Deictic and Anaphoric Uses of Demonstrative Noun Phrases

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1 Outline

- The target of this talk are deictic uses of demonstrative noun phrases.
- But this is part of a larger project: a comparative study of the various definite uses of the different types of definite noun phrases of English (and, eventually, also of other languages).
- Definite uses of definite noun phrases: those uses which come with an *identification presupposition*: the interpreter must be able to identify the referent (or 'semantic value') of the noun phrase in some independent, non-circular way.
- I will use 'definite noun phrase use' as short for the clumsier 'definite use of a definite noun phrase'.
- The identification presuppositions of the different definite noun phrase uses vary between different definite noun phrase types and also between different uses of the same type.

  In large part the comparative analysis aimed for in this project reduces to the study of (i) the *form* and (ii) the (*resolution constraints* of the presuppositions associated with the different definite noun phrase uses.

- One respect in which the resolution constraints for such presuppositions can differ is the status of the information that can be used to resolve them.

  For instance, third person pronouns are different in this respect from definite descriptions.

  The resolution of the identification presuppositions of pronouns must either rely on the *discourse context* (anaphoric use) or on the *context provided by the immediate environment* (deictic use).

  The resolution of the identification presuppositions of definite descriptions may make use of *enceclopedic* contextual information as well.

  Evidence: Typically a majority of definite descriptions occurring in texts are 'discourse-new' (e.g. Fraurud (1990)).

- To account for the resolution of the identification presuppositions of definite noun phrase uses that are discourse-new we need a richer notion of context than is found in the formal semantics literature, which includes not only discourse contexts and 'Kaplanian' utterance contexts (Kaplan (1989)) but other components besides.

- The richer context notion that we will use is that of an *articulated context*

- This then is the first main feature of the analysis of definite noun phrases I am proposing: Definite noun phrase uses differ with regard to which components of the articulated context are available for their resolution.

- The second main feature of the analysis is that for many definite noun phrase uses interpretation and production are considered separately, but nevertheless as coordinated, and that both interpretation and production are analyzed as involving *entity representations*, by means of which hearer and speaker mentally represent the entity that the given noun phrase is being used to refer to.

- In order to be able to describe the role of entity representations in the production of definite noun phrases and their interpretation with enough precision we need to make fairly detailed assumptions about

  (a) the structure of mental content representations that speakers put into words and interpreters extract from them and, more generally, about

  (b) the structure of the mental states of which these content representations are part.

  I will assume that mental states are composed of

  (i) propositional attitudes as combinations of (a) a well-defined representation of their propositional content, and (b) a specification of their attitudinal mode

  (ii) entity representations, which can enter as argument-constituents into the content representations of different propositional attitudes.

  The assumptions about the structure of mental states that we will be making use of are inspired by psychological interpretations of DRT.

2 Pieces of the Framework

2.1 Old-Style DRT: a Simple Example

- The DRS in (1.b) is the semantic representation for the first sentence of the two-sentence discourse in (1.a).

  The DRS in (1.c) is the semantic representation for the two-sentence discourse as a whole.

- Resolution of the pronouns *it* and *his* in the second sentence make use of the discourse referents u and v in (1.b).

(1) a. Joseph has a donkey. It carries his fiancée.

b.
$$\boxed{\begin{array}{c} s_1 \quad j \quad d \\ \text{Joseph'}(j) \quad \text{donkey'}(d) \quad n \subseteq s_1 \\ s_1\text{: have'}(j,d) \end{array}}$$

c.
$$\boxed{\begin{array}{c} s_1 \quad j \quad d \qquad s_2 \quad u \quad v \quad f \\ \text{Joseph'}(j) \quad \text{donkey'}(d) \quad n \subseteq s_1 \quad s_1\text{: have'}(j,d) \\ \\ \text{fiancee-of'}(f,v) \quad u = d \quad v = j \\ n \subseteq s_2 \quad s_2\text{: carry'}(u,f) \end{array}}$$

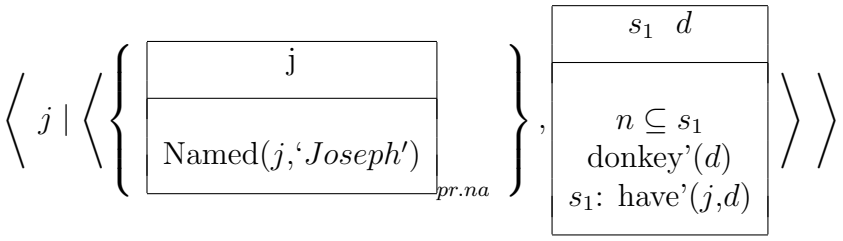
2.2 Presupositional DRT

Presuppositional DRT was first proposed in (Van Der Sandt (1989), Geurts (1999)).

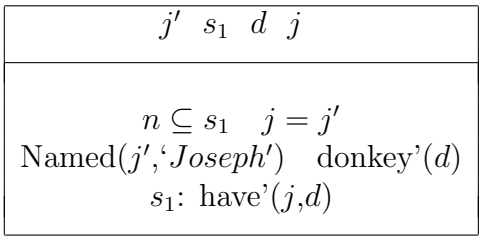
- In presuppositional DRT DRS construction proceeds in two stages.
- First, a *preliminary* DRS is constructed in which all linguistic presuppositions generated by triggering words and constructions are explicitly represented.
- Then, during the second stage, these presuppositions are resolved in the context in which the utterance is made.

  Often the discourse representation of the preceding part of the text, story or conversation – the 'discourse context representation' – plays a crucial part in this resolution process.
- The result of resolution is a non-preliminary DRS (like the two in (1)). This non-preliminary DRS can then be incorporated into the discourse context.

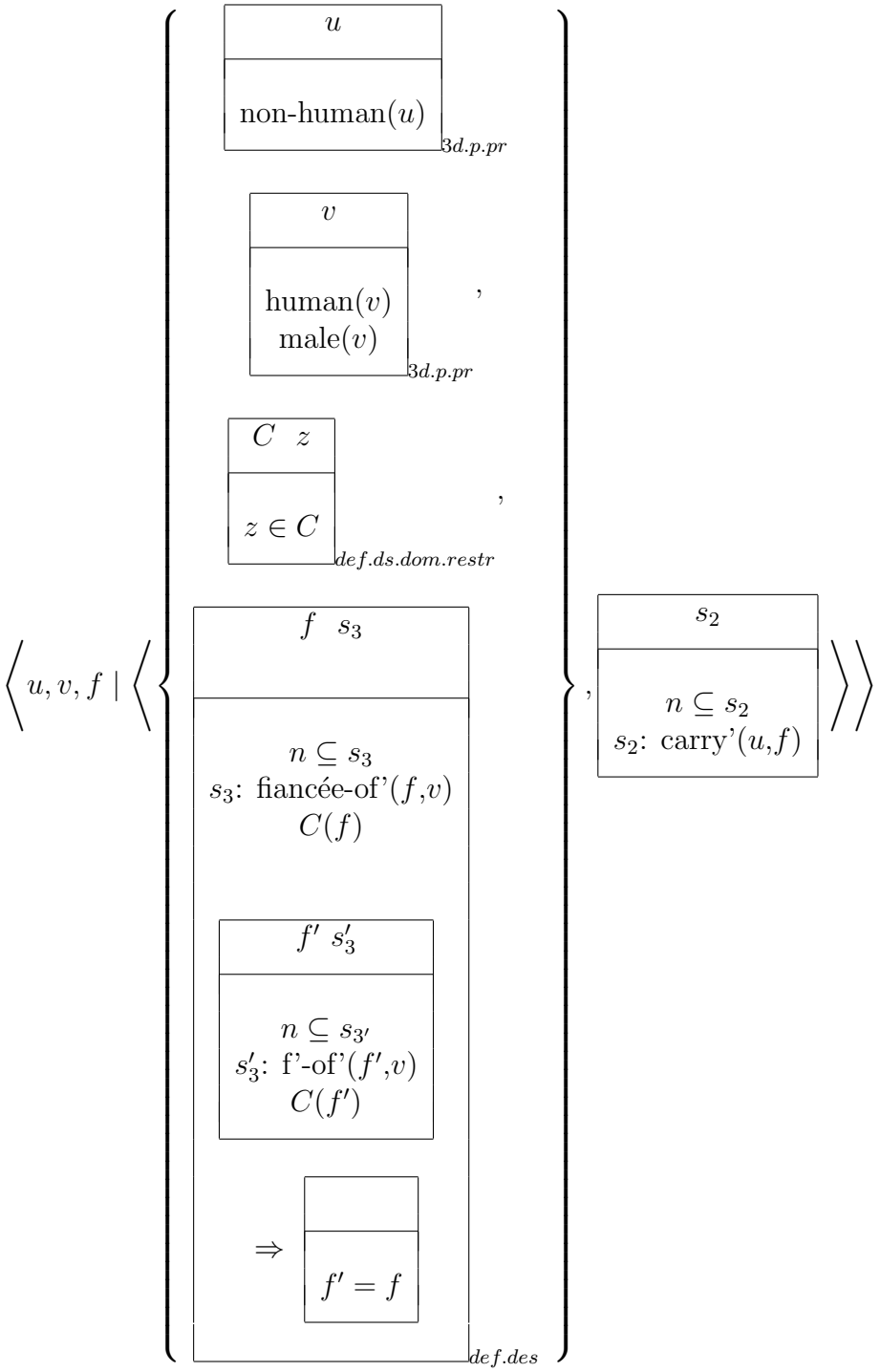
(2) a. Preliminary representation of the first sentence of (1):
('Jospeph owns a donkey')



b. After justification of the presupposition:



c. Preliminary representation of the second sentence of (1):
(It carries his fiancée.)


u
non-human(u)
3$d.p.pr$
v
human(v)
male(v)
3$d.p.pr$
C z
$z \in C$
$def.ds.dom.restr$
f s_3
$n \subseteq s_3$
s_3: fiancée-of'(f,v)
$C(f)$
f' s'_3
$n \subseteq s_{3'}$
s'_3: f'-of'(f',v)
$C(f')$
$\Rightarrow$
$f' = f$
$def.des$
s_2
$n \subseteq s_2$
s_2: carry'(u,f)
u, v, f |

d. (2.c) after justification of its presuppositions (using (2.a) as context)

e.

s_2 u v f
fiancee-of'(f,v) $u = d$ $v = j$ $n \subseteq s_2$ s_2: carry'(u,f)

f. Merge of (2.d) with (2.b):

j' s'_3 f' s_1 j d s_2 u v f
$j = j'$ t x y z s''_1 s''_2 | $t \subseteq s''_1$ $t \subseteq s''_2$ s''_1 : fiancée-of'(y, x) s''_2 : fiancée-of'(z, x) $\Rightarrow$ | $y = z$ $n \subseteq s_1$ Named(j',*Joseph*) donkey'(d) s_1: have'(j,d) $n \subseteq s'_3$ $u = d$ $v = j$ $f = f'$ $C = \lambda f'.\ f' = f'$ $C(f')$ $n \subseteq s_2$ s'_3: fiancée-of'(f',v) s_2: carry'(u,f)

2.3 DRSs as Utterance Representations and as Character Representations

(3) a. Representation of the proposition expressed by an utterance of the 1-st sentence of (1):

$$\boxed{\begin{array}{c} s_1 \quad j \quad d \\ \hline \text{Joseph'}(j) \quad \text{donkey'}(d) \\ n \subseteq s_1 \\ s_1\text{: have'}(j,d) \end{array}}$$

b. Representation of the character of the 1-st sentence of (1):

$$\lambda t.\boxed{\begin{array}{c} s_1 \quad j \quad d \\ \hline \text{Joseph'}(j) \quad \text{donkey'}(d) \\ t \subseteq s_1 \\ s_1\text{: have'}(j,d) \end{array}}$$

- The DRSs in (3.a,b) show how the dependence of content on utterance – and thus this aspect of Kaplanian character – can be made explicit within DRT.

2.4 Articulated contexts

(4) An *articulated context* is a 4-tuple $< K_{dis}, K_{enc}, K_{gen}, K_{env} >$, where

(i) K_{dis} is the representation of the discourse context (with possible occurrences of indexical discourse referents to capture the contributions of the utterance context);

(ii) K_{enc} is a set of representations of "known entities";

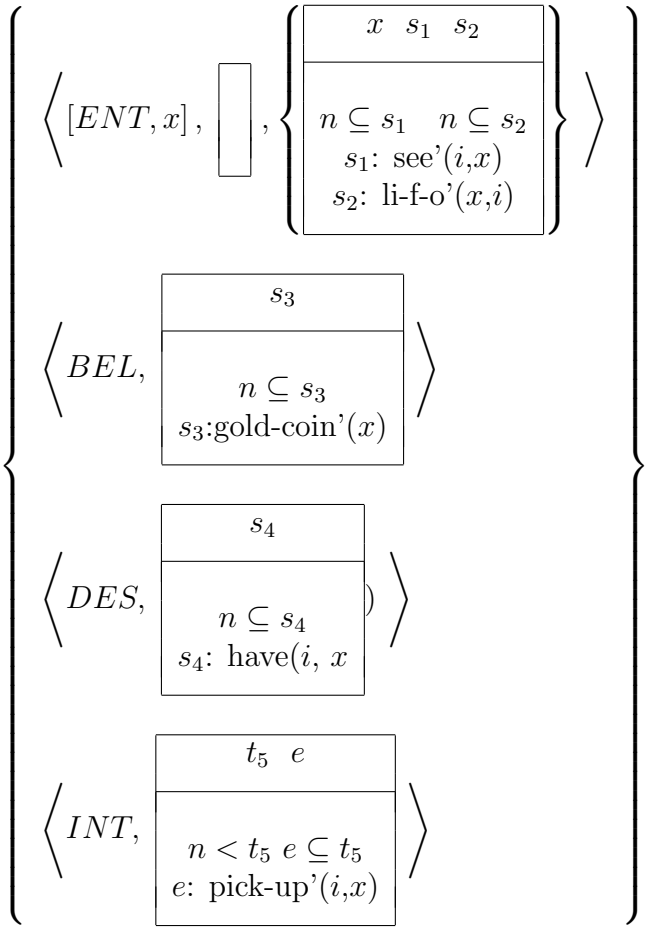
(iii) K_{gen} is a set of representations of items of "(generic) world knowledge";

(iv) K_{env} is a set of representations of elements from the immediate environment.

2.5 A DRT-based account of the structure of mental states and its incorporation into DRT

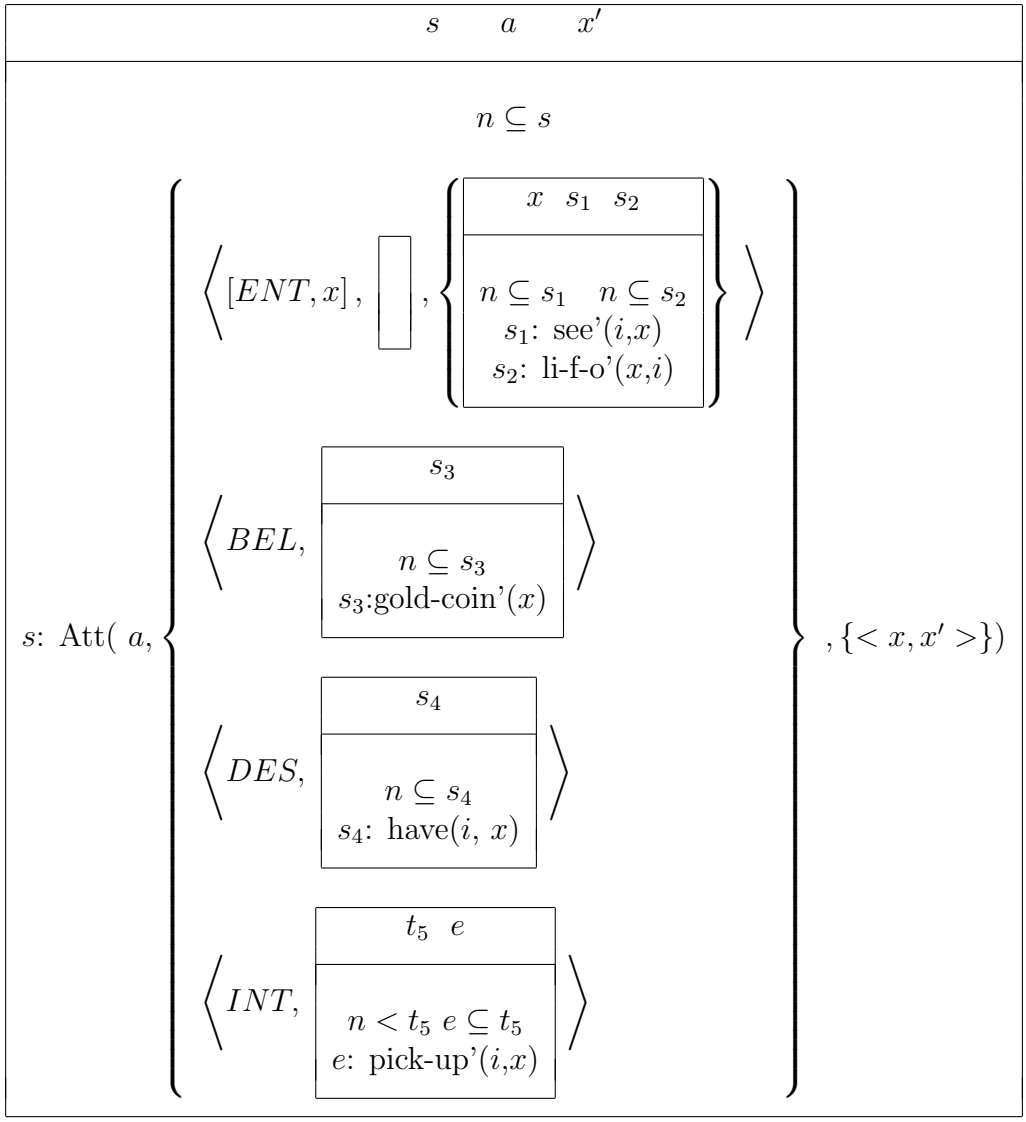
A mental state consisting of propositional attitudes and entity representations.

(5)



DRS representing that a is currently in a mental state of the type described by (5).

(6)



A well-known example from the literature:

(7) a. John thinks he will catch a fish and he wants Mary to fry it.

b. Representation of John's mental state as reported in (7.a):

$$\left\{ \begin{array}{l} \langle [ENT, m],\ K_{des}\ , \mathcal{K}\ \rangle\ , \\ \\ \left\langle BEL, \begin{array}{|c|}\hline e_1 \quad f \\ \hline n < e_1 \quad \text{fish'}(f) \\ e_1\text{: catch'}(i,f) \\ \hline \end{array} \right\rangle , \\ \\ \left\langle DES, \begin{array}{|c|}\hline e_2 \quad u \\ \hline n < e_2 \\ u = f \\ e_2\text{: fry'}(m,u) \\ \hline \end{array} \right\rangle \end{array} \right\}$$

c. Semantic representation of the attitude report (7.a):

$$\begin{array}{|c|}\hline s \qquad j \qquad m' \\ \hline \\ n \subseteq s \qquad \text{Named}(j,\ \textit{John}) \qquad \text{Named}(m', \textit{Mary}) \\ \\ s\text{: Att}(\ j, \left\{ \begin{array}{l} \langle [ENT, m],\ K_{des}\ , \mathcal{K}\ \rangle\ , \\ \\ \left\langle BEL, \begin{array}{|c|}\hline e_1 \quad f \\ \hline n < e_1 \quad \text{fish'}(f) \\ e_1\text{: catch'}(i,f) \\ \hline \end{array} \right\rangle , \\ \\ \left\langle DES, \begin{array}{|c|}\hline e_2 \\ \hline n < e_2 \\ e_2\text{: fry'}(m,f) \\ \hline \end{array} \right\rangle \end{array} \right\} , \{< m, m' >\}) \\ \\ \hline \end{array}$$

2.6 Entity Representations as parts of Mental State Representations

I will refer to the representation formalism that includes both representations of the forms (5) and (7.b) and representations of the forms (6) and (7.c) as 'MSDRT' (for 'Mental State DRT') (See Kamp et al. (2011), although the term 'MSDRT' is not used there).

MSDRT assumes that representations of the propositional contents of thoughts are DRSs.

(However, many of these DRSs are *improper*, in that they contain the distinguished drefs of on or more ERs.)

Entity Representations on the other hand, are structures of a form (and with a role) not found in older (and possibly more familiar) versions of DRT.

(At this point a number of questions about form and origin of ERs remain unsettled. This will show also in what follows.)

In the version adopted here entity representations have the following formal features:

- An entity representation consists of three components:

  (i) A component which identifies it as an *entity* representation (rather than some kind of propositional attitude representation).

  (ii) A component with descriptive information about the represented entity. This information is in the form of a DRS.

  (iii) A set consisting of zero or more *internal anchors*.

  An internal anchor of an ER identifies it as being causally connected to the entity it represents, in some way that enables it to function as a representation of *that and no other* entity.

- Internal anchors come in different types.

  Among these are anchors based on current perception as well as on certain kinds of indirect perception – the person producing the cry or the knocking sounds I hear, the author of the text I am reading, the individual whose DNA I am looking at through my microscope etc?

  In addition there are corresponding *memory-based* anchors.

  N.B. I assume that ERs have their individual existence through time, as separate components of mental states, and that their anchors change – e.g. from perception-based to memory-based – as the present becomes the past.

- Of special importance here are *vicarious* anchors.

  A vicarious internal anchor is established by some agent H who is witness to an act of reference by another agent S, and who, on the basis of this, establishes an entity representation ER for the referent of that act.

  The vicarious anchor of that representation witnesses this referential intention on the part of H, and makes ER into a representation of that referent.

  The relation in which a vicariously anchored ER stands to its referent by virtue of the relation signalled by its vicarious anchor is a complex one:

  The agent's own referential intention connects the representation with the other agent's referring act and that act relies on some antecedent relation between the referent and that second agent.

  (Often, and perhaps always, this latter relation will involve an entity representation on the part of the second agent; the cases on which we will focus below in connection with reference by names will all be of this kind.)

- The form of vicarious internal anchors:

(8) $\boxed{e\text{: refer}(a, \alpha, x)}$

- Formal definitions:

(9) a. of *entity representation*

An *entity representation* is a triple of the form $< [ENT, x], K_{descr}, \mathcal{K}_{anch} >$, where x is a discourse referent, K_{descr} is a DRS and $\mathcal{K}_{anch}$ is a set of anchor-DRSs.

b. of *unanchored*, *singly anchored* and *multiply anchored* entity representations

An entity representation ER is *unanchored* iff $\mathcal{K}_{anch} = \emptyset$; otherwise ER is *anchored*. ER is *simply anchored* if $\mid \mathcal{K}_{anch} \mid = 1$ and *multiply anchored* if $\mid \mathcal{K}_{anch} \mid > 1$.

(10) a. of *sound anchored entity representation*

An anchored entity representation ER is *sound* iff each of its internal anchors has a corresponding external anchor.

b. of *(in)coherent multiply entity representation*

An anchored entity representation ER is *incoherent* if it has two internal anchors with distinct corresponding external anchors. ER is *coherent* if it is not incoherent.

2.7 Status and Dynamics of Articulated Contexts

- Articulated contexts were originally intended as an elaboration of the notion of Common Ground.
- In this talk it is assumed that the hearer H and the speaker S each have their own articulated context.

  In addition S is assumed to make assumptions about the articulated context of H.
- Articulated contexts were adopted to account for facts such as this:

  When an entity is first introduced into the discourse, this can be done by using a proper name, definite description or demonstrative phrase; it is only after this has been done that the entity can be referred to through the use of (anaphoric) pronouns.

- Account of this fact: The proper name, definite description or demonstrative phrase can be interpreted by making use of an entity representation from K_{enc} or K_{env}.

  This interpretation renders the entity representation formally a part of K_{dis}.

  Once that has happened, 3d person pronouns, whose interpretation is by and large limited to K_{dis}, can be used to refer to the represented entity as well.

- Articulated contexts show other dynamic effects as well (Global growth of K_{enc}, local growth of K_{env}).

3 Demonstrative Noun Phrases and their Uses

- **Different uses of demonstrative noun phrases**

(11) a. If a Texan steals the cattle of another Texan, that Texan will be very cross.
(Anaphoric use)

b. That blackbird sitting over there on the lawn seems to have something wrong with its wing.
(Direct deictic use)

c. Do you recall that guy in that black leather jacket at the party last night? I wouldn't mind getting to know him a little better.

d. There was this farmer riding along on one of those huge combine harvesters along the highway, at a snail's pace. ..

e. The core of this paper is an excerpt from a larger project.

f. (Last minute addition, March 21, 2013)

That which is put last is always meant to be best.

(Question: Why is it that this is possible with *that* but not with *this*?)

3.1 Deictic Uses of Demonstratives

We now turn to deictic uses of demonstrative noun phrases. Throughout this discussion we will assume that:

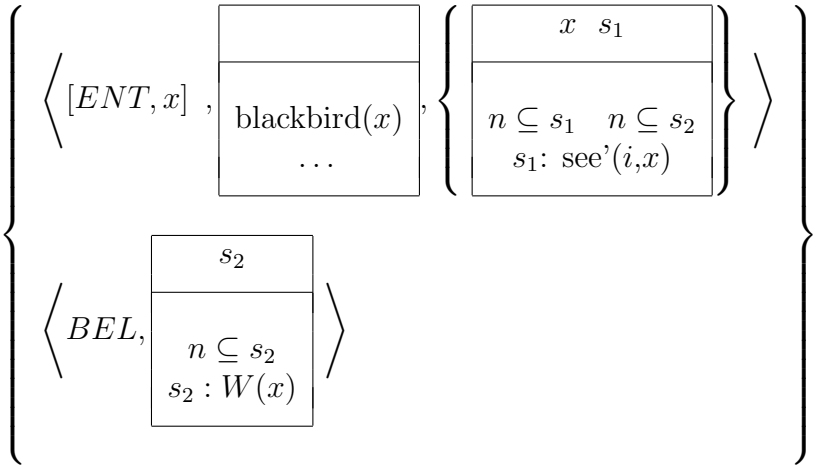
(i) We are only dealing with demonstrative reference to entities that can be observed in the usual straightforward sense in which we can observe physical objects.

(ii) In order to interpret a demonstrative phrase the recipient H must make use of an entity representation ER_H in his environment component K^H_{env}.

(iii) The speaker S too must have an entity representation ER_S in her K^S_{env} in order to make use of the demonstrative she chooses to use.
The referential intention she has in using the demonstrative is then to refer to the entity represented by this ER_S.

(iv) S's use of the demonstrative she has chosen has been *successful* if the entity representation ER_H H uses to identify the referent of S's use of the demonstrative represents the same entity as the entity representation ER_S that S relied on in choosing her demonstrative.

(12) That blackbird sitting over there on the lawn seems to have something wrong with its wing.

(13)


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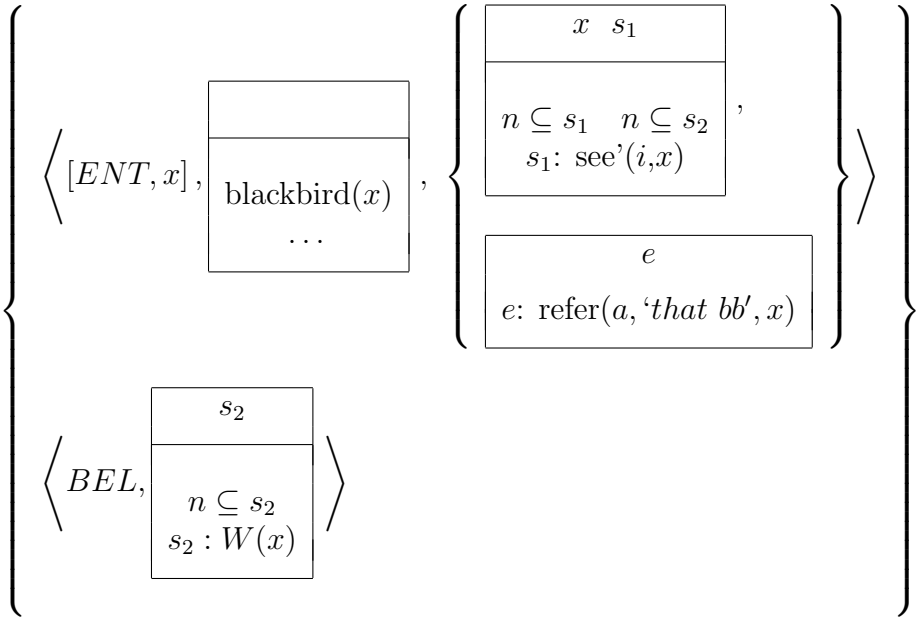

3.2 Misfirings

- Whenever verbal communication requires coordination of entity representations entertained by speaker and hearer there is room for error:

  the entity representation used by the hearer may fail to refer to the same entity as the entity representation used by the speaker.

- Of some interest are certain misidentifications of the referents of demonstrative phrases which involve environments that extend into the past.

- Consider the case where you and I are walking along the street and at one point you say to me either one of (15.a) and (15.b).

  (15) a. That man who was standing on the corner over there yesterday is standing there again today.

  b. That man who is standing on the corner over there was also standing there yesterday.

- Let us assume that you are wrong.

  Question: What does that entail about your mental state and what are the various things that can happen when I interpret your words?

- Another case of a similar sort:

  Someone comes into David Kaplan's office and addresses him with the following words:

  (16) That portrait of Spiro Agnew on the wall behind you rally brings out the man's remarkable intelligence.

- Kaplan responds to these words by laughing heartily at what he takes to be a good joke.

  Indeed, this is a joke, but it isn't quite the one he thinks it is.

  Kaplan has had, for many years, a portrait of Carnap on the wall behind his desk. The portrait is, he and every one else who has seen it agree, that of someone who clearly looks intelligent. That makes the notion that the person portrayed could have been Spiro Agnew all the more hilarious.

But things aren't quite as he takes them to be. A little earlier, while he was concentrating hard on a passage he was writing, someone sneaked into the room and exchanged his portrait of Carnap for a portrait that truly is of Agnew. And that is the portrait that the person who says (16) to him is referring to.

- The speaker's words might still be considered funny, for the portrait shows Agnew to be just as daft as all his other portraits.

  But they are not funny in quite the way in which Kaplan thinks they are.

- This case is a variation on the one discussed by Kaplan himself, In that other case it is Kaplan who says:

  (17) That is one of greatest philosophers of the 20th Century.

  In both (16) and (17) the confusion is Kaplan's; and on the present analysis it involves a flaw of the ER he uses, as producer in (17) and as interpreter in (16).

- (18) variant of the original example (17) in which it is also Kaplan who is speaking, but which is otherwise more closely to (16)

  (18) That is a portrait of one of greatest philosophers of the 20th Century.

- In both (16) and (18) Kaplan's ER involved in the communication is for the portrait of Carnap that has always been on his wall and that unbeknownst to him has just been replaced.

- In case (16), where K is the addressee, K uses an ER to interpret the speaker's use of her demonstrative which fails to be coreferential with the speaker's ER.

- In case (18), where Kaplan is the speaker, the referent of the ER he is trying to express in words by using the demonstrative he utters contains false information: it is not on the all behind him and so cannot be verbally realized by using the demonstrative *that* while deictically demonstrating a portrait distinct from the ER's referent.

So, an interpreter of his words who follows the rules of the language will take Kaplan to refer to something other than what he is trying to refer to.

3.3 Is the descriptive content of a complex demonstrative ever/never/sometimes part of the content of what is said?

- The representation of information obtained from sentences containing a definite noun phrase is as a rule *distributed over* (a) the representation of the propositional content and (b) the (new or updated) entity representation that is involved in the interpretation of the definite.

- More specifically, some of the descriptive information contained in the definite noun phrase can get stored in the entity representation.

- In fact, as far as I can tell, there is a certain amount of flexibility here: such information can be incorporated within the ER, but it can also be added to the propositional representation; and finally it could be made part of a separate propositional representation.

  These decisions can make a difference to what propositional content is being represented, although when, and what difference, depends also on further theoretical assumptions regarding the relationship between mental representations and the intensional contents they represent.

  Question: To what extent does this flexibility reflect a genuine looseness of language as a communication tool and to what extent is it an artifact (and thus a weakness) of the theory as it stands?

- (Some of this flexibility seems to be authentic. At least, this is what much in the philosophical literature on reference since Donnellan's work from the sixties (**?**) suggests.

  In particular, part of the explication within the present framework of the distinction between interpreting a definite description as *attributive* or *referential* is that when the description is interpreted attributively, then its descriptive content becomes part of the propositional representation and when it is used referentially, then its descriptive content does not.

- An important aspect of the general picture of which the analysis of demonstratives and other definite noun phrases is meant to fit has to do with how human beings make use of the various kinds of information carried by the representations they form, and in particular with what interpreters do with the content representations they extract from linguistic input.

  Salient among the manipulations of content representations that constitute our mental lives are formally driven inferences – those that are the targets of the theory of practical and theoretical reasoning.

  A theory of theoretical and practical inference based on the representational structures I have proposed is still outstanding.

3.4 Similarities between K_{dis} and K_{env}?

- A remarkably consistent cross-linguistic pattern is this: the same noun phrase types can be used both deictically and anaphorically.

- In our terms this means that with regard to their availability for definite noun phrase interpretation K_{dis} and K_{env} seem to be on a par.

  What do K_{dis} and K_{env} have in common that could account for their playing these parallel roles in definite noun phrase interpretation?

- One common feature of K_{dis} and K_{env} is that both are verifiably part of the common ground, as it unfolds in the course of complex verbal communication events. Both are, one might want to say, part of what's on the evolving scoreboard.

- Texts and conversations create their own 'linguistic' environments, in which demonstrative phrases can zero in on their referents via their presence on the scoreboard.

  The special mechanisms which determine the referents of 'demonstrative' phrases by exploiting the special structure of such 'linguistic environments' are those that we designate as 'anaphoric'.

- Anaphoric mechanisms tend to be different from the mechanisms that are involved in determining the referents of deictic uses even where the same noun phrase types are involved. This shouldn't be surprising. Here are two reasons why this should be expected:

On the one hand linguistic environments have their own structure, imposed by the linearity of speech and more specifically by the hierarchical features of the organization of discourse and of the individual sentences that make it up.

On the other hand linguistic environments are truly ubiquitous: we find ourselves in such an environment as soon as the verbal communication in which we are engaged extends beyond a single self-contained ('atomic') utterance. This will often be the case in face-to-face communication, where the context component K_{env} is defined.

But linguistic environments are also prominent, and particularly so, in communication that is not face-to-face.

It is no surprise, then, that English and other languages should have a range of different expressions that can function anaphorically and special mechanisms that govern their anaphoric use.hir

Third person pronouns are often presented as the paradigm example. But it is important to be aware that they just on of many.

- A challenge: To what extent can we unify our account of deictic and anaphoric reference so that the differences can be explained in terms of the distinctive structural properties of K_{env} and K_{dis}?

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