deixis were limited, but for a demonstration that this is not the case, see Haviland 1996.) Then there is anaphora, which is so closely linked to deixis that it is not always separable, as in "I've been living in San Francisco for 5 years and I love it here" (where *here* is both anaphoric and deictic), bridged by the intermediate area of textual deixis (as in "Harry said 'I didn't do that' but he said it in a funny way", where *it* does not refer to the proposition expressed but to Harry's utterance itself). An additional boundary problem is posed by the fact that the class of indexical expressions is not so clearly demarcated. For example, in "Let's go to a nearby restaurant", *nearby* is clearly used deictically, but in "Churchill took De Gaulle to a nearby restaurant" it is clearly being used non-deictically – is this deixis relativized to text, or does *nearby* simply presume some point of measurement just like *tall* is relative to some implicit standard? Suppose we yield *nearby* up to deixis, then what about *enemy* in "The enemy are coming" – *enemy* seems to presume an implicit agonistic counterpart, which can be filled deictically, but of course need not (as in "Hannibal prepared for the

onslaught of the enemy”); see e.g. Mitchell 1986). There is no clear boundary here. Even more difficult of course is the point already made above: indexicality exceeds the bounds of ready-made indexical expressions, that is, deictics with in-built contextual parameters are not the only forms used deictically, as shown by the possible indexical use of third-person pronouns and referring expressions.

3.0 Deictic expressions in semantic theory

Let's return to relative *terra firma*, namely special purpose deictic expressions – that is, linguistic expressions which by linguistic convention advertise, as it were, their need for indexical resolution. The special semantic character of such expressions is one of the abiding puzzles of the philosophy of language. On the one hand, expressions like *today* have a constant meaning, but on the other hand they have systematically varying reference (since the reference of *today* will always be different tomorrow). In some ways they are like proper names, since they often have little descriptive content (and hence resist good paraphrase), but in their constantly changing reference they could hardly be more different (Kaplan 1989:562). Above all, they resist eliminative paraphrase into non-indexical objective description – *I am Stephen Levinson* cannot be paraphrased as *Stephen Levinson is Stephen Levinson* (*The speaker of this utterance is Stephen Levinson* gets closer of course, but at the cost of failing to eliminate the indexical component now shifted to *this*, and of introducing token-reflexivity).

So how should we think about the meaning of indexicals? What is clear is that any sentence with indexicals (and that means, given person, tense, and spatial deixis, nearly every natural language sentence) cannot directly express a proposition, for on any doctrine a proposition is an abstract entity whose truth-value is independent of the times, places and persons in the speech event. If we think of propositions as mappings from worlds to truth-values in the normal way, then whereas we might be able to characterize the meanings of non-indexical expressions in terms of the part they play in such a mapping, there seems no such prospect for indexical expressions.

In philosophical approaches to semantics a consensus has no arisen that the way to handle indexical expressions is as a two-stage affair, a mapping from contexts into propositional contents, which are then a mapping from, say, worlds to truth-values, or whatever your favourite theory is. In Montague's (1970) early theory the content of deictic expressions was captured by mapping contexts (reduced to a set of *indices* for speakers, addressees, indicated objects, times and places) into intensions. In Kaplan's (1989) theory, all expressions have this characteristic mapping (their *character*) from contexts into intensions (their proposition-relevant *content*), but only indexicals have variable character, which can be thought of as their meaning. Thus the meaning of *I* is its character, which is a function or rule that variably assigns an individual concept, namely the speaker, in each context (Kaplan 1978). Non-indexical expressions have constant character, but may (rigid designators) or may not (other referring expressions) have constant content, as illustrated below (we'll return to deferred ostension later):

	<i>constant character</i>	<i>variable character</i>
<i>constant content</i>	proper names	indexicals
<i>variable content</i>	definite descriptions	‘deferred ostension’

Another influential version of the two-stage theory can be found in Situation Semantics (Barwise & Perry 1983). There, utterances are interpreted with respect to three situations (or states of affairs): the utterance situation (corresponding to Montague’s indices), the ‘resource situation’ (which handles other contextually determined reference like anaphora) and the ‘described situation’ (corresponding to the propositional content). Indexicals and other contextually-parameterized expressions get their variables fixed in the utterance and/or resource situations, which are then as it were thrown away – it is the value of the variables, e.g. the referent alone of *I* or *that*, that is transferred to the described situation (so that “I gave him that” has the described content, say, ‘Stephen Levinson gave him that book’). Meaning is relational, and the meaning of an indexical is characterized as the relation between utterance/resource situations and described situations. This theory is a large improvement over the Montague theory, because it no longer requires a complete pre-specification of relevant aspects of the context as in Montague’s indices – other ad hoc factors can be picked up in the ‘resource situation’.

The central property of these two-stage theories is that indexicals do not contribute directly to the proposition expressed, the content of what is said, or the situation described. Instead, what they do – by virtue of an independent mechanism of some sort –

is take us to an individual, a referent, which is then slotted into the proposition expressed or the situation described, or as Nunberg (1998:159) puts it: “The meanings of indexicals are composite functions that take us from an element of the context to an element of a contextually restricted domain, and then drop away”.

Now this kind of treatment of indexicality in fact falls far short of descriptive adequacy. Let us list the empirical properties that indexical expressions exhibit. First, the indexicals which have been the target of most of the philosophical approaches (sometimes called ‘pure indexicals’) are expressions like *I*, *now*, or *here*, seem to have their semantico-pragmatic content exhausted by a specification of the relevant index (speaker, time and place of speaking respectively; see Wettstein 1984). But as soon as one turns to the closely related *we*, *today*, *nearby* we find that indexical expressions may also express additional semantic conditions (at least one person in addition to the speaker, the diurnal span which contains the coding time, a place distinct from here but close to here, respectively). So deictics may contain both descriptive properties and contextual variables in the one expression. Perhaps a more difficult problem for the view that deictics just deliver referents to the proposition expressed is that fact that they can in fact express quantified variables. For example, in *Every time a visiting soprano comes, we sing duets* the pronoun *we* denotes a set consisting of the speaker and a variable (Nunberg 1998). In addition, nearly all deictics are heavily dependent on pragmatic resolution – “Come here” may mean come to this sofa or come to this city according to context (see Levinson 2000:177ff).

Secondly, the idea that the relevant contextual features can be fixed in advance (as is required by the Montague type of solution) is problematic. Suppose I say “This is the largest walnut tree on the planet”: I could be pointing to a tree some distance away, or we could just be standing underneath it, or I could be touching a picture in a book, or if you were blind I could be running your hand over the bark, or I could be telling you what we are about to see as we walk over the hill. The mode of demonstration, if any, just does not seem to be determined in advance (see Cresswell 1973:111ff). Thirdly, there are many aspects of the meaning of demonstratives that exceed any such specification by pre-determined index. Suppose Sheila says “We have better sex lives than men” - *we* here doesn’t just mean ‘speaker plus some other’; it quite clearly denotes the set of women, which includes the speaker. Such usages exploit indexicality in the Peircean sense, that is, the direct connections between the situation of speaking (here, the fact that the speaker is female) and the content of what is communicated. Fourth, there is the problem that Quine called ‘deferred ostension’, now familiar through the work of Nunberg (1978, 1998, this volume). Suppose we are listening to a program on a radio station and I say “CNN has just bought this” – I don’t refer to the current jingle but the radio station. Or I point at a Coca-Cola bottle and say “That used to be a different shape” – what I refer to is not the current bottle, but the type of container of the holy liquid, and assert that tokens used to be of a different shape. In these cases, the indicated thing is not the thing referred to, and the Montague or Cresswellian mechanism will get us the wrong proposition. Fifth, these treatments of indexicality presuppose that there is a clear class of indexical expressions, which have an inbuilt variable whose value is instantiated in the context.

But third-person, non-deictic expressions can have indexical uses, as when I say, pointing to a man in a purple turban, “He is Colonel Gaddafi’s nephew”.

There are then a formidable set of obstacles to the treatment of indexicals as simply a rule-governed mapping from contextual indices to intensions, or utterance-situations into individuals which can then play a role in described situations. The problems in essence are that the context offers Gibsonian *affordances*, that is properties of the context which may be creatively exploited for communicative purposes.¹ Deictics have *attentional*, *intentional* and *subjective* features that resist this cashing out of their content in objective descriptions. The attentional and intentional features were mentioned in the prior section, but the subjective features are worth a special mention. Perry (1977), developing a character of Frege’s, invites us to imagine an amnesiac, Rudolf Lingens, lost in the Stanford library, who discovers a complete biography of himself. So he knows everything there is to know about Rudolf Lingens, even that he is an amnesiac lost in the Stanford library, but he does not know that he himself is Rudolf Lingens. In this case, it is clear that when he says “I am hungry”, the corresponding Fregean ‘thought’ is not ‘Rudolf Lingens is hungry’. Were he to come to his senses and utter “Why, I am Rudolf Lingens!”, the force of the realization would certainly not be captured by the proposition ‘Rudolf Lingens is Rudolf Lingens’, or even ‘The speaker of this utterance is Rudolf Lingens’ – for what he would have realized is not the identity of the subject of the sentence, but the identity of his subjective self.² Linguists have also noted a subjective quality to deixis, for example an overlap between the subjective aspects of modality and the objective aspects of tense – thus the French *Le premier ministre serait malade* codes

both present tense and a lack of subjective certainty, just as in grammaticalized evidentials in other languages (Lyons 1982:111).

A final aspect of the semantic character of indexical expressions that should be mentioned is their special *projection* properties which follow from the fact that demonstratives and many other deictics have no substantial descriptive content, so that once the contextual parameters have been fixed they are ‘directly referential’ (Kaplan 1990). Note that a true demonstrative remains transparent in an intensional context – “Ralph said he broke that” can only have *that* identified as the thing the speaker is now pointing at, not the thing Ralph pointed at – the speaker cannot withhold a gesture on the grounds that Ralph made it. Further, deictics do not generally fall under the scope of negation or modal operators: *That is not a planet* cannot be understood as ‘I am not indicating x and x is a planet’ (Enç 1981). Deictics resist attributive or ‘semantic’ readings, thus whereas *The man who can lift this sword is our king* has both a referential and attributive reading (‘whoever can’), *That man who can lift this sword is our king* has only a referential reading. In addition to the paradoxes of self reference, there are sentences with indexicals which have the curious property of being contingently but necessarily true or false, as in *I am here now* or *I am not pointing at that* (said pointing at something).

4.0 The role of pragmatics in the resolution of deictic expressions: a close look at demonstrative systems

The remarks above amount to the following: indexicality exceeds the bounds of the built-in indexical expressions in any language. Moreover, the field of indexical expressions is in the last resort not clearly delimited, because in so far as most referring expressions are not fully individuating solely by virtue of their semantic content, but rather depend for success on states of mutual knowledge holding between participants in the discourse, the great majority of successful acts of reference depend on indexical conditions. Still, we may hope to make a distinction between expressions used indexically, and those – let us call them deictic – that necessarily invoke features of the context because there is, as it were, a contextual variable built into their semantic conditions. This distinction will also be plagued by borderline examples, as exemplified above by expressions like *nearby* or even *enemy*. Even if we decide that *local* as in *the local pub* is an expression with an unfilled variable that is preferentially filled by spatial parameters of the context of speaking, we would be loath to think that all quality adjectives are deictic just because they have a suppressed comparator as argument (as in *John is tall* implying taller than the average reference population, as supplied by the context). Fuzzy borders to a phenomenon do not make categories useless (otherwise color terms would not exist), so in what follows we will proceed by focussing on the clear cases of deictic expressions which clearly involve inbuilt contextual variables.

The pragmatic character of indexicality is not the only central issue for a pragmatic theory of deictic expressions. For the organization of the semantic field of contrastive deictic expressions is often itself determined by pragmatic factors. As an illustration of this, we concentrate here on the cross-linguistic comparison of demonstrative systems, which have played a central role in philosophical and linguistic thinking about deixis. The analysis of demonstratives is much complicated by their multi-functional role in language – they are often used not only to point things out, but to track referents in discourse and more generally to contrast with other referring expressions. It has become traditional to distinguish amongst at least some of the following uses (Levinson 1983, Diessel 1999):

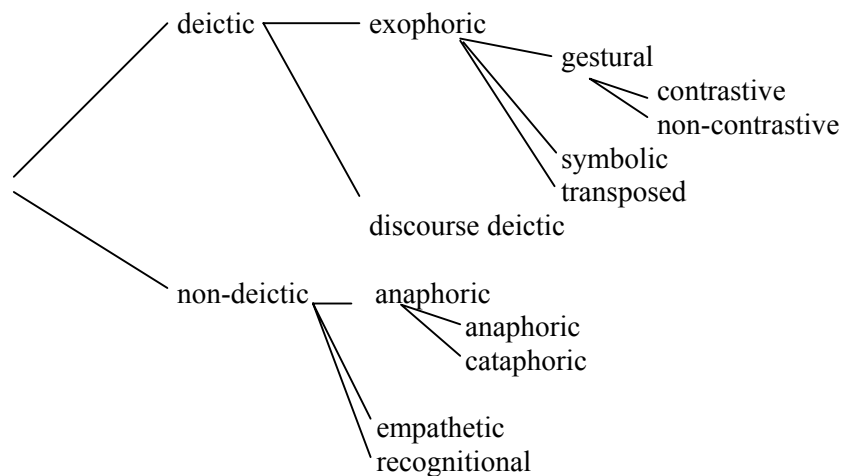


Figure 1. Distinct uses of demonstratives

The relations between these uses are probably more complex than this taxonomy suggests, but it is clearly not sufficient to distinguish simply between exophoric (deictic) and endophoric (non-deictic) at the highest branch as both Levinson (1983:68) and Diessel (1999:6) assumed, since discourse deixis is intra-text but deictic, and empathetic

and recognitional uses are extra-text but non-deictic. The following examples are hopefully self-explanatory of the distinctions involved:

- (11) “Give me **that** book” (exophoric: book available in the physical context)
- (12) “I hurt **this** finger” (exophoric gestural: requires gesture or presentation of finger)
- (13) “I like **this** city” (exophoric symbolic: does not require gesture)
- (14) “I broke **this** tooth first and then **that** one next” (gestural contrastive)
- (15) “He looked down and saw the gun: **this** was the murder weapon, he realized”
(transposed)
- (16) “‘You are wrong’. **That’s** exactly what she said” (discourse deictic)
- (17) “It sounded like **this**: whoosh” (discourse deictic)
- (18) “The cowboy entered. **This** man was not someone to mess with.” (anaphoric)
- (19) “He went and hit **that** bastard” (empathetic)
- (20) “Do you remember **that** holiday we spent in the rain in Devon?” (recognitional)

The bulk of opinion has always been that exophoric, gestural, non-transposed uses of demonstratives are basic. Diessel (1999) provides some good argumentation to this effect, pointing out that exophoric gestural uses are the earliest in acquisition, the least marked in form, and the source of grammaticalization chains that run through the other uses. So in what follows we shall concentrate on the exophoric gestural uses. Another common supposition is less well supported – it is that the basic semantic contrasts between sets of exophoric demonstratives are spatial in nature, e.g. encoding degrees of distance from speaker or addressee (cf. Anderson & Keenan 1985). There is no a priori

reason why this should be the case, nevertheless grammars of languages almost invariably describe demonstrative systems in this spatial way – we shall question this assumption further below. There are two major kinds of paradigm in the literature: speaker-anchored distance systems, and speaker-or-addressee-anchored systems, which are illustrated here by Spanish and Quileute (data from Anderson & Keenan 1985):

(21) Spanish	<i>Distance from Speaker</i>		
	-	(proximal)	<i>este</i>
	+	(medial)	<i>ese</i>
	++	(distal)	<i>acquel</i>

(22) Quileute	<i>Close to Spkr</i>		<i>Close to Addr</i>	
	+	-		<i>xî o' ÷o</i>
	-	+		<i>so' ÷o</i>
	+	+		<i>sa' ÷a</i>
	-	-		<i>aÿ: cÇa+a</i>

Anderson & Keenan (1985) develop a typology in terms of the number of terms demonstrative systems exhibit within each of these two frameworks. Although a few languages may have only one demonstrative pronoun or adjective, this is supplemented in probably most (Diessel 1999: 36 claims all) cases by a proximal/distal contrast in deictic adverbs ('here' vs. 'there'). Two term systems seem to be speaker-anchored distance systems, as in English *this* vs. *that*. Three term systems seem to be either speaker-anchored or speaker-&-addressee-anchored systems, or as I shall show below, both. Systems with more than four terms are thought to invariably combine other semantic

dimensions, like visibility or vertical distance relative to the speaker, or shape of the referent.

I have used a feature-based description in the two examples above to make the point that this is how such systems are normally described, as having positive semantic content of this kind. However, in collaborative work with a number of other scholars, we have conducted a survey using an improved field instrument designed by David Wilkins (see Van Geenhoven & Warner 1999), which systematically examines use in about twenty scenarios. This survey shows that demonstrative systems often involve a privative opposition between two or more expressions. For example, a two-term speaker-anchored system as in English may have a proximal term ('this') and an unmarked, semantically general term ('that') which covers the whole area, but is normally pre-empted by the proximal where the object is being held by the speaker or is close. This explains why 'this' and 'that' can often both be applied at the same distance if some other contrast is to be made – for example in English one can say of the rings on one's fingers "This ring was given to me by my aunt, but that one by my grandmother". This suggests that the correct analysis is one in which *this* is marked '+proximal' but *that* is unmarked for proximity, and picks up its distal meaning by pragmatic contrast via Grice's first maxim of Quantity, which enjoins the speaker to be as informative as circumstances permit (if the referent had been proximate, the speaker should have used the term marked '+proximal' – since instead he has used a term unmarked for proximity, he must mean that the referent is not proximate). In fact we could analyze the contrast as a scalar opposition between *this* and *that*, so that *that* conversationally implicates 'a referent for

which *this* would be inappropriate’ just like *some* implicates but does not encode ‘not all’ (see Levinson 2000:93-4). The semantically general nature (with respect to distance) of the so-called ‘distal’ demonstrative *that* helps to explain its use as a diachronic source for the complementizer and relativizer *that* (Traugott 1992:230ff). It seems natural that it is the proximal demonstrative in such a two-term system that has the more specific information, but Dunn (forthcoming) argues that in Russian it is the distal term *tot* that has the more specific semantics, namely distance from the speaker, while the apparently proximal *éto* can be used irrespective of distance from the speaker – so here such an analysis would need to reverse the privative opposition, and have *éto* unmarked for distance, implicating proximity from the availability but non-use of its counterpart *tot*. If an implicatural analysis of this sort can be generally maintained, it would go a long way to explaining the puzzling, protean usages of demonstratives.

In demonstrative systems with more than two terms, the picture is more complex. It seems likely that a speaker-anchored distance system with three terms is in fact often organized in terms of a binary opposition between proximal and distal, with the distal category permitting finer discrimination between a ‘medial’ and ‘distal’ (such an analysis is argued for by e.g. McGregor for Warrwa, where the ‘medial’ is the most marked form (see Van Geenhoven & Warner 1999:60)). Some systems combine both a speaker-anchored distance system and an addressee-anchored system, as in the following paradigm of Yéli Dnye demonstrative determiners:

(23) Speaker-Based Addressee-Based

Proximal	ala	ye
Medial	kî	–
Distal	mu (far from Spkr, can apply to objects to close to Addr)	

In this system, *kî* the speaker-centered medial, is the unmarked term – it can be used to refer to things just about anywhere, except that if the speaker or addressee is actually holding something, the speaker-centered or addressee-centered term pre-empts it. Thus the ‘medial’ interpretation is due entirely to pragmatic pre-emption from the other, more semantically specified forms. In this semantic generality, the Yélfî Dnye medial contrasts of course with the Warrwa medial just mentioned, which in that system is the most marked form. The Yélfî Dnye system has two other terms which contrast on yet other dimensions. One, *yi*, is a dedicated anaphoric determiner, and on this anaphoric dimension, the other terms can play a cataphoric or other contrastive role. The final term, *wu*, is a demonstrative which contrasts on yet another dimension, namely perceptual accessibility: of a noise in the night one would say *wu lukwe* ‘that’s what?’, or of a light that has disappeared in the mist one could say ‘did you see *wu*?’. The demonstratives therefore in fact occupy a multi-dimensional space, with spatial distance on one dimension, textual reference on another, and perceptual accessibility on a third.

The Yélfî Dnye system is interesting because it shows that there are actually at least three kinds of multi-term systems, not just the two systems posited in the literature – speaker-centered distance systems (with no addressee-centered forms) vs. person-based systems

(with no medial-from-speaker forms, and where distal is interpreted as distal from both S[peaker] and A[addressee]).

So far we have gone along with the idea that demonstratives centrally code spatial discriminations. But this may not always be so (cf. Hanks 1996, Himmelmann 1997).

Two systems that have traditionally been treated as addressee-anchored distance systems have on close analysis proved to be less spatial than thought. Here is one kind of typical analysis of Turkish and Japanese demonstratives:

(24)	Turkish	Japanese
‘Near Speaker’	<i>bu</i>	<i>ko</i>
‘Near Addressee’	<i>şu</i>	<i>so</i>
‘Near neither Spkr nor Addr’	<i>o</i>	<i>a</i>

Close analysis of video-taped task-oriented communication by my colleagues shows that these glosses do not reflect real usage conditions (Özyürek & Kita in prep.). For Turkish the correct analysis seems to be that *şu* presumes lack of joint attention and is used to draw the attention of the addressee to a referent in the context, while *bu* and *o* presume that the referents are already in the addressee’s attentional focus, in which case *bu* is used for objects closer to the speaker and *o* for those distant from the speaker (because of this speaker-based opposition, the whole Turkish system has alternatively been considered entirely speaker-based). A similar story can be told for Japanese: *so* has two functions – one is simply to indicate that the referent is close to addressee, the other is (like Turkish *şu*) to draw the addressee’s attention to a new referent. This latter usage is pre-empted by

ko when the referent is very close to speaker, and by *a* when far from both speaker and addressee. What is interesting about this is that one of the main oppositions in these systems is not about proximity to speaker vs. proximity to addressee, but is rather based on shared vs. non-shared attentional focus.

This finding fits with the pre-theoretical ruminations above: indexicality crucially involves some kind of existential link between utterance and context so that the context can be used as an affordance to find the intended reference – and as we noted there, the crucial way in which deictic expressions and gestures do this, is by drawing the addressee’s attention to some feature of the spatio-temporal environment (or some portion of the just spoken or about to be spoken utterance). It also brings us back to gesture and its central role in deixis, for gesture is of course one way to direct the addressee’s attention, in this case by funneling visual attention. Demonstratives prototypically occur with gestures, and this co-occurrence seems crucial to how children learn demonstratives, which are always amongst the first fifty words learnt and often the first closed-class set acquired, and the acquisition of the pointing gesture precedes the use of the words (Clark 1978, Tanz 1980).

Finally, it has often been suggested that definite articles are simply demonstratives unmarked for distance (Lyons 1977:653-4, Keenan & Anderson 1985:280), but this does not fit the fact, noted above, that many demonstrative systems themselves have unmarked members (like *that* in English), nor the fact that a number of languages (like German) have only one demonstrative that contrasts with a definite article. There

certainly is close kinship between definite determiners and demonstratives, as shown by the frequent grammaticalization of the former out of the latter. Both contrast with indefinites (see Diessel 1999), and both share a presumption of uniqueness within a contextually given set of entities (Hawkins 1991). It is the focussing of attention on (at least in the central cases) the physical context which is the special character of demonstratives in their most basic use.

5.0 The fields of deixis

I turn now to a brief survey of deictic expressions in language. Linguists normally treat deixis as falling into a number of distinct semantic fields: person, place, time and so forth. Since Bühler (1934), they tend also to think of the deictic field as organized around an *origo* or ‘ground zero’ consisting of the speaker at the time and place of speaking. This is an oversimplification, as many systems utilize two distinct centers – speaker and addressee. Further, as Bühler (1934) pointed out, many deictic expressions can be *transposed* or relativized to some other *origo*, most often the person of the protagonist at the relevant time and place in a narrative (or as Fillmore (1998) puts it, they can be *relativized to text*).

It is essential for the descriptive enterprise to make a number of clear distinctions between different ways in which deictic expressions may be used. First, many deictic expressions may be used non-deictically, e.g. anaphorically, as in *We went to Verdi’s Requiem last weekend and really enjoyed that*, or non-anaphorically as in *Last weekend*

we just did this and that. Second, when used deictically, we need to distinguish between those used at the normal origo, versus those transposed to some other origo. It might be thought that the latter are not strictly speaking deictic (since they have been displaced in some way from the time and place of speaking), but consider *He came right up to her and hit her like this here on the arm*, in which the speaker pantomimes the protagonists, so licensing the use of *come, this* and *here*. Third, as already pointed out, deictic expressions may be used *gesturally* as in *this arm* (which requires some demonstration of which arm) versus non-gesturally as in *this room* (which does not require any such gesture). Some deictic expressions may obligatorily require some gesture, as in *yea big* (American English meaning ‘this big’, resisting usage on the telephone), while some like tense inflections may not occur with gestures at all. Those expressions optionally allowing gestures may have rather different reference when accompanied by gesture, for example while English *you* is semantically general over singularity/plurality of referents, *you* with a point to one person is singular. ‘Gesture’ here has to be understood in the widest sense, since in some cultures (like the Cunha) persons point primarily with the lips and eyes and not the hands, and even vocal intonation can function in a ‘gestural’ way, as in *Now hold your fire; wait; shoot NOW*, or in *I’m over HERE*. Similarly many languages have presentatives (like French *voilà!*), which require the presentation of something simultaneous with the expression, or greetings which require the presentation of the right hand, or terms like *thus* requiring a demonstration of a mode of action. Another distinction that may be useful is that between ‘relatively presupposing’ and ‘relatively creative (asserting)’ uses (Silverstein 1976). This is perhaps most obvious in the use of honorifics or address forms, where usage other than the ‘presupposed’ may cause more

than raised eyebrows, but it may also be useful in understanding why saying *This finger* draws the speaker's attention to the referent, while *He's coming* merely presupposes where we are.

With this preamble, we may now embark on a cursory tour of deictic expressions in the languages of the world. Since this is not a systematic survey, but rather a series of reminders about linguistic variation in this domain, I will use one random 'exotic' language that I happen to be familiar with as a foil, supplemented by others as required. The language is Yélf Dnye, an isolate of the Papuan linguistic area, spoken on Rossel Island (see Henderson 1995). For much further cross-linguistic detail see Anderson & Keenan 1982; Diessel 1999; Fillmore, 1975; Levinson 1983, Ch.3; Weissenborn & Klein 1982. In general, there is striking cross-linguistic instantiation of the deictic categories of person, place and time in the grammatical distinctions made by languages around the world. That is to say that Bühler's origo, the speaker and the place and time of his or her utterance, along with the role of recipient or addressee, recurs at the core of deictic distinctions in grammar after grammar. These are the crucial reference points upon which complex deictic concepts are constructed, whether honorifics, complex tenses, or special systems of discourse deixis. They constitute strong universals of language at a conceptual level, although their manifestation is anything but uniform: not all languages have pronouns, tense, contrasting demonstratives, or any other type of deictic expression that one might enumerate.

Perhaps right at the outset the reader should be warned that cross-linguistic data on

deictic categories is not as good as one would expect, given that core deictic expressions are readily identifiable. One problem is that the *meaning* of deictic expressions is usually treated as self-evident in grammatical descriptions and rarely properly investigated, and a second problem is that major typological surveys (which perforce rely on those descriptions) have largely yet to be done (but see Cysouw 2001, Diessel 1999). But what one can say is that despite the universality of deictic categories like person, place and time, their expression in grammatical categories is anything but universal. For example, despite claims to the contrary, not all languages have first and second person pronouns (cf. “The first and second person pronouns are universal”, Hockett 1961:21), not all languages have spatially contrastive demonstrative pronouns or determiners (see Diessel 1999, who suggests that such a contrast in demonstrative adverbs may be universal however), not all languages have tense, not all languages have verbs of coming and going, or bringing and taking, and so forth. Rather, deictic categories have a universality independent of their grammatical expression – they will all be reflected somewhere in grammar or lexis.

5.1 Person deixis

The grammatical category of person directly reflects the different roles that individuals play in the speech event: speaker, addressee and other. When these roles shift in the course of conversational turn-taking the deictic origo shifts with them (hence Jespersen’s 1922 term *shifters* for deictic expressions generally): A’s *I* becomes B’s *you*, A’s *here* becomes B’s *there* and so forth.

The traditional paradigm of first, second and third persons can be captured by the two semantic features of speaker inclusion (S) and addressee inclusion (A): first person (+S), second person (+A, -S), and third person (-S,-A), which is therefore a residual, non-deictic category. Most languages directly encode the +S and +A roles in pronouns and/or verb agreement, and the majority explicitly mark third person (-S, -A). But there are clear exceptions to the alleged universality of 1st and 2nd person marking – for example especially in the S. E. Asian languages like Thai there are titles (on the pattern of ‘servant’ for 1st person, ‘master’ for 2nd person) used in place of pronouns and there is no verb agreement (Cooke 1968). Many languages have no third person pronouns, although they often indirectly mark third-person by zero agreement markers. Thus Yélf Dnye has the following pronoun paradigm (with different paradigms in possessive and oblique cases)

(25) **Yélf Dnye Nominative Pronouns**

	sing	dual	pl
1	<i>nê</i>	<i>nyo</i>	<i>nmo</i>
2	<i>nyi</i>	<i>dp:o</i>	<i>nmyo</i>
3	<i>î</i>	<i>î</i>	<i>î</i>

The paradigmatic analysis of person marking, whether in pronouns or agreement, is a more complex area than one might at first suppose. Although the traditional notions 1st, 2nd and 3rd persons hold up remarkably well, there are many kinds of homophony, or

different patterns of syncretism, across person paradigms (Cysouw 2001). Much of this complexity is due to the distinctive notions of ‘plurality’ appropriate to this special paradigm: first-person plural clearly does not entail more than one person in +S role, for that would entail a chorus. ‘We’ notions are especially troubling, since many languages distinguish such groups as: +S+A vs. +S+A+O (where O is Other, i.e. one or more 3rd persons), vs. +S-A, vs. +S-A+O. In some pronominal systems ‘plural’ can be neatly analysed as augmenting a minimal deictic specification with ‘plus one or more additional individuals’ (AUG). Thus the distinction between *I* and *We* might be analyzed as (+S,-Aug), (+S,+AUG). A special motivation for such an analysis is the fact that a number of languages treat ‘I + you’ – that is the speech-act participants – as a singular pronominal package, which is then augmented to form a ‘I + you + other’ pronoun. The following is the paradigm from Rembarrnga (Dixon 1980:352):

Table 1: Rembarrnga Dative Pronouns (after Dixon 1980)

	Minimal	Unit Augmented	Augmented
+S	êänä	yarrparra÷	yarrä
+S+A	yäkkä	êakorpparra÷	nakorrä
+A	kä	nakorpparra÷	nakorrä
-S-A masc	nawä	parrparra÷	parrä
-S-A fem	êätä		

Many languages (like Tamil, Fijian) distinguish ‘inclusive we’ from ‘exclusive we’, i.e. (+S,+A) from (+S,-A,+AUG). A few languages (like Pirahã) do not mark plurality in the person paradigms at all (Cysouw 2001:78-9).

Most languages have a number of quirky details which show that a more sustained analysis of the nature of person is in fact required. Consider the English *Johnny is to get ready now* – this is appropriately said to a person who will then run along and tell Johnny “Get ready now!”. Many traditional grammars have a category of 3rd person imperative covering essentially the same situation. In such a scenario, the speaker is analytically dividing the notion of an ‘addressee’ into two distinct sub-roles: a person actually spoken to by the speaker, and an illocutionary target, as it were, of the utterance. In a similar way, some languages have specific ways of indicating that the speaker is merely the mouthpiece for someone else, thus distinguishing the actual speaking role from the illocutionary source of the message. In English, we can use the same imperative form, as in *You are to bring it now*, to indicate that the speaker is not the originator of the message. In Yélí Dnye one would say in effect “You let-him-bring it” with 2nd person pronoun and 3rd person imperative form of the verb (Henderson 1995:87). It turns out that some quite elaborate dissections of the speaking and addressee roles can be motivated by such grammatical detail (Levinson 1989; see also Goffman 1981). Generally the grammatical repercussions of such specialized devices is not great, although some systems of evidentials might be partially reanalyzed in these terms (‘hearsay’ evidentials indicating that the speaker is not the illocutionary source).

There are many other interesting aspects of person deixis. One much studied phenomenon is what happens in reported speech to the self-reference of the speakers – where we say *John said he would come* many languages permit only in effect ‘John said “I will come”’. In Yélí Dnye thoughts and desires must also retain the correct subjective

person: instead of “John wants to come” one must say in effect ‘John wants “I come”’.

Another important phenomenon related to person is the whole field of honorifics, which typically make reference to speaking and recipient roles, but which are dealt with separately below under the rubric of *social deixis*. Yet another important area is the special role that the speaker and addressee roles play in grammatical hierarchies of various kinds important to typology – for example many languages have no dedicated reflexives in 1st and 2nd person, and many languages treat 1st and 2nd person as the topmost categories on an ‘animacy’ hierarchy, governing case-marking, passivization and other syntactic processes (see e.g. Comrie 1989). In addition, although in the Bühlerian and the philosophical traditions the speaking role is given centrality, the importance of the addressee role is reflected in a number of special grammatical phenomena, for example vocative cases (the only deictic case) and the special forms of titles, kin-terms and proper names used in address.

Apart from its grammatical importance, person has a special significance because of its omnipresence – it is a grammatical category marked or implicit in every utterance, which inevitably indicates 1st, 2nd or 3rd person in nominal or verbal paradigms either explicitly or by contrastive omission.

5.2 Time deixis

In Bühler’s origo, the temporal ‘ground zero’ is the moment at which the utterance is issued (‘coding time’ in Fillmore’s (1997) useful terminology). Hence *now* means some

span of time including the moment of utterance, *today* means that diurnal span in which the speaking event takes place, and *is* predicates a property that holds at the time of speaking. Similarly we count backwards from coding time in calendrical units in such expressions as *yesterday* or *three years ago*, or forwards in *tomorrow*, or *next Thursday*. In written or recorded uses of language, we may need to distinguish coding time from receiving time, and in particular languages there are often conventions about whether one writes ‘I am writing this today so you will receive it tomorrow’ or something more like ‘I have written this yesterday so that you receive it today’.

The nature of calendrical units naturally varies across cultures. Yéli Dnye recognizes the day as a diurnal unit, and has words for yesterday and the day before, and special monomorphemic words for tomorrow, the day after tomorrow and so forth for ten days into the future, and thereafter a generative system for specifying days beyond that. It needs such a system because there is no concept of week, or any larger clockwork system of calendrical units that can be tied to coding time as in English *next March*. But most languages exhibit a complex interaction between systems of time measurement, e.g. calendrical units, and deictic anchorage through demonstratives or special modifiers like *next* or *ago*. In English, units of time measurement may either be fixed by reference to the calendar, or not: thus *I'll do it this week* is ambiguous between guaranteeing achievement within seven days from utterance time, or within the calendar unit beginning on Sunday (or Monday) including utterance time. *This year* means the calendar year including the time of utterance (or in some circumstances the 365 day unit beginning at the time of utterance), but *this November* tends to mean the next monthly unit so named (or

alternatively, the November of this year, even if past), while *this morning* refers to the first half of the diurnal unit including coding time, even if that is in the afternoon (see Fillmore 1975).

However, the most pervasive aspect of temporal deixis is tense. The grammatical categories called tenses usually encode a mixture of deictic time distinctions and aspectual distinctions, which are often hard to distinguish. Analysts tend to set up a series of pure temporal distinctions that roughly correspond to the temporal aspects of natural language tenses, and then catalogue the discrepancies (cf. Comrie 1985:18ff). For example, one might gloss the English present tense as specifying that the state or event holds or is occurring during a temporal span including the coding-time; the past tense as specifying that the relevant span held before coding-time; the future as specifying that the relevant span succeeds coding-time; the pluperfect (as in *He had gone*) as specifying that the event happened at a time before an event described in the past tense; and so on.

Obviously, such a system fails to capture much English usage (*The soccer match is tomorrow; John will be sleeping now, I wanted to ask you if you could possibly lend me your car, etc.*), but equally it is clear that there is a deictic temporal element in most of the grammatical distinctions linguists call tenses. Tenses are traditionally categorized as ‘absolute’ (deictic) versus ‘relative’ (anterior or posterior to a textually specified time), so that the simple English past (*He went*) is absolute and the pluperfect (*He had gone*) is relative (anterior to some other, admittedly deictically specified, point). Absolute tenses may mark just e.g. past vs. non-past, or they may mark up to nine distinct spans of time counted out from coding-time (Comrie 1985, Ch. 4). Yéli Dnye, for example, has six

such tenses, and like some other Papuan and some Bantu languages these are interpreted not vaguely, but precisely in terms of diurnal units. So counting back from the present, there is (in the continuous aspect) a tense specific to events that happened earlier today, another tense for yesterday, and yet another for any time before yesterday. In the other direction, there is a tense for later today, and a separate tense for tomorrow or later. Interestingly the tense particles for tomorrow incorporate those for yesterday (and the word for the day before yesterday incorporates the word for the day after tomorrow), indicating a partial metric symmetry around coding-time. Yélf Dnye, like a number of Amerindian languages (see Mithun 1999:153-4), also has tensed imperatives, distinguishing ‘Do it now’ from ‘Do it sometime later’.

The interpretation of tenses often involves Gricean implicatures, so that e.g. “Believe it or not, Steve used to teach syntax” implicates that he no longer does so, but this is clearly defeasible as one can add “and in fact he still has to do so” (see Levinson 2000: 95 for a relevant framework of analysis, and Comrie 1985 for the role of implicature in the grammaticalization of tense). Many languages in fact have no absolute deictic tenses (Classical Arabic is a case in point, Comrie 1985:63), although they may pick up deictic interpretations by implicature. Yet other languages, e.g. Malay or Chinese, have no tenses at all. A specially interesting case in point is Yucatec, which not only lacks tenses but also lacks relative time adverbials of the ‘before’ and ‘after’ kind (on the analysis of Bohnemeyer 1998). How on earth do speakers indicate absolute and relative time? By implicature of course. Bohnemeyer sketches how this can be done e.g. by the use of phasal verbs, so that “Pedro stopped beating his donkey and began walking home”

implicates that he first stopped donkey-beating and then after that proceeded homewards (see Bohnemeyer 1998).

However, for languages that have tense, this grammatical category is normally obligatory, and ensures that nearly all sentences (with the exception of those, like *Two times two is four*, which are interpreted tenselessly) are deictically anchored and have interpretations relativized to context. Although we tend to think of tenses as a grammatical category instantiated in predicates, some languages like Yup'ik tense their nouns as well, so one can say in effect “my FUTURE-sled” pointing at a piece of wood (Mithun 1999:154-6). Note that even in English many nominals are interpreted through Gricean mechanisms as tensed, so “John’s piano teacher was a karate black-belt in his youth” suggests that the person referred to is currently John’s piano teacher (Enç 1981). All of these factors conspire to hook utterances firmly to coding-time.

It is clear that many deictic expressions in the temporal domain are borrowed from the spatial domain. In English, the temporal prepositions and connectives like *in* (as in *in the afternoon*), *on* (*on Monday*), *at* (as in *at 5.00 p.m.*), *before* and *after*, are all derived from spatial descriptions. The demonstratives in English follow the same pattern (*cf. this week*), and in many languages (like Wik Mungan, see Anderson & Keenan 1985:298) ‘here’ and ‘there’ are the sources for ‘now’ and ‘then’. Many languages work with a ‘moving time’ metaphor, so that we talk about *the coming week* and *the past year* – which is natural since motion involves both space and time. In general, the ways in which the spatial domain is mapped onto the temporal domain are quite intriguing, for as

Comrie (1985:15) notes, the temporal domain has discontinuities that the spatial one lacks (as in the discontinuity between past and future, unlike the continuity of places other than ‘here’), while space has discontinuities (like near speaker vs. near addressee) which the temporal one lacks (at least in the spoken medium, when ‘now’ is effectively both coding and receiving time).

5.3 Spatial deixis

We have already examined one of the central kinds of place-deictic expressions, namely demonstrative pronouns and adjectives. But as we noted there, there are one-term demonstrative (ad/pro)nominal systems, unmarked for distance (German *dies* or *das* being a case in point, see Himmelmann 1997). Thus the deictic adverbs, like *here* and *there*, may be the most direct and most universal examples of spatial deixis (Diessel 1999:38). As a first approximation, English *here* denotes a region including the speaker, *there* a distal region more remote from the speaker. Languages with a speaker-anchored distance series of demonstrative pronouns will also have a speaker-centered series of demonstrative adverbs. It is clear that there is no necessary connection between the number of pronominal or adnominal demonstratives and demonstrative adverbs – German for example has one demonstrative pronoun (or rather no spatial distinction between *dies* and *das*) but two contrastive demonstrative adverbs, and there are addressee-based adnominals that are not reflected in the demonstrative adverbs (as in Yélf Dnye). Malagasy has seven demonstrative adverbs, but only six demonstrative pronouns, apparently encoding increasing distance from speaker (Anderson & Keenan

1985:292-4, although many commentators have suspected other features rather than sheer distance). Perhaps one can hazard the generalizations that speaker-centered degrees of distance are usually (more) fully represented in the adverbs than the pronominals, and conversely that no language may have a person-based system in the demonstrative adverbs if it does not have one in the pronominal or adnominal demonstratives.

Very large paradigms of demonstratives usually involve many ancillary features, not all of which are deictic. For example, Yup'ik has three sets of demonstratives (31 in all) conventionally labelled 'extended', 'restricted' and 'obscured', where 'extended' refers to large horizontal objects or areas or moving referents, 'restricted' to small, visible, or stationary objects, and 'obscured' to objects not in sight (Anderson & Keenan 1985:295, after Reed et al. 1977). Here the restricted condition is an additional non-deictic condition, but the other two sets involve a visibility feature which is deictic in nature (visible by the speaker from the place of speaking). Visibility is a feature reported for many North American Indian languages, and not only in demonstratives – for example in Kwakwa'la every noun phrase is marked for this deictic feature by a pair of flanking clitics (Anderson & Keenan 1985, citing Boas). But caution is in order with a gloss like 'visibility'; for example, Yélfí Dnye has two demonstratives *kí* and *wu*, mentioned above, which Henderson (1995:46) glosses as 'visible' and 'invisible' respectively, but these glosses do not accurately capture usage – a better gloss for *wu* seems to be 'indirectly ascertained, not directly perceivable or not clearly identifiable to addressee', while *kí* seems to be the unmarked deictic, which is pragmatically opposed to *wu* in one dimension, and to the proximal/distal deictics in another.

Apart from visibility, deictics often contain information in an absolute frame of reference, that is an allocentric frame of reference hooked to geographical features or abstract cardinal directions. Thus the large Yup'ik series of demonstratives has 'upstream/downstream/across river' oppositions, West Greenlandic has north/south (Fortescue 1984), and languages used by peoples in mountainous areas of Australia, New Guinea or the Himalayas often contain uphill/'downhill' oppositions (see Diessel 1999:44-5 for references). Such languages are likely to use absolute coordinates in many ways unhooked from the deictic center (as in 'north of the tree'), but these forms specifically place the origo of the coordinates at the place of speaking (see Levinson 1996 for exposition). In a cross-linguistic survey of demonstratives in 85 languages, Diessel (1999) finds attested, in addition to these deictic factors, various not-deictic properties of the referent - such as animacy, humanness, gender, number and the boundedness of Eskimo languages mentioned above.

In many kinds of deictic expressions the deictic conditions are indeed backgrounded, and other semantic properties foregrounded. Thus if I say "He didn't come home", you are unlikely to read what I said as 'He went home, but not towards the deictic center' (except possibly with contrastive emphasis on *come*). Verbs of 'coming' and 'going' have been thought to be universal, but that is not the case. In the first instance, many languages do not have verbs that encode motion to or away from the deictic center – they make do instead with 'hither'/'thither' particles (about which, more later). Secondly, when they have verbs of 'coming' and 'going' what they encode turns out to be quite differentiated

(see Wilkins & Hill 1995, Wilkins, Hill & Levinson 1995). If someone comes towards me but stops short before he arrives at the tree over there, I can say ‘He came to the tree’ in English, but not in Longgu or Italian, where we must say ‘He went to the tree’. In fact, if a ‘come’ verb is identified as one which can only be used if the motion is towards the place of speaking, then we can distinguish at least four distinct kinds, according to whether they are marked for telicity or require the goal to be the place of speaking, as exemplified in the table (from Wilkins, Hill & Levinson 1995):

Table 2: Varieties of COME verb

	+telic	-telic (i.e. unmarked)
Goal is Place of Speaking	<i>Longgu</i>	<i>Italian</i>
Goal need not be Place of Speaking	<i>Ewe</i>	<i>Tamil</i>

Thus, it turns out there is no universal lexicalized notion of COME, although vector alignment with the place of speaking is a candidate for a universal feature of linguistic meaning. The notions underlying GO may be somewhat more uniform. That is because it turns out that on close examination GO notions generally do *not* encode anything about alignment of vectors with the deictic center (contra to e.g. Miller & Johnson-Laird 1996). Rather COME and GO verbs tend to be in privative opposition, with COME marked as having such an alignment, and GO unmarked for such a feature – scalar implicature can then do the rest: saying GO where COME might have been used but wasn’t, implicates that the speaker is not in a position to use the stronger, more informative COME because its conditions have not been met, and thus that the motion in question is not towards the

deictic center. Variants in GO semantics should then be the mirror image of variants in COME semantics, illustrating the point stressed in Levinson (2000) that many Saussurean oppositions may be as much in the pragmatics as in the semantics.

Not all languages lexicalize the ‘towards the deictic center’ feature in their verbs.

Consider Yéli Dnye, which has a ‘hither’ feature that can be encoded in variant forms of the verbal inflectional particles. Now there are irregular verbs that obligatorily take this feature, including a motion verb *pwiyé*. So it is tempting to gloss *pwiyé* ‘come’, but in fact it is perfectly usable to encode motion away from the deictic center (one can say, ‘He *pwiyé*-d off in that direction’), because it is just an irregular verb with meaning somewhat unrelated to its obligatory inflectional properties. So to say ‘come here!’ one can either use *pwiyé* or the unmarked GO verb *lé*, but now marked with the ‘hither’ particle. Now note, Yéli Dnye has no ‘thither’ particle – that’s because by privative opposition it is not necessary: any motion verb unmarked for ‘hither’ will be presumed to have a ‘thither’ (or at least not ‘hither’) interpretation. Once again implicature provides the opposition. Many North American languages have rich sets of directional suffixes on verbs, which encode both deictic features like ‘hither’/‘thither’ and information in absolute coordinates (like ‘thither upriver’; see Mithun 1999:139ff).

There is a further large set of phenomena relevant to place deixis which should be mentioned. Many analysts have noted the ambiguity of *The cat is behind the television*, where the cat could be at that side of the television opposite from the screen, or it could be on the other side of the TV from the speaker, whichever side the speaker is on. The

former interpretation is called the ‘intrinsic’ frame of reference or perspective in the literature, and the latter mostly ‘deictic’. I have argued at length (Levinson 1996) for a reform of this terminology, wherein the so-called ‘deictic’ frame of reference should be called the ‘relative’ frame of reference, on the grounds that (a) the viewpoint encoded need not be deictic, as in *He went into the room and the cat hid behind the television*, and (b) we need to distinguish the frames of reference *qua* coordinate systems from the various origins (deictic and non-deictic) that these systems can have. The relative frame of reference is dominant in our language and psychology, while in other cultures the absolute frame of reference is dominant (as shown in Levinson 1996, in press). Some languages simply do not have notions like ‘to the left of (the tree)’ or ‘behind (the tree)’ in the relative sense, making do instead with ‘to the north of (the tree)’, or ‘uphill of (the tree)’ in the absolute frame of reference. In both cases, though, the deictic center is often the origo of these coordinate systems, as when in saying ‘Go north’, I mean ‘Go north from here’ (see e.g. Haviland 1997, Levinson in press).

In all three frames of spatial reference, intrinsic, relative and absolute, there is a great deal of cross-linguistic variation not only as concerns which frames are reflected in a language at all, but exactly how they are instantiated. For example, in the relative frame of reference, the mapping of the viewer’s coordinates (left/right/front/back) onto the scene can be quite various – in Hausa for example (and a lot of other languages) ‘The cat is behind the tree’ means what in English would be expressed by *The cat is in front of the tree*, because the viewer’s bodily coordinates are translated and not reflected onto the tree. All of these systems have complex interactions with culturally-specific

segmentations of objections into their parts, so that e.g. *the left side of the armchair* is ambiguous as to whether one is referring to the intrinsic left or the relative left. There is a great deal of interesting complexity in all this, dealt with at length in Miller & Johnson-Laird 1976, Herskovits 1986, and Levinson (in press).

5.4 Discourse deixis

In both spoken and written discourse, there is frequently occasion to refer to earlier or forthcoming segments of the discourse (as in *As mentioned before*, *In the next chapter*, or *I bet you haven't heard this joke*). Since a discourse unfolds in time, it is natural to use temporal deictic terms (like *before* or *next*) to indicate the relation of the referred-to segment to the temporal locus of the moment of speaking or the currently read sentence. But spatial terms are also sometimes employed, as in *in this article*, or *two paragraphs below*. Clearly references to parts of a discourse which can only be interpreted by knowing where the current coding point or current reading/recording point is are quintessentially deictic in character. Such reference is relative to context just like a demonstrative is.

There is a distinction often made between textual deixis and general anaphora, along the following lines. Whereas textual deixis refers to portions of the text itself (as in *See the discussion above*, or *The Pewit sounds like this: pee-r-weet*), anaphoric expressions refer outside the discourse to other entities, although they do this by connecting to a prior referring expression (anaphora) or a later one (cataphora, as in *In front of him, Pilate saw a beaten man*). In so far as the distinction between anaphoric and cataphoric expressions

is conventionalized (as it is in some languages), such expressions have a clear conventional deictic component, since reference is relative to the point in the discourse. Thus Yélí Dnye has an anaphoric pronoun *yi*, which cannot be used exophorically and contrasts to the demonstratives which can be used cataphorically. This is like the English legalese *the aforementioned party*, which requires looking backwards in the text from the point of reading. These expressions, with their directional specification from the current point in the text, make clear the underlyingly deictic nature of anaphora.

Many expressions used anaphorically, like third person pronouns in English, are general purpose referring expressions – there is nothing intrinsically anaphoric about them, and they can be used deictically as noted above, or non-deictically but exophorically, when the situation or discourse context makes it clear (as in *He's died* said of a colleague known to be in critical condition). The determination that a referring expression is anaphoric is itself a matter of pragmatic resolution, since it has to do with relative semantic generality. For this reason, *the ship* in a sentence like the following can be understood anaphorically: *The giant Shell tanker hit a rock, and the ship went down*, while the same expression resists an interpretation as an antecedent in *The ship hit a rock, and the giant Shell tanker went down* (see Levinson 2000 for a Gricean analysis). The whole subject of anaphora lies beyond the scope of this article, but see Huang (2000, this volume) for a recent pragmatic approach to this subject at the heart of modern linguistic theory.

An important area of discourse deixis concerns discourse markers, like *anyway*, *but*, *however*, *actually*, *in conclusion*, and so forth (see Schiffrin 1987). These relate a current contribution to the prior utterance or portion of text, and they typically resist truth-conditional characterization – for this reason, Grice introduced the notion of CONVENTIONAL IMPLICATURE, noting that *but* has the truth-conditional content of *and*, with an additional contrastive meaning which is non-truth conditional but conventional.

5.5 Social deixis

Social deixis has to do with the marking of social relationships in linguistic expressions, with direct or oblique reference to the social status or role of participants in the speech event. Special expressions exist in many languages, including the honorifics well known in the languages of S. E. Asia, like Thai, Japanese, Korean and Javanese. It proves descriptively essential to distinguish a number of axes on which such relations are defined (see Levinson 1983, Brown & Levinson 1987):

Axis	Honorific Types	Other linguistic encodings
(1) Speaker to referent	Referent honorifics	titles
(2) Speaker to addressee	Addressee honorifics	address forms
(3) Speaker to non-addressed participant	Bystander honorifics	taboo vocabularies
(4) Speaker to setting	Formality levels	register

The distinction between (1) and (2) is fundamental in that in (1) ‘honour’ (or a related attitude) can only be expressed by referring to the entity to be ‘honoured’, while in (2) the same attitude may be expressed while talking about unrelated matters. In this scheme, respectful pronouns like *Vous* or *Sie* used to singular addressees are referent honorifics, which happen to refer to the addressee, while Tamil particle *nka* or Japanese verbal affix *-mas* are addressee honorifics which can be adjoined by the relevant rules to any proposition. The elaborate honorifics systems of S. E. Asia are built up from a mixture of (1) and (2) – for example there are likely to be humiliating forms replacing the first person pronoun (on the principle that lowering the self raises the other) together with honorific forms for referring to the addressee or third parties (both referent honorifics), and in addition suppletive forms for such verbs as eating or going, which give respect to the addressee regardless of who is the subject of the verb (see Brown & Levinson 1987, Errington 1988, Shibatani 1999). There are also means of indicating respect to third persons, e.g. by honorific verb agreement (these are referent honorifics again). Customary collocations of these expressions construct the ten or so recognized levels of Javanese etiquette (Errington 1988, Agha 1993). Many honorific terms are derived from other

dialects or languages, or else are based on semantically broader or vaguer reference, so hinting rather than specifying what precisely is intended (Brown & Levinson 1987, Shibatani 1999). Although respect is the major attitude documented, other kinds of social relationship are also signalled in this way, for example special kin-titles of address may indicate a joking relationship appropriate to cross-cousins or the like.

The third axis is encoded in what can be called ‘bystander honorifics’, used to signal respect to a non-addressed but present party. For example, in Pohnpei, in addition to referent and addressee honorifics, there are special suppletive verbs and nouns to be used in the presence of a chief (Keating 1998). Many of the Australian languages had taboo vocabularies used in the presence of real or potential in-laws, or those who fell in a marriagable section for ego but were too close to marry (Dixon 1980:58-65, Haviland 1979). The Papuan language Yéli Dnye has a similar, if more limited, taboo vocabulary for in-laws, especially parents and siblings of the spouse. This involves a replacement vocabulary for body-parts and items like clothing and baskets associated with the taboo person, and special indirect ways of referring to such people in their presence.

The fourth axis involves respect – or some other special attitude – conveyed to the setting or event. Most Germans use a system of address with *Du* vs. *Sie* and First Name vs. *Herr/Frau* + Last Name which is unwavering across formal or informal contexts; they find surprising the ease with which British English speakers can switch from First Name to Title+ Last Name according to the formality of the situation (see Brown & Gilman 1960, Lambert & Tucker 1976). Many European languages have distinct registers used on

formal occasions, where *eat* becomes *dine*, *home* becomes *residence*, etc, while languages like Tamil have diglossic variants, with distinct morphology for formal and literary uses . Full scale honorific systems are sometimes deployed in the same way, for example in the so-called ‘Beautification’ (*bika-go*) style of Japanese, where referent honorifics are used wholesale without regard to e.g. the addressee’s association with the thing referred to (Shibatani 1999), in order to lend an air of grace to the proceedings (mostly associated with women’s talk). Special replacement vocabularies can also be found – again, in Yélf Dnye there is a replacement vocabulary of some hundred or more lexemes that is used only when on the sacred islet of Lów:a, which can be partly understood as avoidance of words associated with the mythology of the gods who inhabit the place. Similarly, many Australian languages had replacement vocabularies used only during initiation rites which might even involve a replacement phonemic system (Dixon 1980:65-68).

A rather different phenomenon, because it is not relational but absolute, involves special forms reserved for use by persons in designated statuses, as in the British royal *we*, or the Japanese Emperor’s special first-person pronoun. Languages like Thai have different vocabulary items for men’s and women’s speech, and some languages involve systematic changes in phonology and morphology according to the sex of the speaker (see e.g. Dunn (2000) on Chukchi).

Although many of these details seem exotic from the point of view of European languages, one should note that systems of address of any kind – pronouns, titles, kin-

terms and the like – are systems guided by the socially deictic contrasts made by alternate forms. The social deictic contents of honorifics should be considered to be conventional implicatures overlaid on the referential content (if any), just as Grice argued that *but* can be thought of as *and* plus a conventional implicature of contrast, for the deictic content is not deniable and does not fall under the scope of logical operators (see Levinson 1979).

6.0 Conclusions

This article has touched on a number of topics that establish deixis as a central subject in the theory of language. Indexicality probably played a crucial part in the evolution of language, being prior to the full-scale recursive, symbolic system characteristic of modern human language. The intersection of indexicality and the symbolic system engenders a hybrid that has complexities way beyond the two contributing systems themselves. These complexities are made evident in the paradoxes of token-reflexivity, and in the puzzles of the psychological content of indexical utterances. Deictic categories like person are universal grammatical categories (although very variably expressed), thus demonstrating their importance to the fundamental design of language. They play a special role in language learning, and are elaborated differentially in the languages of the world, making a typology of the major deictic categories an important item on the agenda for future research.

References

- Asif Agha 1994. Honorification. *Annual Review of Anthropology* 23:277-302.
- Stephen Anderson & Ed Keenan 1985. Deixis. In T. Shopen (ed.), *Language Typology & Syntactic Description*, Vol 3: *Grammatical Categories and the Lexicon* (pp. 259-308). Cambridge: Cambridge University Press.
- John Barwise & John Etchemendy 1987. *The Liar: an essay in truth and circularity*. Oxford:Oxford University Press.
- John Barwise & John Perry 1983. *Situations and Attitudes*. Cambridge, MA: MIT Press.
- Jürgen Bohnemeyer 1998. Temporal reference from a radical pragmatics perspective: Why Yucatec does not need to express 'after' or 'before'. *Cognitive Linguistics* 9(3):239-282.
- Penelope Brown & Stephen Levinson 1987. *Politeness*. Cambridge: Cambridge University Press.
- Roger W. Brown & Gilman, Albert 1960. The pronouns of power and solidarity. In T. Sebeok (ed.), *Style in Language* (pp. 253-276). Cambridge, MA: MIT Press.
- Bühler, Karl 1982 [1934]. The deictic field of language and deictic words. In R.J. Jarvella & W. Klein (eds.), *Speech, place and action* (pp. 9-30). New York: Wiley.
- Butterworth, George 1998. What is special about pointing in babies. In F. Simion & G. Butterworth (eds.), *The development of sensory, motor and cognitive capacities in early infancy* (pp. 171-190). Hove: Psychology Press.

- Clark, Eve 1978. From gesture to word: on the natural history of deixis in language acquisition. In J. Bruner & A. Garton (eds.), *Human growth and development: Wolfson College Lectures 1976* (pp. 85-120). Oxford: Clarendon Press.
- Clark, Herbert 1996. *Using language*. Cambridge: Cambridge University Press.
- Comrie, Bernard 1985. *Tense*. Cambridge: Cambridge University Press.
- Comrie, Bernard 1989. *Aspect*. Cambridge: Cambridge University Press.
- Cooke, Joseph 1968. *Pronominal reference in Thai, Burmese and Vietnamese*. Berkeley, CA: University of California Press.
- Cresswell, Max 1973. *Logics and languages*. London: Methuen.
- Cysouw, Michael 2001. *The paradigmatic structure of person marking*. PhD dissertation, KU Nijmegen.
- Davis, Steven (ed.) 1991. *Pragmatics: a Reader*. Oxford: Oxford University Press.
- Diessel, Holger 1999. *Demonstratives: Form, function and grammaticalization*. Amsterdam: Benjamins.
- Dixon, Robert 1980. *The languages of Australia*. Cambridge: Cambridge University Press.
- Dunn, Michael 2000. Men and women's Chukchi: A historical and comparative perspective. *Anthropological Linguistics*, 42(3), 305-328.
- Dunn, Michael (forthcoming). Planning for failure: The niche of standard Chukchi. *Language Planning*, 3(1).
- Enç, Mervet 1981. *Tense without scope: An analysis of nouns as indexicals*. PhD dissertation, University of Wisconsin-Madison.

- Errington, Joseph 1988. *Structure and style in Javanese: a semiotic view of linguistic etiquette*. Philadelphia: University of Pennsylvania Press.
- Fillmore, Charles 1975 Santa Cruz Lectures on Deixis. Indiana University Linguistics Club, Bloomington.
- Fillmore, Charles 1977. Topics in lexical semantics. In P. Cole (ed.), *Current issues in linguistic theory* (pp. 76-138). Bloomington, IN: Indiana University Press.
- Fillmore, Charles 1997. *Lectures on Deixis*. Stanford, CA: CSLI Publications.
- Fortescue, Michael 1984. *West Greenlandic*. London: Croom Helm.
- Frege, Gottlob 1967 [1892]. The thought: a logical enquiry. Translated in P. F. Strawson (ed.), 1967. *Philosophical Logic* (pp. 17-38). Oxford: Oxford University Press.
- Goffman, Erving 1981. *Forms of talk*. Philadelphia: University of Pennsylvania Press.
- Grice, Herbert 1957. Meaning. *Philosophical Review* 67:377-88.
- Hanks, William 1990. *Referential Practice: language and lived space in a Maya community*. Chicago: University of Chicago Press.
- Hanks, William 1996. Language form and communicative practices. In J. Gumperz & S. Levinson (eds.), *Rethinking linguistic relativity* (pp. 232-270). Cambridge: Cambridge University Press.
- Hauser, Marc 1997. *The evolution of communication*. Cambridge, MA: MIT Press.
- Haviland, John 1979. How to talk to your brother-in-law in Guugu Yimithirr. In T. Shopen (ed.), *Languages and their speakers* (pp. 161-239). Cambridge, MA: Winthrop.

- Haviland, John 1996. Projections, transpositions, and relativity. In J.J. Gumperz & S.C. Levinson (eds.), *Rethinking linguistic relativity* (pp. 269-323). Cambridge: Cambridge University Press.
- Haviland, John (in press). How to point in Zinacantán. In S. Kita (ed.) in press.
- Hawkins, John 1991. On (in)definite articles: Implicatures and (un)grammaticality prediction. *Journal of Linguistics* 27:405-442.
- Henderson, Jim 1995. Phonology and the grammar of Yele, Papua New Guinea. *Pacific Linguistics*, Series B-112.
- Herskovits, Annette 1986. Language and spatial cognition: An interdisciplinary study of the prepositions in English. *Studies in natural language processing*. Cambridge: Cambridge University Press.
- Himmelman, Nikolaus 1997. *Deiktikon, Artikel, Nominalphrase*. Tübingen: Niemeyer.
- Hockett, Charles 1958. *A course in modern linguistics*. New York: Macmillan.
- Hockett, Charles 1961. The problem of universals in language. In J.H. Greenberg (ed.), *Universals of language* (pp.1-29). Cambridge, MA: MIT Press.
- Huang, Yan 2000. *Anaphora: a cross-linguistic approach*. Oxford : Oxford University Press.
- Jackendoff, Ray 1999. Possible stages in the evolution of the language capacity. *Trends in Cognitive Sciences*, 3(7):272-279.
- Jarvella, Robert & Klein, Wolfgang 1982. *Speech, Place and Action: Studies of Deixis and Related Topics*. New York: Wiley.
- Jespersen, Otto 1968 [1922]. *Language: its nature, development and origin*. London: Allen and Unwin.

- Kaplan, David 1978. On the logic of demonstratives. *Journal of philosophical Logic* 8:81-98. (Reprinted in Davis 1991:137-145.)
- Kaplan, David 1989. Demonstratives. In J. Almog, J. Perry & H. Wettstein (eds.), *Themes from Kaplan* (pp. 481-564). Oxford: Oxford University Press.
- Kasher, Asa 1998. *Pragmatics: Critical Concepts, Vol III: Indexicals and reference*. London: Routledge.
- Keating, Elizabeth 1998. Honor and stratification in Pohnpei, Micronesia. *American Ethnologist* 25(3):399-411.
- Kita, Sotaro (ed.) (in press). *Pointing: where language, cognition, and culture meet*. Mahwah, NJ: Erlbaum.
- Lambert, William & Tucker, Gordon 1976. *Tu, vous, usted*. Rawley, MA: Newbury Press.
- Lewis, David 1972. General semantics. In D. Davidson & G. Harman (eds.), *Semantics of Natural language* (pp. 169-218). Dordrecht: Reidel.
- Levinson, Stephen 1979. Pragmatics and social deixis. *Proceedings of the Fifth Annual Meeting of the Berkeley Linguistic Society*, pp. 206-23.
- Levinson, Stephen 1983. *Pragmatics*. Cambridge University Press, Cambridge
- Levinson, Stephen 1988. Putting linguistics on a proper footing. In P. Drew & A. Wootton (eds.), *Erving Goffman* (pp. 161-227). Cambridge: Polity Press.
- Levinson, Stephen 1996. Frames of reference and Molyneux's question: cross-linguistic evidence. In P. Bloom, M. Peterson, L. Nadel & M. Garrett (eds.), *Language and Space* (pp. 109-169). Cambridge, MA: MIT Press.
- Levinson, Stephen 2000. *Presumptive Meanings*. Cambridge, MA: MIT Press.

- Levinson, Stephen (in press). *Space in language and cognition: Explorations in cognitive diversity*. Cambridge: Cambridge University Press.
- Lyons, John 1975. Deixis as the source of reference. In E. Keenan (ed.), *Formal Semantics of Natural Language* (pp. 61-83). Cambridge: Cambridge University Press.
- Lyons, John 1977. *Semantics*. 2 Vols. Cambridge: Cambridge University Press.
- Lyons, John 1982. Deixis and subjectivity. In Jarvella & Klein 1982:101-124.
- McNeill, David 1992. *Hand and mind*. University of Chicago Press.
- Miller, George 1982. Some problems in the theory of demonstrative reference. In R. Jarvella & W. Klein (eds.), *Speech, place and Action* (pp. 61-72). New York: Wiley.
- Miller, George & Johnson-Laird, Philip 1976. *Language and Perception*. Cambridge, MA: Harvard University Press.
- Mitchell, Jonathan 1986. *The formal semantics of point of view*. PhD dissertation, Univ. of Massachusetts, Amherst.
- Mithun, Marianne 1999. *The languages of native North America*. Cambridge: Cambridge University Press.
- Montague, Richard 1974 [1968]. Pragmatics. In R.H Thomason (ed.), *Formal Philosophy* (pp. 95-118). New Haven, CT: Yale University Press.
- Nunberg, Geoffrey 1978. *The pragmatics of reference*. Mimeo, Indiana University Linguistics Club.
- Nunberg, Geoffrey 1998. Indexicality and deixis. In Kasher 1998:145-184.

- Özyürek, Asli & Kita, Sotaro (in prep.). Interacting with demonstratives: Encoding of joint attention as a semantic contrast in the Turkish and Japanese demonstrative systems.
- Peirce, Charles 1955 [1940]. *Philosophical writings of Peirce*. In J. Buchler (ed.), New York: Dover Publications. (see page 1)
- Perry, John 1977. Frege on demonstratives. *Philosophical review* 86:474-97. (Reprinted in Davis 1991:146-159.)
- Perry, John 1990. Frege on demonstratives. In Yougrau 1990:50-70.
- Pick, Herbert & Pick, Anne 1999. James Jerome Gibson. In R. Wilson & F. Keil (eds.), *The MIT Encyclopedia of the Cognitive Sciences* (pp. 349-351). Cambridge, MA: MIT Press.
- Povinelli, Daniel, Bering, Jesse & Giambrone, Steve (in press). Chimpanzee 'pointing'. Another error of the argument by analogy? To appear in Kita, S. (ed.). Erlbaum.
- Reed, Irene, Miwaoke, Osahito, Ascan, Pascal & Krauss, Michael. 1977. *Yup'ik Eskimo Grammar*. Fairbanks, University of Alaska. Alaska Native Language Center.
- Quine, Willard 1961. *From a logical point of view*. New York: Harper.
- Schelling, Thomas 1960. *The strategy of conflict*. Cambridge, MA: MIT Press.
- Schiffrin, Deborah 1987. *Discourse markers*. Cambridge: Cambridge University Press.
- Shibatani, Masayoshi 1999. Honorifics. In K. Brown & J. Miller (eds.), *Concise Encyclopedia of Grammatical Categories* (pp. 192-201). Amsterdam: Elsevier.
- Silverstein, Michael 1976. Shifters, linguistic categories and cultural description. In K. Basso & H. Selby (eds.), *Meaning in anthropology* (pp.11-55). Albuquerque: Univ. of New Mexico Press.

- Stalnaker, Robert 1999. *Context and content*. Oxford: Oxford University Press.
- Tanz, Christine 1980. *Studies in the acquisition of deictic terms*. Cambridge: Cambridge University Press.
- Traugott, Elizabeth 1992. Syntax. In R. Hogg (ed.), *Cambridge history of the English language*, Vol. 1 (pp. 168-289). Cambridge: Cambridge University Press.
- Van Geenhoven, Veerle & Warner, Natasja (eds.) 1999. Annual Report 1998. MPI for Psycholinguistics, Nijmegen.
- Wales, Roger 1986. Deixis. In P. Fletcher & M. Garman (eds.), *Language acquisition*. 2nd ed. (pp. 401-28). Cambridge: Cambridge University Press.
- Weissenborn, Jürgen & Klein, Wolfgang 1982. *Here and There: Cross-linguistic Studies on Deixis and Demonstration*. Amsterdam: Benjamins.
- Wettstein, Howard 1984. How to bridge the gap between meaning and reference. *Synthese* 58:63-84. [Reprinted in Davis 1991:160-174.]
- Wilkins, David & Hill, Deborah 1995. When 'GO' means 'COME': Questioning the basicness of basic motion verbs. *Cognitive Linguistics* 6:209-259.
- Wilkins, David, Hill, Deborah & Levinson, Stephen (1995). Bedeutet KOMMEN und GEHEN in verschiedenen Sprachen immer dasselbe? Max-Planck-Gesellschaft Jahrbuch (pp. 307-312).
- Yourgrau, Palle (ed.) 1990. *Demonstratives*. Oxford University Press.

Endnotes

¹ The reference is to the perceptual theories of J.J. Gibson, who, in opposition to classical perceptual theory, stressed the active nature of the perceiving animal, and the way in which perception is geared to the features of the environment ('affordances') which encourage or inhibit certain actions. See Pick & Pick 1999.

² For the further puzzles this raises for the subjective 'thoughts' corresponding to sentences, see Stalnaker 1999: Ch. 7.