

Lecture 12: Implicit Arguments and Point of View

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Readings

- (Partee 1989) Binding implicit variables in quantified contexts
(Condoravdi and Gawron 1996) The context-dependency of implicit arguments
(Lasersohn 2009) Relative truth, speaker commitment, and control of implicit arguments
(Elbourne In Press) Implicit content and the argument from binding

Additional readings

- (Lasersohn 2005) Context dependence, disagreement, and predicates of personal taste.
(Lasersohn 2008) Quantification and Perspective in Relativist Semantics
(Elbourne 2008) Implicit content and sloppy identity
(Bhatt and Pancheva 2006) Implicit arguments (a good survey of different sorts of implicit arguments; emphasis on syntax, but includes semantics as well)

1. Background: Anaphora in Semantics and Pragmatics

It is well known that English third-person pronouns can function variously as deictic or demonstrative elements, as discourse anaphors, and as bound variables, as illustrated in (1), (2), and (3) respectively.

- (1) Deictic or demonstrative: *Who's **he**?*
- (2) Discourse anaphoric: *A woman walked in. **She** sat down.*
- (3) Bound variable: *Every man believed that **he** was right.*

In a typical use of (1), the pronoun gets its value from the non-linguistic context of the utterance, the context in which the speech act occurs. This is sometimes called a **pragmatic** (use of the) pronoun (Partee 1978), sometime **indexical** or **deictic** (because of its similarity to the typical uses of indexical **I** and deictic **this, that**). In discourse anaphora, as in (2), the pronoun takes its value from the constructed discourse context (Heim 1983, Kamp 1981, Karttunen 1976). In a bound variable case like (3), the pronoun

is interpreted as a variable bound by a variable-binding operator associated with the interpretation of *every man* .

Unified treatments of these uses of pronouns became available with the work of Kamp on Discourse Representation Theory (Kamp 1981) and Heim on File Change Semantics (Heim 1983). Extensions to temporal and locative anaphora, where similar ranges of behavior can be found, were immediately made (Bäuerle 1979, Cooper 1986, Hinrichs 1981, Partee 1984b, von Stechow 1982). Some temporal examples are given below.

- (4) Deictic past reference time: *I didn't turn off the stove.*
- (5) Discourse anaphora: *Mary woke up sometime in the night. She turned on the light.*
- (6) Bound reference time: *Whenever John wrote a letter to Mary, she answered two days later.*

In (Mitchell 1986) and (Partee 1989) it was argued that such a range of behavior can be found among a broader class of contentful context-dependent elements, as in the case of the adjective *local*, and others have extended the list even farther (Section 2.) This has given rise to interesting debates.

- (7) *John visited a **local** bar.* (Mitchell 1986)
- (8) *Every sports fan in the country was at a **local** bar watching the playoffs.* (Partee 1989), modifying an example of (Mitchell 1986)

An issue that arises for words like *local* and for many other cases is this: should we posit a covert pronoun-like element in the syntax as an “implicit argument” of *local*, or perhaps something like a situation variable in its semantics, or might the context-dependency somehow all be in the pragmatics? I will discuss several recent proposals in Section 3. In Section 4 I show how the sensitivity of bound variable interpretations to linguistic structure has been used to argue against a “pure pragmatics” account. Section 5 reviews arguments for and against several other accounts. Section 6 introduces Lasersohn’s idea about including a “judge” parameter in the speech-act context for sentences with “predicates of personal taste” like *tasty, fun*. In Section 7, if time remains, we’ll look at more examples that raise puzzles for the syntax-semantics-pragmatics borderlines.

2. Data: Binding implicit variables in quantified contexts

The possibility of bound-variable-like dependence of open-class words like adjectives and nouns was first raised in the work of Jonathan Mitchell, with examples like (7-8) above. On one of its interpretations, the word *local* demands some reference location to anchor to, and means something close to “in the vicinity of [*reference location*]”. In example (7), the reference location could be the utterance location, or, if the utterance is part of a narrative about John, the reference location could be determined by the narrative. These represent indexical/deictic anchoring and discourse anaphora respectively. While *local* in (8) could also be understood as anchored to the utterance location or some specific discourse location, the most likely interpretation, and the one I will consider here, is one with a “bound variable reference location” – a possibly different location for every sports fan.

Examples (7-8) concerned implicit binding of a context-dependent part of the meaning of an adjective; Partee (1984a) observed that the same behavior can be found with “intransitive” uses of some relational nouns like *enemy* and *friend*.

- (9) (a) *An enemy is approaching.* (Partee 1984)
(b) *John faced an enemy.*
(c) *Every man faced an enemy.*

Enemy in (9a) is likely to be understood as my or our enemy. Note that *approaching* in (9a) is also context-dependent, and if the context supported a goal argument of *approaching* other than me/us, the interpretation of *enemy* would probably shift accordingly, especially if the example were put in the past tense. In (9b), it’s most likely an enemy of John or of John’s group. And in (9c) we have the possibility of a bound variable reading.

- The behavior of *enemy* raises interesting issues about the relation between 2-place *enemy* and 1-place *enemy*. The 2-place relation is clearly more general, but as Mitchell (1986) argued, it does not follow that every instance of the 1-place property is best analyzed as derived from the 2-place one by filling in or quantifying over one argument place.
- An egocentric 1-place version of *friend* or *enemy* may be developmentally and ontogenetically prior to the 2-place version: small children and dogs may have only a 1-place version. See (Partee 1989) for some discussion.

We can also find similar phenomena with “null arguments” of some transitive verbs. Examples (10a,b) are from (Dowty 1982); (10c) is from (Partee 1989).

- (10) a. *Bill was nervously biting his nails. Everyone noticed.*
b. *Every secretary made a mistake in his final draft. The good secretary corrected his mistake. Every other secretary didn’t even notice.*
c. *Every many who shaves off his beard expects his wife to notice.*

Intransitive *notice* is interpreted like transitive *notice* with a contextually definite object, and this “implicit argument” can get a deictic interpretation as in (10a), a “pronoun of laziness” reading as in (10b), or a bound variable reading as in (10c).

This contrasts with the many transitive verbs, like *eat* and *read*, whose intransitive variants are interpreted as having a narrow-scope existentially quantified object – ‘eat something’, ‘read something’ – especially when they are used in the progressive. For some debate about whether intransitive *eat* should be analyzed as having an implicit argument similar to that of *notice*, see (Martí 2006, Recanati 2002). Recanati offers (11) as an example of *eat* with a bound-variable implicit argument, but Martí argues convincingly in favor of the more usual analysis in which the ‘missing object’ of intransitive *eat* is understood to be existentially quantified, with maximally narrow scope (Dowty 1982, Partee 1989).

- (11) *John is anorexic, but whenever his father cooks mushrooms, he eats.* (Recanati 2002)

Recanati asserts that (11) has a reading in which *eats* has an understood object interpretable as *the mushrooms his father cooks at time i*. Martí uses examples like (12)

to show that Recanati's paraphrase merely describes one possible situation in which (11) can be true, not a linguistically distinct *reading* of (11).

- (12) #*Whenever Sally cooks mushrooms, John never eats. Instead, he eats pasta with tomato sauce.* (Martí 2006)

As Martí argues, if *eat* could have a bound variable argument as *notice* can, (12) would not be anomalous. It would be able to have an interpretation saying that when Sally cooks mushrooms, John never eats them, but instead eats pasta. But it can't mean that – it can only mean that when she cooks mushrooms, he doesn't eat anything. And because of that, the continuation *Instead, he eats pasta ...* is anomalous.

In addition to context-dependence with nouns, adjectives, and verbs, it's easy to find examples involving temporal or locative expressions. Plain context-dependence is familiar in such cases; I add a pair of bound-variable examples from (Partee 1989); these are actually constructed on the model of "donkey-sentences" like *Every farmer who owns a donkey beats it*, and should presumably be given an analysis analogous to one's favorite treatment of donkey-sentence anaphora.

- (13) (a) *Every man who stole a car abandoned it 2 hours later.*
(b) *Every man who stole a car abandoned it 50 miles away.*

Anchoring situations can vary from expression to expression within a single evaluation situation: some of the above examples, and examples with overt indexicals and demonstratives:

- (14) (a) Real time: *Now you see it, now you don't.*
(b) (Kaplan) *Is that the same river as that?*

3. Competing proposals for accounting for such phenomena

3.1. Similarities to pronouns

Partee (1989) observed that the distribution and interpretation of many of these "implicit arguments" had much in common with the distribution and interpretation of pronouns, showing the same sorts of C-command restrictions, weak crossover, etc. But Partee (1989) argued against analyzing the examples as containing "unpronounced/empty/zero pronouns", because of some observed differences between implicit arguments and overt pronouns.

First the similarities to pronouns.

- (15) a. *Only the nearest photographer got a good picture of Reagan.*
b. #? *Only the nearest photographer got a good picture of every senator.*
c. *Every senator directed a smile at the nearest photographer.*
- (16) a. *Only his top aide got a good picture of Reagan.*
b. #? *Only his top aide got a good picture of every senator.*
c. *Every senator directed a smile at his top aide.*

These similarities provide one argument for positing empty pronoun-like elements in the structures containing such context-dependent elements as *nearest*, *local*, *later*, *enemy*, *notice*.

The main counter-argument in Partee (1989) was the impossibility of replacing the “implicit argument” by an overt pronoun in a number of examples, especially when it gets a bound-variable-type interpretation.

- (17) a. *Not everyone who thinks their parents did a bad job of bringing them up actually switches to the **opposite** child-rearing method.*
b. Interpretation: ... for each x, the child-rearing method opposite to the method used by x’s parents in bringing x up
c. * *the child rearing method **opposite to it.***

Condoravdi and Gawron (1996) propose that the implicit argument in many such cases is not actually pronoun-like, but has more in common with definite descriptions. They agree that there are strong constraints on using a pronoun without an overt antecedent, and note that it’s much easier to use a definite description with an implicit antecedent that is accommodated via “bridging”. “Implicit arguments are like pronouns in their capacity to anchor to any kind of context; however, they are unlike pronouns and more like definite descriptions in not demanding an overt antecedent.” [p.10].

The sentences in (13) illustrate the way in which implicit arguments pattern with definite descriptions. Even without an overt antecedent denoting a bet, the sentences (13a) and (13b) share a reading on which every man won the wager he made on the outcome of the Superbowl. The pronoun in (13c) lacks this reading.

- (13) a. Every man who bet on the Superbowl won.
b. Every man who bet on the Superbowl won the bet.
c. #Every man who bet on the Superbowl won it.

Given the restriction on the quantifier, for every man in the domain of quantification there is entailed to be a bet and that is sufficient for the interpretation of the implicit argument of *win*. It is exactly this entailment that is responsible for the felicity of the dependent definite *the bet* in (13b) as well.” (pp.10-11)

As Condoravdi and Gawron note, the similarities observed by Partee (1989) between pronouns and implicit arguments are also shared by definite descriptions, and definite descriptions also have the full range of uses – deictic, discourse anaphoric, and bound – and their analysis does a good job of capturing both the similarities and differences between implicit arguments and pronouns observed by Partee (1989).

Their proposal is built on Heim’s (1982) analysis of definite NPs. They interpret an implicit argument as including a relational predicate linking the ‘referent’ of the argument to some parameter in the context. They make a good case for splitting the notion of ‘context’ into two parts. One part is the “speech-act context”, which always provides its own salient “I”, “here”, “now”, and possibly additional salient referents. The other part is what they call “information state”, their term for the kind of context that gets recursively manipulated in dynamic semantics if we take meanings as functions from contexts to contexts. It is the ‘information state’ that includes various ‘discourse

referents' as well as the propositions that are in the current common ground, and it is information states that correspond to Heim's "files" and Kamp's "DRS's".

Splitting the notion of context into these two parts gives them a good way to put felicity conditions on different sorts of expressions that can anchor only to the utterance context or to any kind of context including 'bound variable contexts'. See their paper for details. Two nice conclusions are the following:

"On our account, the indexical interpretation of an implicit argument functions as a kind of default. The utterance context is always present and the information it provides is always available via the information state. So in the absence of any linguistic context generating entailments to fill the implicit argument role, the utterance context will serve. It is perhaps no accident, then, that the vocabulary of implicit arguments is replete with words connected with space and time, when these are two of the principal features of the utterance context." (p.22)

"More generally, the kinds of contexts a dependent element can anchor to ... depends on the specificity of its felicity conditions and need not be stated independently." (p.22)

In recent years, debates about implicit arguments have intensified, in part because of philosophical interest in "contextualism". Examples that have played an important role in these debates, in addition to some of those discussed above, include the following.

- (18) *Everyone* was asleep.
(19) *It's raining*.

The context-dependent element in (18) is the "domain restrictor" on *everyone*, which might in a given context mean 'everyone in the house'. In (19) it's something like a spatial or spatiotemporal argument or modifier that specifies where and when it's raining.

3.2. The Syntactic Relation Variable Approach

And much of the discussion concerns definite noun phrases (and other quantifiers) and their implicit additional restrictors. Example (20), due to Heim (1991), is discussed by (von Fintel 1994) and (Elbourne 2008, In Press). Elbourne notes that (20a) may be interpreted as in (20b), and follows von Fintel in advocating something like (20c) as its (simplified) syntactic structure, with unpronounced variables of two sorts and a lambda-operator to bind the individual variables. The fact that the same variable v_2 shows up twice, as argument to two different relational expressions, provides an argument for separating the individual variable from the relational variables R_i .

- (20) a. *Only one class was so bad that no student passed the exam.*
b. *Only one class x was so bad that no student in x passed x 's exam.*
c. [*only one class*] λ_2 [*t_2 was so bad that [no R_1 v_2] student passed [the R_3 v_2] exam*]

The analysis sketched in (20c) is an example of the approach Elbourne calls "**The Syntactic Relation Variable Approach**". That approach has two variants, the one just illustrated, where the syntactic variables are associated with the determiner, (von Fintel)

and one advocated by Stanley and Szabó (2000), on which the silent syntactic variables are associated with nouns rather than with determiners.

(21) [only one class] λ_2 [t_2 was so bad that no [student R_1 v_2] passed the [exam R_3 v_2]]

3.3. The Pragmatic Enrichment Approach

A very different approach is the **pragmatic enrichment approach** (Sperber and Wilson 1986). On this approach, the syntax is not involved at all. From the overt syntax, a conceptual representation is derived in the semantics, an expression in the “language of thought”. Then “supplementation” of this object occurs in the language of thought to obtain the mental object that corresponds to the literal content of the utterance. (I am citing Elbourne’s description.) So for a sentence like (18) above, the semantics would produce a conceptual representation we can roughly schematize as in (22).

(22) PAST (EVERYONE IS ASLEEP)

From this conceptual representation, the hearer may proceed through relevance-driven inferences to an enriched representation such as that in (23).

(23) PAST (EVERYONE WHO IS A GUEST OF MINE IS ASLEEP)

3.4. The Explicit Approach

Elbourne also discusses what he calls the **explicit approach** of Neale (1990, 2004), which he takes to be a modification of the pragmatic enrichment approach. Neale also assumes that semantics delivers a Language of Thought representation, which may be supplemented by enrichment. But for Neale there is a limit on the kind of enrichment permitted: we are limited to adding content which could have been expressed by adding well-formed words or phrases to what was actually uttered. The enrichment illustrated in (23) would be permitted, because it could have been expressed by adding the relative clause *who is a guest of mine* to sentence (18).

3.5. The Syntactic Situation Variable Approach

The other principal approach that Elbourne considers (in addition to a compromise of his own that I won’t describe) is the **syntactic situation variable approach**. It goes back to early work of Kuroda, and has been advocated more recently in (Kratzer 2004) and (Recanati 1996, 2004). Elbourne himself argues against it in (Elbourne In Press), but then favors it in (Elbourne 2008); he had used a similar approach in his book (Elbourne 2005), though without putting the situation variables into the syntax. (Partee 1989 might be thought of as a primitive first step in this direction.) On this approach, each predicate has a situation argument in the syntax, so that different predicates in one sentence can be evaluated with respect to different situations. A sentence like (24a) would have a Logical Form (the level of syntactic representation which forms the input to the semantics) like (24b). The semantic value of the whole LF will then be as in (24c).

- (24) a. *Every subject is asleep.*
b. \sum_8 [[every [subject s_8]] [is [asleep s_8]]]
c. λs_8 . every subject in s_8 is asleep in s_8 .

Because each predicate gets its own situation argument, there can be a mixture of deictic and bound situation variables in the same sentence, allowing for an account of the non-contradictory interpretability of (25).

(25) *Everyone is asleep and is being monitored by a research assistant.*

3.6. The Global Approach

One approach that barely gets mentioned and is quickly dismissed is a “global approach”: it has not had any advocates in recent decades, although it was once widespread. This approach says that the semantic content compositionally derived from the overt syntactic representation is asserted, but may be asserted just in some contextually restricted domain. This approach has no way to account for bound-variable types of context-dependence and need not be taken seriously.

4. Why it can't all be pragmatics, and identifying cases that are.

Formal semanticists are quite uniformly convinced that the Pragmatic Enrichment Approach cannot be right, because it does not predict any purely linguistic constraints on possible enrichment, and there are indeed strong anaphora-like constraints on what is possible, as illustrated earlier with examples (15-16). Some parts of this critique can be overcome with Neale's “Explicit Approach”, which adds linguistic constraints to a Pragmatic Enrichment theory. Elbourne (In Press) finds a new argument against the Pragmatic Enrichment Theory, including Neale's modification of it, based on some subtle details of the possible form and interpretation of English possessive phrases, which I will not try to repeat here.

But I believe all researchers agree that there are some clearly pragmatic principles at work in every instance where we interpret utterances as containing more information than we can derive compositionally from their overt content. One such principle might be thought of as a “Minimum disturbance” principle:

“Minimum disturbance” principle: If the interpretation derivable from the overt content of a sentence is a complete proposition that is appropriate in the given context, do not “enrich” it, and do not “shift” the meanings of its parts.

That is, use pragmatic enrichment or meaning shifts to help make sense of something that would otherwise be uninterpretable or anomalous in the given context, not to reinterpret something that would be appropriate as is.

The sorts of examples we have been discussing here are ones which evidently need syntax and semantics to account for them; pragmatics is better suited for the inferential reasoning that leads us to interpret (26) as a request.

(26) *Can you pass the salt?*

5. Arguments for and against implicit elements in syntax.

I have not left enough time or space to do justice to the very interesting topic of arguing for or against including “empty pronoun”-like objects in the analyses of the examples we have considered. The simple “zero pronoun” option argued against by Partee (1989) is rarely advocated. The currently most attractive theories appear to be of two sorts: the

Syntactic Relation Variable Approach discussed in Section 3.2 and the **Syntactic Situation Variable Approach** discussed in Section 3.5. The first inserts elements similar to pronouns (perhaps more like definite descriptions) as implicit arguments of certain kinds of predicates. The second makes all predicates sensitive to a situation argument, but limits the points at which binders for such arguments may be introduced.

Without giving the arguments, I will just indicate the examples Elbourne uses to argue for opposite conclusions in his two most recent papers. To argue in favor of the Relation Variable approach, Elbourne (In Press) uses the following surprising contrast.

First he gives the following pair just to be clear about the reading he is interested in.

- (27) a. *John fed no cat of Mary's before **it** was bathed.*
b. *There does not exist an x such that x is a cat of Mary's and John fed x before x was bathed.*

- (28) *John fed no cat of Mary's before the cat of Mary's was bathed.*

Sentence (28) can have the meaning in (29); but the minimally different sentence (30) cannot.

- (29) *There does not exist an x such that x is a cat of Mary's and John fed x before the cat of Mary's identical to x was bathed.*

- (30) *John fed no cat of Mary's before Mary's cat was bathed.*

These facts are argued to best support von Stechow's version of the Relation Variable approach, because the difference can be traced to the difference between *the* and *Mary's*. Elbourne argues that *Mary's* cannot host a domain-restriction variable, quite possibly because the internal genitive relation already occupies that slot. But Elbourne in this paper sees no way that the Situation Variable Approach could solve the problem.

In (Elbourne 2008), he identifies a problem for the Relation Variable Approach and indicates a preference for the Situation Variable Approach.

- (31) a. *In this village, if a farmer owns a donkey, he beats the donkey and the priest **beats the donkey** too.* (strict, *sloppy)

- b. *In this village, if a farmer owns a donkey, he beats the donkey he owns and the priest **beats the donkey he owns** too.* (strict, sloppy)

- (32) a. *In this village, every farmer who owns a donkey beats the donkey, and the priest **beats the donkey** too.* (strict, *sloppy)

- b. *In this village, every farmer who owns a donkey beats the donkey he owns, and the priest **beats the donkey he owns** too.* (strict, sloppy)

The problem for most of the theories is the difficulty they will have in trying to **rule out** the "sloppy" reading of the (a) examples; what stops them from filling in some implicit *he owns*? Elbourne shows how the Situation Variable approach can do better.

How then to solve the problem he earlier identified for the Situation Variable approach? I asked him, and in recent correspondence (p.c., e-mail April 15, 2009) he suggests that it could be solved by making use of a principle first articulated by Reinhart to capture a variant of Chomsky's "Principle B". Reinhart's "Rule I" says roughly that you can't use a co-indexed plain pronoun in a context where you could have used a reflexive or other

bound variable expression: I.e. you can't say "John saw him" with 'him' co-indexed to 'John', since you could have said "John saw himself" instead. I won't try to repeat here the details of how that applies to (28) and (30) above, but it seems like a promising approach.

6. Lasersohn on predicates of personal taste and a "judge" parameter.

In a recent series of papers (Lasersohn 2005, 2007, 2008, 2009), Lasersohn has addressed a family of linguistic and philosophical problems concerning sentences like (33) below. Do they even have real truth conditions, if they are just a "matter of personal taste"? And how do we interpret apparent disagreements as in a dialogue like (34)?

- (33) a. *Ryazhenka is tasty.*
b. *Roller coasters are fun.*
- (34) a. John: *Ryazhenka is tasty.*
Mary: *No, ryazhenka is not tasty.*

Many such predicates of taste can take an argument with a *for*-phrase – *tasty for/to me*, *fun for John*. So one might try to analyze such sentences along the lines of other implicit arguments, anchoring either to the speaker, or to some salient entity, as in von Stechow's example:

- (35) The new cat food is evidently very tasty, because the cat ate a lot of it.

But Lasersohn argues that the implicit argument or parameter for predicates like *tasty* and *fun* has a different status. If it simply anchors to the speaker, for instance, we cannot explain why John and Mary are disagreeing in (34), which they must be if we are to make sense of Mary's felicitous use of "No". I won't include details: we would need more background about Kaplan's distinction between "character" and "content" from his theory of indexicals and demonstratives (Kaplan 1989). Lasersohn's main idea is that the implicit argument of these predicates is a special "judge" role, and that utterance contexts should implicitly contain such a role – by default the speaker, but not obligatorily. And this judge role comes into play in the very first stage of interpretation, in determining what proposition is expressed (as with interpreting "I"). For more of the fascinating details and examples, see his paper. For some interesting disagreements, see (MacFarlane 2006).

7. Additional interesting examples.

7.1. Multiplying ambiguities

The context-dependence of the word *foreign* gives rise to some interesting ambiguities, as noted in (Partee 1989).

- (36) (a) *Most Europeans speak a foreign language.*
(b) *Most foreigners speak a foreign language.* (Gregory Ward)

There are two very different ways to interpret (36a), depending on whether the implicit reference context for *foreigner* (foreign relative to whom?) is fixed as the speaker (the

indexical interpretation) or bound to *most Europeans*. The result gives you either a language ‘foreign to me’ or a language ‘different from their native one’, i.e. ‘foreign to them.’¹ The first could be the complaint of the “ugly American” who wishes everyone spoke English. The second could be the wistful remark of the young American linguist envying how easily Europeans learn languages.

And as Gregory Ward (p.c.) noted, the ambiguities multiply in (36b). First we interpret *foreigners*, most likely deictically – ‘foreign to me’. Then we can interpret *foreign* either with the same deictic anchor (the “ugly American’s complaint”), or with a bound-variable interpretation bound by the quantified subject.

7.2. Mixed types of anaphora within a single lexical item

As observed in Partee (1989), the pronoun *we* not only allows all three of kinds of anaphoric interpretation illustrated for *he/she* in (1-3), but can have a mixture of the three types within a single occurrence.

(37) *John often comes over for Sunday brunch. Whenever someone else comes over too, we (all) end up playing trios. (Otherwise we play duets.)*

The *we* in *we (all) end up playing trios* can very well include “me” (the “deictic” part), John (the discourse anaphora part), and whoever else comes over (a “bound variable” part). Condoravdi and Gawron include such items in their account.

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¹ If the sentence were put in the past tense and embedded in a narrative, there would also be a possibility of a ‘discourse anaphora’ interpretation, ‘foreign relative to [the context we have just established in this discourse]’.

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