

The Discourse Representation of *It*-Clefts*

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1 Introduction

1.1 Preliminaries

In this paper, we look at the presuppositions of *it*-clefts in the light of van der Sandt's [1988] proposal that presuppositions can be treated as a species of anaphor within the framework of Kamp's [1981] Discourse Representation Theory. In exploring how such a treatment might work for *it*-clefts, our first step is to identify both anaphora and presupposition as PRECONDITIONAL phenomena, in that they pose certain requirements on preceding context in order for the discourses in which they appear to be felicitous. In order to represent this commonality, we make a simple amendment to Discourse Representation Structure (henceforward DRS) construction rules, dividing them into two portions: a PRECONDITION and an UPDATE. We then look at the ordinary treatment of pronominal anaphora in terms of precondition update, before turning our attention to the treatment of cleft presuppositions. We show that, unlike other factive presuppositions such as that conveyed by the complement of *regret*, the cleft presupposition cannot be assimilated altogether straightforwardly to the ordinary treatment of pronominal anaphora. While our general characterisation of both *it*-cleft presupposition and anaphora as preconditional allows us to capture a general notion of context dependency present both cases, the precondition/update distinction takes us a step further, representing the difference between the two. We suggest that the distinction to make between the two cases is that anaphors proper serve a resumptive role, in that material in the precondition is picked up in the update conditions. *It*-clefts, by contrast, need not resume material in this way. We accordingly distinguish between two subtypes of preconditional expressions: anaphors proper, and PRESUPPOSITION-TRIGGERS like *it*-clefts, which do not display resumptive behaviour.

To complete the treatment of the *it*-cleft within DRT, we also suggest a means of representing of the asserted content of the cleft, taking into account the observation that some kind of UNIQUENESS condition or implicature is associated with the use of

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clefts in discourse. In the course of the discussion, we also make some comments about the notion of ACCOMMODATION (cf. Lewis [1975]) in relation to clefts, and suggest some pragmatic constraints that seem to operate on the accommodation of presupposition in *it*-clefts that are additional to those suggested by van der Sandt [1988] for presuppositions in general.

1.2 The Analysis of *It*-Clefts

In an *it*-cleft like *It was John who left*, we call *John* the cleft HEAD, and *who left* the CLEFT COMPLEMENT:

$$(1) \quad \begin{array}{ccc} \textit{It was} & \underbrace{\textit{John}} & \underbrace{\textit{who left}} \\ & \textbf{Head} & \textbf{Complement} \end{array}$$

It is generally accepted that (1) has a presupposition of the form (2a), and asserts (2b):

- (2) a Some person x left.
 b x was John.

Since (2a) contains the unbound variable x , we assume that it will only express a proposition in a context where the presupposition is able to provide an appropriate binding mechanism. The x in (2a) seems to be analogous to a pronoun which picks up the reference introduced by the indefinite phrase in the presupposition. Of course, if we try to formalise the presupposition and assertion as separate formulae of standard predicate logic, we encounter the well-known problem that the quantifier associated with the indefinite *some person* fails to bind the variable whose value is set in the second clause:

$$(3) \quad \exists x[\textit{leave}(x)]. x = j$$

In order to circumvent this difficulty, we shall adopt the solution proposed by DRT (Kamp [1981]); that is, the scope of indefinite *NPs* which are not themselves embedded within negation or implication can be extended indefinitely to succeeding sentences in a discourse. For example, given a DRS such as (4) representing the presupposition of the cleft,

$$(4) \quad \begin{array}{|c|} \hline x \\ \hline \textit{person}(x) \\ \textit{leave}(x) \\ \hline \end{array}$$

we can extend it to represent the asserted content as follows:

(5)

x
$person(x)$
$leave(x)$
$x = j$

2 Anaphora in DRT

Van der Sandt [1989] has suggested that presuppositions can be analysed as a species of propositional anaphor within the framework of DRT. In order to explore this proposal, we need to look briefly at the way in which pronominal anaphors are treated in DRT.

In Kamp’s original formulation, a DRS for a text is determined by a set of DRS-construction rules which operate top-down on the parse trees of each sentence in the text. A DRS is a pair $K = \langle U_K, Con_K \rangle$ where U_K is the *universe* of K , consisting of a set of discourse markers, and Con_K is a set of *conditions* consisting of either atomic formulae, or relations on subordinate DRSs.

For example, a simple *NP VP* sentence is processed, relative to a DRS K by analysing the *NP*, indexing it with a discourse marker x which is inserted into the universe U_K , and then analysing the structure $VP(x)$, where x identifies the argument role in the *VP* which is filled by the subject *NP*’s discourse marker. Both *NP* and $VP(x)$ will give rise to conditions which are added to Con_K .¹

If *NP* is the personal pronoun *she*, the construction rule has two components:

- (6) a Find an ‘accessible’ discourse marker x_{fem} of feminine gender already present in the complete DRS.
- b Use x_{fem} as the argument-filling index associated with *NP*.

Note that we think of discourse markers as being sorted for gender (just as pronouns are in English and other languages).² This will be indicated by means of the subscripted markers, ‘ x_{fem} ’ and ‘ x_{masc} ’. Suppose that we are processing a discourse such as:

- (7) A woman entered. She was smiling.

A DRS for the first sentence might look as follows:³

¹In fact, the *NP* and *VP* enter into either a conjunctive or an implicative relation, depending on the determiner of the *NP*. However, we will ignore this issue here, and concentrate only on conjunctive structures.

²For some discussion of the use and implementation of sorted variables in semantic representation, see Moens *et al* [1989].)

³For simplicity, we ignore issues of tense and aspect.

$$(8) \quad \begin{array}{|c|} \hline x_{fem} \\ \hline woman(x_{fem}) \\ \hline enter(x_{fem}) \\ \hline \end{array}$$

The effect of evaluating *She was smiling* in this discourse context is obtained by adding to (8) one further condition, with the results shown below:

$$(9) \quad \begin{array}{|c|} \hline x_{fem} \\ \hline woman(x_{fem}) \\ \hline enter(x_{fem}) \\ \hline smile(x_{fem}) \\ \hline \end{array}$$

Here, we were able to add to the DRS the new clause $smile(x_{fem})$, since x_{fem} was an appropriate antecedent for *she*, and served as the agent argument of *smile*, as required by (6.)

We can look at DRS construction rules as consisting of a PRECONDITION on the current DRS, and an UPDATE of the DRS which results from analyzing the pronoun. That is, in the case just considered, there is a precondition that the current DRS contain a discourse marker x of the correct gender, and an update where x fills an argument position in the clause being analysed. We can also look at the rules as partial functions on DRSS. The precondition specifies the domain of appropriate inputs to the function, and the update specifies the function value on any input which meets the preconditions. For current purposes, it is useful to think of both the precondition and update of a construction rule as being partial DRSS, and we use the visual device of a ‘maps to’ arrow (\mapsto) to link the two structures. (10) illustrates a construction rule associated with the clause *She was smiling*:⁴

$$(10) \quad \begin{array}{|c|} \hline x_{fem} \\ \hline \\ \hline \end{array} \mapsto \begin{array}{|c|} \hline \\ \hline smile(x_{fem}) \\ \hline \end{array}$$

PRECONDITION UPDATE

That is, the precondition says that the universe of the current DRS should contain a marker x_{fem} which is encoded as feminine gender. The update consists of an atomic condition, containing x_{fem} as an argument, which must be added to get the new DRS. Thus, when (10) is applied to (8), the result is the DRS in (9).

More generally, let $PRE(\phi)$ and $UP(\phi)$ be the precondition and update, respectively, of a construction rule ϕ . Then we say:

Definition 1 A DRS K is in the DOMAIN of ϕ iff the DRS $PRE(\phi)$ is a logical consequence of K .

⁴If we wanted to be slightly more formal, we might represent the rule as a λ -term of the following kind:
 $\lambda K. \text{if } (K = \langle U, Con \rangle \wedge \exists x_{fem}(x_{fem} \in U)) \text{ then } \langle U, Con \cup smile(x_{fem}) \rangle \text{ else undefined}$

Definition 2 We write ‘ $\phi(K)$ ’ for the result of evaluating ϕ with respect to the DRS K . If K is in the domain of ϕ , then $\phi(K) = K + UP(\phi)$, where ‘+’ is an operation which combines the information of two DRSs.⁵

By contrast, given a preceding DRS where there is no marker of the appropriate sort, such as (11), the rule (10) will fail to yield a value.

$$(11) \quad \begin{array}{|c|} \hline x_{\text{masc}} \\ \hline \text{man}(x_{\text{masc}}) \\ \text{came-in}(x_{\text{masc}}) \\ \hline \end{array}$$

That is, *PRE* (10) does not follow from (11), and hence no update is possible.

3 Presupposition and *It*-Clefts

3.1 Presupposition as Anaphora

We return now to the proposal that presuppositions are propositional anaphors. To illustrate the idea, let us look at a simple example, namely the factive presupposition borne by the verb *regret*.

By analogy with our earlier treatment of the anaphoric pronoun *she*, we can formulate the semantic force of *Mary regrets that S* in terms of the following DRS rule (where we use the notation ‘ S ’ to indicate the semantic representation of the constituent S):

$$(12) \quad \begin{array}{|c|} \hline \pi \\ \hline \pi : S' \\ \text{true}(\pi) \\ \hline \end{array} \mapsto \begin{array}{|c|} \hline x_{\text{fem}} \\ \hline \text{mary}(x_{\text{fem}}) \\ \text{regret}(x_{\text{fem}}, \pi) \\ \hline \end{array}$$

There are clear analogies between (12) and the treatment of pronominal anaphora sketched earlier. First, the argument position associated with the sentential complement S in the *VP regrets that S* is filled by a discourse marker π , parallel to the way in which x_{fem} filled the subject argument slot in the clause *she smiled*. The marker π has the sort *PROPOSITIONAL*, parallel to the gender-sorting of the marker x_{fem} (in fact, to be notationally consistent, we could have written $y_{\text{proposition}}$ in place of π). Third, the rule requires that π have already occurred in the current discourse context. The main distinguishing features of (12) are first, that we also require π to be specified as having the propositional content given by the sentential complement S , notated by ‘ $\pi : S'$ ’, and second, that the proposition in fact holds in the relevant state of affairs, as indicated by the condition *true*(π).

⁵In the simplest case, if $K_1 = \langle U_1, \text{Con}_1 \rangle$ and $K_2 = \langle U_2, \text{Con}_2 \rangle$, then $K_1 + K_2 = \langle U_1 \cup U_2, \text{Con}_1 \cup \text{Con}_2 \rangle$.

Suppose, for example, that (13b) is uttered in a discourse context K where (13a) has already been accepted:

- (13) a John left.
 b Mary regrets that he left.

Then (12) will map K into the new DRS shown in (14).

(14)

x_{masc}	π	x_{fem}
$john(x_{\text{masc}})$	$\pi : leave(x_{\text{masc}})$	
$true(\pi)$		
$mary(x_{\text{fem}})$		
$regret(x_{\text{fem}}, \pi)$		

From these observations, there appears to be considerable intuitive appeal to van der Sandt’s approach. Before exploring further, however, it would be useful to briefly reflect on what it means, within a DRS context, to say that an expression α_x is being used ANAPHORICALLY. In the standard case, α_x will be an argument to some predicate, and will receive a DRS translation as a reference marker x in a condition of the form $U(x, y_1, \dots, y_n)$, where U is the content of the predicate, and y_1, \dots, y_n is a (possibly empty) list of co-arguments of x . Thus, in the preceding section, we had the condition $smile(x_{\text{fem}})$ as the update condition. In addition, for α_x to be classed as anaphoric, the semantic value of x depends on an antecedent, construed as a ‘prior’ introduction of the marker x , together possibly with an additional condition $P(x, x_1, \dots, x_m)$.

Again in terms of our previous example, the prior introduction of x_{fem} was triggered by processing the phrase *a woman*. To digress briefly, notice that although this indefinite brought with it the additional condition $woman(x_{\text{fem}})$, the latter was not part of the preconditions of *she*. The only content carried by the pronoun *she* is that the prior reference marker be of the right gender, and we encoded this not as a condition, but by assigning a sort to the reference marker. However, there are anaphors which do place substantive conditions on their antecedents, namely anaphoric definition descriptions. For example, an anaphoric usage of *the woman* does carry the precondition that its antecedent satisfy the condition $woman(x_{\text{fem}})$.

Returning to our main line of argument, we can put our earlier remarks together to say that an expression α_x is *anaphoric* when it induces the following type of construction rule:

$$(15) \quad \frac{x \quad x_1 \dots x_m}{P(x, x_1, \dots, x_m)} \mapsto \frac{y_1 \dots y_n}{U(x, y_1, \dots, y_n)}$$

Thus, the precondition associated with α_x is that a reference marker x has been introduced, possibly in conjunction with some extra condition $P(x, x_1, \dots, x_m)$, earlier in the discourse. The update determined by α_x is some (conjunction of) condition(s) $U(x, y_1, \dots, y_n)$ in which x occurs as an argument, together possibly with some other

reference markers y_1, \dots, y_n .

According to the analysis suggested in (12), the sentential complement of *regret* is indeed anaphoric, since it exhibits the following pattern:

$$(16) \quad \frac{\pi}{\pi : S' \quad true(\pi)} \mapsto \frac{}{U(\pi)}$$

However, this approach does not extend in a straightforward way to *it*-clefts. Let us attempt to provide a rule for (17) which is analogous to (16).

$$(17) \quad \text{It was John who left.}$$

The closest we seem to be able to come is (18):

$$(18) \quad \frac{\pi \quad x}{\pi : leave(x) \quad true(\pi)} \mapsto \frac{x_{\text{masc}}}{john(x_{\text{masc}}) \quad x = x_{\text{masc}} \quad \pi?}$$

As before, the preconditions require the prior introduction of a propositional discourse marker π , whose content is specified to be the presupposed proposition expressed by *leave*(x). The update asserts that John is the one who left. But what is the condition which picks up the anaphoric reference π ? The answer seems to be, there is none. That is, unlike the *regret* case, the presupposed proposition ‘someone left’ does not occur as an argument within the asserted part of the whole meaning, and hence there is no need (or justification) for introducing the reference marker π in the first place. Instead, it seems as though the presuppositional nature of the *it*-cleft complement can be adequately captured by a simpler rule shown in (19):

$$(19) \quad \frac{x}{leave(x)} \mapsto \frac{x_{\text{masc}}}{john(x_{\text{masc}}) \quad x = x_{\text{masc}}}$$

Later in this paper, we will look more closely at the way in which *it*-clefts induce construction rules, and we will modify some details of (19). Nevertheless, the general analysis will remain the same, and we tentatively draw the conclusion that presupposition cannot to be assimilated completely to anaphora. Instead, what is required is some more general notion of context dependency, of which anaphora and presupposition are two special cases. We will return to this question in the final section.

3.2 The Phenomenon of Accommodation

It is a familiar observation that a presupposed proposition may in fact not be present in (or even inferrable from) the current discourse context, yet this does not lead to an unacceptable discourse—instead, the presupposition is ACCOMMODATED, to use Lewis’s

terminology (Lewis [1979]). That is, the presupposed proposition is added to the context as though it were ‘already there’. In this section, we will point out some considerations necessary for a treatment of accommodation that is able to take into account the pragmatic contexts in which presupposing takes place.

The phenomenon of accommodation was earlier commented on by Karttunen [1974] and Stalnaker [1974]. Karttunen explains it as follows:

People do make leaps and shortcuts by using sentences whose presuppositions are not satisfied in the conversational context . . . I think we can maintain that a sentence is always taken to be an increment to a context that satisfies its presupposition. If the current conversational context does not suffice, the listener is entitled and expected to extend it as required. He must determine for himself what context he is supposed to be in on the basis of what was said and, if he is willing to go along with it, make the same tacit extension that his interlocutor appears to have made.

[Karttunen 1974:191]

As many authors have pointed out, accommodation is pervasive in discourse. Speakers typically rely on accommodation as a means of conveying information which is signaled as ‘uncontroversial’—this has even been conventionalised in locutions such as

(20) We regret that we do not cash cheques.

As a first approximation, we might say that accommodation of a presupposition is possible if the presupposition is acceptable in the discourse context. Following van der Sandt [1988], we take a proposition ϕ to be *ACCEPTABLE* in a context K only if neither ϕ nor $\neg\phi$ are entailed by K .⁶ This leads us to a formulation of the following kind:

Definition 3 (Accommodation) *If $PRE(\phi)$ is consistent with K , then $\phi(K) = K + PRE(\phi) + UP(\phi)$, otherwise $\phi(K)$ is undefined.*

This proposal is undoubtedly overly simple. One obvious objection is that it would allow pronouns to be accommodated, in the sense that an appropriate discourse entity could always be deemed to be present as an ‘antecedent’ in the discourse context. Although this may be marginally acceptable in discourses like (21),

(21) Have you met the Smiths? She is a noted brain surgeon.

in general the semantic content of pronouns is too meagre to support the postulation of an appropriate discourse entity. By contrast, the existence presuppositions of definite descriptions do seem to be readily accommodated. Thus, consider

⁶Van der Sandt also adds further conditions which ensure that the utterance is *informative* (i.e. its content is not already entailed by the context) and *efficient* in a Gricean sense.

(22) Have you met the Smiths' daughter?

which is felicitous without the addressee already knowing that the Smiths have a daughter.

A more fundamental objection to Definition 3 is that it blurs the distinction between assertion and presupposition: if information contained in a 'missing' presupposition can be added to the discourse context *via* accommodation, how does this differ from information being added *via* assertion?

It seems that the notion of dialogue provides the most fruitful setting for finding an answer to this question. Stalnaker [1972] has argued convincingly that the semantic effect of assertion is to narrow the range of 'live options' being considered by speaker and hearer. However, dialogue, as opposed to monologue, brings to the fore the BID-like nature of assertion as a speech act: assertions can succeed, in the sense that the addressee accepts the semantic update, or fail, when the addressee refuses to take on the commitment carried by the update. Acceptance of the assertive content of ϕ can be signalled by explicit agreement (*yes*), or tacitly (e.g. by asserting a semantically independent statement ψ). Rejection can be signalled by explicit denial (*no*), by querying the evidential basis for ϕ (*why?*), or by asserting a contrary statement. Couched in terms of precondition and update, when a denial takes place, the hearer is normally taken to be rejecting only the content of the update. Therefore, even though the speaker's overt bid to update fails, there may still be an informational increment by virtue of the addressee accommodating the preconditions. When a statement is accepted by the addressee, the informational increment effected by accommodating the preconditions will be just like that effected by the update conditions.

Preconditional material provides a way for a speaker to convey certain information as uncontroversial, or as Known, in the terminology of Prince: '...information which the speaker presents as being factual and as already known to certain persons (often not including the hearer)' (Prince [1978:896]).

The above observations indicate that it is useful to view discourse representations in a more dialectical perspective. Rather than trying to model dialogue in terms of a shared discourse context representing the the common ground, it seems to us that an approach using a mechanism such as Hamblin's [1970,1971] COMMITMENT-SLATES might be fruitful in this regard. However, it would take us to far afield to explore this issue in the depth it deserves.

In addition, we might want to include additional constraints on the acceptability of presuppositions that are broadly pragmatic in nature. Briefly, these are as follows:

- Presuppositions with inappropriate prosodic patterns cannot be accommodated; and
- What can be accommodated when presented by means of one particular presupposition-triggering construction cannot be accommodated when presented by means of another.

The first point addresses the fact that information that is intended to be accommodated by the hearer—i.e. that is new in the discourse, or inferrable from what has gone before, but not explicit—must be articulated with an intonation contour appropriate to its status. To use Pierrehumbert’s [1980] terms, we would expect in such cases a high pitch accent followed by a low boundary tone. Accommodation could take place, therefore, in an example like (23), imagining a low tone on *John*, a high tone on *Mary*, and a fall towards the end of the utterance:

(23) It’s *John* who likes *MARY*.

Using an intonation contour that indicates ‘Given’ information, however—a contour falling to a low boundary tone from a high pitch accent on the head of the cleft—indicates that the presupposed information ought already to be available to the hearer:

(24) It’s *JOHN* who likes *Mary*.

If this information is not already available, accommodation by the hearer cannot take place: there is a clear indication that the speaker using such a contour as misunderstood which information is and is not available to the hearer, and repair must be initiated⁷.

The second point concerning pragmatic constraints on accommodation is simply that the process of accommodation appears to be sensitive to how presuppositions are presented. The three kinds of cleft construction, all of which are widely agreed to be presupposition-bearing, cannot apparently induce accommodation of presupposed content with equal facility. The *it*-cleft and reverse *wh*-cleft⁸ appear to be the more flexible, allowing information that is new to the hearer or reader to be presented as presupposition fairly readily:

- (25) a It’s the recent price slump that causes unrest and disturbance throughout the intellectual population.
b ...the recent price slump. That’s what causes unrest and disturbance throughout the intellectual population.

The *wh*-cleft, on the other hand, appears unable to induce accommodation—unless the content of the presupposing clause *causes unrest and disturbance throughout the intellectual population* is seen as an ‘echo’ of a previous speaker, in which case it is available in the discourse anyway:

- (26) ?What causes unrest and disturbance throughout the intellectual population is the recent price slump.

Turning now from our discussion of accommodation, let us summarise our account

⁷In fact, one might make the tentative suggestion that falling contours such as that in (24) are in themselves preconditional, as they mark clear expectations on the part of the speaker regarding what information should be present in the context at the time of utterance. There is not the space here, however, to explore this proposal in more detail.

⁸This example features an anaphoric rather than a full NP head because reverse *wh*-clefts almost never extract a full NP. The presuppositional content is unaffected.

of *it*-clefts so far. Without entering into details of syntax, we assume that the gross structure of *it*-clefts is that exemplified in (27):

$$(27) \quad [{}_S \text{ It } [{}_{VP} \text{ was } [{}_{NP} \text{ John }] [{}_S [{}_{+R} \text{ who left }]]]]$$

In line with the analysis proposed by Gazdar *et al.* [1985:158–160],⁹ we are treating the cleft complement as having the internal syntax of a relative clause, labelled here as $S[+R]$ (i.e. an S specified as ‘ $+R(\textit{relative})$ ’). We emphasise, however, that $S[+R]$ does not form a constituent with the NP head under this analysis.

The intended semantic analysis of *it*-clefts is presented schematically in (28), where as before we use the notation ‘ X' ’ to indicate the semantic representation of a constituent X .

$$(28) \quad \frac{x}{S[+R]'(x)} \mapsto \frac{x_{NP}}{x = x_{NP}}$$

Following Gazdar *et al.* and many other approaches, we assume that $S[+R]'$ is a one-place predicate, formed by λ -abstraction or the DRT counterpart thereof—cf. Klein [1987]. For example, the complement $[{}_S [{}_{+R} \textit{who left}]]$ might be analysed as the abstract $\lambda x_0[\textit{leave}(x_0)]$. In addition, we use ‘ x_{NP} ’ to indicate the reference marker whose introduction is triggered by the semantic interpretation of the *it*-cleft head NP .

Finally, we claim that the primary discourse function of *it*-clefts is to present the material in the cleft complement as Known, where the latter term is intended to subsume information which is either presupposed or accommodated. Indeed, given our remarks about accommodation, we would now suggest that Known information be thought of as PRECONDITIONAL MATERIAL TO WHICH DISCOURSE PARTICIPANTS ARE COMMITTED BY DEFAULT.

4 Cleft Heads

Up to this point, we have only looked at presuppositional aspects of the *it*-cleft complement. Yet there also appear to be independent preconditional constraints on the *it*-cleft head. A cleft such as (29)

$$(29) \quad \text{It was John who came to the talk.}$$

conveys that John *and only John*, of some salient set of individuals, came to the talk. A speaker who used (29) when Mike, Sally, and Anna came to the talk as well as John could be accused of being ‘economical with the truth’. This is not a new observation: it has appeared elsewhere in the literature as the observation that some kind of UNIQUENESS condition or implicature is associated with the use of clefts in discourse (cf. Halvorsen [1978], Atlas and Levinson [1981], for example).

⁹For simplicity, we ignore here Gazdar *et al.*’s proposed analysis of non-relative complements of *it*-clefts.

Yet it would be a mistake to conclude from this similarity that the head of an *it*-cleft has to be a singular definite *NP*. Thus, consider the following *it*-clefts.

- (30) a It was *Tom/the cat/Sue's pet* that drank the milk.
b It was *Tom and Sue/the cats* that drank the milk.
- (31) a It was *a hedgehog* that drank the milk.
b It was *some/several/three hedgehogs* that drank the milk.
c It must have been *hedgehogs* that drank the milk.
- (32) a It was *no pet of mine* that drank the milk.
b *It was *every/each rodent* that drank the milk.

Examples (30b) show that the cleft head *NP* can be a plural definite, while examples (31) show that it can be a singular or plural indefinite. Finally, the examples in (32) suggest that universally quantified *NPs* cannot appear as cleft head.¹⁰

We conclude, from the above data, first that we are concerned with something like EXHAUSTIVENESS rather than uniqueness, since plural objects can be specified as cleft heads. Second, the exhaustiveness condition does not reside in the cleft head, but rather in some referential properties arising from the cleft complement. This conclusion is made more plausible by paraphrases such as the following:

- (33) a The one that drank the milk was *Tom/the cat/Sue's pet*.
b The ones that drank the milk must have been *hedgehogs*.

There are at least *prima facie* grounds for supposing that the italicised *NPs* in (30)–(32) are complements of the copular *be*, and this is supported by the observation that cleft head *NPs* seem to obey the distributional constraints of predicate nominals in post-copular position:

- (34) a That animal is *Tom/the cat/Sue's pet*.
b Those animals are *Tom and Sue/the cats*.
- (35) a This animal is *a hedgehog*.
b These are *some/several/three hedgehogs*.
c These are *hedgehogs*.
- (36) a This animal is *no pet of mine*.
b *This animal is *every/each rodent*.

¹⁰Keith Brown (pers.com.) has pointed out to us that despite the marginality of (32b), universally quantified adverbials can occur as cleft heads, as in *It isn't every day that you see a hedgehog*. However, the presence of negation on the copula appears to be crucial, as evidenced by the unacceptability of *It is every day that you see a hedgehog*. We have no explanation for this fact.

Recall that that we formulated the update part of an *it*-cleft interpretation as an identity condition:

$$(37) \quad \begin{array}{|c|} \hline x_{NP} \\ \hline NP' \\ \hline x = x_{NP} \\ \hline \end{array}$$

If exhaustiveness is not determined by the interpretation of the *NP* head, we infer that it is determined by the referential nature of the discourse marker x in (37). To the extent that x is playing the same discourse role as a definite pronominal anaphor such as *she* or a definite anaphoric *NP* such as *the woman*, this conclusion is not altogether surprising.¹¹ Moreover, translating copular *be* by the logical relation of identity prevents us from capturing the predicational nature of *it*-cleft heads. Thus, it would not allow us to express (38b), which seems to be the appropriate representation of the update of (38a):

$$(38) \quad \begin{array}{ll} \text{a} & \text{It was a boy who left.} \\ \text{b} & \textit{boy}(x)' \end{array}$$

To remedy this, we will adopt Williams' [1983] proposal that copular *be* always has one referential and one predicative argument, with the interpretation that *be* simply applies the predicative argument to the referential one. On this account, we need to replace the identificational clause in (37) by (39) (where we assume the equivalence $be(x, P) \equiv P(x)$):

$$(39) \quad \begin{array}{|c|} \hline x_{NP} \\ \hline NP' \\ \hline be(x, NP') \\ \hline \end{array}$$

In other words, the cleft head is taken to be the predicational argument of *be*, while the anaphoric marker x is taken to be the referential argument.

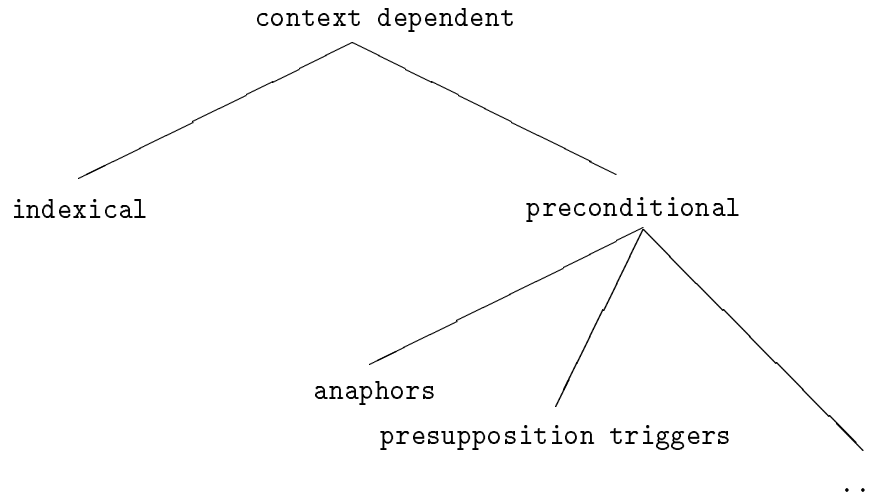
We assume that indefinite *NPs* in this position will be construed as straightforward predicates, while definite *NPs* will undergo a type-changing operation *IDENT* which turns them into predicates, along the lines proposed by Partee [1986]. That is, if α is a definite singular term, then *IDENT*(α) is a predicate with the interpretation $\lambda y[y = \alpha]$. However, if we follow Kamp [1981] in analysing proper names as consisting of a reference marker and a condition (e.g. *John* induces a condition $john(x)$), then type-changing will not be necessary for proper names. (40) illustrates:

$$(40) \quad \begin{array}{|c|} \hline x \\ \hline leave(x) \\ \hline \end{array} \mapsto \begin{array}{|c|} \hline x_{\text{masc}} \\ \hline john(x_{\text{masc}}) \\ \hline be(x, john) \\ \hline \end{array}$$

¹¹See Zeevat [1989] for a recent review of the familiarity account of definiteness.

5 Concluding Remarks

While broadly accepting van der Sandt's position that presupposition resembles anaphora, we have suggested that presupposition triggers and anaphors should be subsumed under a broader notion of PRECONDITIONAL expressions. Thus, both kinds of expressions place constraints on the discourse context in which they occur. However, anaphors have a resumptive role, in the sense that material in the precondition is picked up in the update conditions. Our analysis of *it*-clefts shows that, by contrast, presupposition triggers need not resume material in this way, despite there being a dependency between precondition and update. A broad categorization of context-dependent expressions might therefore go as follows:



We have also argued that notion of accommodation, as distinct from assertion, can only be properly appreciated when viewed in the setting of dialogue. Clearly, much more work is required to explore whether the standard assumption of a unitary discourse representation interferes with an adequate understanding of context-dependent constructions.

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