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'Proximal' and 'distal' in language and cognition: evidence from deictic demonstratives in Dutch

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Abstract

In this paper we examine the differences in use between distal and proximal demonstrative terms (e.g., singular "this" and "that", and plural "these" and "those" in English). The proximal–distal distinction appears to be made in all languages and therefore promises to be an important window on the cognitive mechanisms underlying language production and comprehension. We address the problem of accounting for the distinction through a corpus-based quantitative study of the deictic use of demonstratives in Dutch. Our study suggests that the distal–proximal distinction corresponds with use of the proximal for intensive/strong indicating (i.e., directing of attention) and the distal for neutral indicating. We compare our findings with empirical findings on the use of English demonstratives and argue that, despite some apparent differences, Dutch and English demonstratives behave roughly similarly though not identically. Finally, we put our findings into context by pulling together evidence from a number of converging sources on the relationship between indicating and describing as alternative modes of reference in the use of distal and proximal demonstratives. This will also lead us to a new understanding of the folk-view on distals and proximals as distinguishing between nearby and faraway objects.

Keywords: Proximal and distal demonstratives, accessibility, importance, deictic reference

Biographical notes:

Paul Piwek (1971) studied computational linguistics and the philosophy of linguistics and cognitive science at the Universities of Tilburg and Amsterdam, obtaining masters degrees in 1993 and 1994, both *cum laude*. He obtained his PhD from Eindhoven University in 1998, with a thesis on proof-theoretic natural language semantics and pragmatics. After working for some years as a postdoctoral researcher at the Information Technology Research Institute in Brighton, in 2005 he was appointed as a lecturer at the Open University in the UK. His current research interest is in verbal and non-verbal communication in dialogue.

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Anita Cremers studied Language and Literary Studies, specialising in Computational Linguistics at Tilburg University, The Netherlands and graduated (with honors) in 1991. In 1996 she finished her PhD thesis on referential behaviour of humans during task-oriented dialogues at the Institute for Perception Research in Eindhoven, The Netherlands. Until 2000 she worked as a researcher of human-computer interaction at the Dutch telecom company KPN in Leidschendam. In 2000 she joined the Dutch institute for applied research TNO Defense, Security and Safety (Human factors) in Soesterberg, as a senior researcher of human-computer interaction, focusing on multimodal interfaces and design-for-all.

1 Introduction

In this paper we present an analysis of the use of demonstrative noun phrases, henceforth demonstratives. Demonstratives can be found across all languages and, more specifically, all languages have at least two types of demonstrative terms: a demonstrative term roughly expressing that the intended referent is nearby the speaker and another demonstrative term expressing that the intended referent is faraway from the speaker (see Diessel, 1999:50). The two alternative forms of demonstratives are known as *proximal* (also proximate) and *distal*; in English, "this/these" and "that/those", respectively.

The universality of demonstratives and the proximal–distal distinction across languages makes demonstratives a topic that is of interest beyond the bounds of pure linguistics to the wider field of cognitive science. It is very unlikely that the proximal-distal distinction is completely arbitrary, given that language communities across the world have independently from each other arrived at this distinction. This makes it much more likely that the distinction is grounded in how the human cognitive system represents and processes information and how these abilities are exploited in language use.

The aim of this paper is to study in detail how the use of distal and proximal demonstratives is grounded in the cognitive processes that are involved in language comprehension and production. Although linguists have studied the use of demonstratives extensively, this is an area that is relatively unexplored. For instance, Diessel (1999:160), who provides an excellent overview of findings on demonstratives for a sample of 85 languages, concedes that "The vast majority of grammars that I consulted use semantic labels such as 'proximal' or 'near speaker' in order to characterize meanings of demonstratives. These labels are, however, only rough approximations. The meaning of a demonstrative is often more complex. It would be a very interesting project to study semantic values of demonstratives in greater detail.".

Doing exactly that, we present a quantitative study into the semantic values of demonstratives that are used for direct reference to objects in a speech situation, henceforth *deictic demonstratives*. The interest of deixis from a cognitive point of view has been pointed out by, amongst others, Weissenborn and Klein (1982:3): "deixis is the domain par excellence where language and reality meet".

Interestingly, although the deictic use of demonstratives is considered more basic than other uses (see Diessel 1999 and Levinson 2004), to our knowledge, there are no quantitative studies of this type of use. Existing studies typically consist of a detailed analysis of a few naturally occurring or constructed instances. The work of Robert Kirsner on demonstratives in written discourse is a notable exception to the general lack of quantitative studies. Kirsner studied Dutch demonstratives extensively, using both corpus data and experiments. His findings have been reported in a series of papers including Kirsner (1979, 1985, 1993) and Kirsner and Van Heuven (1988). However, whereas Kirsner focused on the use of demonstratives in written discourse, we are concerned primarily with the deictic use of demonstratives, which refer directly to objects in the environment of the interlocutors.

In the remainder of this paper, we proceed as follows. Firstly, we introduce some terminology for characterizing different types of demonstratives. We then review a number of arguments against the folk-view on proximal and distal demonstratives. According to the folk-view, proximals are used to refer to objects that are near to the speaker and distals for objects that are faraway from the speaker. In the next section, we develop a new account of the difference between proximal and distal demonstratives. For this purpose, we build on the notion of *indicating*. This notion goes back to C.S. Peirce (Buchler, 1940: chap. 7) and has, more recently, been expanded upon by Herbert Clark (e.g., Clark 1996; 2004). Roughly speaking, indicating means directing of attention, which can be achieved by a wide variety of means such as pointing, ringing a door bell, knocking on a surface, pitch accent, etc. Here, we draw attention to the fact that an act of indicating can be executed with different degrees of intensity: one can, for instance, knock on a surface softly, or with considerable force. Building on this notion of *intensity of indicating* – which is closely related to García's (1975) distinction between low and high deixis that was first applied to the analysis of demonstratives by Kirsner (1979) – we put forward our main hypothesis regarding demonstratives that are accompanied by a pointing (i.e., indicating) act: proximals are used for intense indicating and distals for neutral indicating. The hypothesis is fleshed out by two sub-hypotheses which link intense indicating with low accessibility and high importance (of the object which the speaker is referring to). The next section describes how we collected a corpus of data on the use of deictic demonstratives and tested our hypotheses on these data. We found that low accessibility is indeed correlated with intense indicating. No evidence was, however, found for the relation between intense indicating and high importance. The penultimate

section of this paper compares our findings on Dutch with those on English demonstratives and puts the findings in a wider context; whereas the emphasis so far has been on the use of demonstratives for reference through indicating, in this section, we also consider how demonstratives are used for describing. For comparison, we consider the standard analysis of the role of *describing* in definite descriptions. We draw on a variety of evidence –including findings from diachronic studies– to provide the outline of a systematic treatment of the relation between indicating, describing and demonstratives. The aim of this section is to stimulate discussion and suggest further lines of observational and experimental inquiry. We will also shed some light on why the folk-view of demonstratives has remained unchallenged for so long. We end the paper with a conclusion section.

2 Form and Use of Demonstratives

We will speak of a demonstrative noun phrase, or demonstrative, if the noun phrase contains a demonstrative term –e.g., singular "this" and "that", and plural "these" and "those" in English– functioning either as a determiner or as a demonstrative pronoun constituting the full noun phrase.

The predominant use of demonstratives is as definite referring expressions.[1] In that role they are used to *identify* a referent in the surroundings of the interlocutors, or the addressee's mental/memory representation of a referent. Consider the following example:

(1) that green one with four holes

This expression consists of a demonstrative determiner ("that") and two modifiers ("green" and "with four holes"). The two modifiers present properties of the referent: its colour and shape. These properties can help the addressee to identify the referent. The identificational role of descriptive content in referring expressions is widely acknowledged and believed to be the predominant role. Non-identificational uses of descriptive content do, however, exist: for example, occasionally, speakers include descriptive content in order to trigger task-related inferences, as in the use of "the £200 purple vase", where inclusion of £200 is not intended to aid identification, but is relevant in some way to the current purpose of the conversation, e.g., whether to buy the vase (see, e.g., Jordan 2000).

We distinguish between demonstratives that are used anaphorically/cataphorically and those that are used deictically. An anaphoric/cataphoric demonstrative is co-referential with a linguistic expression that precedes/succeeds it (the antecedent) and is dependent on this antecedent for its interpretation (cf. Carter. 1987), while a deictic demonstrative refers directly to the *extra-linguistic context*, e.g., physical objects, times or events. We follow Biber et al. (1999), who distinguish between situational, time, anaphoric and cataphoric reference; however, we group situational and time reference under the label deictic reference.[2] Deictic demonstratives are often accompanied by pointing gestures.

The anaphoric use of demonstratives in written discourse is illustrated by the following fragment from a book on the history of mathematics (Hollingdale, 1989:19–20):

[1] There is, however, also a use of demonstratives which is sometimes characterized as indefinite. An example of this use occurs in the following sentence: "This guy I met yesterday almost sold me his car". Here, a new person ("This guy") is introduced into the discourse. The addressee is not presumed to be familiar in any way with this person. This type of use is beyond the scope of the current paper which focuses on demonstratives as definite referring expressions.

[2] Some have used the same terminology in a different way, e.g., Diessel (1999) classifies some instances of what we would call anaphoric demonstratives as discourse deictic demonstratives. For instance, 'this' in example 2 is considered discourse deictic because it refers to a proposition rather than the referent of a noun phrase. This is in contrast with our approach according to which what matters for determining whether a reference is anaphoric is whether the reference proceeds via the linguistic context or not.

Our position is that taking discourse deictic demonstratives as a separate category gives rise to two complications which are better avoided. Firstly, it is not possible to consistently distinguish between antecedents that refer to propositions, events, etc. and antecedents that are realized by noun phrases, since some noun phrases refer to events, proposition, etc. Take "this conquest" in the following discourse: "The conquest of Pasam in 1802 was a swift one and consequently this conquest involved only little loss of life.". The noun phrase 'this conquest' refers to an event which is the referent of a noun phrase ("The conquest of Pasam in 1802"). Additionally, propositional non-nominal antecedents P can be easily transformed into nominal antecedents by means of the schema 'The proposition that P'. Diessel's (1999:103) table 62, which summarizes his scheme, does not tell us what to do with such unusual but nevertheless nominal antecedents. Secondly, Diessel (1999:103) is forced to speak about "cataphoric" and 'anaphoric discourse deictic demonstratives' to distinguish between dependence on the preceding versus the succeeding linguistic context. This also shows that under this interpretation the terms anaphoric and discourse deictic overlap and therefore do not identify mutually exclusive types of use of demonstratives.

(2) If p and q are decomposed into their prime factors, then each factor will appear twice in the factorizations of p^2 and q^2. This means that the left side of the equation $p^2 = 2q^2$ will consist of an even number of factors, and the right side of an odd number of factors.

In this text fragment, a pronominal demonstrative ("This") is used anaphorically, i.e., the demonstrative has a linguistic antecedent. The linguistic antecedent in question is the entire first sentence of the text fragment. This antecedent expresses a proposition.

The next example consists of a fragment of naturally occurring task-oriented dialogue. The fragment was taken from the Dutch corpus that we study in this paper and for which the transcripts can be found in (Cremers, 1993). The dialogue from which this fragment was taken involves two interlocutors, a builder (B) and an instructor (I), who are solving a task in a block world. The actual Dutch wording (in italics) is followed by a word-by-word translation into English and a colloquial or "loose" translation. Furthermore, pauses of N seconds are represented by ". . . (N)" and "+ ↗" indicates a concurrent pointing act. We follow these conventions throughout the paper.

(3) I: *Ja.*
Yes.
Yes.
En nou dat gele blokje daar rechtsvoor,
And now that yellow block there rightfront,
And now that yellow block in the front to the right,
B: *Deze?* + ↗
This? + ↗
This one? + ↗
I: *Dat moet ook weg.*
That must also away.
That one has to go too.
Dat moet worden vervangen door een blauwe.
That must be replaced by a blue.
That one has to be replaced by a blue one.
B: . . . (2.2) *Zo?*
. . . (2.2) Like this?
. . . (2.2) This way?

This dialogue fragment contains two examples of deictically used demonstratives followed by two anaphoric uses (Cremers, 1993:16):[3] Note that in Dutch there are separate demonstrative terms for common gender (proximal "deze" and distal "die") and neuter gender (proximal "dit" and distal "dat").

Referring expressions, such as demonstratives, convey information beyond their descriptive content by means of the linguistic type: when speakers formulate a referring expression they have to choose from a range of alternative types of noun phrase, including personal pronouns, definite descriptions, names, distal demonstratives and proximal demonstratives. Here we concentrate on factors that influence the choice between a proximal and a distal demonstrative.

The labels *proximal* and *distal* reflect the traditional analysis of the two term opposition as linguistically codifying the spatial concepts of nearby and faraway. Such a spatial interpretation of demonstratives is associated with their paradigmatic use for identifying objects that are located in the spatial environment of the interlocutors (e.g., Clark & Marshall, 1981) and can be found in entries for the terms "this" and "that" in dictionaries for both English and Dutch.[4]

The traditional account would be particularly attractive if it could be shown that the way people linguistically divide space into nearby and faraway is grounded in our visual encoding of space. Kemmerer (1999), however, extensively argues against this possibility. Kemmerer reviews the literature on the neurologically

[3] The third and fourth demonstrative depend on the preceding linguistic context for their interpretation.

[4] E.g., "that [...] 2. the farther away or less immediately under observation <*this chair or ∼ one*>" (Longman Dictionary of the English Language, 1991); "de'ze [...] *dit* of *deze* voor nabij zijnde; *die*, *dat* of *gene* voor meer verwijderde zaken; [...]" (this [...] *this* [neuter gender] or *this* [common gender] for the close by; *that* [common gender], *that* [neuter gender] or *that one*, for more distant things) (Van Dale: Groot Woordenboek der Nederlandse Taal, 1984: volume A–I).

grounded perceptual distinction between nearby and faraway and points out that that distinction is concrete and quantitative: we have a perceptual system geared towards objects within our arms' reach which helps with manipulating and avoiding objects and a separate system for objects that are further away and helps with identifying and analyzing objects with the eyes. Kemmerer then points out that (qualitative) data from various crosslinguistic studies show that the linguistic distinction between nearby and faraway is quite different. In particular, it is not constrained by the range of the speaker's or hearer's arms.

Findings along the same lines as those reported in Kemmerer (1999) can be found in Enfield (2003). Enfield carried out a field study into the use of the Lao demonstrative determiners "nii" and "nan" and concludes "neither [of the demonstrative terms] encodes information about distance, and only one encodes information about location" (Enfield, 2003:115). Enfield proposes that the two demonstratives are ordered in terms of generality, with "nii" being more general than "nan", and the latter having the specific semantic content of 'not here'. 'Here' space, according to Enfield, is essentially contextual and interactional: it is influenced by a variety of factors including visibility and access. Enfield argues against identifying the contextual and interactional factors that determine 'here' space with the semantic content of the demonstrative terms; according to him the semantic content itself is simple, and nevertheless gives rise to wide variety of uses depending on the contextual/interactional realization of the 'here' space.

Hence, the nearby–faraway analysis is less promising than it looks at first sight. Some data from Dutch also brings home its limited applicability. Consider the following dialogue fragment, which is discussed in Janssen (1993, p. 768), and takes place in a situation where a doctor is palpating a patient.

(4) Doctor: *Doet het zeer op deze plek?*
Does it hurt on this place?
Is this where it hurts?
Patient: *Ja, op die plek.*
Yes, on that place.
Yes, that is where it hurts.

In this example, the referent (the place where it hurts) is strictly speaking closest to the patient (it is a part of the patient), and yet it is the doctor who uses the proximal form and the patient who uses the distal form.

3 Referring with Demonstratives: A Cognitive Model

In the previous section, we have seen that the intuitively attractive spatial analysis of the distal–proximal opposition may not be the best foundation for studying the differences between the use of proximal and distal demonstratives. In this section, we introduce an alternative grounding in terms of the cognitive notions of indicating, accessibility and importance.

3.1 Two Modes of Reference: Describing and Indicating

Our starting point is C.S. Peirce's (Buchler, 1940) theory of signs. *Signs* are characterized as relating to an object and an interpretant: a sign stands for its object and creates in the mind of the addressee an idea, which Peirce calls the interpretant. For example, a statue of Queen Victoria stands for a particular person, i.e., Queen Victoria, and creates in the mind of the onlooker an idea of the person that the statue portrays. Peirce divides signs into icons, indices and symbols. The distinction rests on the way in which the sign is connected to its object. *Icons* resemble their object. Thus, the statue of Queen Victoria is an icon. *Symbols* are related to their object by convention. The object of a symbol is not an individual thing, but rather a type of thing. For example, the word "cup" is a symbol: it stands for a particular type of objects, i.e., cups, and not for one specific object. Finally, *indices* are spatially, causally or temporally connected to their object. For example, a thermometer is an index because it is causally connected to the temperature, and a pointing finger is an index because it is spatially related to the object which it is pointing at. According to Peirce, indices are used for "[directing] the attention to their objects by blind compulsion. [...] Psychologically, the action of indices depends upon association by contiguity and not upon association by resemblance or upon intellectual operations." (Buchler, 1940:108). Recent research on pointing gestures characterizes

these along the same lines: "Pointing is a deictic gesture used to reorient the attention of another person so that an object becomes the shared focus for attention." (Butterworth, 2003:9)

Clark (1996:160) extends Peirce's work by defining a *signal* as "*the presentation of a sign by one person to mean something for another*". For each type of sign, Clark introduces terms for the corresponding *method of signaling*: icons are used for *demonstrating*, symbols for *describing* and indices for *indicating*.

In this paper, we are interested in how signs are used to refer to an object. For indices and icons, this is straightforward: when a speaker presents an index or icon to an addressee, the speaker is thereby referring to the object which the index or icon stands for. For symbols, there is a complication: we have seen that symbols stand for types of things, rather than individual objects. Nevertheless, combinations of symbols can be used for referring to individual objects. For example, one specific use of a definite description such as "the green block" is to uniquely identify an object that is green and block-shaped from the set of contextually given objects. In other words, the speaker refers to an object by *describing* it as green and block-shaped. In specific contexts, the definite article can license such an interpretation of a noun phrase as designating a unique identifiable referent that satisfies the descriptive content of the noun phrase – note that this is by no means the only interpretation that the definite article can give rise to; e.g., Epstein (2002) describes other uses of the definite article and proposes that the basic meaning of the definite article is that of signalling 'to the addressee the availability of an "access path" [to the knowledge that is needed for interpreting the noun phrase]'.

In short, describing and indicating put very different cognitive demands on their addressees: describing requires an intellectual operation from the addressee; he has to determine which object(s) fit a certain set of properties, whereas indicating relies on the addressee being open to conspicuous or stylized actions (cf. Clark, 1996:167) for directing their attention to a particular object.

3.2 Intensity of Indicating and Demonstratives

When people refer to objects, they often combine indicating and describing. For instance, the demonstrative noun phrase "this block" combined with a pointing act relies both on description (the noun 'block' contributes the descriptive content that the referent is of the type block) and indicating (the pointing act that draws attention to the referent). We will call a referring act that, in addition to or instead of a description, includes an act of indicating –such as a pointing– *indexical*. We use the term *indexical demonstrative* as shorthand for a referring act combining an indicating act and a demonstrative noun phrase.

The relation between demonstratives and indicating has been discussed by various authors. In Kaplan's (1990:20) seminal work, demonstrative reference is even equated with indexical reference: "[demonstrative reference is] use of a singular denoting phrase when the speaker intends that the object for which the phrase stands be designated by an associated demonstration [e.g., a pointing act]". Roberts (2002) points out that according to diachronic evidence the current day demonstrative has very likely evolved from a (spatially) indexical demonstrative. This suggests that indexical demonstratives represent the prototypical use of demonstrative noun phrases. We share this assumption, and therefore focus our study, in the first instance, on indexical demonstratives.

We already pointed out that indicating is fundamentally different from describing in that it involves the directing of attention of the addressee to an object through direct physical means, rather than reliance on, what Peirce calls, an intellectual operation by the addressee. This specific nature of indicating affords it with a particular property: an act of indicating can be varied in *intensity*. Consider a situation in which someone knocks on a door to make their presence known. Depending on the circumstances, this person may apply more or less force when knocking on the door. If no one shows up to open the door within a reasonable length of time, he or she is likely to intensify the force used to knock on the door, hoping that the resulting sound is sufficiently loud to attract attention. More generally, in a situation in which indicating is performed via the auditory channel, degrees of intensity can be realized by varying the volume of the indicating act – though this is by no means the only way to intensify an auditory act of indicating, for instance, pitch is another means for intensifying. In everyday life, we usually perceive at least two degrees of intensity of indicating: typically there is a neutral way for performing a particular type of indicating act (such as knocking on a door), and there are ways that are perceived as more intense or marked.

Our concept of *intensity of indicating* is closely related to the concept of *deixis* which is characterized in the context of pronominal reference as "*the force with which the hearer is instructed to seek the refer-*

ent of the pronoun" (García, 1975:65). García proposes that there are two degrees of deixis: *high deixis* is an instruction to find the referent, whereas *low deixis* is a less emphatic and vaguer instruction for the hearer to "look neither hard nor far" for the referent. According to García, high deixis is appropriate when it is difficult to find the reference, whereas low deixis is suitable for those situations where it not difficult and less effort is needed to find the referent. The notion of deixis was used in Kirsner (1979) to provide instructional meanings for the Dutch distal and proximal demonstratives. Kirsner's pioneering quantitative studies concerned demonstratives in text rather than conversation. Our main hypothesis for demonstratives in conversation (see below) follows Kirsner's proposal: proximals are associated with intense indicating/high deixis and distals with neutral indicating/low deixis. If our hypothesis is confirmed, this will provide evidence for a uniform analysis of Dutch demonstratives in both text and conversation. We have recast the concept of deixis in terms of intensity of indicating in order make explicit how our work fits in with recent studies into reference, in particular, the influential quantitative studies of multimodal reference by Herbert Clark and collaborators; see, e.g., Clark and Bangerter (2004).

The main hypothesis of this paper is that indexical proximal demonstratives are used for intensive indicating and indexical distals for neutral indicating. This hypothesis brings together the special relation between demonstratives and indicating and the empirical finding that there is a systematic difference in the intensity of the vowels in distals and proximals: Woodworth (1991:280) found that in a sample representative of the set of language types across the world, the proximal form in a language tended to have a vowel whose pitch is higher than that of the distal form in the same language (using binomial probability, the null hypothesis of no difference between the two forms was rejected with $p = 0.0037$ by Woodworth, 1991:284).[5]

In order to test this hypothesis, we formulate two sub-hypotheses which relate intensity of indicating to the circumstances of use. Just like the intensity with which we knock on a door depends on the situation (whether there is a response, presence of background noise, etc.), the choice between (a) intense indicating with a proximal versus (b) neutral indicating with a distal is assumed to be causally related to the circumstances in which the utterance is produced.

Our sub-hypotheses are grounded in a long tradition of research into the role of information structure in communication. For example, Halliday (1985:59) proposes a distinction between the *given* as 'what is presented as being already known to the listener' and the *new* as 'what the listener is being invited to attend to as new, or unexpected, or important'. The new is marked in a sentence as bearing stress/pitch accent. Here we concentrate on the interpretation of the new as (1) that what the addressee is being invited to attend to as new (though we use the term low accessibility instead of newness. The former has a firmer foundation in the psychological literature which we discuss below), and (2) that what the addressee is being invited to attend to as important:

> H-ACC: Indexical proximal demonstratives are preferred by speakers to refer to entities with low accessibility, whereas indexical distal demonstratives are preferred to refer to entities with high accessibility.

> H-IMP: Indexical proximal demonstratives are preferred by speakers to refer to entities which are important, whereas indexical distal demonstratives are preferred to refer to entities which are less important.

These hypotheses rely on two cognitive notions, i.e., notions which are grounded in the information-processing capacities of human language users: *accessibility* and *importance*. Further motivation for the two hypotheses is provided in the next section. Let us now first elaborate on the notions of accessibility and importance that we propose to put to work.

Accessibility and related notions such as cognitive status have been dealt with by a variety of authors. Notably, Ariel (1990) and Gundel et al. (1993) applied it to study reference in texts. Here we use the notion as characterized in Kahneman (2003), which extends the scope of the notion beyond textual

[5] Woodworth's (1991) work confirmed preliminary results obtained in an earlier study by Ultan (1984). Woodworth's work presents a refinement of Ultan's work by focusing on a single criterion for vowel quality (value of the second formant), rather than a variety of articulatory measures (which cannot be compared along a single parameter).

accessibility. This is crucial for our investigation which involves referring acts to objects in the speech situation. According to Kahneman "[...] accessibility—the ease (of effort) with which particular mental contents come to mind. The accessibility of a thought is determined jointly by the characteristics of the cognitive mechanisms that produce it and by the characteristics of the stimuli and events that evoke it. [...] the determinants of accessibility subsume the notions of stimulus salience, selective attention, specific training, associative activation, and priming." (Kahneman, 2003:699) and "As this discussion illustrates, much is known about the determinants of accessibility, but there is no general theoretical account of accessibility and no prospect of one emerging soon. [...] For these purposes, what matters is that empirical generalizations about the determinants of differential accessibility are widely accepted and that there are accepted procedures for testing the validity of particular hypotheses." (Kahneman, 2003, 702) We follow the approach outlined here. The determinant of accessibility that we will employ is the widely accepted notion of a *focus of attention* (i.e., the focus of attention has high accessibility).

Much of what has been said about accessibility also applies to importance. Again, there is not yet a general theory of this notion. Determinants can, however, be identified by starting from the insight that importance is goal-dependent: A fact, object or event is important for an agent, if it is perceived to be relevant by the agent for the attainment of her or his goals/desires. Although it might often be difficult to obtain certainty about the goals and desires of an agent, this does not mean that the notion is completely beyond empirical scrutiny. In clearly defined situations of human activity (such as the one described in the next section; see also Clark 1996 who discusses the role of joint activities in communication), it is possible to determine the goals of the interlocutors and consequently also the importance of objects (relative to these goals).

3.3 Related Work on Dutch and English

The two hypotheses on the relation between indexical proximal and distal demonstratives on the one hand and accessibility and importance on the other are partly motivated by existing qualitative and quantitative findings on the use of distal and proximal demonstratives in both Dutch and English. In this section, we review those findings and also some other findings which, at least at first sight, appear to contradict the hypothesis on accessibility.

3.3.1 Accessibility

In written discourse, one of the determinants of accessibility of the referent of an antecedent is the distance between the antecedent and the anaphoric expression (cf. Ariel, 1990): accessibility decreases as the distance grows. For a corpus of Dutch texts, Kirsner (1979, p.365) found that the proximal demonstrative is used to refer to objects over longer stretches of intervening text than the distal demonstrative. He compared references within the same sentence with references one sentence back and references further back than one sentence. This finding supports the hypothesis H-ACC which relates proximates to low accessibility.

The findings on English concerning low accessibility are, at least at first sight, not consistent with the findings for Dutch. The most substantial quantitative study of distal versus proximal demonstratives (and other referring expressions) and referent accessibility is Gundel et al. (1993). Drawing on, amongst others, Chafe (1976), Gundel (1978), Prince (1981) and Grosz & Sidner (1986), Gundel et al. adopt a scale of *discrete* cognitive statuses. The statuses are: focus, activated, familiar, uniquely identifiable, referential and type identifiable. Referents become less easy to retrieve from memory as we descend the scale. In our terms, accessibility decreases as we descend the scale.

Gundel et al. found that in an English corpus consisting of various naturally occurring data (including transcripts from casual conversations and TV Talk shows, novels, etc.) both the distal and proximal demonstratives were used only once to refer to an in focus referent. All the remaining (26) occurrences of the proximal demonstratives consisted of references to activated referents. The remaining occurrences of the distal demonstrative were distributed 27 : 7 over activated and familiar referents. Thus both proximal and distal demonstratives tended to be used predominantly to refer to activated referents. However, distals were also used to refer to referents with the lower cognitive status *familiar*. In the discussion section of this paper we take a closer look at these findings which associate proximals with referents whose accessibility is higher than that of the referents of distals and propose an interpretation in light of our findings for Dutch.

Additionally, there are other data on English which point in different direction from those collected by Gundel et al. Strauss (2002) examined a corpus of conversational American English. She observes that "this" typically occurs with other phrases that are intended to attract the attention of the hearer (Strauss, 2002:148):

(5) Crandall: Don't'cha see
All of this-
No no
Donthcu understand
. . .
Crandall: Now,
You see now
This is the kind of thing that bothers me

In other words, "this" co-occurs with other means for marking newness of information in Halliday's (1985) sense. "that" on the other seems to co-occur more often with ways of marking given/familiar information (Strauss, 2002:149):

(6) Curt: Hey, Where can I get a:::uh, 'member the old
twenty-three Model T spring,
(0.5)
Backspring came up like that [Does gesture showing shape of part]
. . .

Here 'member (for "remember") marks shared information and precedes the distal demonstrative "that". Unfortunately, the differences between "this" and "that" illustrated in 5 and 6 are not supported by Strauss with further quantitative data.

3.3.2 Importance

Kirsner (1979) reports a number of quantitative results from a corpus study that suggest that Dutch proximal demonstratives associate more frequently than the distal demonstratives with referents that are perceived to be important by the speaker. In particular, Kirsner (1979:361-364) found that (a) proximals are used significantly more to refer to human referents than distals; (b) proximals are used significantly more to refer to individual (as opposed to plural) referents than distals; (c) proximals are used significantly more to refer to named individuals than distals and (d) proximals are used significantly more in subject position than distals.

Kirsner & Van Heuven (1988:225) report, again on the basis of a statistical analysis of a Dutch corpus, that proximal demonstratives are associated to a larger extent with *reinterpreting* noun phrases than distal demonstratives. A reinterpreting noun phrase refers to a linguistic antecedent by using a new description rather than by repetition of (part of) the antecedent. In the following extract from Hume (1739/1984:289), the noun phrase "this brief exposition of the principles of that famous atheist" (re)interprets the preceding paragraphs, using expressions such as 'brief' and 'exposition' and 'famous', imposing an interpretation on these paragraphs.

(7) The fundamental principle of atheism of *Spinoza* is the doctrine of the simplicity of the universe, and the unity of that substance, in which he supposes both thought and matter to inhere [...]

I believe this brief exposition of the principles of that famous atheist will be sufficient for the present purpose, [...]

Kirsner & Van Heuven (1988) argue that the use of reinterpreting noun phrases signals that the referent in question is considered important by the speaker: "In contrast to simple repetition of referents, summarizing or reinterpreting suggests an integration or adaptation of material into larger discourse topics, so that the speaker can communicate a message which goes beyond a mere listing of entities. Summarizing

or interpreting seem more involved than repetition with the central rather than peripheral aspects of a text."(Kirsner & Van Heuven, 1988, p.229).

For English there are also some intuitive judgments which suggest that proximals are used to refer to more important referents than distals. Lakoff (1974:350) remarks about example 8 that "There seems, however, to be a subtle feeling in [8.a] that the speaker remains involved in the subject, and may well go on to say more about it. *That* [in 8.b] distances the speaker from the report, making it less likely that he will expatiate on it".

(8) a. The prime minister made his long-awaited announcement yesterday. This statement confirmed the speculations of many observers.

b. The prime minister made his long-awaited announcement yesterday. That statement confirmed the speculations of many observers.

If we follow Lakoff's analysis (see also Wright & Givon, 1987), 8 is a further example where the choice between "this" and "that" is influenced by the importance of the referent; assuming that speakers are more likely to continue speaking about referents which they currently deem important. Glover (2000) argues a related point on the basis of a qualitative analysis of the transcripts of a urban planning department meeting. According to her, the choice between proximal and distal demonstratives is associated with problematic or unresolved and typically new issues (which require further discussion) versus referents with an established context, respectively.

Finally, the data reported in Botley & McEnery (2001) suggest that also in English proximal demonstratives are more often used for reinterpretation than distals. Botley & McEnery carried out frequency counts on the demonstratives in a collection of three corpora. We analyzed the counts presented in table 3, p.15. of Botley & McEnery. We looked at the distribution of proximal and distal demonstratives over recoverable and not directly recoverable antecedents (this distinction corresponds to the non-reinterpreting–reinterpreting noun phrases distinction we discussed above). For proximal demonstratives we have the distribution 900 : 677 (57% : 43%) for directly recoverable versus not directly recoverable antecedents. For distal demonstratives the distribution is 641 : 333 (66% : 34%). These figures show a slight skewing for proximals, when compared to distals, to refer to referents that are not directly recoverable. The result is statistically highly significant ($\chi^2_{df=1} = 19.23$, $P < 0.001$), although the effect size is small ($r = 0.09$). The aforementioned findings together provide some initial support for our hypothesis H-IMP. In the next section, we subject this hypothesis to a new empirical test.

4 A Dialogue Game: Corpus Collection and Results

In order to study the deictic use of demonstratives we need instances of demonstratives which are used to directly refer to objects in the environment of the interlocutors. There are a number of alternative ways to gather such data. Empirical approaches can be thought of as occupying a scale from situations where the experimenter has no control over the situation which s/he observes to situations where as many features of the situation as possible are under his or her control. The former situation is typical for the kind of studies which are carried out by conversation analysts whereas the latter are encountered in experimental studies. Both extremes have their advantages and disadvantages. On the one hand, conversation analytical studies involve real-world natural conversations but are often difficult to study due to parameters which are hidden from the experimenter. On the other hand, experimental studies provide the experimenter with an extensive insight into the parameters of the situation but can also lead to the study of artificial situations or situations which hardly ever occur in the real world.

In this paper, we describe an approach that occupies the middle ground. Our aim is to study fairly controlled situations which allow the subjects enough room to exhibit natural communicative behavior. We build on the insight that language use has to be understood with reference to the activity in which it takes place (e.g., Levinson, 1992; Clark, 1996; Beun & Cremers, 1998; Kühnlein et al, to appear). Our aim is to make sure that the parameters of this activity are known to the experimenter. This means that s/he designs such an activity, henceforth a *dialogue game*, and gets his or her subjects to communicate within the bounds of this game. We propose to define such a dialogue game in terms of four components/parameters.

A DIALOGUE GAME consists of:

1. A set of PARTICIPANTS;
2. An INITIAL STATE OF PLAY;
3. A JOINT PUBLIC GOAL STATE which the participants are supposed to achieve;
4. A ROLE FUNCTION which assigns to each of the participants its entitlements, prohibitions and abilities to access various types of information and perform various types of action during the game.

4.1 Set-up for corpus collection

The corpus of dialogues which we used for this study was collected by having subjects play the following dialogue game.

1. PARTICIPANTS: The set of participants consists of two subjects.
2. INITIAL STATE: In the initial state the participants are separated by an opaque screen and facing a foundation plate (38x38cm) which is occupied by a building made of LEGO blocks of the DUPLO series (see figures 1 and 2). One of the participants is located next to another foundation plate with an example building on it and the other is located next to a box containing more blocks.
3. JOINT PUBLIC GOAL STATE: The goal state is achieved when the building on the shared foundation plate is identical to the example building.
4. ROLE FUNCTION One of the participants is assigned the role of builder (B) and the other the role of instructor (I). Both B and I can point at and observe all objects present on the foundation plate and they are allowed to talk with each other. Whereas only B is allowed to *move* the objects with his or her hands, only I has visual access to the example building.

FIGURE HERE

Figure 1: Schematic overview and photo of the experimental set-up, with B for builder and I for instructor

FIGURE HERE

Figure 2: Side view of types of blocks from the LEGO DUPLO series used in the experiment

Ten pairs of Dutch subjects engaged in a dialogue game of the described type. Before the game, they were given a written explanation of the game. Half of the subjects were male, the other half female, and their age varied from 20 to 60 years. They were all native speakers of the Dutch language. Their interactions were recorded on video tape and subsequently transcribed.[6]

4.2 Definitions

In order to test our hypotheses with respect to the data collected in the aforementioned dialogue game, we need to make the notions of accessibility and importance operational in the context of this dialogue game.

[6]The transcriptions can be found in Cremers (1993).

Accessibility For the purpose of our empirical study, we consider a well-established determinant of the accessibility of a referent: focus of attention.[7] There are two types of focus of attention: *discourse focus* (Grosz, 1977) and *domain focus*. We concentrate on domain focus, since we are interested in deictic reference: in our corpus, we only looked for those referring acts that were used for *initial* identification of objects in the domain of discourse. These were all deictic acts of reference, because the speakers referred directly to a physical object in the shared domain of conversation without mediation of the preceding linguistic context. An object is part of the domain focus if it satisfies one of the following two criteria (cf. Cremers, 1994):

1. The object was referred to in the preceding utterance or is adjacent to an object that was referred to in the preceding utterance;

2. The object lies in an area to which the speaker explicitly directed the attention of the addressee. This is marked by what we will call *focussing expressions* as in 'Wat nou helemaal naar voren zit, daar zit die rode dwars' (literally: *What now entirely to the front is, there is that red one diagonally*. Loose translation: If you look at the bit in the front, you will find a red diagonally placed block).

Within the scope of our study, we will use the term *High Domain Accessibility* (HDA). An object has *High Domain Accessibility* (+HDA) if and only if it is part of the domain focus. Otherwise, it is labelled –HDA.

Importance We start from the assumption that the task at hand determines which objects are more important than other objects. In this particular dialogue game, objects which are talked about or manipulated as part of the execution of the task are more important than other objects which do not play such a role.

Within the aforementioned class of more important objects we can make a further distinction. In the task that we have described, the central activity is the manipulation of blocks. The instructor communicates to the builder which blocks have to be manipulated (e.g., *Remove the green cube*). On the basis of this distinction we characterize blocks as either + or – important: A block is classified as +important at time t if the instructor tells the builder to manipulate this particular block at t. All other blocks, at the same point in time t, are labelled –important.[8]

We can determine whether a block is +important or –important by examining whether the utterance in which the referring act to the block occurs is an instruction to manipulate it. Note that objects are not only referred to because they have to be manipulated. Blocks can also be referred to in order to specify other parameters of manipulations. Consider the following fragment from Cremers (1993:47):

(9) I: ...
Alles wat hier achter die gele steen staat mag weg.
All what here behind that yellow stone stands can go.
Everything behind that yellow stone can go.
...

Here the yellow stone is used to identify a group of blocks which need to be removed: 'that yellow stone' serves to help with identifying the referents of the phrase 'Everything behind that yellow stone'. In the

[7] Focus of attention is an important determinant of accessibility among several other determinants (see section 3.2). Other determinants include: training, priming, salience and association. Arguably, the notion of domain focus that is used in this study can be viewed as a combination of attention and association (as a result proximity in physical space). Neither priming nor training were taken into account, given that we dealt exclusively with initial referring acts. Salience was also not taken into account, because no clear operational definition of salience was available for the current set-up. By salience we mean: (1) inherent properties of objects that attract attention and (2) relative frequency of a particular property in comparison with other properties (e.g., a single blue block among one hundred red blocks will attract attention not because of the inherent salience of the blue block, but the relative frequency of its colour). Neither colour, shape nor size of the objects were particularly salient. Objects were coloured red, green, yellow and blue (each being either a primary colour of pigment or light) and were present in roughly equal numbers. Most objects had the shape of a beam, whereas some were convex or concave. Again, this did not appear to make them visually more salient. Neither were there dramatic differences in size between objects."

[8] Note that there are parallels and differences between this notion of importance and the concept of high topicality or discourse prominence that is common in linguistics: an object that is being introduced is called *discourse prominent* if it is going to be the primary topic of the immediately following discourse. For our notion of importance, it is not such much the immediate discourse that is relevant, but rather the immediately following task-oriented actions: in these actions the +important object plays a central role.

following fragment (Cremers, 1993:43) the red block is used to indicate where and how the blue block has to be put.

(10) I: ...
[En] die blauwe die moet aan de rechs(t)e kant gelijk komen
[And] that blue that must on the righthand side come aligned
And that blue one has be aligned on its righthand side
met de zijkant van de rode.
with the side of the red.
with the side of the red one.
...

4.3 Results

The ten dialogues that were obtained from the dialogue game contained 108 instances of initial demonstrative referring acts to blocks. This included 14 referring acts which consisted of plural noun phrases and 1 instance where the speaker self-corrected ("die dit rode blokje", literally: *that this red block [diminutive form]*). We excluded the plural references and the self-correction from our investigation. Of the remaining 93 demonstratives, 50 were indexical and 43 were non-indexical. Their distribution over proximals and distals is presented in Fig. 3. These demonstratives included both demonstrative pronouns and demonstratives with a demonstrative determiner.

FIGURE HERE

Figure 3: Results on distribution of *Dutch* variants of the proximal this (...) (dit/deze (...)) and distal that (...) (die/dat (...)) over indexical and non-indexical referring acts

FIGURE HERE

Figure 4: Results on domain accessibility and importance for the *Dutch* variants of indexical this (...) (dit/deze (...)) and that (...) (die/dat (...))

We now discuss the results obtained from the data for our two hypotheses. A graphical representation of the results pertinent to H-ACC and H-IMP can be found in Fig. 4.

> H-ACC: Indexical proximal demonstratives are preferred by speakers to refer to entities with low accessibility, whereas indexical distal demonstratives are preferred to refer to entities with high accessibility.

The distribution of indexical proximals over +HDA (High Domain Accessibility) and –HDA objects was 10:16, whereas the distribution of indexical distals over +HDA and –HDA objects was 18:6. These data support the hypothesis. There is a statistically significant relationship ($\chi^2_{df=1} = 6.76$, $r = 0.37$, $P < 0.01$) between whether the intended referent is +HDA or –HDA and the type of demonstrative (i.e., proximal versus distal): of all indexical demonstrative references to +HDA objects, 64.3% are distals, whereas of those to –HDA objects, 72.7% are proximals.

This result on indexical demonstratives comprises the behavior of our sample of 20 participants. Out of these 20, 11 individuals never used indexical demonstratives. The remaining group of 9 included 6 instructors who used indexical demonstratives and 3 builders who did as well. We checked the compatibility of the behavior of these 9 individual speakers with H-Acc.

6 participants used proximals more frequently than distals for –HDA objects, and only 3 participants did the reverse. For +HDA objects, 6 participants used distals more frequently than proximals, whereas 3 did the reverse. In both cases, the majority of subjects acted in line with H-Acc. Note that this view of the results is from the speaker's perspective. The speaker needs to decide whether to use a proximal or a distal

given the HDA status of a referent. It does not tell us how helpful the distal/proximal distinction is from the point of view of an addressee.

An addressee might want to determine whether the referent of a given demonstrative is +HDA or –HDA. For instance, suppose that the addressee knows that a speaker has so far used 50 distals for +HDA and 10 proximals for +HDA and that she also uses 2 distals –HDA and 7 proximals for –HDA. On the basis of this information and the fact that the current referring act by this speaker consist of a proximal, the addressee's best bet is that the referent is +HDA, because +HDA referents outnumber –HDA referents. In this example, even though the speaker acts in line with H-Acc (she prefers proximals over distals for –HDA objects) the addressee has to conclude that the speaker is most likely to refer to a +HDA object when the speaker uses a proximal.

In our data, the relation between proximals and –HDA and distals and +HDA also existed when the data were analyzed from the addressee's point of view: we found that all individuals, except for one, used proximals more frequently to refer to –HDA than to +HDA objects. There was only one individual whose behavior deviated from this: this was a builder who only once used an indexical demonstrative, and in that single instance used a proximal to refer to a +HDA object. Also, all individuals, except for one, used distals more frequently to refer to +HDA objects than to -HDA objects. The single outlier used 4 distals to refer to –HDA objects and 3 distals for +HDA objects.

> H-IMP: Indexical proximal demonstratives are preferred by speakers to refer to entities which are important, whereas indexical distal demonstratives are preferred to refer to entities which are less important.

The distribution of indexical proximals over +important and –important objects is 22:4, whereas the distribution of indexical distals over +important and –important objects is 19:5. These data are not statistically significant: there is no statistically significant relationship between whether the intended referent is +important or –important and the type of indexical demonstrative (i.e., proximal versus distal).

5 Discussion

Contrary to some previous work on demonstratives, our study did not support our second hypothesis that (indexical) proximals, as opposed to (indexical) distals, are preferred for reference to important objects. This result might, however, be caused by the specific interpretation of the notion of importance that we used in this study. We differentiated between objects that need to be manipulated and those that do not, and argued that the former are more important than the latter in the dialogue game that we set up. One could argue that this distinction is too fine-grained: objects that are identified in order to specify the location of another object or its orientation are important, since identification of such objects is also crucial to successful completion of the task at hand.

A second way to explain the failure of this hypothesis is to assume that importance primarily influences whether the speaker indicates (i.e., points), rather than the intensity of the indicating act. More generally speaking, the idea would be that importance influences the engagement or involvement of the speaker with the referent,[9] and one specific form of physical involvement would be pointing. Let us assume for a moment that this is correct. Then we expect reference to +important objects to involve indexical demonstratives more often than reference to –important objects. Additionally, note that we actually found in our observational study that indexical demonstratives as opposed to non-indexical demonstratives are more likely to involve a proximal demonstrative (see Figure 3). Thus a link, though it is indirect, can be established between importance and type of demonstrative (proximal versus distal). This was, however, obscured in our study (especially, Figure 4) by our focus on indexical demonstratives only. Example 4 is suggestive of the relation between speaker involvement and type of demonstrative: there the doctor, who is palpating the patient, uses a proximal demonstrative.

The argument we just put forward rests on the assumption that importance and speaker involvement (e.g., pointing) are positively correlated. As a preliminary investigation into this assumption, we conducted a post-hoc analysis of our data consisting of 93 demonstrative referring acts. These included 50 indexical

[9] We thank one of the anonymous reviewers for drawing our attention to this dimension.

referring acts and 43 non-indexical referring acts. The distribution of indexical referring acts over +important and –important objects was 41:9, whereas the distribution of non-indexical referring acts (i.e., referring act that are not accompanied by pointing) over +important and –important objects was 24:19. In other words, 82% of the indexical referring acts concerned a +important referent, whereas only 56% of the non-indexical referring acts concerned a +important referent. This finding is statistically significant ($\chi^2_{df=1} = 7.53$, $r = 0.28$, $P < 0.01$). In conclusion, these post-hoc findings do suggest that the relation between importance and type of demonstrative might be mediated via the dimension of speaker engagement/involvement (in particular, in terms of pointing).

Our results do support our first hypothesis, i.e., the hypothesized correlation between indexical proximals and –HDA (High Domain Accessibility) objects and indexical distals and +HDA objects. This holds both for the participants as a group and for a majority of the participants individually. We examined not just the behavior of the participants as a group, but also the behavior of each individual participant, to make sure that the statistics derived from the data corresponded with behavior that was exhibited by individual participants. We are aware of the dangers of building models of language production solely on the basis of averaging behaviors of individuals: we always need to verify that such averages correspond with the behavior of individual language producers, since that is not necessarily the case (just like the average family with 2.5 children does not exist).

Studies into the difference between proximal and distal demonstratives often invoke the notion of contrastiveness (e.g., Maes and Noordman, 1995). In the current study, we did come across some contrastive pairs (of the form *this* ... *that* ...). These were, however, too limited in number (4 pairs on a total of 93 demonstrative referring acts) for any quantitative results. Interestingly, we also found that at least in Dutch co-occurring demonstrative and locative expressions need not always converge (we found instances of *die groene hier*, which is literally: that green here; loose translation: that green one here).

In the remainder of this section, we return to the findings on demonstratives for English that were reported in Gundel et al. (1993). These seem, at first sight, to contradict our findings. Closer inspection does, however, allow resolution of the apparent differences and leads to some suggestions for expanding the scope of our model of the difference between distal and proximal demonstratives. For this purpose, we will also discuss further statistics on the use of demonstratives and other referring expressions that were obtained from our observational study. We report these statistics at this point, rather than in the results section of this paper, because we want to keep a clear distinction between the statistics in the results section which were arrived at on the basis of prior hypotheses and the statistics in this section which we arrived at through *post-hoc* analysis of the data.

5.1 English versus Dutch Demonstratives?

In their English corpus, Gundel et al. (1993) found that both the distal and proximal demonstratives were used only once to refer to an "in focus" referent. All the remaining (26) occurrences of the proximal demonstratives consisted of references to activated referents. The remaining occurrences of the distal demonstrative were distributed 27 : 7 over activated and familiar referents. Thus both proximal and distal demonstratives tended to be used predominantly to refer to activated referents. However, distals were also used to refer to referents with the lower cognitive status *familiar*.

How do we relate these findings to the results reported in this paper? At first sight, it seems straightforward: we associate statuses that are high on the givenness scale with high accessibility and those lower on the scale with low accessibility. Under this interpretation our results for Dutch are in direct contradiction with the ones for English reported by Gundel et al. There is, however, an alternative interpretation that reconciles these at first sight incompatible data. For this interpretation, we need to take into account the fact that for the purposes of Gundel et al. the act of pointing functioned as a criterion for labelling an object as having a high cognitive status/being highly accessible (Gundel, personal communication). Thus the findings of Gundel et al. could reflect the fact that proximals are always indexical, whereas distals can also be non-indexical (i.e., occur without a pointing act). Post-hoc analysis of our data reveals precisely that pattern (see also Fig. 3): whereas 26 out of 27 proximals in our corpus are indexical only 24 out of 66 distals are indexical (a statistically highly significant distribution: $\chi^2_{df=1} = 27.69$, $r = 0.55$, $P < 0.001$. There is further converging evidence from a variety of sources which suggests that the link between distals and indicating is less strong than that between proximals and indicating.

Diachronic studies into the distal and proximal demonstrative terms have linked distals to the definite article. In particular, for Indo-European languages the definite article has been traced back to the distal demonstrative pronoun (Christophersen, 1939; Ayto, 1990). The fact that it was the distal that developed into the prototypical means for reference through describing, i.e., the definite description, suggests that there has been a stage at which the distal developed away from its prototypical use as device for indicating into a device for describing, thus no longer requiring the co-occurrence of other acts of indicating such as pointing.

5.2 Back to nearby and faraway

The folk-view of demonstratives is that distals refer to objects faraway from the speaker and proximals to close-by objects. Bühler (1934) worked out this idea in more detail, introducing the notion of distance to a deictic center/origo. More recent textbooks on language use, such as Clark (1996:168) also discuss the proximal/distal opposition using the labels nearby and faraway. In this section, we wish to investigate whether the persistence of this view makes sense in the light of recent empirical findings on referring acts including our own.

The data collected in our corpus appear to contradict the nearby/faraway analysis: we found that proximals are used more frequently to refer to entities with low accessibility than distals. Low accessibility has by some been equated with faraway and high accessibility with nearby; e.g., see Ariel's 1990 account of distal and proximal demonstratives. Under this interpretation, our results are not compatible with the traditional nearby/faraway analysis.

There is, however, an alternative way of looking at our results. For this we need to make an excursion into the use of pointing. Clark & Bangerter (2004) dub pointing acts to objects that are within reach of the speaker's arm *close pointing* and suggest that this type pointing allows for precise identification of the intended referent. They contrast it with *distant pointing*, where the things pointed at are out of arms' reach and pointing is less precise. In an experiment by Bangerter (2004), speakers tended to point less the more distant the referent was, presumably because speakers prefer precise close pointing and when this is not available seek alternative ways for identifying an object, in particular, description. Our data show that proximals always require a pointing act. Thus, if it is true that when speakers refer to more distant objects, they also use less pointing, then when speakers refer to more distant objects, we would expect them to also use fewer proximals. Thus, the association of proximals with nearby referents and distals with ones that are faraway is not only compatible with our analysis, but is even predicted by it.

6 Summary and Conclusions

The first half of this paper reports on a quantitative that explores the use of indexical distal and proximal demonstratives. That is, we focused on both proximal and distal demonstratives that are accompanied by a pointing act. We proposed a cognitive model of the use of these demonstratives which relates the choice between the distal and proximal form to the accessibility and importance of the intended referent. This relation was established via the notions of intense and neutral indicating: we argued that proximals are intense indicators and therefore are used to refer to objects that have a low accessibility and/or are important. In contrast, distals are considered to be neutral indicators and predicted to be used more frequently to refer to objects that have a high accessibility and/or are less important. To investigate the validity of this model we collected a corpus of task-oriented dialogues between pairs of Dutch participants. The hypotheses on the relation between proximals/distals and accessibility was borne out by the data. The relation between proximals/distals and importance was, however, refuted. A post-hoc analysis showed that importance might be linked with the use of a pointing act rather than the choice of demonstrative: important objects were pointed at significantly more often than less important objects.

In the second half of this paper, we extended the scope of our analysis beyond indexical demonstratives. We presented evidence from a number of sources (corpus-based, diachronic, experimental and introspective) showing that it is the distal demonstrative that is used for non-indexical reference, i.e., reference without a pointing act. This allowed us to reconcile results on use of demonstratives in Dutch and English and, last

but not least, to show how our model is compatible with, and even predicts the folk-view analysis of the distal/proximal distinction in terms of faraway and nearby.

Proximal and distal demonstratives can, as we pointed out at the beginning of this paper, be found in all languages. This led us to suspect that despite differences in use among individual languages, there might be a universal cognitive principle underlying the use of demonstratives across languages. We proposed that a principle based on the notion of intensity of indicating can play this role. Our starting point was the insight that indicating –the directing of attention– is an action which can be carried out with more or less intensity, and in this respect differs from symbolic and iconic signaling. We fleshed out this idea by investigating intensity of indicating in relation to the cognitive notions of accessibility and importance. We succeeded in linking accessibility via intensity of indicating to the proximal/distal distinction.

Note that our approach leaves room for differences in the use of distals and proximals among individual languages. For instance, though accessibility and importance are cognitive notions, they are relative to the ways that interlocutors perceive the world around them and their goals. Consequently, for different communities of language users and in different contexts, the use of proximal versus distal demonstratives can vary. We have emphasized that all languages have a pair of deictically contrastive demonstrative terms (proximal versus distal). Most European languages are restricted to this two-way distinction, however, some languages have *additional* terms either indicating a position between proximal and distal, or introducing the location of the hearer as a further reference point for accessibility and importance (see Diessel, 1999:50). It is beyond the scope of this paper to examine such further demonstrative terms in detail. The current proposal can, however, accommodate further demonstrative terms, since the notion of intensity of indicating allows for more than the current two levels of intensity (i.e., intense and neutral).

Through the notion of intensity of indicating, we have provided a viable alternative to the common equivocation in linguistics of high accessibility with proximity and low accessibility with distance. This alternative was made possible by the insight that the use of proximals versus distals needs explanation in terms of what speakers *do* when they use a proximal or a distal. The traditional approach assumes that the distal or proximal demonstrative merely reflects some feature of reality, i.e., distance of the object to the speaker, whereas in our, essentially *dynamic and action-oriented*, approach the difference between the two lies in what the speaker is doing, i.e., the force/intensity with which s/he directs the attention of the addressee. This gives rise to an alternative view on the possible meanings/uses of linguistic expressions which moves away from the idea of language as simply a tool for reflecting reality.

Finally, a note of caution is needed. The accessibility of the referent accounts only for part of the variation in use. Further studies need to be carried out to identify other factors which influence the choice between intense and neutral indicating.

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Figures

FIGURE 1

[SCHEMA-SIT.EPS AND PHOTO-SET-UP.EPS]

Caption: Schematic overview and photo of the experimental set-up, with B for builder and I for instructor

FIGURE 2

[DUPLO.EPS]

Caption: Side view of types of blocks from the LEGO DUPLO series used in the experiment

FIGURE 3

[DEMOS-GRAPHS.EPS]

Caption: Results on distribution of *Dutch* variants of the proximal this (...) (dit/deze (...)) and distal that (...) (die/dat (...)) over indexical and non-indexical referring acts

FIGURE 4

[GRAPHS.EPS]

Caption: Results on domain accessibility and importance for the *Dutch* variants of indexical this (...) (dit/deze (...)) and that (...) (die/dat (...))

Final draft of: Piwek et al. (2007). In: Journal of Pragmatics. Electronically published June 27 2007. doi:10.1016/j.pragm

Table

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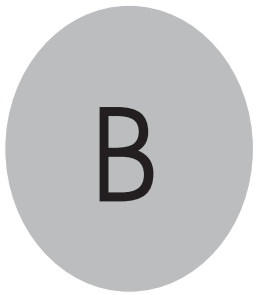
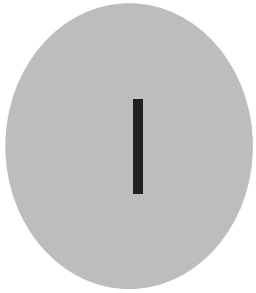
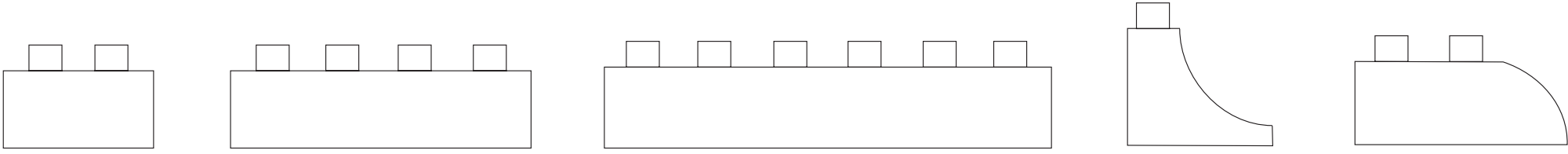


Foundation Plate with Blocks



Example Building



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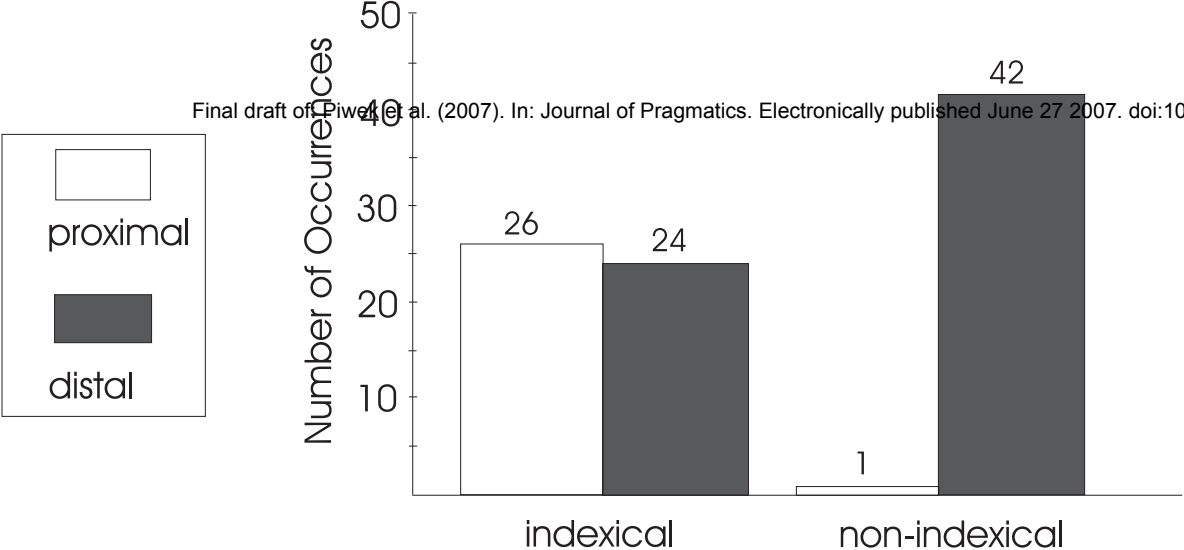
Final draft of Piwek et al. (2007). In: Journal of Pragmatics. Electronically published June 27 2007. doi:10



a. High Domain Accessibility

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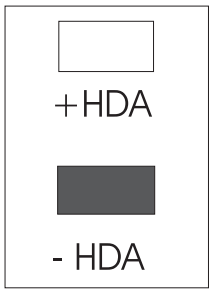

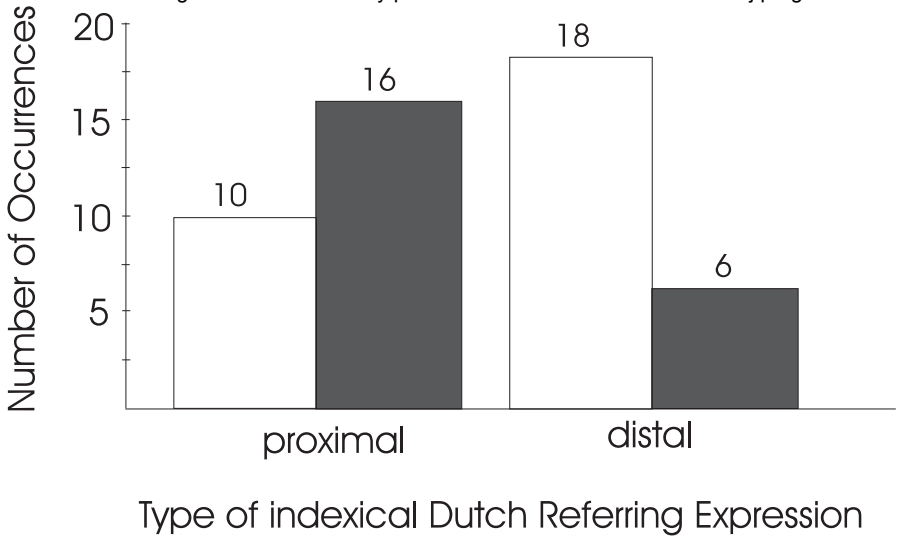
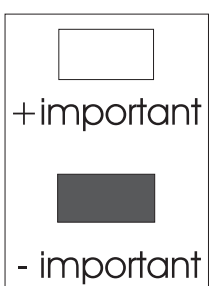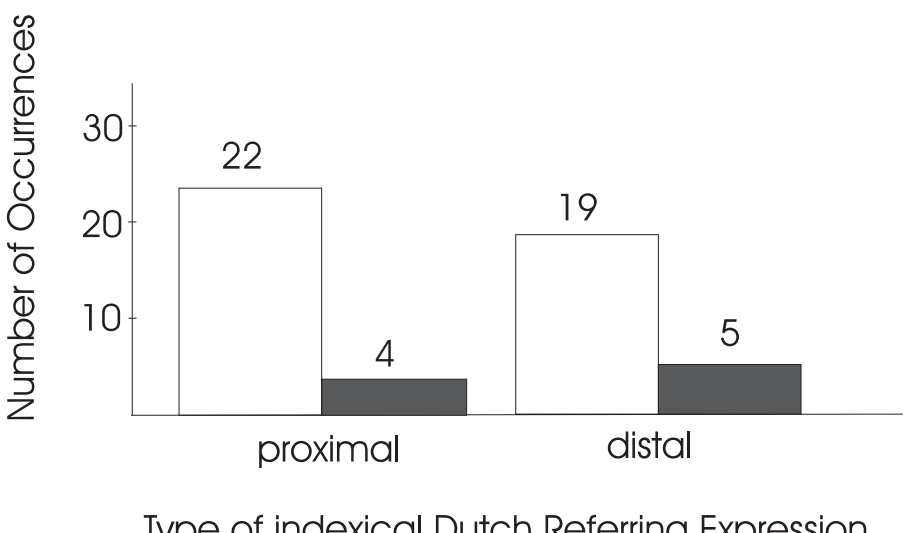
b. Importance