

# MSDRT-based Communication-theoretic Analyses of Definite Noun Phrases: The case of Proper Names

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# The larger Project

- To gain insight into the referential functions and referential properties of different definite noun phrases (DPNs) by looking at them as devices for reference communication.

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- To gain insight into the referential functions and referential properties of different definite noun phrases (DPNs) by looking at them as devices for reference communication.
- The Definite Noun Phrases of English:
  - ▶ Definite Descriptions
  - ▶ Third Person Pronouns
  - ▶ First and Second Person Pronouns
  - ▶ Simple Demonstratives (*this/that/these/those*)
  - ▶ Complex Demonstratives (*this man/that bird on the roof over there*)
  - ▶ Proper Names

# The larger Project

- The questions to be answered:
  1. What enables the speaker  $S$  to use a DPN of a given type to refer to a particular entity on a given occasion?
  2. What motivates  $S$  to choose this DPN in case there are alternative DPNs that she could also have used?
  3. Under what conditions is it possible for the recipient  $H$  to correctly interpret the DPN used by  $S$ ?
  4. What is involved in the correct interpretation of DPNs?

# The larger Project

- To be able to say something of interest about these questions we need to make certain assumptions:
  - (a) about the processes of language generation and interpretation; and
  - (b) about the cognitive environments within which these processes take place.

# Mental States

- Cognitive environments:

We assume that the mental states of speaker S and hearer H are given by mental state descriptions of MSDRT.

More specifically, we identify the relevant parts of the mental states of S and H in terms of ADRSs and IADRSSs.

- Recall: according to the (IA)ADRS description regime:
  1. A mental state consists of
    - (i) propositional attitudes and
    - (ii) entity representations.

# Mental States

- Propositional attitudes are of the form  $\langle MOD, K \rangle$ , where
- $MOD$  is an attitudinal mode indicator (e.g.  $BEL$  for belief,  $DES$  for desire etc.)
- $K$  is the representation of a propositional content.

In general  $K$  has the form of an MSDRS.

(In simple cases  $K$  is just a DRS.)

# Entity Representations

- We now assume that Entity Representations have the following general form:

$\langle [ENT, x], K_{descr}, \mathcal{K}_{anch} \rangle$  , where

- (i)  $x$  is a discourse referent,
- (ii)  $K_{descr}$  is a DRS (which contains certain information about the represented entity)
- (iii)  $\mathcal{K}_{anch}$  is a set of internal anchor-DRSs.



# Entity Representations

- It is important to distinguish between the following three possibilities for anchor sets:

(1)  $\mathcal{K}_{anch} = \emptyset$ : the Entity Representation ER is *unanchored*.

Unanchored ERs refer (when they do) via unique satisfaction of  $K_{descr.}$ )

(2)  $|\mathcal{K}_{anch}| = 1$ : ER is *simply anchored*.

(3)  $|\mathcal{K}_{anch}| > 1$ : ER is *multiply anchored*.

# Entity Representations

- An Entity Representation can contribute its distinguished discourse referent to the content representations of propositional attitude component.

The effect of this is that the content representation determines a proposition that is *singular* with respect to the referent (external anchor) of the ER

- A consequence: Very many propositional contents come out as singular propositions, and many as ‘multiply’ singular (i.e. as singular with respect to two or more entities).

# Entity Representations

- Anchor DRSs express information about the way(s) in which the ER is causally connected to its referent.
- There are various types of anchor DRSs, reflecting different kinds of causal connections between an ER and its referent.
- Of special importance for the present Project:
  - (i) perceptual anchors
  - (ii) vicarious anchors
  - (iii) memory-shifted anchors
- Unsolved questions about internal anchors:
  - ▶ What forms can the different types of anchor DRSs take?
  - ▶ What happens to anchor sets when they get big?

## Example

- Example: Entity representations of S on the part of H before and after S has used the name *Julie* to refer to some person called ‘Julie’.

S herself is called ‘Mary’ and that is part of H’s representation of her.

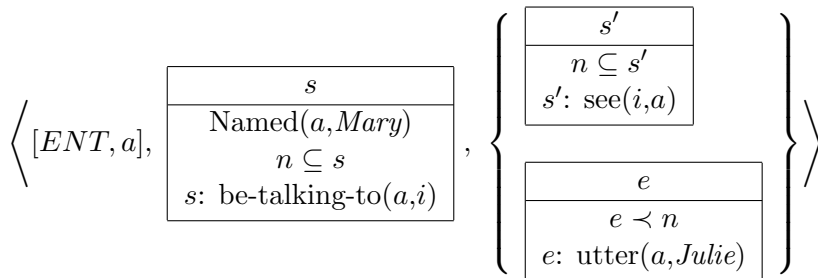
H’s representation of Mary before she speaks:

$$(1) \left\langle [ENT, a], \begin{array}{|c|} \hline s \\ \hline \text{Named}(a, \textit{Mary}) \\ n \subseteq s \\ s: \text{be-talking-to}(a, i) \\ \hline \end{array}, \left\{ \begin{array}{|c|} \hline s' \\ \hline n \subseteq s' \\ s': \text{see}(i, a) \\ \hline \end{array} \right\} \right\rangle$$

# Example

- Example, continued: H's entity representation of S after she uttered *Julie* to refer to Julie

(2)



## Example

- Example, continued: H's entity representation of Julie on the basis of S's reference to her.

$$(3) \left\langle [ENT, j], \begin{array}{|c|} \hline s \\ \hline \text{Named}(j, \textit{Julie}) \\ \hline \end{array}, \left\{ \begin{array}{|c|} \hline e \\ \hline e < n \\ e: \text{refer}(a, \textit{Julie}, j) \\ \hline \\ \hline ? \\ \hline \end{array} \right\} \right\rangle$$

## Example

- Example, continued: H's entity representation of Julie on the basis of S's reference to her.

$$(3) \left\langle [ENT, j], \begin{array}{|c|} \hline s \\ \hline \text{Named}(j, \textit{Julie}) \\ \hline \end{array}, \left\{ \begin{array}{|c|} \hline e \\ \hline e < n \\ e: \text{refer}(a, \textit{Julie}, j) \\ \hline \\ \hline ? \\ \hline \end{array} \right\} \right\rangle$$

- Note: 1. The anchor of (3) is an example of a vicarious anchor.  
2. Because (3) contains the discourse referent  $a$ , it presupposes H's Entity Representation (2) for S.  
3. Because of the conditions 'Named( $a$ , *Mary*)' and 'Named( $j$ , *Julie*)' (2) and (3) are *labeled* Entity Representations.

# Proper Names: the Standard Referential Use

- The *standard use* of proper names:
  - ▶ S can use a proper name  $N$  only as the label of an  $N$ -labeled ER that is part of her mental state.

(That is, the 2-nd component of the ER must contain the condition 'Named( $x,N$ )'.)

When S uses  $N$  as label of an ER, then that use she makes of  $N$  refers to the ER's referent.
  - ▶ A standard use of  $N$  presupposes that the addressee H has an  $N$ -labelled ER which represents the referent of this use of  $N$  and that H interprets S's use of  $N$  as referring to the referent of that ER.



## Proper Names: the Standard Referential Use

- Assumption:

One effect of H using an N-labeled ER to interpret S's standard referential use of a name N is the addition of a vicarious anchor to this ER which records that this ER was used by H to interpret S's use of N.

A vicarious anchor reflecting H's use of an ER to interpret S's standard use of *N* is always added to this ER

(N.B. Such a vicarious anchor is not only added when H accommodates an ER in order to interpret N.)

- The general principle: Reuse of an ER, in recognition or interpretation, always leads to the addition of new anchors.

This is how ERs end up with multiple anchors.

## Proper Names: the Standard Referential Use

- Example: The speaker Mary says to H:

(4) “Julie is in Paris.”

We assume that H has an ER  $ER_{m_h}$  for Mary, as the person who is speaking to him, and ERs  $ER_{j_h}$  and  $ER_{p_h}$  for Julie and Paris and that he uses these ERs in his interpretation of (4).

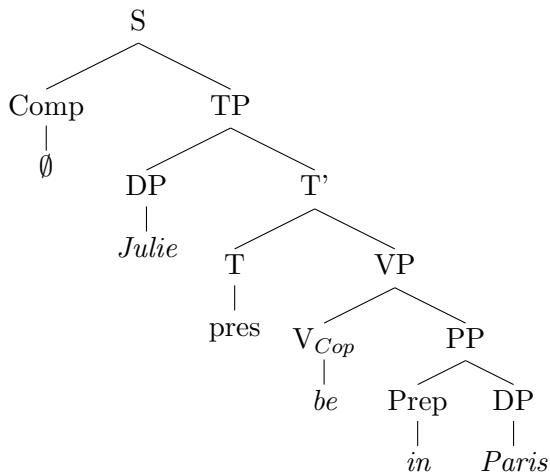
- Here follows one possible reconstruction of what happens when H interprets (4)

(The reconstruction makes use of the DRS Construction Algorithm that I have been developing partly in the course of teaching Semantics II and Semantics I over the last few years in the Linguistics Department.)

## Proper Names: the Standard Referential Use

- According to this reconstruction H's identification of the content of (4) involves a parse for the sentence as in (5)

(5)

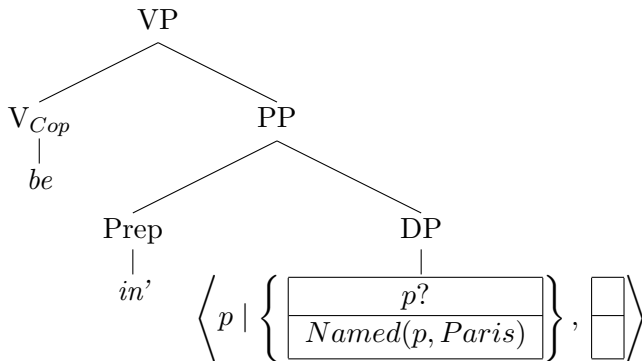


## Proper Names: the Standard Referential Use

- Logical Forms for the nodes of this tree are obtained by bottom up composition

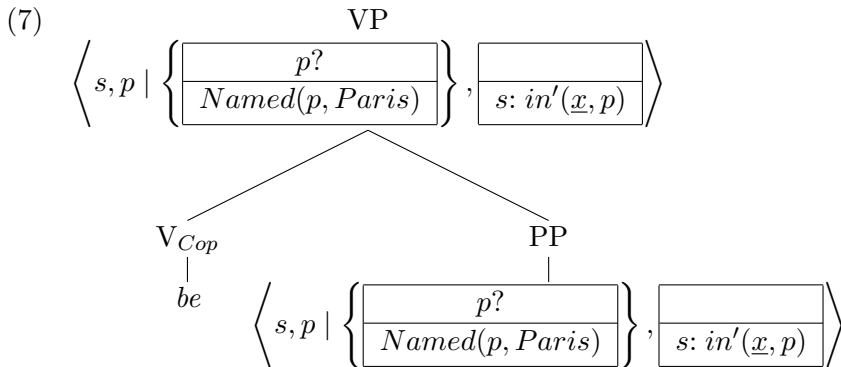
For reasons of space we show this process on several successive slides.

(6)



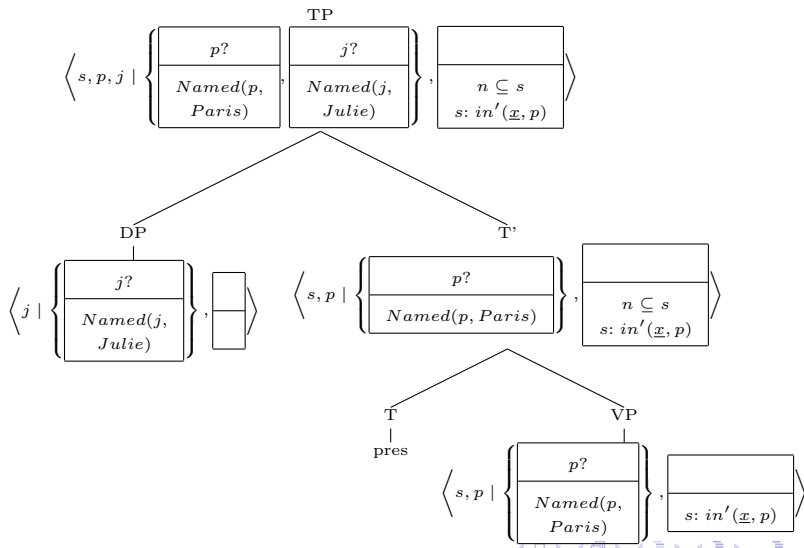
# Proper Names: the Standard Referential Use

- Logical Forms for the PP and VP nodes:



# Proper Names: the Standard Referential Use

- Logical Forms for the subject DP, T' and TP nodes:



## Proper Names: the Standard Referential Use

- The Logical Form for the S-node is the same as that for the TP-node.

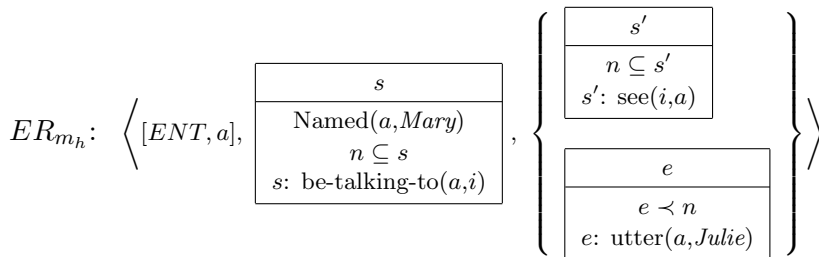
This Logical Form is shown once more, now on a more readable scale.

$$(8) \left\langle s, p, j \mid \left\{ \begin{array}{|c|c|} \hline p? & j? \\ \hline \text{Named}(p, \textit{Paris}) & \text{Named}(j, \textit{Julie}) \\ \hline \end{array} \right\}, \begin{array}{|c|} \hline \\ \hline n \subseteq s \\ s: \textit{in}'(j, p) \\ \hline \end{array} \right\rangle$$

- The next task for H is to resolve the presuppositions in (8).

# Proper Names: the Standard Referential Use

- Let the ERs  $ER_{m_h}$ ,  $ER_{j_h}$  and  $ER_{p_h}$  that H has at this stage for the speaker Mary, for Julie and for Paris be as follows:





## Proper Names: the Standard Referential Use

$$ER_{j_h} : \left\langle [ENT, j_h], \begin{array}{|c|} \hline \\ \hline \text{Named}(j_h, Julie) \\ \hline \end{array}, \mathcal{K}_{j_h} \right\rangle$$

$$ER_{p_h} : \left\langle [ENT, p_h], \begin{array}{|c|} \hline \\ \hline \text{Named}(p_h, Paris) \\ \hline \end{array}, \mathcal{K}_{p_h} \right\rangle$$

- These ERs enable H to resolve the two proper name presuppositions of (8).
- This takes the form of identifying the queried drefs  $j$  and  $p$  of the presuppositions with the distinguished drefs of these ERs.
- After this identification the presuppositions can be discarded and the drefs from the store transferred to the Universe of the non-presuppositional DRS.

## Proper Names: the Standard Referential Use

- The result is shown in (9).

(9)

$s \quad j \quad p$
$j = j_h \quad p = p_h$
$n \subseteq s$
$s: in'(j, p)$

In (9) the drefs  $j$  and  $p$  are essentially redundant.

After their elimination (9) becomes (10).

(10)

$s$
$n \subseteq s$
$s: in'(j_h, p_h)$

## Proper Names: the Standard Referential Use

- What is the relevant part of H's mental state that results from this interpretation process?

That question depends on what H does with the information represented in (10):

Does H accept what Mary has just said and adopt (10) as a belief?

Or does he doubt that what she has told him is true?

Or is he convinced that (10) can't be true?

- Interpreters mostly make an instant choice between these possibilities.

But sometimes they don't; they keep wondering whether to trust what they have been told, waiting for evidence that will tip the scales.

## Proper Names: the Standard Referential Use

- We will assume that the choice between these different possibilities is separate from identifying the content and involves an additional step.

Before that step is made, the content is available to H as ‘mere content’.

We treat the having of a content as ‘mere content’ as an attitudinal mode, given by the MOde Indicator *CON*.

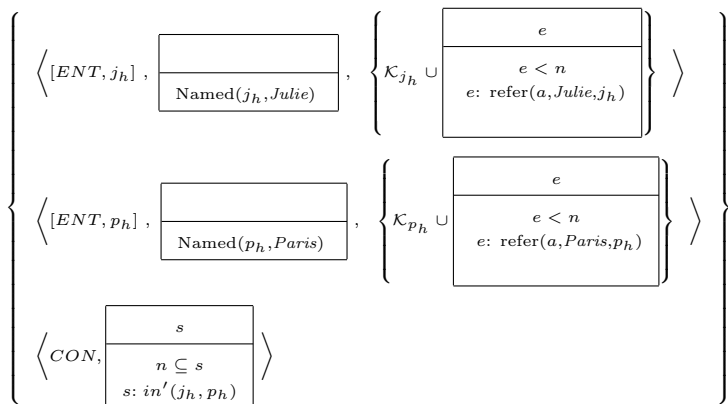
So the new propositional component of the H’s mental state will have the form:

$$\left\langle CON, \begin{array}{c} s \\ \hline n \subseteq s \\ s: in'(j_h, p_h) \end{array} \right\rangle$$

## Proper Names: the Standard Referential Use

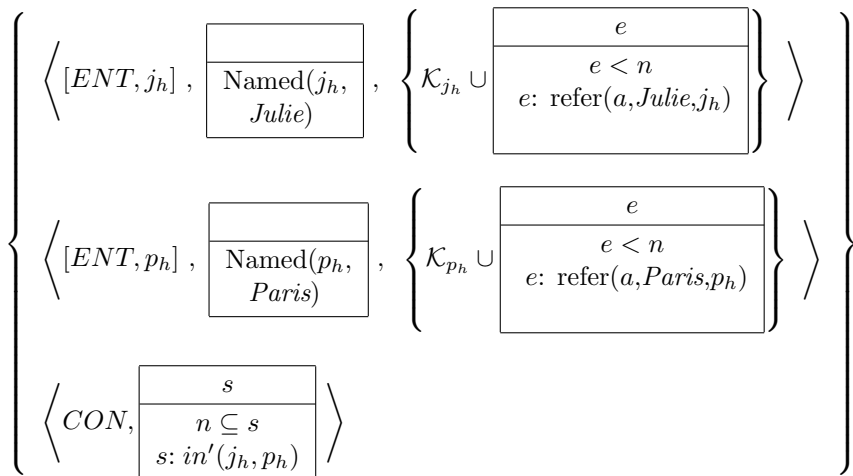
- The two ERs H has used to interpret the namers *Julie* and *Paris* are now updated with vicarious anchors recording their use.

So the part of H's mental state that has changed looks like this:



# Proper Names: the Standard Referential Use

- Repeat:



## Common Ground

- Common Ground is the sharing of assumed content (Stalnaker).

Thus defined, Common Ground is not the same as Common Knowledge or Shared Belief.

Is Common Ground the same as a shared confidence that the content has been correctly identified?

This isn't clear to me.

But such shared confidence that H has correctly identified the content of what S has said is a crucially important aspect of verbal communication'

It is especially important in relation to disputes and debates.

If it weren't for shared confidence in successful meaning transfer debate would be impossible.

## Proper Names: the Standard Referential Use

- Things that can go wrong when using an ER to interpret a name:

- ▶ (i) H has no  $N$ -labeled ER.

In that case H will have to *accommodate* a vicariously anchored,  $N$ -labeled ER for the individual that S's use of  $N$  refers to.

- ▶ (ii) H has one or more  $N$ -labeled ERs, but not one that refers to the referent of S's given use of  $N$ .

Then there are two possibilities:

- (a) H realizes that none of his  $N$ -labeled ERs is coreferential with S's use and accommodates a new  $N$ -labeled ER as under (i).
  - (b) H erroneously uses one of his  $N$ -labeled ERs, and thereby gets S's message wrong.
- ▶ N.B. This is not an exhaustive list of possibilities; but it is enough to give an idea of what can go wrong.



## Introductory uses of Proper Names

- ER accommodation as part of the interpretation of standard uses of names is one mechanism through which names spread through a community.

(See Kripke: *Naming and Necessity*, Chastain *Reference and Context*)

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- But there are other, regular mechanisms for the spreading of names as well, involving *introductory* uses of proper names.

# Introductory uses of Proper Names

- Introductory<sub>1</sub> uses:

- (11) a. Meet my friend Joan.
- b. This is Manuela. Manuela will be with our project for the next six months.
- c. We recently acquired a poodle. His name is Horace.
- d. Aldebaran is the brightest star in the constellation Taurus.
- e. ‘Aldebaran’ is the name of the brightest star in the constellation Taurus.
- f. A *pentadodekahedron* is a regular polyhedron with twelve sides, each of which is a regular pentagon.
- g. Call me Ishmael.

# Introductory uses of Proper Names

- Differences between the standard use and the Introductory<sub>1</sub> use:
  - ▶ An introductory<sub>1</sub> use of  $N$  does not presuppose that  $H$  has an  $N$ -labelled ER that is coreferential with  $S$ 's use of  $N$ .
  - ▶ Rather, an introductory<sub>1</sub> use relies on  $H$  having or forming an ER for the referent of  $N$  with one or more anchors distinct from the vicarious anchor which records that the ER represents the referent that  $S$  uses  $N$ .
  - ▶ So in this case too the result of  $H$ 's interpretation will be that the ER he uses for this purpose is multiply anchored.
  - ▶ An ER with a single anchor (recording its use in the interpretation of  $S$ 's use of  $N$ ) will only arise when  $H$  has to accommodate this ER for the sake of interpreting  $S$ 's use of  $N$ .

## Introductory uses of Proper Names

- Introductory<sub>2</sub> uses:

- (12) a. Yesterday I met someone called 'Vixen'.
- b. A man by the name of Jackson rang earlier. He left his number and asked for you to ring back.
- c. I have a brother called Michael and a sister who is called Emily.

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- Non-referential uses:

- (13) a. If I am rung up by someone with the name ‘Smith’, I always ask his or her first name.
- b. I wonder if there is any town in the US that is called ‘Maoville’.
- c. Surely nobody was ever called ‘Aaron Aartvark’ in the real world.

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- Assumption:

Interpreting an indefinite as epistemically specific carries with it the introduction of a vicariously anchored ER for the entity that S has used the indefinite to talk about.

In case this indefinite contains a naming predication – such as ‘called *N*’, or ‘by the name of *N*’ etc. – the ER introduced this way will end up as *N*-labeled as a consequence of the normal processing of its descriptive content.



## Introductory uses of Proper Names

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In case this indefinite contains a naming predication – such as ‘called *N*’, or ‘by the name of *N*’ etc. – the ER introduced this way will end up as *N*-labeled as a consequence of the normal processing of its descriptive content.

- Non-referential uses of names do not presuppose or require the introduction of ERs.

They too involve naming predications, but these predication Conditions will end up in some other position inside the DRS.

## Names as Bound Variables?

- One use of names that has drawn considerable attention since it was first identified more than two decades ago by Geurts is illustrated by his example

(14) If any couple makes the mistake of naming their daughter Bambi, then the Disney Company will sue Bambi's parents.

Geurts presented this example as a demonstration that names can and in some cases must be given a descriptive analysis.

For what other analysis can be given to the second occurrence of *Bambi* in (14) than as 'the person/child called Bambi'?

Geurts seems to have regarded examples like this one as counterexamples to the Kripkean claim that names do not function like definite descriptions.

## Names as Bound Variables?

- This contention is doubtful, and if true it is true in a literal sense, which Kripke did not intend.

But Geurts is right about one thing: names can be used, quite naturally, without having been previously established as names of some particular bearer by some actual act of name giving.

For one thing, the occurrence of *Bambi* in the main clause of (14) isn't used to refer to just one particular bearer of the name.

Both the phrase *their child* in the *if*-clause and the occurrence of *Bambi* in the main clause show the behavior of bound variables.

(In a DRT-based approach like ours they are represented by discourse referents that are bound because the first belongs to the Universe of the DRS for the *if*-clause and the second is anaphorically linked to the first.)

## Names as Bound Variables?

- But does this show that the semantics of ‘Bambi’ is given by ‘the individual called ‘Bambi’ ’?

Perhaps, but only in a quite uninteresting way.

Note in this connection that the cases that Kripke brings up against descriptive theories of names could have been given just as well using descriptions of this form.

Take for instance, the story about Jonah: that everything said about him in the bible is false of what we now know of the historical figure that was the actual bearer of the name ‘Jonah’ that the bible talks about.

All this can be pointed out just as easily using the phrase ‘the prophet called ‘Jonah’ in the bible’ as by using simply ‘Jonah’.

## Names as Bound Variables?

- There is also a question what it means to say that the semantics of  $N$  is ‘given by ‘*the individual called ‘N’*’.

It cannot mean that ‘ $N$ ’ and ‘*the individual called ‘N’*’ are generally intersubstitutable.

For in introductory uses of  $N$  the replacement by ‘*the individual called ‘N’*’ leads to utterances that are bizarre and/or have a different sense or purport.

Consider for example the introductory<sub>1</sub> use of *Manuela* in the first sentence of (11.b).

(11.b) This is Manuela. Manuela will be with our project for the next six months.

The sentence (15) we get by replacing *Manuela* by *the person called ‘Manuela’* has a very different force.

(15) This is the person called ‘Manuela’.

## Names as Bound Variables?

- This second sentence suggests that the addressee already knew about a person called ‘Manuela’.

By uttering the name *Manuela* the speaker makes it possible for the addressee to identify the *Manuela*-labeled ER he already has for this person as the person in front of him.

In other words, while this is also a case of recognition, involving an ER *ER* for Manuela that the addressee already has, it is not one in which the name has an introductory function.

The name *Manuela* is supposed to be attached to *ER* already.

It is because *ER* has *Manuela* as a label that the speaker’s use of *Manuela* enables the addressee to zero in on *ER* and to merge it with the perceptually anchored ER that he has just formed of the person that the speaker has referred to with her use of *this*.

## Names as Bound Variables?

- It should be noted that the first sentence of (11.b) can be used in this way as well.

(This is a point that we didn't make when (11.b) was presented as an example of the introductory<sub>1</sub> use, since it wasn't relevant at that point.)

But on the other hand an introductory<sub>1</sub> use is not possible for (15).

- Even when it is used in the way we have described, (15) appears to be subject to further constraints.

It would be all right if previously the addressee had talked about Manuela to the speaker in some such way as this:

“There was this woman called 'Manuela' that everyone was talking about at the party I went to last Saturday. From what they said she sounded really interesting. I really fancy meeting her.”

## Names as Bound Variables?

- But mostly the use of the phrase ‘the person/woman/... called  $N$ ’ for this kind of introductory purpose would be strange.

This is so especially when the person in question is somebody famous.

Suppose for instance that I am a great fan of the writer Murakami and that you know that I am dying to meet him in person.

You know Murakami personally and at a social function where Murakami, you and I are present you want to give me the opportunity to talk to him.

It would be rather odd if you were to introduce me to Murakami by saying: “This is the man called ‘Murakami.’”

Better would be: “This is Mr. Murakami.”; or “I would like you to meet Mr. Murtakami.”



## Names as Bound Variables?

- The first use of *Bambi* in Geurts' example is also different from the three 'referential' uses distinguished above:

The standard referential use, the introductory<sub>1</sub> use and the introductory<sub>2</sub> use.

It comes closest to the examples mentioned above in conjunction with introductory<sub>2</sub> uses.

(Recall that in those examples noun phrases containing *called N* or *named N* were used to *quantify* over naming events or their result states.)

## Names as Bound Variables?

- The first occurrence of *Bambi* in Geurts' example is like these quantificational uses of noun phrases containing *called N* or *named N* in that it too quantifies over naming events.

Only: in the *Bambi* example this quantification is expressed by using an active form of the transitive verb *to name*.

- Note that there is a systematic (and fairly obvious) relation between:
  - (i) event-describing uses of verb phrases of the form *name N* and *call N*,
  - (ii) the use of adjectival phrases *named N* and *called N* to describe the result states of those events.

(As usual for adjectival phrases, these phrases can occur both as complements of copulas and as prenominal adjectival constituents in noun phrases of the type *a/every city named N*.)

## Names as Bound Variables?

- In Geurts' Bambi example (14) we can replace the second occurrence of *Bambi* by the pronoun *her*, as in (16).

(16) If any couple makes the mistake of naming their daughter Bambi, then the Disney Company will sue her parents.

It might be thought that (14) is felt to be awkward because its competitor in (16) is felt to be more natural.

There are also examples, however, where this cannot be the explanation.

The following example is a variation of one from Elbourne (2005).

(17) Every woman who has one friend called John and another friend called Gerontius will only take Gerontius to the Rare Names Convention.

## Names as Bound Variables?

- Here substituting the second occurrence of *Gerontius* by *him* or *her friend* wouldn't do because this would make the sentence hopelessly ambiguous (to the point of making it ungrammatical).

(If we want a viable alternative for *Gerontius* in this sentence, the best one might be the phrase *the friend called Gerontius*.)

So the reason why (17) seems odd cannot be that there is a simpler and shorter alternative that is preferred to this second occurrence of *Gerontius*.

## Names as Bound Variables?

- To summarize this discussion of Geurts' example:

For us the moral of these examples is that names can be used in sentences where they make bound variable contributions (much like donkey pronouns).

I should add that not all speakers find these sentences wholly felicitous.

(There is also a tendency for speakers who resist these sentences at first to find them more acceptable with increased exposure.)

So this may be a case of ideolectal variation:

Speakers vary in differ in the rules for the use of names as parts of their grammars. They have different rules for the resolution of the identification presuppositions triggered by names.

## Further uses of names

- Names can also be used as common nouns, with meanings that are related to their function as proper names in various ways.  
These uses are not considered here.
- A complete classification of all the different uses of names from the present communication-theoretic perspective is still outstanding.  
Possibly an improved classification will not only new use categories but also force us to redraw some of the boundaries I have suggested.

## Applications; (1) Ambiguous Names

- Ambiguous names

In the mind of an agent  $A$  the same expression can be attached as name (via a 'Named'-Condition) to two (or more) ERs.

As a rule  $A$  will assume that two such ERs refer to different entities.

That is:  $A$  has the belief  $\left\langle BEL, \begin{array}{|c|} \hline \emptyset \\ \hline x \neq y \\ \hline \end{array} \right\rangle$ , where  $x$  and  $y$  are the distinguished discourse referents of the two ERs.

## Applications: (1) Ambiguous Names

- In the philosophical literature the identity criteria of proper names are sometimes taken to include the identity of their referents.

Thus, if there are two towns called ‘Springfield’, then there isn’t one name ‘Springfield’ that is ambiguous between two bearers, but two different names which happen to look and sound the same.

- This conception of the identity of names ignores the ambiguity problems that names often pose to the interpreter.

For instance, a speaker uses ‘Springfield’ and her addressee doesn’t know which Springfield she is referring to.

He has two ‘Springfield’-labeled ERs and doesn’t know which he should use to interpret the speaker’s use of ‘Springfield’.

- For him there is a single, morphophonologically identified word ‘Springfield’ that is ambiguous between two possible interpretations.



## Causal Chains and Networks

- In ‘Naming and necessity’ Kripke outlines a story according to which a name  $N$ , once it has been introduced as name of a given referent  $r$  – by an actor ‘baptism’ as Kripke puts it – can then spread through the language community via successive communicative events.

Over time these successive events form chains that lead from any speaker who is in a position to use the name back to someone who was party to the initial baptism.

- One of the first critical evaluations of this proposal can be found in ‘The Causal Theory of Names’ by Evans and Altham.

We will discuss some aspects of this paper later on.

## Causal Chains and Networks

- Here is an observation about name spreading in the light of what we have been saying about the different uses of names:

Introductory uses of names (in the sense discussed above) play an important part in the spreading of a name, probably more so than their standard referential uses.

Spreading of a name  $N$  through a standard referential use of it takes place only when the presupposition associated with that use is not satisfied:

The addressee does not have an  $N$ -labeled Entity Representation to interpret the speaker's use of  $N$  as name for  $r$ .

So the addressee must accommodate, either by forming a completely new  $N$ -labeled ER or by adding  $N$  as label to some ER representing  $r$  that the addressee already had but that wasn't  $N$ -labeled yet.

## Causal Chains and Networks

- Name using vents of this type would seem to occur far less often in dialogue than they do when people read texts in which they encounter unfamiliar names.

Various forms of public speaking occupies a kind of middle ground between racing texts and being spoken to face to face.

Think for instance of public lectures on historical or geographical topics.

Here too it is often difficult for speakers to avoid using names that are unfamiliar to some members of the audience.

The alternative would be to have to explain who the referents of those names are and that would bore or irritate the part of the audience that is familiar with those names.

# Causal Chains and Networks

- Our proposal as to how the different uses of names work in communication gives a way of reconstructing the causal chain idea in more precise terms.

Central is the part of the proposal according to which the interpreter of a standard referential or introductory use of a name  $N$  ends up with an  $N$ -labeled ER that has a vicarious anchor which records the speaker's use of  $N$ .

Recall in more detail:

For each successful instance of any of the three 'referential' uses of a name  $N$  we have distinguished – standard referential, introductory<sub>1</sub> and introductory<sub>2</sub> – the following must be the case:

## Causal Chains and Networks

- (i) The speaker  $a$  must have an  $N$ -labeled ER  $ER_a$  which represents some entity  $r$ .
- (ii) The interpretation of  $a$ 's use of  $N$  by the recipient  $b$  results in  $b$  having an ER  $ER_b$  with a vicarious anchor of the form

$$\left[ \begin{array}{c} e \\ e < n \\ e: \text{refer}(a, N, r_b) \end{array} \right],$$

where  $r_b$  is the distinguished discourse referent of  $ER_b$ .

This vicarious anchor of  $ER_b$  makes  $r$  into an external anchor for  $ER_b$ .

So, as long as there are no conflicting anchors in the anchor set of  $ER_b$ ,  $ER_b$  represents  $r$ .

## Causal Chains and Networks

- In this way any pair  $\langle N, r \rangle$  of a name  $N$  (as morphophonological form) and an entity  $r$  gives rise to a 5-place relation  $\text{VicLink}_{N,r}$  between agents  $a$  and  $b$ , ERs  $ER_a$  and  $ER_b$  belonging to the mental states of  $a$  and  $b$ , respectively and a time  $t$ .

$\text{VicLink}_{N,r}(a, b, ER_a, ER_b, t)$  holds iff  $ER_a$  and  $ER_b$  are mental states of  $a$  and  $b$  such that the following is the case:

- (a)  $ER_a$  and  $ER_b$  are both  $N$ -labeled and both represent  $r$ ;
- (b)  $e$  is an event of  $a$  using  $N$  to refer to the referent represented by  $ER_a$  in an utterance that reaches and is correctly interpreted by  $b$ ;
- (c)  $t = \text{dur}(e)$ ;
- (d) as a result of interpreting this use of  $N$  by  $a$ , the anchor set of  $ER_b$  is updated with a vicarious anchor of the form given under (ii) on the last slide.

# Causal Chains and Networks

- The motivation for the predicate ‘VicLink’ is this:

What we are after is the question who got  $N$  as name for  $r$  from whom?

‘VicLink’ is meant to help us answer this question.

- But note the following complication:

As we have described what happens during the interpretation of referential uses of names, it is possible for VicLink

$N,r(a, b, ER_a, ER_b, t)$  and  $VicLink_{N,r}(b, a, ER_b, ER_a, t')$

to both hold.

(Normally this will be possible only when  $t$  and  $t'$  are different. There could be marginal cases where  $t$  and  $t'$  are the same, but I will ignore these.)

## Causal Chains and Networks

- For an example, suppose that  $b$  did in fact get  $N$  as name for  $r$  from  $a$  in the way described, so that  $\text{VicLink}_{N,r}(a, b, ER_a, ER_b, t)$  holds for the time  $t$  when  $a$  made her utterance.

$b$  can then in his turn use  $N$ , in the standard referential mode, in utterances that he addresses to  $a$ .

For instance, he could respond right away with the question:

(18) Can you tell me more about  $N$ ?

According to the above definition of  $\text{VicLink}_{N,r}$   $a$ 's interpretation of  $b$ 's use of  $N$  in this question will lead to the addition of a vicarious anchor to  $ER_a$  which links  $ER_a$  to the referent of  $ER_b$ .

So according to our definition we now also have

$\text{VicLink}_{N,r}(b, a, ER_b, ER_a, t')$ , though for a time  $t'$  that is later than the time  $t$  at which  $a$  made used  $N$ .



## Causal Chains and Networks

- As long as we are only concerned with interactions between  $a$  and  $b$ , we can resolve the question whether  $b$  got  $N$  as name for  $r$  from  $a$  or  $a$  got  $N$  as name for  $r$  from  $b$  by looking at all the instances of  $\text{VicLink}_{N,r}(a, b, ER_a, ER_b, t)$  and  $\text{VicLink}_{N,r}(b, a, ER_b, ER_a, t)$  for different  $t$ .

This is going to be a finite set, so there will be an earliest  $t_0$  among all these instances.

If  $t_0$  is such that  $\text{VicLink}_{N,r}(a, b, ER_a, ER_b, t_0)$  is among the instances, then  $b$  got  $N$  from  $a$ .

If  $\text{VicLink}_{N,r}(b, a, ER_b, ER_a, t_0)$  is among the instances, then  $a$  got  $N$  from  $b$ .

## Causal Chains and Networks

- In general the situation is more complicated, however, because one agent may have got a name for a thing from another agent indirectly:

There may be a chain of utterance events that connect  $b$  with  $a$ , resulting in a finite set of instances of  $\text{VicLink}_{N,r}$ , but also involving speakers other than  $a$  and  $b$ :

$\text{VicLink}_{N,r}(a_1, a_2, ER_{a_1}, ER_{a_2}, t_1), \text{VicLink}_{N,r}(a_2, a_3, ER_{a_2}, ER_{a_3}, t_2),$   
 $\dots, \text{VicLink}_{N,r}(a_{n-1}, a_n, ER_{a_{n-1}}, ER_{a_n}, t_{n-1}),$

with  $a = a_1, b = a_n$  and  $t_1 \prec t_2 \prec \dots t_{n-1}$ .

- Such a chain is prima facie evidence that  $b$  got  $N$  as name for  $r$  from  $a$ .

But of course there might also be some other chain that connects  $a$  with  $b$  and that would also be prima facie evidence that  $a$  got  $N$  from  $b$ .

## Causal Chains and Networks

- The general situation is this:

The instances of  $\text{VicLink}_{N,r}$  form a network of connections between members of the given language community  $C$ .

We think of  $\text{VicLink}_{N,r}$ -instances as the nodes of this network.

The edges between these nodes are identified by agents participating in  $\text{VicLink}_{N,r}$ -instances, acting as recipient in the earlier one of two instances and as speaker in the later one.

That is: where  $t_1 \prec t_2$ , there is an edge connecting the node  $\text{VicLink}_{N,r}(a_1, a_2, ER_{a_1}, ER_{a_2}, t_1)$  and the node  $\text{VicLink}_{N,r}(a_2, a_3, ER_{a_2}, ER_{a_3}, t_2)$  because the two nodes share the agent  $a_2$ .

(In  $\text{VicLink}_{N,r}(a_1, a_2, ER_{a_1}, ER_{a_2}, t_1)$   $a_2$  is the recipient of  $N$  as a name of  $r$  and in  $\text{VicLink}_{N,r}(a_2, a_3, ER_{a_2}, ER_{a_3}, t_2)$   $a_2$  is the producer of an utterance of  $N$  as name of  $r$ .)

## Causal Chains and Networks

- Each node  $\text{VicLink}_{N,r}(a_i, a_{i+1}, ER_{a_i}, ER_{a_{i+1}}, t_i)$  of the network has its time stamp  $t_i$ .

These time stamps impose a partial ordering  $\prec_{N,r}$  on the network. A *causal chain* for the combination  $\langle N, r \rangle$  is a subset of this network that is linearly ordered by  $\prec_{N,r}$ .

Every maximal chain  $Ch$  extends backwards to an agent  $a_{Ch}$  who was party to the introduction of  $N$  as a name of  $r$  in an event of private or public baptism in which  $r$  was given the name  $N$ .

(As noted earlier and described in some more detail in *Names as Intermediaries between labelled Entity Representations*, it is a common feature of baptisms that they involve more than a single person.)

## Causal Chains and Networks

- Let us assume that each participant  $a$  of a baptism event that confers the name  $N$  on  $r$  has, as a result of her participation, an  $N$ -labeled ER for  $r$  with an internal anchor reflecting this participation.

And let us use assume that this internal anchor takes the form of the following DRS

$$(19) \quad \boxed{\begin{array}{c} e \\ \hline e: \text{Baptism}(N, r_a) \\ \text{Participant}(i, e) \end{array}}$$

where  $e$  is the distinguished dref of the ER.

## Causal Chains and Networks

- The Condition ‘ $e$ : Baptism( $N,x$ )’ expresses that  $e$  is an event of baptizing  $x$  with the name  $N$ .
- The Condition ‘Participate( $a,e$ )’ expresses the relation that holds when  $a$  is an ‘active participant’ of  $e$  – ‘active’ the sense that  $a$  understands  $e$ . as conferring  $N$  as name on  $r$

(The predicate ‘Participate’ is at this point just a stopgap, waiting to be replaced by a proper analysis.

But as part of the agent’s record of a baptizing event that she participated in and that she understood to be an event of conferring the name  $N$  on the entity  $r$  ‘Participate’ will do for now.)

# Causal Chains and Networks

- The participants of the event that conferred the name  $N$  on  $r$  are distinguished from the other members of  $C$  who have the capacity to use  $N$  as name for  $r$  in that they have an  $N$ -labeled ER for  $r$  which has an internal anchor of the form (19).

We call an agent  $a$  with such an ER for  $r$  a *baptism participant* for  $(N,r)$ .

## Causal Chains and Networks

- We can now restate our claim about maximal  $(N,r)$ -chains as follows:

Suppose that

$$\begin{aligned} (20) \quad & \text{VicLink}_{N,r}(a, a_2, ER_a, ER_{a_2}, t_1), \\ & \text{VicLink}_{N,r}(a_2, a_3, ER_{a_2}, ER_{a_3}, t_2), \\ & \cdot \\ & \cdot \\ & \text{VicLink}_{N,r}(a_{n-1}, b, ER_{a_{n-1}}, ER_b, t_{n-1}), \end{aligned}$$

is a chain linking  $b$ 's command of  $N$  as a name for  $r$  to  $a$ 's command and that  $a$  is a baptism participant for  $(N,r)$ .

Then we say that  $b$ 's *command of  $N$  as name for  $r$  goes all the way back to  $a$* .

- Note well:  $b$ 's command may go back all the way to more than one baptism participant for  $(N,r)$ .



# Causal Chains and Networks

- As noted above, an important aspect of how names can spread via causal chains through a literate community  $C$  is the role played by texts.

A large proportion of the names that members of literate communities acquire in the course of their lives is by first encountering them in newspapers and other non-fictional texts.

(Public lectures and spoken news bulletins also play an important part in this.

But arguably these forms of using the spoken word are best seen as forms of spoken texts).

## Causal Chains and Networks

- A natural way to capture the role of texts in the spreading of names is to allow them the status of information sources in vicarious anchors.

That is, the ER that a reader  $b$  forms when he encounters an unfamiliar name  $N$  in a text will have a vicarious anchor of the form

$e$
$e < n$ $e: \text{refer}(d, N, r_b)$

where  $d$  is now the distinguished dref for  $b$ 's ER for the text he is reading.

# Causal Chains and Networks

- Furthermore, we assume that when an author makes use of a name  $N$  in a text, then the occurrence of  $N$  in the text refers to the entity represented by the  $N$ -labeled ER that the author made use of when producing this written token of  $N$ .
- When the reader knows who the author is, he may also add a vicarious anchor to his new ER that links him directly to the author.

But this addition should be regarded as optional.

# Causal Chains and Networks

- When everything works exactly as we have been assuming in this discussion of  $\text{VicLink}_{N,r}$  networks, then the uses of  $N$  in which it serves as name for a given entity  $r$  form a separate network.

In particular:

If  $r \neq r'$  and  $N$  serves within the given community  $C$  both as a name for  $r$  and as a name for  $r'$ , then the  $\text{VicLink}_{N,r}$  network and the  $\text{VicLink}_{N,r'}$  network will be disjoint.

## Causal Chains and Networks

- In practice, however, such perfect separations of the networks that connect uses of a name for one particular referent are rarely perfect.

Mishaps, in which an interpreter of a token of  $N$  as name of  $r$  mistakes the token as a reference to some different referent  $r'$ , are bound to happen ever so often.

Most of these mishaps will remain local in time and space and get corrected or eliminated from the network before they can seriously corrupt it.

But sometimes they lead to lasting changes.

A famous example, about which we will say something below, is that of the name 'Madagascar'.

# Madagascar

- Supposedly because of some mistake on the part of the medieval traveler Marco Polo it developed from the name of a part of the African mainland ('Mogadishu') to the name of the island that now goes by this name.

Let us assume that when Marco Polo was told about Madagascar (presumably by Arab traders), he formed a 'Madeigascar'-labeled ER with a vicarious anchor and the associated erroneous belief that the referent was an island off the African East Coast far to the south.

At that point his ER had only one internal anchor, the vicarious anchor reflecting the information he derived from a some Arab traders who mentioned the name in conversation with him.

# Madagascar

- I will assume that MP's belief about the location of Madagascar was part of the descriptive content of his ER (i.e part of the DRS occupying its second slot).

All else that MP has to tell us about Madagascar (which, by the way, is ever so much poppycock) I assume were separate beliefs he associated with the referent of 'Madeigascar'.

(N.B. This may well do Marco Polo an injustice.

The actual writing of his travel memoir 'The Travels of Marco Polo' was done by Rustichello da Pisa, by profession a writer of Romances, with whom Marco Polo was charring a cell when both were Genoese prisoners of war.

Rustichello appears to have added a lot he expected the readers wanted to read in a story about distant lands.)

# Madagascar

- If this was the ER by means of which Marco Polo represented the referent of 'Madeigascar', what did this ER represent?

According to what we have been saying in these slides the entity represented was Mogadishu.

For the decisive factor in this is the vicarious anchor that identifies the referent as the port that MP's informants referred to as 'Madagascar'.



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According to what we have been saying in these slides the entity represented was Mogadishu.

For the decisive factor in this is the vicarious anchor that identifies the referent as the port that MP's informants referred to as 'Madagascar'.

- But what can we say about those who got 'Madeigascar' from Marco Polo?

Let us focus on those who became acquainted with 'Madeigascar' by reading 'The travels of Marco Polo'.

# Madagascar

- Someone who would have read this book in the Middle Ages or the Renaissance and would have encountered the name ‘Madeigascar’ in the course of reading, would, I assume, have formed a ‘Madeigascar’-labeled ER with a vicarious anchor that would have linked the ER’s referent to the book and its author (which for simplicity we will assume was Marco Polo himself).

These ERs too would have represented Mogadishu, in spite of all the wrong information that those readers might have associated with it on account of what is said in the book.

- But this changed when Europeans equipped with such ‘Madeigascar’-labeled ERs finally reached Madagascar.

# Madagascar

- The historical record seems to leave open whether any of these later travelers were ever confused about the relation between the name and the island.

One account has it that they were simply looking for a good name (and part of what ‘good’ meant was that no one would connect the name with Portugal).

So they took the name known from ‘The travels of Marco Polo’ because it somehow fitted and – crucially – because it didn’t come with the wrong connotations.

- But let us, for the sake of argument, assume that these people were taken in:

that they did think that they had reached Marco Polo’s Madagascar.

# Madagascar

- That would have had the effect of adding to their ‘Madeigascar’-labeled ERs new perceptual anchors that reflected their direct perceptual contact with the island.
- Both through their abundance and their vividness (and their direct connections with action) these anchors quickly gained a prominence which pushes the original vicarious anchor into the background.
- This prominence was then further reinforced when those who were in Madagascar or had been to it referred to it by using the name ‘Madagascar’ when communicating with each other.

At some point ‘Madagascar’ had de facto become the name of the island for a new community  $C$  of people who knew the island first hand.

The name could then also be transferred to people who got their information about Madagascar from members of  $C$ .

# Madagascar

- An explicit discarding of the anchors inherited from MP's original vicarious anchor need not have been part of this process.

If it wasn't, then, it might be thought, a whiff of incoherence must still have attached to the *Madagascar*-labeled ERs of the members of this new community.

But in the practice of using those ERs and thereby further enriching their anchor sets the connection with MP's original vicarious anchor quickly got buried under ever thicker layers of other internal anchors.

After a little while that connection lost all significance and the anchors linking the ERs to the island totally prevailed.

# Madagascar

- The story I have just told about how ‘Madagascar’ came to be the name of Madagascar is by and large an elaboration within our ER-based framework of what Evans has to say about this case in ‘The Causal Theory of Names’.

This case is strikingly different from what Kripke has to say about biblical figures like Jonah or Moses.

There is a wide consensus that these are historical figures, but that little if anything that is said about them in the Old Testament is true.

- How can what Kripke has to say about these biblical figures be so different from what we may assume happened to the name ‘Madagascar’?

The explanation is not hard to find.

# Madagascar

- Jonah, Moses and their ken have long been gone. We only know about them through the bible and a few other documents from the period.

So the only anchors in our ERs for these figures are vicarious.

They are the same vicarious anchors that are added, over and over again, to the ERs of new users.

Madagascar is different. It always has been there (since the earliest days of human language) and it is still there.

Because of this it could be the inexhaustible source of new perceptual anchors that it has been.

Sooner or later such perceptual anchors win the day against conservative force of chains of vicarious anchors.

# Madagascar

- This account of how ‘Madagascar’ became the name of the island Madagascar is an example of how name-referent relations can shift:

New additions to the anchor sets of the ERs involved in the use of the name can occlude the anchors that populated the anchor sets of those ERs at earlier times.

But the cases where this mechanism leads to a permanent community-wide shift of a name to a new referent are comparatively rare.

The more common case is that of marginal corruptions to ERs, which do not lead to a shift in reference.



## Mild Forms of ER Incoherence

- This often happens for instance when an ER is involved in a misrecognition:

You think that the person you see at the other end of the garden is Jane.

This leads to the addition of a new perceptual anchor to your ER for Jane that links it to the person you see.

But the person you are seeing isn't Jane.

So your ER for Jane which may have been coherent up to this point has now become incoherent:

It now has an internal anchor that links it to a different individual than the one that it already was anchored too already.

## Mild Forms of ER Incoherence

- As often as not such incoherence-producing anchors are eliminated soon after they have been introduced:

You may, as you are looking at the person, realise your mistake.

“No, this isn’t Jane”, you are saying to yourself;

and the new anchor is discarded from your ER, almost as soon as it was added.

Or you go up to the person, in the happy expectation of a conversation with Jane.

But as you get close to the person, you become aware that she isn’t Jane after all.

## Mild Forms of ER Incoherence

- There are also many cases where such an anchor-discarding repair never takes place:

You think you see Jane at the other end of the garden, and so add to your ER for Jane the perceptual anchor that comes with this perception .

But Jane and you are no longer on good terms.

So you try to avoid her, perhaps by stealthily leaving the party.

In this case the perceptual anchor you have just added isn't removed from your ER.

You may get home congratulating yourself on having seen Jane (as you rethink you did) before she saw you.

## Mild Forms of ER Incoherence

- But even in this case your ER for Jane may continue to serve as an essentially unscathed representation for her.

The experience that led to the new anchor plays no further part in your idea of Jane, the ways you may interact with her henceforth and your use of her name.

This may be so even in cases where the episode that led to the new anchor remains vividly in your mind:

You still can and often do think back to that occasion when you were lucky to escape a direct confrontation with her.

- A good account of when incoherence prevents an ER from functioning as an ER for either or any of the entities to which it is linked by one or more of its internal anchors is still missing.

For more on this issue see the slides below about Donnellan's *Aston Martin* example towards the end of these slides.

## Uncertain Recognitions

- There are also cases where the agent is wondering whether the individual she sees is someone she knows.

The natural analysis of such cases within our framework is one that involves two ERs.

In the present case: the agent forms a new perceptually anchored ER for the person he is seeing and wonders whether this ER represents the same person that is represented by his *Jane*-labeled ER.

There also cases of this sort where the doubt is that of a larger community.

Each member  $a$  of the community has a pair of ERs  $ER_{1,a}$  and  $ER_{2,a}$  and these ERs are correlated with each other in that the  $ER_{1,a}$ s form one VicLink network and the  $ER_{2,a}$ s another.

## Uncertain Recognitions

- A special case of this is where the  $ER_{1,a}$ s and the  $ER_{2,a}$ s are both labeled but with different names:

All the  $ER_{1,a}$ s are labeled with some name  $N$  and all the  $ER_{2,a}$ s are labeled with some different name  $N'$ .

- An intriguing example has recently been discussed by Anders Schoubye (March 2018).
- There has been widespread speculation in Britain over whether the famous British street artist who has been going by the name *Banksy* is the same as the musician *Del Naja*.

The members of the relevant British community have *Banksy*- and *Del Naja*-labeled ERs and wonder about the identity of their referents.

## Uncertain Recognitions

- Anyone in the community who engages in speculation about this question might express this by using the sentence in (21)

(21) Del Naja might be Banksy.

- In our framework such sentences must be analyzed as epistemic modalities that are verified by thoughts of the form

$$\langle \text{WON}, \boxed{\begin{array}{c} \phantom{x_{dn} = x_b} \\ x_{dn} = x_b \end{array}} \rangle ,$$

where  $x_{dn}$  and  $x_b$  are the distinguished drefs of the agent's *Del Naja*- and *Banksy*-labeled ERs.

## Application (2): Shared Reference

- In face-to-face communication the referential use of a name not only results in a vicarious anchor to the ER of the hearer.

It also can, and typically will, produce a registration of this presumed success by the speaker.

We represent this information in the form of a predicate ‘Gotref’ (for ‘get reference’) that holds between the hearer  $h$ , the speaker herself, the referring phrase  $\alpha$  she has used and the referent represented by the distinguished discourse referent of the ER on which her utterance was based.

So a predication involving this predicate will look like this:

$$\textit{Gotref}(h, i, \alpha, x_s),$$

where  $x_s$  is the distinguished discourse referent of the speaker’s ER  $ER$ .



## Application (2): Shared Reference

- Where should this information go?

There are two possibilities that come to mind:

1. As part of the second component of the speaker's ER  $ER$ .
2. As a separate belief of the speaker's of the form

$\langle \text{BEL}, \boxed{\text{Gotref}(h, i, \alpha, x_s)} \rangle$  .

In either case the content is registered as content that the speaker believes to be true.

There may be no absolutely compelling reason for choosing one of these possibilities over the other.

Let us adopt option 2 and assume that this information takes the form of a separate new belief.

## Application (2): Shared Reference

- Often this belief will be an implicit one, in the following sense:

Suppose you would press the speaker on whether she thinks the hearer got her reference right and is now thinking of the same entity she just referred to by  $N$  and has represented what she has just said as a proposition about that entity.

Then she would reply that, yes, that is what she does think.

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Then she would reply that, yes, that is what she does think.

- A similar question can now be raised about the addressee H.

Does H come to believe that S believes that he has correctly understood the reference she has made through her use of  $N$ ?

Here too the answer ought to be that ‘in the typical case, yes’.

## Application (2): Shared Reference

- And again the belief should in general be an implicit one, which would now also involve implicitness as part of its content:

When you press H whether he believes this, his reaction would be:

“I think that if you were to press S on the matter then she would say that, yes, she does believe that I have such a belief.”

## Application (2): Shared Reference

- The question could be repeated, now once more addressed to S.

Probably the answer should once again be affirmative:

But the belief that a positive answer would attribute to H would now be a multiply implicit one.

Further iterations of such inquiries probe for beliefs that, with all their qualifications about the doxastic dispositions of the participants, become quite complex and very hard to process.

But if we abstract from these processing difficulties, then, I think, there is no reason why the inquiry to ever more couldn't be continued and the answers would go on being affirmative, albeit with ever more complex qualifications.

For explaining how communication works only the first few of these iterations will be relevant.

## Application (2): Shared Reference

- Questions of this kind are familiar from the literature on shared belief and Common Knowledge.

The upshot of many discussions in this literature is that:

- (i) the best analysis of these notions is that they involve iteration of like-patterned beliefs;
- (ii) and that therefore some *fixed point semantics* is appropriate for them.

(The distinction between implicit and explicit belief is not often drawn, however.

## Application (2): Shared Reference

- Also, most discussions are restricted to the doxastic concepts Common Knowledge and shared belief.

But it is obvious that they can be extended to other attitudinal modes.

For instance, the notions of shared desire and shared intention are no less important than shared belief.

These concepts too are best analyzed as involving iteration of the same attitudinal patterns;

Note well, however, that the sharing of attitudes of modes other than belief also involve beliefs at all but the ground level.

## Application (2): Shared Reference

- For instance, the analysis of shared desire between two agents A and B would take the following form:
  - (i) A and B both have the same desire.

(More precisely, A and B both have desires  $\langle DES, K_A \rangle$  and  $\langle DES, K_B \rangle$ , where  $K_A$  and  $K_B$  express the same proposition (and perhaps should resemble each other also in other ways).
  - (ii) In addition A and B each have the belief that the other has a desire that resembles their own in this way.
  - (iii) Further iterations also involve belief.

Thus B should have the *belief* that S has the *belief* that he has a desire resembling her own. And so on.



## Application (2): Shared Reference

- In the framework we are using, shared reference is much like cases of sharing some kind of propositional attitude.

In the case of shared reference A and B must have ERs that resemble each other in the right way.

(This requires minimally that their ERs must represent the same entity.)

But again, the higher level attitudes involved in shared reference all involve beliefs.

With shared reference the same question arises about how far the iteration should be assumed to go.

## Application (2): Shared Reference

- We will take it to be a minimal condition on shared reference that A and B have matching ERs  $ER_A$  and  $ER_B$  and that they both believe this.

More precisely: A believes that B has an ER matching  $ER_A$  and likewise B believes that A has an ER matching  $ER_B$ .

There are also conditions of a different sort that may be imposed on reference sharing:

For the ERs  $ER_A$  and  $ER_B$  to count as matching, they must have been involved in communicative links.

## Application (2): Shared Reference

- This is a notion that so far we developed only for  $N$ -labeled ERs. But the relevant predicate VicLink is applicable just as much to ERs without labels.

All that matters is that the speaker uses some way of referring to the referent of her ER, that the recipient understands that this is what she is doing, uses his ER to interpret the speaker's reference and adds a vicarious anchor testifying to his ER.

Suppose for instance that such a communication takes place between A and B, with A the speaker and B the interpreter and that  $ER_A$  and  $ER_B$  are the ERs involved.

Then this event can also be described as an instance of VicLink, viz.  $\text{VicLink}(A,B,ER_A,ER_B,t)$ , for some appropriate timestamp  $t$ .

## Application (2): Shared Reference

- Such VicLink instances involving non-labeled ERs also form networks.

And here too it is possible for two ERs like  $ER_A$  and  $ER_B$  to be linked in the sense of belonging to the same VicLink network.

Being linked in this way could be adopted as a further constraint on shared reference.

Stronger constraints of this sort – e.g. that  $ER_A$  and  $ER_B$  have been involved in an instance of the form  $\text{VicLink}(A,B,ER_A,ER_B,t)$  that provides a direct link between them, might also be imposed.

And there are other VicLink-related constraints that could be considered as well.

## Application (2): Shared Reference

- Shared reference is an important notion because of the ways in which it can help to account for some of what happens when the same name is used by different participants to the same conversation.

This is so in particular when the ERs involved are  $N$ -labeled for some  $N$ .

(This needs to be spelling out in detail. The details will follow later.)

- Shared reference (more exactly: a notion very much like it) will be central to what we will have to say about coreference in fictional discourse.

## Applications (3): Names in Attitude Reports

- Suppose that S says to H:

(22) Bill believes that Julie is in Paris.

Our line of analysis for this (and any other) attitude report takes the form of assigning a Logical Form to the report in which an Att-Condition plays the pivotal part.

This Att-Condition attributes to Bill an attitudinal state that can be derived from the specification of the attitudinal content provided by the report.

In the present case this specification is given by the *that*-clause of (22).

- Our principal concern right now:

What contributions do the names *Julie* and *Paris* make to the content of the report?

## Applications (3): Names in Attitude Reports

- This is what the account we have given of the standard use of proper names seems to imply for a report like (22):

The speaker must have *Julie*- and *Paris*-labeled ERs for the Julie and the Paris that (22) is about.

But this doesn't tell us much about the contributions these names make to the attributed content.

- Here is a first proposal:

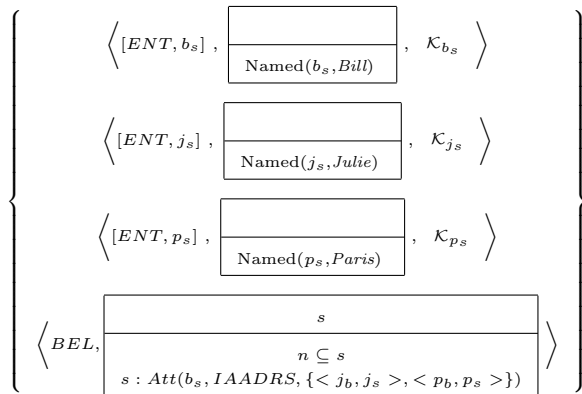
The contributions that are made by names in the complement clauses of attitude reports to the attributed content are always *de re*.

That is – in our terms – they attribute to the attributee ERs whose external anchors are the referents of the speaker's ERs for those names.

## Applications (3): Names in Attitude Reports

- According to our assumptions the speaker  $S$  also has an ER for the attributee Bill.

So her representation of the attribution she has made is assumed to be like this:





## Applications (3): Names in Attitude Reports

Once more, a little larger:

$$(23) \left\{ \begin{array}{l} \left\langle [ENT, b_s], \begin{array}{|c|} \hline \\ \hline \text{Named}(b_s, \textit{Bill}) \\ \hline \end{array}, \mathcal{K}_{b_s} \right\rangle \\ \left\langle [ENT, j_s], \begin{array}{|c|} \hline \\ \hline \text{Named}(j_s, \textit{Julie}) \\ \hline \end{array}, \mathcal{K}_{j_s} \right\rangle \\ \left\langle [ENT, p_s], \begin{array}{|c|} \hline \\ \hline \text{Named}(p_s, \textit{Paris}) \\ \hline \end{array}, \mathcal{K}_{p_s} \right\rangle \\ \left\langle BEL, \begin{array}{|c|} \hline s \\ \hline n \subseteq s \\ s : Att(b_s, IAADRS, \{ \langle j_b, j_s \rangle, \langle p_b, p_s \rangle \}) \\ \hline \end{array} \right\rangle \end{array} \right\}$$

## Applications (3): Names in Attitude Reports

- The IAADRS in the third slot of the Att predicate is:

$$\left\{ \begin{array}{l} \langle [ENT, j_b], K_{j_b}, \mathcal{K}_{j_b} \rangle \\ \langle [ENT, p_b], K_{p_b}, \mathcal{K}_{p_b} \rangle \\ \left\langle BEL, \begin{array}{|c|} \hline s' \\ \hline n \subseteq s' \\ s' : in'(j_b, p_b) \\ \hline \end{array} \right\rangle \end{array} \right\}$$

The next slide gives the part of the mental state that the speaker of (22) must be in if she is to be in a legitimate position to assert (22).

# Applications (3): Names in Attitude Reports

$$(24) \left\{ \begin{array}{l} \left\langle [ENT, b_s], \begin{array}{|c|} \hline \\ \hline \text{Named}(b_s, \text{Bill}) \\ \hline \end{array}, \mathcal{K}_{b_s} \right\rangle \\ \left\langle [ENT, j_s], \begin{array}{|c|} \hline \\ \hline \text{Named}(j_s, \text{Julie}) \\ \hline \end{array}, \mathcal{K}_{j_s} \right\rangle \\ \left\langle [ENT, p_s], \begin{array}{|c|} \hline \\ \hline \text{Named}(p_s, \text{Paris}) \\ \hline \end{array}, \mathcal{K}_{p_s} \right\rangle \\ \left\langle BEL, \begin{array}{l} s \\ \hline n \subseteq s \\ \left\{ \begin{array}{l} \left\langle [ENT, j_b], \mathcal{K}_{j_b}, \mathcal{K}_{j_b} \right\rangle \\ \left\langle [ENT, p_b], \mathcal{K}_{p_b}, \mathcal{K}_{p_b} \right\rangle \end{array} \right\}, \{ \langle j_b, j_s \rangle, \langle p_b, p_s \rangle \} \\ \left\langle BEL, \begin{array}{|c|} \hline s' \\ \hline n \subseteq s' \\ s' : in'(j_b, p_b) \\ \hline \end{array} \right\rangle \end{array} \right\rangle \end{array} \right\}$$

## Applications (3): Names in Attitude Reports

- Note that in this rendering of the part of S's mental state that is relevant to the attribution she makes to Bill the thought expressed in her attribution is presented as a belief.

This is to some extent arbitrary. For instance, S could be lying, expressing a thought that she herself doesn't believe is true.

In this case some other Mode Indicator, such as Disbelief, would be required.

- But irrespective of this the Mode Indicator in the specification of Bill's attitudinal state has to be *BEL*.

For it is a belief that (22) is attributing to him.

## Applications (3): Names in Attitude Reports

- What about the truth conditions of the belief attribution (22) as represented by the Att-Condition in (24)?

These are fixed by the semantics we have developed for MSDRT.

The Att-Condition of (24) is verified by an agent  $a$ , at a world  $w$  and a time  $t$  iff

(i)  $a$  is the individual represented by S's ER

$$\left\langle [ENT, b_s], \begin{array}{|c|} \hline \\ \hline \text{Named}(b_s, \text{Bill}) \\ \hline \end{array}, \mathcal{K}_{b_s} \right\rangle.$$

## Applications (3): Names in Attitude Reports

(ii) the proposition expressed by the belief component of the IAADRS in its third slot is entailed by a belief that is part of  $AS(a, w, t)$ , where the agent  $a$  is Bill, the person represented by the speaker's Entity Representation.

Crucial to (ii) is that the proposition expressed is singular both with respect to Julie and Paris

(represented by S's ER  $\left\langle [ENT, j_s], \begin{array}{|c|} \hline \\ \hline \text{Named}(j_s, \textit{Julie}) \\ \hline \end{array}, \mathcal{K}_{j_s} \right\rangle$ )

and by S's ER  $\left\langle [ENT, p_s], \begin{array}{|c|} \hline \\ \hline \text{Named}(p_s, \textit{Paris}) \\ \hline \end{array}, \mathcal{K}_{p_s} \right\rangle$ .

## Applications (3): Names in Attitude Reports

- It follows from the assumptions we have made about the proper referential use of names that S's utterance of (22) *can* only be interpreted as the attribution of a belief to Bill that is *de re* with respect to Julie and Paris.

Since we have also assumed that agents can have *de re* thoughts only when they have ERs for the entities w.r.t. which those thoughts are *de re*, it follows that Bill, to whom S attributes the *de re* belief that Julie is in Paris must also have ERs for Julie and Paris (and that these must corefer with S's ERs).

## Applications (3): Names in Attitude Reports

- Let us now consider what is involved in the interpretation of (22) by the recipient H.

We saw that the ideal conditions for the standard referential use of a name  $N$  include that the recipient of an utterance containing such a use of  $N$  must have an  $N$ -labeled ER that he makes use of in his interpretation of  $N$  and that is conferrential with the ER used by the speaker.

In the case of (22) this condition must be fulfilled both with respect to *Julie* and with respect to *Paris*. Let us assume that it is. (H must of course also have an ER for Bill. Let us assume this as well.)



## Applications (3): Names in Attitude Reports

- To do justice to the role that the names *Julie* and *Paris* play in identifying the content of the belief attributed to Bill the interpreter must also assume that Bill has ERs for Julie and Paris which are coreferential with those of the speaker (and thus, by the assumption we have already made also with his own ERs).
- Again there are different possibilities to be considered.

It may be that H already knows that Bill has ERs for Julie and Paris.

(He and Bill share reference to Julie and Paris, in the sense explained above.)

- But it is also quite possible that the interpreter lacks this knowledge, with respect to Julie, with respect to Paris (less likely) or with respect to both (equally unlikely, but again not impossible).

## Applications; (3) Names in Attitude Reports

- In these latter cases the interpreter will have to accommodate the belief that Bill has ERs of the required kind.

But it seems to me that these are easy accommodations, done quasi-automatically so long as the interpreter doesn't have information that explicitly blocks them.

Let us assume that accommodation of the assumption that Bill has ERs for Julie and Paris is unproblematic.

Then with or without accommodation the interpreter will end up with an interpretation of (22) that looks very much like the speaker's representation in (24):

A complex of three mental state components: ERs for Julie and for Paris and a belief whose content is to the effect that right now the referent represented by the first ER is in the referent of the second ER.

## Applications; (3) Names in Attitude Reports

- Other variants are possible as well.

H may have no ER for Bill or for Julie or for Paris or for any combination of them.

But considering these variants does not lead to any novel insights.

In all cases we end up with a representation that H forms of Bill's mental state on the basis of his interpretation of (22).

The only differences have to do with how much of that H needs to accommodate.

- Exercise: Present the changes in the mental state of H that result from interpreting S's attribution of (22) to Bill.

## Applications (4): Kripke Puzzles

- Sometimes an agent is wrong in thinking that two of his ERs refer to different entities.

Sometimes these ERs may be labeled, and in that case the labels may have the same morphophonological form (Kripke's 'Paderewski' case) or they may have different forms (Kripke's 'London'-'Londres' case).

## Applications (4): Kripke Puzzles

- Sometimes an agent is wrong in thinking that two of his ERs refer to different entities.

Sometimes these ERs may be labeled, and in that case the labels may have the same morphophonological form (Kripke's 'Paderewski' case) or they may have different forms (Kripke's 'London'-'Londres' case).

- As Kripke and others have noted, when the attributee is in this kind of predicament, then the so-called 'standard' linguistic forms for reporting propositional attitudes, such as (22), become problematic.

(I assume familiarity with the stories of Kripke's Pierre, who thinks that London and Londres are different cities, and Kripke's Peter, who falsely believes that Paderewski the Prime Minister and Paderewski the concert pianist are two people rather than one.)

## Applications (4): Kripke Puzzles

- What we have been saying above about unproblematic attributions such as (22) in the circumstances we have considered, helps to see what can go wrong with such attributions when the attributee is in the predicament of Peter or Pierre.

A detailed analysis of what can go wrong with such attitude reports, and when they may come out nevertheless has to take many factors into account.

First, there is the question what the speaker knows about the predicament of the attributee.

Then there is the question what the addressee knows about the attributee.

And then there is the question what the speaker knows about the addressee and in particular about what he knows about the attributee.

## Applications (4): Kripke Puzzles

- Going through all the possible variations amounts to quite a bit of work.

We won't do that here; but we will discuss a few cases, which should give a good idea of how the relevant kind of case analysis should go in general.

We start with Pierre. Recall that Pierre has a *London*-labeled and a *Londres*-labeled ER for London and that he thinks these stand for different cities.

Moreover, Pierre associates with his *London*-labeled ER the belief that its referent is ugly and his *Londres*-labeled ER the belief that its referent is beautiful.

## Applications (4): Kripke Puzzles

- Consider the following attitude attributions of Pierre.  
(25) a. Pierre believes that London is beautiful.  
b. Pierre believes that Londres is beautiful.  
c. Pierre believes that London is ugly.  
d. Pierre believes that Londres is ugly.

Which of these are to be considered true and which false?

That isn't easy to say.

- There are two kinds of problems here.
- The first: What must be the case such a report can be regarded as true, given a logical form that an interpreter assigns to it?
- The second: What logical forms will/can/must interpreters assign to these reports given their state of information about the attributee?



## Applications (4): Kripke Puzzles

- The first question is important for the following reason.

A central principle of semantics is that utterances involve truth conditions.

How truth conditions are involved dependson the type of speech act that is being performed.

When the speech act type is a request, then the truth conditions determine what the world must be like for the request to have been fulfilled.

When the utterance is a promise, then the truth conditions determine what the world must be like in order for the promise to have been kept.

And so on. In particular, when the utterance is an assertion, then the central issue is whether the truth conditions are fulfilled in the actual world, in which the utterance is made.

## Applications (4): Kripke Puzzles

- Here we stick with assertions, as we have been doing throughout these slides.

But assertions of attitude attributions involve truth conditions at an embedded level.

For instance, for a belief report to be true, the world must be such that the attributee has a belief that is correctly described by the report.

And that is usually taken to require that the attributee has an attitude of the type indicated in the report that satisfies the truth conditions of the content specification provided by the report.

So in the case of our belief attribution (22) the assertion that is made by uttering it will be true only if the attributee Bill has a belief that satisfied the truth conditions' of (22)'s *that*-clause.

## Applications (4): Kripke Puzzles

- One question that semantics has to confront generally is whether truth conditions are all that matters.

For utterances of attitude attributions of the form of (22) this question takes on a particular form:

Are the truth conditions of the content specification all that matters to the question whether the attitude of the attributee has been characterized correctly?

Much of the formal semantics literature on the attitudes is, i believe, to be read as endorsing this principle.

(Often the principle seems to be taken for granted, or thought to be so obvious that there is no need to make it explicit.)

## Applications (4): Kripke Puzzles

- The general motivation behind the MSDRT framework we have been using suggests a somewhat different picture.

Central to the conception is that of a mental state with the kind of structure that descriptions in MSDRT are designed to capture:

the structure displayed by MSDRT's IAADRSs.

From such a perspective the primary task of an attitude report is that it correctly capture the relevant part of the mental state of the attributee.

That may include a correct characterization of the truth conditional content of the attitude that the report attributes, but it may also involve more than that.

## Applications (4): Kripke Puzzles

- At this point it is still unclear what this ‘more’ may amount to.

And this is a question that I will not try to address in general terms.

But I want to say something about it in connection with the possibility of reporting on the mental state of someone in the predicament of Pierre.

## Applications (4): Kripke Puzzles

- Let us consider a case in which both the utterer S of an attitude attribution to Pierre and the recipient H of that utterance know that ‘London’ and ‘Londres’ are names for the capital of Britain.

More specifically, each of them has one ER anchored to London that has both *London* and *Londres* as labels.

And furthermore they are both informed about Pierre’s predicament:

That Pierre has a *London*-labeled ER and a *Londres*-labeled ER, which unbeknownst to him are anchored to the same city and of which he erroneously believes that they represent two distinct cities.

S moreover knows something about the thoughts that Pierre associates with his two ERs – that Pierre thinks ‘London’ is ugly and that ‘Londres’ is beautiful.

## Applications (4): Kripke Puzzles

- How is S going to convey either of these bits of information about Pierre to H?

And what matters to the question whether S succeeded in these efforts?

- The second question is according to what principles the recipient of an attitude report is to construct a semantic representation/logical form for it.

To deal with this problem adequately we would have to define a fragment (of English, given all we haven't been doing so far) which includes a significant portion of language that can be used to make attitude attributions, and to spell out an MSDRT construction algorithm for it.

That is a big task and one that would explode the limited aims of these slides.

## Applications (4): Kripke Puzzles

- However, some of the guiding principles have already merged in our discussion of (22).

In the following discussion we will build on those.

Let us begin by focusing on the sentences in (25) and start with (25.c).

(25.c) Pierre believes that London is ugly.

Let us assume that when S uses this sentence to ascribe a belief to Pierre and knows what the relevant part of Pierre's mental state looks like, her aim must be to describe one of the beliefs that Pierre has about the beauty/ugliness of London and Londres.



## Applications (4): Kripke Puzzles

- If S wants to use a name for London in her report, she will, for a start, have to rely on her own ER for London.

Suppose she wants to refer to London by name in the attribution she is going to make to Pierre.

Since her own ER is labeled with both *London* and *Londres* she still has a choice.

But it is reasonable to take it that this choice is further constrained by the attribution to Pierre that she wants to make.

Given what S knows about Pierre, attributing to him a belief (in this case: about the aesthetic merits of London) must inevitably involve her focusing on one of the London-anchored she knows Pierre to have.

## Applications (4): Kripke Puzzles

- A natural policy for S to follow in this case is to use the name that is attached to the ER of Pierre of which it is the label.

So if S wants to report a belief of Pierre's that he associates with his *London*-labeled ER, then S should use *London* in her description of the content of the belief she attributes to him.

And likewise, when she wants to report a belief that Pierre associates with his *Londres*-labeled ER, then she should use *Londres*.

In the light of this policy for name choosing, S's report (25.c) , repeated once more:

(25.c) Pierre believes that London is ugly.

should be understood as the attribution that Pierre has a belief of the kind described that he connects with his *London*-labeled ER.

## Applications (4): Kripke Puzzles

- If we assume (as we have) that H has the same knowledge about London as S, then his limitation impose no restrictions on S's use of either *London* or *Londres*.

And if S assumes that H has this knowledge she will feel no constraints on this score when making her choice between *London* and *Londres*.

So the natural policy for H to follow in interpreting what S has said is to take her to to ascribe a belief to Pierre that he associates with his *London*-labeled ER, and not a belief associated with his *Londres*-labeled ER.

- But suppose that H had, for some reason or other, interpreted S's attribution as that of a belief that Pierre himself associates with *Londres*-labeled ER.

How wrong would that have been?

## Applications (4): Kripke Puzzles

- Trying to answer this question makes us aware of the paradoxical situation we have reached.

To make clear what I have in mind consider the case where H knows nothing about Pierre's mental state, and thus nothing about Pierre's predicament.

In this situation H's interpretation of (25.c) can only take the form of assuming that Pierre has some ER for the city of London and representing the content of the attributed belief as a proposition about the referent of that ER.

H is no position to make further assumptions about the ER he attributes to Pierre.

Nor, it would seem, does he have to in order to arrive at a semantic representation of (25.c) that we would consider adequate.

## Applications (4): Kripke Puzzles

- In the light of this it might be thought that all that is required for a correct interpretation of (25.c) is that it gets the truth-conditional content of the attributed belief content right, viz. as the *de re* proposition that London is ugly.

(The need to assume that Pierre has some ER representing London is just a concomitant of the assumptions that the MSDRT framework makes about the representation of thoughts *de re*.)

But when we return to the case of the informed interpreter H, who knows that Pierre has two distinct ERs for London, then this statement of what is necessary for a correct interpretation of (25.c) by H, seems once again too weak.

Once H knows that Pierre has these two ERs he cannot avoid asking, it would seem, with which of those two the reported belief is associated.

## Applications (4): Kripke Puzzles

- H may have no clue as to how to resolve the matter and leave it unresolved.

But leaving it unresolved would lead to an *underspecified* representation, in which the choice between the two ERs still needs to be made in order to turn the underspecified representation into a proper representation.

- This then is the apparently paradoxical situation we have reached:

So long as the interpreter is ignorant enough about the attributee he can construct a representation of the report that seems adequate although it says nothing about which of the two ERs that Pierre actually has is the one involved in the represented belief.

The ER H accommodates could be either of those ERs, but the question which never arises in this case.

## Applications (4): Kripke Puzzles

- The representation H is able to construct in this case is neutral on this issue. But it is not *underspecified* and can stand as H's final interpretation of (25.c).

But when H knows more, then the standards for his interpretation rise, so to speak.

Remaining neutral on the question which of Pierre's ERs is involved won't do.

And when H makes the wrong choice then his representation of S's utterance must be considered wrong.

More knowledge about the context in which the relevant sentence or sentence part (here: the *that*-clause of (25.c)) is to interpreted offers more opportunities for making connections.

But by the same token it also creates new opportunities for getting things wrong.

## Applications (4): Kripke Puzzles

- Before trying to say more about this paradoxical result, let us look at the formal representation that H might construct for (25.c).

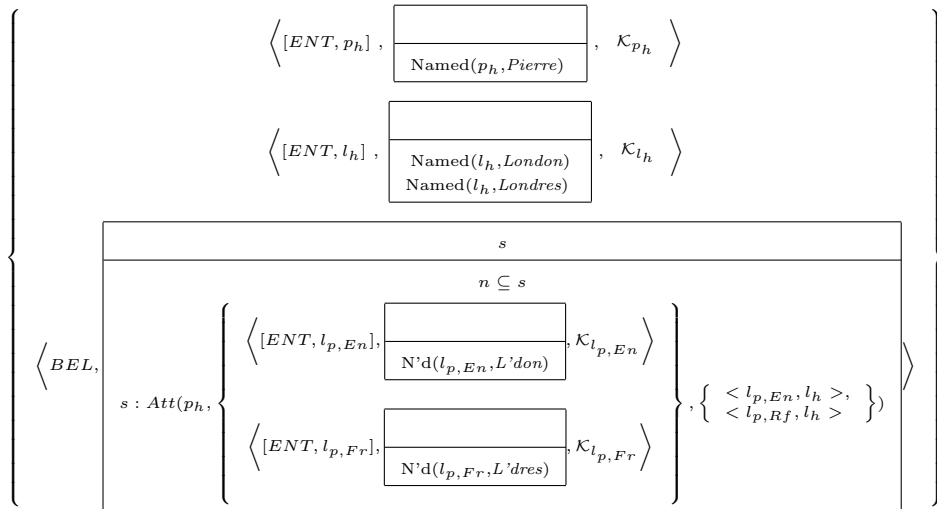
More, precisely, let us have a look at the representations that the informed and the uninformed H would construct if he were to proceed along the lines described in connection with (22).

The next three slides give the relevant part of the mental state of the fully informed H just before receiving and interpreting (25.c) (first slide) and just after reception and interpretation (second and third slide).

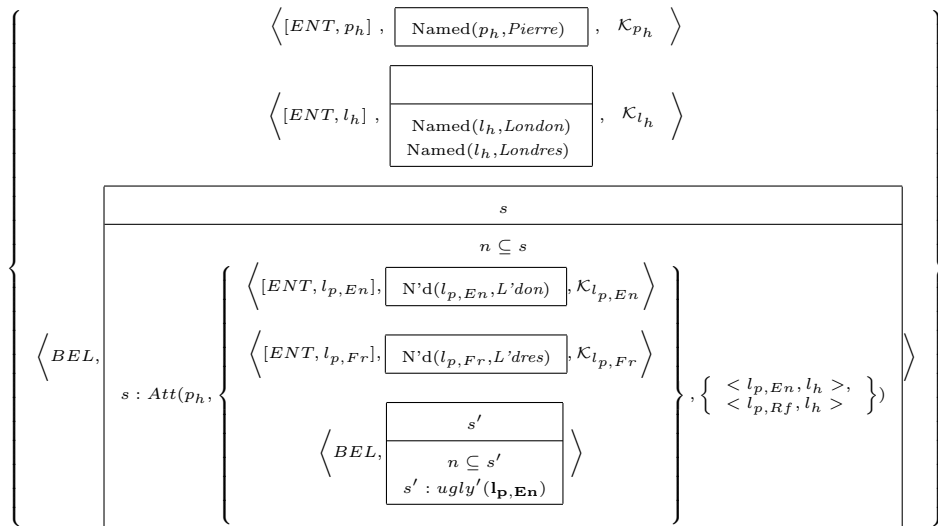
The second slide shows the result of interpreting the attributed belief as connected with Pierre's *London*-labeled ER and the third slide the result of interpreting the belief as connected with his *Londres*-labeled ER).



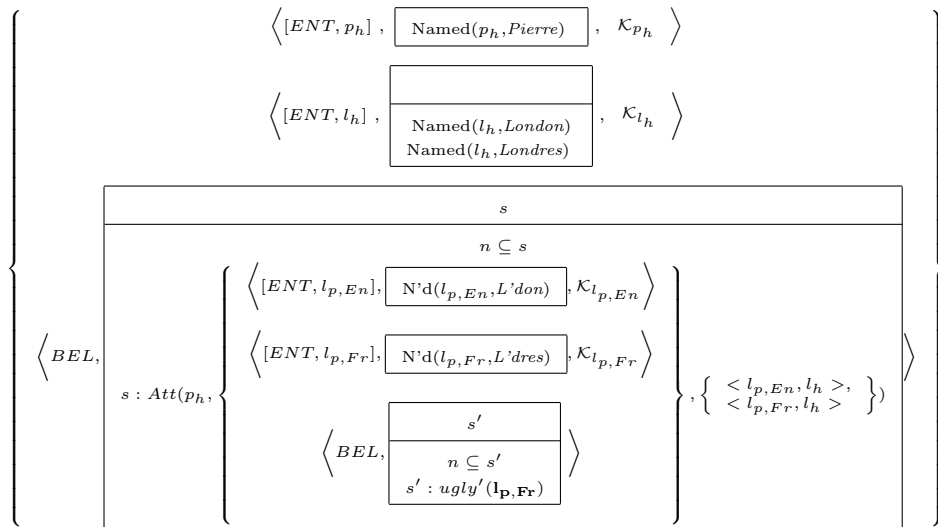
# Applications (4): Kripke Puzzles



# Applications (4): Kripke Puzzles



# Applications (4): Kripke Puzzles



## Applications (4): Kripke Puzzles

- Note that, as a kind of graphical accident, the difference between H's two interpretations of S's belief attribution to Pierre is nearly invisible.

I have tried to highlight the difference by putting the crucial spots in boldface.

The difference is that in the first interpretation the argument position of *ugly*' is filled by the distinguished dref  $l_{p,En}$  of Pierre's *London*-labeled ER.

In the second interpretation it is the distinguished dref  $l_{p,Fr}$  from his *Londres*-labeled ER.

## Applications (4): Kripke Puzzles

- The next two slides show the mental states before and after interpretation of the uninformed H.

We now assume that H himself has, as before, an ER for Pierre and a single ER for London which is labeled with both *London* and *Londres*.

But H has no beliefs and made no assumptions about the mental state of Pierre before S's utterance of (25.c) reaches him.

## Applications (4): Kripke Puzzles

$$\left\{ \begin{array}{l} \left\langle [ENT, p_h], \begin{array}{|c|} \hline \\ \hline \text{Named}(p_h, Pierre) \\ \hline \end{array}, \mathcal{K}_{p_h} \right\rangle \\ \left\langle [ENT, l_h], \begin{array}{|c|} \hline \\ \hline \text{Named}(l_h, London) \\ \text{Named}(l_h, Londres) \\ \hline \end{array}, \mathcal{K}_{l_h} \right\rangle \end{array} \right\}$$

## Applications (4): Kripke Puzzles

$$\left\langle [ENT, p_h], \begin{array}{|c|} \hline \\ \hline \text{Named}(p_h, \text{Pierre}) \\ \hline \end{array}, \mathcal{K}_{p_h} \right\rangle$$

$$\left\langle [ENT, l_h], \begin{array}{|c|} \hline \\ \hline \text{Named}(l_h, \text{London}) \\ \text{Named}(l_h, \text{Londres}) \\ \hline \end{array}, \mathcal{K}_{l_h} \right\rangle$$

$$\left\langle BEL, \begin{array}{|c|} \hline s \\ \hline n \subseteq s \\ \left\langle [ENT, l_p], K_l, \mathcal{K}_{l_p} \right\rangle \\ \left\langle BEL, \begin{array}{|c|} \hline s' \\ \hline n \subseteq s' \\ s': \text{ugly}'(\mathbf{l}_p, \mathbf{En}) \\ \hline \end{array} \right\rangle, \{ \langle l_p, l_h \rangle \} \\ \hline \end{array} \right\rangle$$

## Applications (4): Kripke Puzzles

- Comparing the ‘innocent’ interpretation on the last slide with the interpretations on slides 137 and 138 brings out the nature of the interpreter’s predicament:

When he knows less, he is on safer ground.



## Applications (4): Kripke Puzzles

- Comparing the ‘innocent’ interpretation on the last slide with the interpretations on slides 137 and 138 brings out the nature of the interpreter’s predicament:

When he knows less, he is on safer ground.

- Note that in all three interpretations shown the proposition expressed by the content representation of the attributed belief (the DRS  $K$  following  $BEL$  inside the Att-Condition) is the same:

It is the singular proposition about London that it is ugly.

The three interpretations differ in how this singular proposition is represented in Pierre’s mind.

That is a matter of the representation of truth conditions, not of the truth conditions represented.

## Applications (4): Kripke Puzzles

- It is for this reason that the model-theoretic semantics for MSDRT that was presented earlier in the seminar cannot deal with the distinctions that seem crucial in connection with an attribution like (25) to Pierre.

For this model theory the interpretations on slides 137 and 138 are indistinguishable, since this model theory ignores the representational structure of internal anchors.

(That is arguably one of the defects of this model theory and cases of the kind we are discussing may be a good starting point for attempts to improve on the current version.)

## Applications (4): Kripke Puzzles

- But the difference between the interpretations on slides 137 and 238 is of course crucial.

Given what Kripke tells us about the case, the belief attribution represented on slide 137 is true and the one represented on slide 138 is false:

Pierre does have a belief to the effect that London is ugly which he associates with his *London*-labeled ER for London, but he does not have such a belief associated with his *Londres*-labeled ER.

It is important for us to get such distinctions right.

We want to know about the views and attitudes of others in large part because that helps us to understand how they click and to predict what they are going to do.

## Applications (4): Kripke Puzzles

- The referential connections that are captured in our framework through sharing of discourse referents is one of the most important forms of such connections.

To get these connections wrong can be a serious disadvantage.

To illustrate the point let us switch to (25.a).

(25.a) Pierre believes that London is beautiful.

According to Kripke's story Pierre does not have such a belief associated with his *Lomdon*-labeled ER. (He thinks that the city he knows as 'London' is ugly.)

Let us suppose that S uses (25.a) in an utterance she makes to H and that H interprets her words by representing the reported belief to Pierre's *London*-labeled ER.

## Applications (4): Kripke Puzzles

(There may be various reasons for this:

(i) S herself is misinformed on this point;

(ii) S is not misinformed herself, but wants to misinform H, for some reason or other;

(iii) S intended the occurrences of *London* in her utterance to be interpreted as relating got Pierre's *Londres*-labeled ER, and not to his *London*-labeled ER, but H misunderstands her on this point.

But S's motives do not matter for the point I want to make.)

## Applications (4): Kripke Puzzles

- Here is one way in which H might be led astray by the misinformation represented by his interpretation of S's utterance.

Suppose he had been engaged by Pierre to look for employment for him outside London.

Pierre had expressed this desire to H saying that he could no longer live in a place as dreadfully ugly as London.

H now concludes from his interpretation of (25.a) that Pierre is no longer averse to his current environment and that there is no longer any need to look for a position for him outside London.

Had H connected the belief expressed in (25.a) with Pierre's *Londres*-labeled ER, then he would not have drawn this conclusion.

## Applications (4): Kripke Puzzles

- So far we have only looked at a very small part of the variations that are possible even within the closely limited that of options that have been imposed on our discussion:

The four sentences in (25.a) and the state of knowledge in relation to Pierre on the part of S and of H.

We have only considered two of the sentence and two possible states of antecedent information on the part of H.

(So far we have been assuming that S has full knowledge of Pierre's predicament.)

It is left to the reader of these slides o explore other combinations of the parameters that demarcate this space of variants.

But before closing this discussion I want to mention a couple of others.

## Applications (4): Kripke Puzzles

- First, the sentences (25.b) and (25.d), in which the name *Londers* is used in an English sentence, may make it clear that the speaker wants to convey something special by choosing this name.

Even in an uninformed recipient H this use of the name may trigger a sense that there is something special about the attributee of these sentences:

S must have had a reason for this unusual way of referring to London in an English sentence.

And an explanation for this that may occur to H might be that S is referring implicitly to an Entity representation on the part of Pierre that is labeled with *Londres*.

And so the uninformed H may accommodate that Pierre has a *Londres*-labeled ER for London.



## Applications (4): Kripke Puzzles

- Likewise, for the informed interpreter H the use of *Londres* in an otherwise English sentence will be a clear signal that he is to connect the attributed belief with Pierre's *Londres*-labeled ER.
- The most dramatic risks of misinterpretation arise when H is partially informed about Pierre.

For instance, H might be an old friend of Pierre's back in the times when they grew up together in France and looked at the some pictures of that alluring foreign city called London.

H now runs into a speaker S who has been currently in contact with Pierre in London.

## Applications (4): Kripke Puzzles

- Let us distinguish between two cases:
  - (i) H knows enough English for communication between S and him to take place in English.
  - (ii) H doesn't know English but S knows French and the two communicate in French.
- (i) When H hears S utter either (25.a) or (25.c) , then he is likely to connect the beliefs described in these sentences with the one ER for London that he knows Pierre to have, viz. his *Londres*-labeled ER.

And he will be likely to do this even though S intends his utterances to describe beliefs that Pierre associates with his *London*-labeled ER.

For H knows (I am assuming) that *London* is the English word for what is called *Londres* in French.

## Applications (4): Kripke Puzzles

(ii) Such an interpretation on the part of H might be even more unavoidable when the communications take place in French.

Suppose for instance that S utters the sentence in (26).

(26) Pierre pense que Londres est laide.

When H hears S say this, he will be more or less bound to interpret it as making a statement relating to Pierre's *Londres*-labeled ER, which dates back to the time when he and H grew up together in France.

## Applications (4): Kripke Puzzles

- Of course, when S knows what H knows and doesn't know about Pierre, she can be expected not to use a sentence like (26), of which she can predict that it will lead to misunderstanding.

This would be an instance of the general and not very original observation that speakers try to express themselves in such a way that their interlocutors will interpret their words in the intended way given their (i.e. the interlocutors') resources.

But it points to two further aspects of communications about Pierre's beliefs:

- (a) The knowledge that the speaker S has, or the assumptions she makes, about the addressee H's knowledge about Pierre and the way she makes use of this in her choice of words.
- (b) The state of S's own knowledge about Pierre.

## Applications (4): Kripke Puzzles

- With regard to the state of knowledge of the speaker S we can distinguish a similar range of case as we can in relation to H.

The danger of miscommunication is especially high when both S and H have only partial information about Pierre's predicament.

(For instance, H might know only about Pierre's dreaming about London as an adolescent in France and S only about his current miserable and marginal existence in London.)

In such situations S won't even be in a position to speculate meaningfully about how much H might know.

If she does so at all, she is likely to make the wrong assumptions and her choice of words will be likely to lead to the wrong interpretation.

## Applications (4): Kripke Puzzles

- Contemplation of further variants of Pierre reporting are left to the reader.

But a couple of words ought to be devoted to the case of Peter and Paderewski, which has become a standard companion piece to Pierre.

There isn't much that needs to be said about this second case after all that we have gone through.

- The principal difference between the *Paderweski* case and the *London-Londres* case is that the two ERs for Paderewski that Peter has and that he takes to represent different persons, both have the same name (*Paderweski*) as label, rather than distinct labels.

But how much of a difference is this?

## Applications (4): Kripke Puzzles

- Having ERs for different people that are labeled with the same name is a common condition, which pretty much all of us are knowingly in.

As regards last names this is more or less the rule.

In many societies last names are inherited from fathers to children.

So since every child has a father, ERs for different persons but labeled with one and the same family name, are always around the corner:

and often such ERs actively live side by side in our mental worlds.

## Applications (4): Kripke Puzzles

- Sometimes this is true also for full names, consisting of first name(s) and last name.

Many of us know about more than one person called John Smith:

We have more than one *John Smith*-labeled ER and we know that they represent different persons.

- Still, in relation to full names this is more of an exception.

There is akin of presumption that when two people have the same first name and the same family name, then they are the same person.

And this expectation is reinforced when it is also known that the two people have certain other salient features in common.



## Applications (4): Kripke Puzzles

- A classical example is the name *Alexandre Dumas*.

This is the name of not one but two famous French authors, father and son.

It is not uncommon for people to know this name as the name of a French author.

and think there is just one such author.

The ER they have with the label *Alexandre Dumas* then is prone to become corrupted by anchors linking it to both father and son.

And then, if and when the error is detected, it may be very hard to disentangle.

## Applications (4): Kripke Puzzles

- In the case of Peter and Paderewski the erring is in the opposite direction.

In fact, we may distinguish two versions of the Paderewski case which aren't normally distinguished in discussions in the literature.

The first is that where Peter's ERs for Paderewski are labeled *Paderewski* and the second is that where his ERs are labeled *Jan Ignac Paderewski*

(These aren't very different from each other.

So the lack of attention that has been paid to the distinction isn't to be understood as a criticism of those who haven't made it.)

But the second case is perhaps the more telling one, because full names are on the whole a reasonable guarantee of unique reference, whereas mere family names are not.

## Applications (4): Kripke Puzzles

- The only significant difference between the case of Peter and the case of Pierre is this:

In the case of Pierre there is some possibility to exploit the choice between *London* and *Londres* as a guide to the interpreter.

But in the case of Peter there is no such choice.

So attitude attributions of the simple form we have been considering in this discussion (exemplified by the sentences in (25)) are even more prone to possible misinterpretation.

## Applications (4): Kripke Puzzles

- What morals can we draw from this discussion?

The first is a confirmation of sorts for the old observation that truth-conditional content does not get us very far in the Pierre and Peter cases.

According to our analysis, two belief contents are involved in either case.

In the case of Pierre they are the singular propositions about London that it is ugly and that it is pretty, respectively.

(N.B. I will only speak about the Pierre case in these concluding remarks. But they apply equally to the Paderewski case.)

There are good grounds for saying that Pierre has both of these beliefs and thus that there is a sense in which he has contradictory beliefs.

## Applications (4): Kripke Puzzles

- But it is a way of holding contradictory beliefs that is special insofar as the agent cannot detect it by the mere exercise of deduction no matter how powerful and exquisite his skills.
- Considerations of truth-conditional content do not get us very far in such cases.

What matters at least as much is how the beliefs are ‘represented’ by the agent (or the ‘guises’ in which the beliefs are present to him).

Moreover, since attitude attributions often provide clues about the representational properties of the attitudes they attribute, some of the action also has to do with the linguistic forms we use to ascribe those beliefs.

So much for received views.

## Applications (4): Kripke Puzzles

- Our analysis can be seen as an endorsement of these observations.

But it endorses them in a quite specific and partly novel way.

And they do so on the basis of precise assumptions that also govern the interpretation of attitude attributions in which the complications presented by Pierre cases do not arise.

In particular, an important ingredient of our analysis are the constraints on the production and interpretation of proper names used in what we called the ‘standard referential way’.

These constraints are applicable to all such uses of proper names, not just to those occurring in content specifications of reported attitudes.

## Applications (4): Kripke Puzzles

- Even more important has been our assumption that *de re* thoughts always involve Entity Representations.

When a thought is one that attributes some thought to another agent, then this assumption applies at two levels:

- (i) at the level of the agent who has the attributing thought; and
- (ii) at the level of the mental state of the agent to whom the attribution is made.

One consequence of this is that when a speaker uses a name as part of her specification of the content of a thought she attributes she must:

- (a) have her own ER for the entity she uses the name too refer to; and
- (b) assume that the attributee also has an ER for this entity.

## Applications (4): Kripke Puzzles

- Another important aspect of our analysis is the sharp distinction between:

(i) the attributing thought of the speaker;

(ii) the sentence or sentences she chooses to convey that thought to her audience (i.e. the simple or complex attitude report she utters);

(iii) the interpretation of the report that her audience constructs on the basis of its form together with various contextual clues.

Many problems that simple report sentences like those in (25)) can give rise to have to do with what speaker and hearer assume about the attributee;

and also with what they assume about each other's assumptions about the attributee.



## Applications (4): Kripke Puzzles

- A framework like ours, in which Entity Representations play a central role, makes it possible to state in reasonably succinct terms what these assumptions are and how they can affect communication via the kinds of report sentences we have been looking at.

An analysis of the production and interpretation of such sentences may be possible also without making the use of ERs that we have been making here.

But is not obvious to me how that might be done.

## Applications (4): Kripke Puzzles

- A final moral relates to something that I mentioned in passing early on in this discussion.

Is all the fuss we have been making about what can go wrong with attitude-reporting sentences like those in (25) when the attribute suffers from the kind of cognitive dissonance we find in Pierre and Peter really worth it?

In one sense the answer is, I think, ‘yes’.

We can learn quite a bit from looking up close at what can go wrong when speakers try to use such sentences to make attributions to attributees with such dissonances.

But we should not forget that there are many other ways in which we can talk about the mental states of such attributees and the attitudes that can be meaningfully ascribed to them in spite of their predicaments.

## Applications (4): Kripke Puzzles

- What we most urgently need now is a systematic semantic and pragmatic analysis of the much richer and diverse repertoire that natural languages make available for attitude attribution and the description of mental states.

Sentences like those in (25) constitute only a small patch in this much larger and more diverse field.

And it is a patch that speakers are happy to leave as soon as the task of describing the contents of other people's minds seems to make that necessary or more efficient.

## Applications (5): Donnellan

- The next few slides are concerned with a paper of Keith Donnellan's which discusses the case of a student who meets at a party a man who he mistakes for the philosopher Aston-Martin.

The student updates the ER he already had for Aston-Martin, on the basis of reading his books, with anchors and other information deriving from his interactions with the man at the party.

He then goes home with corrupted ER uncorrected and continues to use the name 'Aston-Martin' henceforth in statements that derive either from what he knows about the philosopher and his works or from his interaction with the man at the party.

According to Donnellan the student can do this, using the name (and, we would say, the ER to which it is attached) sometimes to refer to the philosopher and sometimes to the man at the party.

## Applications (5): Donnellan

- This case and the hypotheses Donnellan formulates about it are a serious challenge to the theory about the use of names that has been developed here.

The following slides make a beginning with a discussion of this issue.

But the need to be extended and reworked.

They also seem oddly placed where they are occurring now, at the very end of this slide package.

Reworking and moving them to the right place, however, will have to wait till later.

I am leaving the slides in their present preliminary form as a kind of preview.

## Applications (5): Donnellan

- Example 1: A subject  $A$  is presented with two identical red squares, one above the other, against a green background screen that covers all of his field of vision.

$A$  observes a change in colour in what appears to him as the square on top and reports this observation by saying:

(27) The square on top has changed color.

As it is,  $A$  has been given up-down reversing glasses without knowing this.

Donnellan's intuition:  $A$  is referring in (27) to the square at the bottom, but is doing that with a DNP which misdescribes its referent.

## Applications (5): Donnellan

- Diagnosis:

*A* has an ER for the square at the bottom with:

- (i) a perceptual anchor that links it to that square;
- (ii) A false descriptive condition (in its second component), to the effect that it is the square at the top.

When *A* relies on this ER when choosing a definite description to refer to the square represented by the ER he will choose this wrong descriptive condition.

But the thought he is trying to express is a thought about the bottom square.

## Applications (5): Donnellan

- Diagnosis:

*A* has an ER for the square at the bottom with:

- (i) a perceptual anchor that links it to that square;
- (ii) A false descriptive condition (in its second component), to the effect that it is the square at the top.

When *A* relies on this ER when choosing a definite description to refer to the square represented by the ER he will choose this wrong descriptive condition.

But the thought he is trying to express is a thought about the bottom square.

- Question:

Should we conclude from this that *A* made a *referential* use of 'the square at the top' in (27)?



## Applications (5): Donnellan

- A second example from 'Proper Names and Identifying Descriptions' is quite different.

Our agent *A* thinks that the famous philosopher Aston-Martin, of whom he has read several articles, is the cat's whiskers.

At a party *A* meets a person by the name of Aston-Martin whom he takes to be the philosopher he admires and with whom he interacts in various ways during the party.

Consider the following two things *A* could say on the day after to a friend who wasn't at the party.

(28) I at last met Aston-Martin, at that party last night.

(29) Towards the end of the party the hostess fell over someone's feet. As it turned out, the feet were Aston-Martin's.

Donnellan's intuition: *A* is referring to two people, the philosopher and the person *A* met at the party.

## Applications (5): Donnellan

- Diagnosis:  $A$ 's 'Aston-Martin'-labelled ER is multiply anchored and it is incoherent, since two of its anchors link it to different individuals.

When such an incoherent ER enters into the content representation  $K$  of a belief (or some other propositional attitude) of  $A$ 's, then what *is* the proposition represented by  $K$ ?

Is  $K$  to be seen as defect too and as not representing any proposition? Does  $K$  represent two propositions, about the respective Aston-Martins? Is it ambiguous between those two propositions? Or an underspecification compatible with both?

I do not quite know how this question should be answered.

- Note well: In this case we are dealing with what appear to be *ill-founded thoughts*. These thoughts are ill-founded because they violate a presupposition: every ER that enters into an agent's representation of a thought must be coherent.

## Conclusions

- Looking at proper names from a communication-theoretic perspective is (I think) useful in trying to understand what is involved in many discussions about how proper names refer and what they refer to in certain special situations.

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- Missing from this presentation:

Parallel but contrasting analyses of other DNPs, which enable us to see even more clearly in what ways Proper Names are special.

- Missing generally:

An account of language generation that matches our current accounts of interpretation in precision and detail.

## Prospects and wider concerns

- Next to nothing has been said here about the question what motivates the choice of a name (or other DNP) by a speaker S when the ER ablaut whose referent she wants to say something offers her various options?

This question, I take it, is a special case of a general strategy:

Given what you know about the resources of your audience, choose your words so that they can be understood by someone with those resources.

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Given what you know about the resources of your audience, choose your words so that they can be understood by someone with those resources.

- A communication-theoretic study along the lines sketched can bring out properties of DNPs that are not so clearly revealed by other approaches.

An example is the classification into standard, introductory<sub>1</sub>, introductory<sub>2</sub> and non-referential use of proper names.



## Prospects and wider concerns

- Also, some of the problems that have been a major preoccupation in the philosophical literature on names become more transparent in the communication-theoretic approach

In particular: the ‘double vision’ problem in its various guises:  
Hesperus-Phosphorus; Ortcutt-the man near the power plant;  
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Hesperus-Phosphorus; Ortcutt-the man near the power plant;  
London-Londres; Paderewski-Paderewski.

- And a related benefit of our approach: We are awarded with natural and painless treatment of ambiguous names.

## Prospects and wider concerns

- Proper names are just one type of DNP.

However, studies along the same communication-theoretic lines have been carried out for

- (i) simple and complex demonstratives, and
- (ii) 1-st and 2-nd person singular pronouns.

These studies show how different the referential behavior of these different DNPs in discourse can be.

Proper names, in particular, stand out by their unique properties.

This remains true when we distinguish between their different uses.

Still outstanding: communication-theoretic studies of 3-d person pronouns and definite descriptions.

## Prospects and wider concerns

- The study of other DNPs reveals that they too can be used in different ways, which can be distinguished in terms of their information-related functions and their presuppositions.

Different DNP types often compete in that they share a certain type of use.

When a DNP is wanted for one of these uses, then the user is often confronted with a choice between DNPs of different types.

For instance we often find ourselves faced with a choice between a third person pronoun and a definite description.

Or with the choice between a pronoun, definite description or proper name.

To explain what may happen in such situations we must not only take the presuppositions and other properties of the given use of the different DNPOs into account.

## Prospects and wider concerns

- Also important are the assumptions that speakers make in such situations about whether their audiences satisfy the presuppositions associated with the DNPs between which they have to choose.

What little has been said here about the assumptions that the utterers of attitude reports with names have to make about the recipients of these utterances can be seen as a first step in the direction of a more comprehensive study of this aspect of verbal communication.

## Prospects and wider concerns

- This is the point to draw attention to an intriguing difference in approaches towards reference and the linguistic devices for making references in verbal communication.

Most linguistic work on how reference is made through the use of language has adopted an interpretational stance.

Thus is part of general tendency within linguistic semantics:

Start from what can be identified in fairly uncontroversial terms – viz. the linguistic ‘input’, which may be identified as a string of phonemes or a string of orthographic signs or a string of words.

And go from there to the ‘meaning’ of the input, something much more difficult to identify in uncontroversial terms.

## Prospects and wider concerns

- We can think of an account of meaning that goes from input strings to a identification of their meaning – as semantics values in models or as logical forms of some kind or other – in abstract, non-cummunicalional terms:

For instance as the syntax-semantic interface of the language as abstract system of meaningful forms.

But when we want to give a communication-theoretic interpretation to such semantic theories, the one that directly comes to mind is that of the interpretations that the recipients of input strings assign to those strings.

So, insofar as those whip have been doing formal semantics in linguistics can be thought of as having said anything directly about the communication-theoretic aspects of language, it is with the interpretational side of the communication process that they have been dealing.

## Prospects and wider concerns

- Interestingly, much of the philosophical literature on reference has taken a production-oriented stance:

What does a speaker do when she refers to something?

And how does she and can she go about that when using language?

A proper communication-theoretic treatment of language use must bring these two perspectives – the production-oriented perspective and the interpretation-oriented perspective – together.

The approach taken in these slides tries to achieve such a unification.

But of course it is only a first beginning.