

*Reference, Procedures and Implicitly Communicated Meaning**

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Abstract

This paper makes two main claims. Firstly, by taking seriously the idea that referring expressions carry information which interacts with relevance theory principles, we can formulate an account of referring expression use that does not rely on the linguistic marking of Accessibility, Givenness or similar notions. Secondly, a relevance-theoretic analysis allows us to look beyond the mere act of referring and account for the extra work that referring expressions do in contributing to what is implicated rather than explicitly expressed. This idea is missing from most accounts and it goes a long way towards explaining the choices made by speakers when selecting one referential expression rather than another.

1 Introduction

This paper considers the processes that lie behind a speaker's choice of one form of referring expression rather than another. From a simple, non-linguistic gesture to a detailed definite description, there are many ways in which a speaker can indicate which of a range of potential candidates, is her intended referent. Consider the forms in (1)

- (1) a. The black cat with the white paw and red collar sitting in the corner
- b. That black cat
- c. This cat
- d. Spotty
- e. Him
- f. Mrs Smith's favourite pet

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These various definite NPs could all be used to pick out the same entity in the world. They may be more or less appropriate in different contexts, but on different occasions they could all lead to a mental representation of the same object being contributed to the proposition expressed by an utterance. Speakers, therefore, must make a choice about which definite NP to use in which discourse context. Several theories of what drives speaker's choice in this matter have been put forward (Clark & Marshall 1981, Prince 1981, Ariel 1988, 1990, Gundel, Hedberg & Zacharski 1993, Gundel & Mulkern 1998). Each attempts to explain how speakers choose between the various linguistic forms available and how hearers reach the intended interpretation. The wealth of forms illustrated in (1) may make it appear that choice of referring expression is to a certain extent free and unconstrained. However, this does not seem to be the case, and there are examples where one particular form is less appropriate than another. Any good account of the use of referring expressions must be able to explain not only how speakers make their choices, but also why some forms seem to be unavailable or inappropriate in certain contexts.

In section 2, I give a brief outline of two existing theories which consider speakers' use of referring expressions. Both Accessibility Theory (Ariel 1988, 1990) and the Givenness Hierarchy (Gundel, Hedberg & Zacharski 1993, Gundel & Mulkern 1998) stress the importance of pragmatic factors in this aspect of utterance interpretation. Both claim to offer accounts of the data based on their respective characterisations of what is encoded by the various linguistic forms, and both align their work with the relevance theoretic pragmatic framework. However, both also claim that relevance theory alone cannot fully explain speakers' choices and introduce extra machinery in the form of scales or hierarchies which they claim are needed to make up the difference. In this paper I discuss some examples where, it is claimed, the acceptability or otherwise of a particular form can not be explained by considerations of relevance alone. I challenge the claim that relevance theory alone (in conjunction with an adequate semantics) is inadequate to explain the use of referring expressions and has to be supplemented in this way. Rather, I start from the hypothesis that choice of referring expression can be adequately explained within the relevance theory pragmatic framework (Sperber & Wilson 1986/95, 2004, Carston 2002) as driven by the goal of satisfying the hearer's expectations of optimal relevance. If this position can be maintained, then the motivation for the additional theoretical machinery introduced by the alternative accounts is removed, and a simpler and more comprehensive analysis emerges.

In this paper I focus on the data that were originally used to motivate the accounts, and argue that the examples can be accounted for using existing and independently justified notions from relevance theory. In section 3 I introduce the distinction between conceptual and procedural meaning and suggest that the work done by the Accessibility and Givenness hierarchies can be just as easily captured using the notion

of procedural constraints on interpretation. In section 4, I will go on to argue that not only does the assignment of appropriate procedural meanings help to explain the choices speakers make, but that relevance theory in general offers a richer account of what referring expressions convey than these alternative frameworks. It allows us to go beyond simply resolving reference and constructing a hypothesis about the proposition expressed, to examine the crucial role that the choice of referring expressions plays in optimising relevance and contributing to the implicit aspects of communication.

2 Accessibility and Givenness

Defenders of Accessibility Theory and the Givenness Hierarchy argue that their respective theoretical machineries are necessary to explain a speaker's choice of referring expression. Both situate themselves within the relevance theory framework but see this framework as unable to fully explain referring expression use on its own. Ariel and Gundel propose their respective scales of Accessibility and Givenness to provide a 'mediator between linguistic forms and pragmatic inferencing (Ariel 1994: 4). I will look briefly at each approach in turn.

Accessibility is a 'graded psychological notion' (Ariel 1994: 37), which is conventionally (i.e. linguistically) encoded by a referring expression. This accessibility marking indicates to the hearer how accessible the speaker judges the intended referent to be for that hearer and thus helps guide him to the intended interpretation.

(2)	Full name + modifier	Low Accessibility
	Full ('namy') name	
	Long definite description	↓
	Short definite description	
	Last name	↓
	First name	
	Distal demonstrative + modifier	↓
	Proximal demonstrative + modifier	
	Distal demonstrative (+NP)	↓
	Proximal demonstrative (+NP)	
	Stressed pronoun +_ gesture	↓
	Stressed pronoun	↓
	Unstressed pronoun	
	Cliticized pronoun	↓
	Extremely High Accessibility Markers	High Accessibility

Accessibility itself is determined by the anaphor-antecedent relation, interacting with a variety of factors that affect general salience including the number of competitors and the status of the referent as a topic or non-topic. This results in a scale of Accessibility which is both language specific in detail and based on universal principles. The scale for English referring expression forms is given above in (2)(Ariel 1990: 73).

An alternative approach is offered by Gundel, Hedberg and Zacharski (1993) with the development of their Givenness hierarchy. This implicational scale relates forms of referring expressions to cognitive statuses: use of a particular referring expression signals to the hearer that the intended referent has the required cognitive status, thus guiding the hearer to the intended referent. The Givenness Hierarchy with associated English forms is reproduced in (3)

(3)

In Focus >	Activated >	Familiar >	Uniquely >	Referential>	Type >
			Identifiable		Identifiable
it	that	that N	the N	this N	a N
	this				
	this N				

The statuses on the Givenness Hierarchy represent the ‘necessary and sufficient’ conditions for use of the corresponding forms, and thus enter into entailment relationships. By uttering a specific form, a speaker signals that the necessary and sufficient conditions of the associated cognitive status are met, and thus helps the hearer to identify potential referents that satisfy those conditions. If the conditions for a certain status on the scale are met, then it follows that the conditions for all the lower statuses are also met. For example, an entity which is ‘activated’ will also be ‘familiar’, ‘uniquely identifiable’, and so on down the scale. A speaker who uses a form which requires at least activation therefore signals to her hearer that this status’s conditions and all the lower statuses’ conditions are met.

Whilst the Givenness hierarchy was originally described as interacting with the Gricean maxims of quantity to explain a speaker’s choice, in a later article Gundel and Mulkern (1998) demonstrate how it would work within a relevance theory framework. Ariel explicitly places Accessibility theory within the relevance theoretic framework as a ‘useful tool serving Relevance assessments.’ (Ariel 1990: 86) However, although they endorse the principles of relevance theory, both Ariel (1990) and Gundel (2003) claim that relevance theory alone cannot explain the choice of referring expressions, citing a range of data that they claim cannot be accounted for by considerations of relevance alone. Consider the utterances in (4)-(5) and the associated acceptability judgements.

- (4) a. *A restudy of pareiasaurs reveals that *the primitive reptiles* are the nearest relatives of turtles
 b. A restudy of pareiasaurs reveals that *these primitive reptiles* are the nearest relatives of turtles
- (5) a. *The two groups* share numerous derived characteristics
 b. *These two groups* share numerous derived characteristics

The sentences in (4) and (5) are meant to be understood as consecutive utterances in the same discourse context. Gundel (2003) and Gundel and Mulhern (1998) discuss the contrast between the (a) and (b) versions of both. In (4) the highlighted definite description in the subordinate clause is judged unacceptable, whilst the corresponding complex demonstrative in (4b) is judged acceptable. In (5), however, both options are judged equally felicitous. The authors claim that the Givenness Hierarchy and its associated cognitive statuses can account for these judgments in a way that relevance theory alone cannot. In (4) the definite description and complex demonstrative forms carry the same semantic information which, they claim, ‘constrains possible interpretations to primitive reptiles, but it provides no information about which primitive reptiles are intended’ (Gundel 2003: 6). The key to understanding the difference in acceptability must therefore, according to Gundel, lie with the determiner. According to the Givenness hierarchy, the demonstrative ‘these’ signals that the referent is at least ‘activated’ in the hearer’s cognitive environment. Gundel and Mulhern claim that in (4b) there is only one potential referent which satisfies this criterion (namely the pareiasaurs). Reference is therefore resolved and the use of the form is deemed acceptable. In contrast, the definite article ‘the’ in (4a) signals that the referent should be at least ‘uniquely identifiable’. This cognitive status is lower down on the scale of Givenness, and so more potential referents will satisfy this requirement. Given the utterance in (4), Gundel (2003) claims that there might well be other groups of primitive reptiles, including the group of all primitive reptiles, that satisfy the condition of being uniquely identifiable; as a result, the range of potential referents is not narrowed down to one, and the form is deemed unacceptable.

In contrast, reference to the ‘two groups’ in (5) requires only the use of a form associated with at least the cognitive status of being ‘uniquely identifiable’. This is lower down the Givenness scale than the ‘activated’ status required for reference resolution in (4), and since both definite descriptions and complex demonstratives signal that the referent is at least ‘uniquely identifiable’, both versions (5a) and (5b) are acceptable.

Ariel (1990) sees a similar problem and cites similar data, claiming that Relevance Theory cannot distinguish between, for example distal and proximal demonstratives. In her view,

Relevance theory...cannot account for the distribution of referring expressions without the mediation of Accessibility theory (1990: 84).

In this paper I am not aiming to provide direct objections to either the Accessibility or the Givenness Hierarchy accounts of the data. However, if I can demonstrate that the existing relevance theory framework can, in fact, fully explain the data in (4)-(5) and other similar examples, then the need for these auxiliary devices in an analysis of referring expressions becomes questionable, at least.

My strategy will therefore be to offer an alternative relevance-based account of the data as presented and discussed in the literature. However, before embarking on my analysis, I would like to enter a caveat: it is not clear that (4a) and (4b) are fully representative of the contrast between definite descriptions and complex demonstrative forms. To illustrate this point, consider briefly (6) and (7) in contrast with the examples in (4)

- (6) a. A restudy of pareiasaurs reveals that *the primitive reptiles* were mainly found on the African mainland
- b. A restudy of pareiasaurs reveals that *these primitive reptiles* were mainly found on the African mainland
- (7) a. A reexamination of the pareiasaur's bones reveals that *the primitive reptile* consumed calcium rich food during its lifetime
- b. A reexamination of the pareiasaur's bones reveals that *this primitive reptile* consumed calcium rich food during its lifetime

The versions of these sentences containing definite descriptions seem to be just as acceptable as the complex demonstrative forms. Perhaps, then, the contrast between (4a) and (4b) does not simply depend on the choice of definite NP type. In fact, one might go further and suggest that the classification of (4a) as unacceptable is too strong. The use of this type of anaphoric epithet is acceptable in parallel cases such as those in (6), and, I suggest, in certain contexts may be acceptable in example (4a). Ultimately I will argue that the contrast in acceptability between each of these pairs depends on the inferences that the various forms encourage the hearer to draw via the procedural meaning they encode. However, there does seem to be some intuitive contrast between (4a) and (4b), and I will begin by putting aside the parallel data in (6) and (7) aside, accepting that there is an intuitive contrast and considering how it might be explained in relevance theory terms.

My claim is that, far from being unable to account for the alternations and contrasts in these examples, relevance theory allows us to better understand the varied contributions that referring expressions may make to both the explicit and implicit phases of communication. It is the vital contribution to implicit meaning that is on the

whole overlooked by existing accounts of reference choice, and which I argue can explain the judgements in (4)-(7). In section 4 I will address the issue of reference resolution and consider how the proposition expressed is derived when the utterance contains a referring expression. In section 5 I will show how the role of referring expressions goes beyond this and contributes to the implicit phase of communication. Ultimately, I will argue that the key to understanding the selection and interpretation of referring expressions depends not only on their contribution of a referent to a proposition expressed, but to a large extent on the constraints they put on the inferential phase of comprehension. To do this, I will begin by introducing two crucial distinctions: between explicit and implicit meaning, and between conceptual and procedural meaning.

3. The Explicit/Implicit Distinction and the Role of Procedural Meaning

Relevance theory assumes a largely computational-representational theory of the mind and communication. The phonetic form of an utterance is seen as undergoing linguistic decoding to yield a logical form (or in the case of ambiguity, a set of logical forms). As decoding proceeds, the logical form is enriched via inferential pragmatic processes including reference assignment, to yield a fully propositional form known as the proposition expressed or (if it is part of what the speaker is taken to communicate) the basic explicature. The distinctions between semantics and pragmatics, saying and implicating and explicit and implicit meaning have been characterised in various ways in the literature. I will argue that a speaker's choice of referring expression can affect both the explicit content (explicatures) and the implicit content (implicatures) of an utterance and I will draw the distinction between the two in relevance theory terms.

As noted above, decoding alone typically does not yield a fully propositional representation, and some pragmatic development of the logical form is then required. Pragmatic processes that contribute to the explicit side of communication include disambiguation, free enrichment and reference assignment. As the logical form is developed into a fully propositional form, it may also provide the input to further inferential processes, resulting in so-called implicatures. The explicit-implicit distinction as drawn by relevance theory is discussed at more length in Carston (2001, 2002), but for the purposes of my argument it is enough to stress that 'pragmatic processes play an essential role on both sides' (Carston 2001: 1) of the explicit/implicit divide. On this approach, then, the interpretation of an utterance is seen as involving two phases, decoding and inference. Pragmatic inference contributes to, 'the construction and manipulation of conceptual representations' (Wilson & Sperber 1993), and linguistic expressions can encode information relating to either conceptual representations or computations. As Wilson and Sperber put it,

we can distinguish between, on the one hand, expressions that encode ‘information about the representations to be manipulated,’ and, on the other hand, expressions that encode ‘information about how to manipulate them.’ (Wilson & Sperber 1993: 2). In relevance theory terms, these two types of encoded information are described as conceptual and procedural meaning, respectively. Conceptual encoding yields representations that figure directly in the explicatures that provide the input to further inferential computation. Procedural encoding places constraints on the types of representations to be constructed or the computations that are to take place.

Whilst the conceptual information encoded by familiar lexical items is relatively easy to grasp and paraphrase, linguistic elements that encode procedural meaning can be notoriously difficult to paraphrase, and the role they play extremely difficult to pin down. An illustration of the kind of work standardly claimed to be done by procedurally encoded meaning can be seen in the following example:

- (8) a. Alison is a vegetarian
b. She doesn’t like meat

The two utterances can be conjoined by the non-truth-conditional discourse connectives, ‘so’ and ‘after all’ yielding the utterances in (9) and (10)

- (9) Alison is a vegetarian. So she doesn’t like meat
(10) Alison is a vegetarian. After all, she doesn’t like meat

Most linguists and philosophers who have looked at such examples agree that the truth conditions of (9) and (10) (and hence the propositions they express) are the same. Both are true if and only if Alison is a vegetarian and she doesn’t like meat. However, the inferences that the hearer is encouraged to draw are constrained by the choice of connective. In (9), the suggested inference is that Alison’s dislike of meat is a consequence of her vegetarianism. However, in (10), the inference is that her vegetarianism is in some way a consequence of her dislike of meat. Thus, although it does not contribute conceptual information to the proposition expressed by the utterance, the procedural meaning of the discourse connective clearly has an important influence on the inferential phase of interpretation, and the implicatures the hearer is encouraged to derive.

Initially it can be tempting to see the relevance theory conceptual / procedural distinction as lining up with the distinction between truth-conditional and non-truth-conditional meaning. However, Wilson and Sperber argue that this is not the case and that four distinct categories of meaning emerge: conceptual and truth-conditional, conceptual and non-truth-conditional, procedural and truth conditional and procedural and non-truth conditional.

The first of these categories is the most easily illustrated. Most ‘content’ words, such as nouns and verbs, can be assumed to encode conceptual meaning and contribute to the truth-conditional content of an utterance. Discourse connectives such as those in (9) and (10) are plausibly seen as encoding procedural meaning which does not affect the truth-conditions of an utterance. Wilson and Sperber (1993) and Ifantidou-Trouki (1993) have argued that adverbials such as ‘seriously’, ‘frankly’ and ‘confidentially’ exemplify a third possibility. Although non-truth-conditional, they are best seen as encoding conceptual information.

- (11) Confidentially, I don’t think Bob will get the job
 (12) Seriously, I’m pleased Bob didn’t come

Intuitively, utterance (11) is true if and only if the speaker doesn’t think that Bob will get the job and it therefore seems that ‘confidentially’ is non-truth-conditional (in speech-act terms, it is seen as an ‘illocutionary force indicator’ which contributes to the illocutionary force of an utterance rather than to the proposition expressed). However, adverbials such as ‘seriously’ and ‘confidentially’ seem to share conceptual meaning with their manner adverbial counterparts, which contribute to truth-conditional content in the regular way:

- (13) I asked him confidentially if he was pleased
 (14) Michael took his role as team captain seriously

They are thus different from the procedural connectives such as ‘so’ and ‘after all’ described above, which have no synonymous truth-conditional counterparts. It therefore seems reasonable to treat ‘confidentially’ as encoding the same concept in (11) and in (13), but to treat it as contributing to truth conditions in (13) but not in (11).

The final logically possible combination involves procedural meaning which provides constraints on the truth-conditional content of an utterance (as opposed to directly encoding a concept which is a constituent of this truth-conditional content). Wilson and Sperber (1993) and Hedley (2007) argue that pronouns encode just such a combination as they ‘guide the search for the intended referent, which is part of the proposition expressed’ (Wilson and Sperber 1993: 23). My analysis of referring expressions is based on the assumption that pronouns are not the only example of this type. I will argue that procedural constraints on truth-conditional content can also be found operating in other types of referring expressions besides pronouns. As with the procedural expressions discussed above, the difference between the determiners in (4a) and (4b) is often hard to paraphrase or bring to consciousness. Whereas for Ariel and Gundel the choice of referring expression directs the hearer to look for a referent

which matches the Accessibility level or cognitive status indicated by the type of referring expression chosen, I will present a relevance theory account on which the procedural meaning of determiners interacts with the conceptual meaning of noun phrases to narrow the hypothesis space in a different way.

Although Wilson and Sperber (1993) and Hedley (2007) argue that procedural information can provide constraints on the derivation of the proposition expressed, I believe that the importance of the procedural meaning of referring expressions is underestimated if we focus only on the fact that it guides the hearer to the intended referent. Crucially, the role of referring expressions is to guide the hearer not just to an intended referent but to an intended overall interpretation. According to relevance theory, identifying this overall interpretation comprises three sub-tasks:

- a. Constructing an appropriate hypothesis about the intended explicit content.
- b. Constructing an appropriate hypothesis about the intended contextual assumptions
- c. Constructing an appropriate hypothesis about the intended contextual implications

(Wilson and Sperber 2004)

In the next section I will consider how the choice of referring expression, with its combination of conceptual and procedural information, guides the hearer to the intended explicit content, and then in section 5 I will begin to consider the role that they play in the derivation of contextual assumptions and implications. Whilst Ariel and Gundel focus on the contribution of referring expressions to the explicit content, I argue that choice of referring expressions cannot be understood fully until we acknowledge and examine the contribution they make to the other two tasks as well.

4 Determining the Proposition Expressed

4.1 Introduction

Although I shall be arguing that the role of referring expressions goes beyond the matter of resolving reference, it should not be forgotten that helping the hearer construct a representation of the intended referent that will figure in the proposition expressed is an important part of their function. In order to motivate a relevance theory account that does not rely on Accessibility, Givenness or similar theory-external constructs, it is necessary to demonstrate how this takes place.

The relevance theoretic account of referring expressions proposed here draws on the conceptual / procedural distinction outlined in section 3 and the relevance theoretic comprehension procedure. The way in which the principles of relevance are applied is

subtly but crucially different from the way assumed in the accounts by Ariel and Gundel. According to Accessibility Theory and the Givenness Hierarchy, each referring expression type conventionally (i.e. linguistically) encodes a signal to the hearer, indicating the accessibility or cognitive status of the intended referent. This then guides him in finding a particular referent amongst the potential referents in the discourse context. For Ariel, referring expressions are ‘guidelines for retrievals’ (Ariel 1988: 68) and for Gundel they ‘conventionally signal different cognitive statuses’ (Gundel, Hedberg & Zacharski 1993: 274). In both cases, it is therefore possible for the speaker’s choice of referring expression to direct the hearer to an entity with low accessibility or low cognitive status in preference to higher ones. Ariel clearly states that ‘since speakers may wish to refer not to the most salient potential referent, they should overtly instruct the addressee to search for a less salient antecedent’ (1994: 20) Let us consider this point in relation to the relevance theoretic comprehension procedure given here in (15)

- (15) a. Follow a path of least effort in deriving cognitive effects. Test interpretive hypotheses (disambiguations, reference resolutions, implicatures etc.) in order of accessibility.
b. Stop when your expectations of relevance are satisfied.

The idea that the hearer may ignore or jump over highly accessible potential referents to reach less accessible ones seems to be directly at odds with this comprehension procedure. The procedure states that the hearer will always test potential referents and potential contexts in order of accessibility, so signalling that the hearer should ignore a highly accessible referent in favour of a less accessible one is in direct conflict with a basic principle of the theory. If a hearer really were following the relevance theory comprehension procedure, then any such signal would be of no significance and might, indeed, cause confusion. I will argue that we can reconcile the relevance theoretic comprehension procedure with the observation that speakers do not always and only refer to the most salient potential referent, by re-examining the role of referring expressions. Rather than ‘guiding’ the hearer amongst the potential referents, referring expressions introduce constraints which narrow down the set of potential referents until the most accessible potential referent remaining is (if all goes well) the intended referent.

Ariel (1994) claims that the problem with pragmatic accounts is that they ‘cannot explain to us how one decides among various potential antecedents’. The relevance theoretic comprehension procedure does just this. Any hearer following the procedure will test out the potential referents in order of accessibility, and stop when his expectation of relevance is satisfied. The set of potential referents may be constrained by the conceptual and procedural information encoded by the referring expression, and

it is this constraining ability that drives the selection of a particular referring expression. Rather than indicating to the hearer which potential referent should be chosen, referring expressions place constraints on the set of potential referents available. Their role in reference resolution is to constrain this set to a point where the most accessible referent is the one the hearer should take to be the intended referent. The kind and extent of constraint required will vary with the context, and so the same entity may be referred to in several different ways in different circumstances. Referring expressions may carry both conceptual and procedural information, and the speaker may manipulate both types in choosing the form of her utterance. Both types of information may place constraints on the set of potential referents, although they do this in slightly different ways.

4.2 Conceptual Information and Explicit Meaning

The conceptual information (if any) encoded by the referring expression will rule out any potential referents that are not compatible with it. Imagine a room full of cats and the many possible ways in which a speaker could refer to a particular cat.

- (16) The cat looks hungry
- (17) The black cat looks hungry
- (18) The black cat in the corner looks hungry
- (19) The black cat in the corner with the red collar looks hungry

To refer to a particular cat in the room, the speaker must use a referring expression that leaves the intended cat as the most accessible one compatible with the linguistically encoded information (and capable of yielding an overall interpretation that is relevant in the expected way). Thus, utterance (16) would usually be infelicitous in a cat-filled room as it fails to leave one particular cat more accessible than the others. However the same utterance would be perfectly acceptable in a room with eight dogs and only one cat. Alternatively, if the cat-only room contains one cat that for some reason is more salient than the others - for example all the cats are asleep, except for one which is worrying for food - then reference will be resolved on that cat and (16) will be felicitous if it leads on to an overall interpretation that is relevant in the expected way. If there is no particularly salient cat in the cat-filled room, but only one cat happens to be black, then the speaker may refer to it felicitously using utterance (17). In this case, she uses conceptual information to narrow down the set of potential referents to just black cats and, as there is only one, it is the most accessible and reference will be resolved on it. Anything not complying with the conceptual conditions imposed by the referring expression in this case - being both black and a cat - will be ruled out of the set of potential referents, and as such

could be seen as having zero accessibility¹. However, utterance (17) is likely to be infelicitous if there is more than one black cat in the context as, all other things being equal, it would fail to leave one of the potential referents as the ‘most accessible’. In such a situation, the speaker may have to further narrow the set, as in (18) or (19), and so on.

Let us compare this use of conceptual information with the alternative approaches. Accessibility Theory distinguishes only between two categories of definite description - ‘long’ and ‘short’ -, whilst the Givenness Hierarchy treats them all equally as indicating the cognitive status of being ‘uniquely identifiable’. An approach that treats definite descriptions as contributing conceptual constraints on reference, however, can account for the indefinitely large number of options that are available to a speaker when constructing a definite description, and makes clear predictions about which will be felicitous in certain discourse contexts and which will not. In effect, the discourse context can be viewed as including a set of potential referents, and the referring expression as a means by which the speaker may select a subset of these, such that the intended referent is the most accessible in the subset.

4.3 Procedural Information and Explicit Meaning

Although the manipulation of conceptual information is a crucial part of the function of a referring expression, it is not the only means by which a speaker can constrain the set of potential referents. In a framework with both conceptual and procedural meaning, referring expressions may also encode procedural constraints. In section 3, I cited some existing analyses of pronouns as encoding procedural information that places constraints on the truth conditional content of an utterance (e.g. ‘you’ constrains the class of potential referents to groups of individuals who include the addressee). Here I claim a similar role for the demonstratives and determiners that figure in more complex referring expressions. Perhaps the most obvious illustration of this is the use of distal and proximal determiners. Consider the following scenario. Emily is sitting in a tea shop when the waitress brings a trolley with a large cake on it. The waitress explains that if Emily prefers, she may purchase a slice of the cake that is currently on display in the shop window. Emily decides that the cake on the trolley is more to her taste. Consider the following possible utterances.

(20) I’ll have a slice of the cake

(21) I’ll have a slice of this cake

¹ It is important to remember that the encoded conceptual material should be viewed as a clue to the intended referent. A metaphorical referring expression may narrow down the set of potential referents without necessarily ruling out anything that doesn’t satisfy the literally encoded concept.

(22) I'll have a slice of the cake on the trolley in front of me

Utterances (20) and (21) encode the same amount of conceptual information. However, it is likely that reference resolution will succeed in (21) but fail in (20). In both cases, the conceptually encoded meaning alone narrows the set of potential referents to a point where it contains two potential referents – a slice of cake from the cake on the trolley and a slice of cake from the cake in the window. Utterance (21) succeeds, as the procedural information encoded in the determiner narrows the set of potential referents further, to a point where it just includes the cake in closest proximity to the speaker.² Utterance (22) would be likely to result in the set of referents being narrowed to a point where reference is resolved on the same slice of cake, but would normally be ruled out on effort grounds. The processing of the extra conceptual material in (22) would put the hearer to extra processing effort without achieving any extra effects (unless the waitress has given evidence of being particularly hostile or slow on the uptake).

I am therefore suggesting that referring expressions may encode procedural information which can be used to narrow the set of potential referents in a way that is more efficient than encoding further conceptual constraints. In the case of distal versus proximal demonstratives, this procedural meaning relates to the spatial position of the referent relative to the speaker. We will explore a different type of procedural meaning when we apply this approach to the data in (4) and (5).

In many examples, it seems that the conceptual information alone is enough to narrow the field of candidate referents to a point where the most accessible referent is the intended one, and yet we still find a contrast between referring forms which differ only in determiner. I will return to this in section 5.2, where I argue that the procedural information encoded in these expressions contributes to the implicit phase of comprehension and guides the hearer as to the type of inferences he should draw.

4.4 Applying the Constraints

Assuming a model in which conceptual and procedural constraints interact I will now re-examine the problematic examples from (4). In this framework, the acceptability of the referring expression chosen to guide the hearer to the intended explicit content

² At this stage I am not making any definite proposal about what this procedural information might look like, but follow the suggestion of Reboul (1997) that the information these demonstratives encode “has to do with the relative distance between the speaker and the object designated”, and that it “has a spatial content which closely parallels that between ‘here’ and ‘there’” (1997: 11)

should be predictable given the encoded conceptual and procedural information and the accessibility of the intended referent relative to other potential referents.

The version of example (4) preferred by Gundel and Mulkern is given here again for convenience:

- (4) b. A restudy of pareiasaurs reveals that these primitive reptiles are the nearest relatives of turtles

To analyse this example fully, it will be necessary to consider the complicated interaction between reference resolution, context construction and implicated effects. In this section I begin this process by looking at how the two types of encoded information contribute to the retrieval of the proposition expressed. I will argue that the proposition expressed by (4a) is the same as that in (4b) and the proposition expressed by (5a) is the same as that in (5b). My suggestion is that the apparent difference in the acceptability of the utterances is a result of the interaction between the proposition expressed and the context, on the one hand, and of the way the procedurally encoded information guides the inferential process, on the other. First, however, we must consider how the explicit content is derived.

The referring expressions in (4a) and (4b) both encode the conceptual information ‘primitive reptiles’. The set of potential referents will therefore be narrowed to include only (sets of) things that are both primitive and reptiles. Given that there is one group of primitive reptiles that is highly salient in the discourse context, it might be tempting to suggest that this is all the speaker needs to do. However, consider (23):

- (23) A restudy of pareiasaurs reveals that primitive reptiles are the nearest relatives of turtles

When the sentence is constructed with a bare-NP instead of a definite-NP, the interpretation changes significantly. The NP ‘primitive reptiles’ receives a generic interpretation where it refers to the primitive reptiles as a kind. (23) will be true if and only if members of the kind ‘primitive reptiles’ are the nearest relatives of turtles. Contrast this with the interpretation of (4b) (and arguably (4a), if we allow an anaphoric epithet reading) where ‘the primitive reptiles’ is co-referential with ‘pareiasaurs’ and the utterance is true only if all pareiasaurs are primitive reptiles. Thus, the inclusion of a definite determiner seems to affect the truth conditional content of the utterance. As with most procedural information, it is difficult to paraphrase in conceptual terms the work done by the determiner. However, in this case it seems to change the reading from a generic one to one in which a definite group of primitive reptiles is picked out. As noted by Gundel and Mulkern, in the case of (4a), this definite group could logically be the group of all primitive reptiles.

However, if, as (23) suggests, a reading where the NP refers to all primitive reptiles is acceptable in some cases, why is (4a) unacceptable on this reading, rather than simply being interpreted as a paraphrase of (23)?

I would like to suggest that the answer to this question follows from the relevance theory claim that a speaker aiming at optimal relevance will not deliberately put the hearer to any gratuitous processing effort. The conceptual information carried by (23) narrows the set of potential referents to just those which are both primitive and reptilian. The lack of any definite determiner results in the generic reading described above.³ Although the same interpretation could be achieved by adding the definite determiner and intending the hearer to resolve reference on the definite group of all primitive reptiles, a speaker who chose this formulation would be demanding extra processing effort from the hearer but failing to offer any extra reward. Moreover, if the speaker wishes to refer to all primitive reptiles, then she runs less risk of misunderstanding if she uses the bare-NP form. Whilst the bare-NP unequivocally picks out the set of all primitive reptiles, there are many different subsets that the definite description could potentially pick out. If (4a) is deemed acceptable at all, then it is under the anaphoric epithet interpretation where the explicit content is parallel with (4b) and not with (23). This brings us back to the issue of how the hearer of (4b) identifies the particular group of primitive reptiles intended by the speaker. Whilst pareiasaurs are a highly salient group of primitive reptiles, it could be possible to identify various other subsets within the set of primitive reptiles, for example crocodylians, which might also fit the conceptual constraints. If there are several logically possible groups of primitive reptiles that could satisfy the referential constraints, then, how does the hearer settle on the interpretation where the definite NP is co-referential with the pareiasaurs?

I suggest that the answer to this lies with the relevance theoretic comprehension procedure. Recall that a hearer following this procedure will test potential referents, and the resulting overall interpretations, in order of accessibility. We therefore predict that the hearer will test the most accessible referent that is not excluded from the set of potential referents by the information encoded by this referring expression. The speaker has used conceptual information to narrow the set of potential referents to groups of primitive reptiles and the procedural information in the determiner to narrow the set further to include only definite (i.e. identifiable) groups of primitive reptiles. Whilst other possibilities are logically available to the hearer, the subset of pareiasaurs is clearly the most accessible one in the context for both (4a) and (4b). The hearer will therefore test the hypothesis that 'pareiasaurs' and 'the/these primitive reptiles' are co-

³ It has been proposed that there is some sort of phonologically null generic operator in such cases. (see Papafragou 1996 for discussion)

referential and, on finding that this interpretation yields enough implications to satisfy his expectation of relevance, will look no further. A similar process is followed in the interpretation of (5a) and (5b) and the hearer resolves reference on the two-group set of pareasaur and turtles.

Having established that some sort of definite determiner is necessary in these cases, we reach the crux of Gundel and Mulkern's argument against a purely pragmatic account and their justification for their scale of Givenness. Although my account so far explains the contribution of both conceptual and procedural information to the proposition expressed, the contrast between 'the primitive reptiles' and 'these primitive reptiles' remains unexplained. Gundel and Mulkern claim that such an explanation is beyond relevance theory alone, and indeed up to this point I have provided no reason to prefer one account over the other. In the following sections, I will address this issue as I move on from the explicit phase of comprehension, to discuss the role that both conceptual and procedural information may play during the implicit phase. Acknowledgement of this role, which is largely missing from the Accessibility and Givenness accounts, will allow us to develop an analysis which captures the subtle differences in acceptability between the utterances in (4), (5), (6) and (7). I will argue that Gundel and Mulkern's account is wrong to characterise the contrast between (4a) and (4b) as lying purely on the explicit side of comprehension. In their view, the various forms contribute to the process of reference resolution, and therefore to the proposition expressed. I hope to have shown in this section that the propositions expressed by (4a) and (4b), and (5a) and (5b) are the same. In all cases, the hearer narrows down the set of potential referents to just those which are sets of things which satisfy the conceptual and procedural constraints. The difference in acceptability results from interaction between the propositions expressed by the utterances and an accessible context, guided by the relevance-theoretic comprehension procedure. I propose that the same processes and constraints are in play in (5) as in (4), but that considerations of relevance result in the infelicity of (4a), and not of (5a).

My claim is that the procedural information can provide constraints not only on the derivation of the proposition expressed, but on the inferences that are drawn during the implicit phase of comprehension. I will return to these examples in the next section, when I consider how referring expressions contribute to the implicit side of utterance interpretation. However, first I will discuss how the conceptual content of a referring expression may contribute to implicit meaning.

5 Beyond Reference

5.1 Conceptual Information and Implicit Meaning

We have seen how conceptual information can affect the derivation of the explicit content of an utterance by guiding the hearer to the appropriate referent. However, derivation of the explicit content is just one of the sub-tasks involved in utterance interpretation. Comprehension of what is implicitly communicated involves ‘constructing an appropriate hypothesis about the intended contextual assumptions’ and ‘constructing an appropriate hypothesis about the intended contextual implications’ (Wilson & Sperber 2002: 261). For the purposes of the discussion to follow, it is important to stress that, according to relevance theory, all three sub-tasks take place in parallel, and the resulting hypotheses may be ‘revised or elaborated as the utterance unfolds.’ (Wilson and Sperber 2002: 261) Whilst I discuss each process separately for clarity and simplicity, they should be viewed as interrelated sub-tasks, ‘embedded within the overall process of constructing a hypothesis about the speaker’s meaning’ (Wilson and Sperber 2002: 262).

To illustrate the contribution that conceptual information can make to implicatures, let us return to our acceptable example in (4b) and compare it with another alternative, given here as (4c).

- (4) b. A restudy of pareiasaurs reveals that *these primitive reptiles* are the nearest relatives of turtles
 c. A restudy of pareiasaurs reveals that *they* are the nearest relatives of turtles

In both (4b) and (4c) it is likely that the hearer will resolve reference on the same representation. In both cases, the referring expression in the subordinate clause will be interpreted as co-referential with the expression ‘pareiasaurs’ in the matrix clause. Thus it seems that, despite my earlier discussion, the conceptual information ‘primitive reptiles’ is unnecessary as far as resolving reference is concerned. Indeed, I predict that a hearer could correctly resolve reference in (4b) even if he did not know what a pareiasaur was and had only limited knowledge of primitive reptiles. This falls out naturally from my earlier discussion, as we have seen that the set of ‘pareiasaurs’ are the most accessible potential referent and so will be tested first. However, if the conceptual constraints discussed above are not strictly necessary, then why is (4b) – which is linguistically more complex – not ruled out by considerations of effort? Once again the answer lies with the relevance theoretic comprehension procedure and the associated principles. According to the procedure, the hearer will test interpretive hypotheses in order of accessibility and stop when his expectation of relevance is satisfied. Until now I have concentrated on the first part of this formulation, but the second clause is equally important and it helps us to gain insight in this case. The

hearer can presume that the utterance will be optimally relevant, where optimal relevance is defined as follows in (24)

- (24) An ostensive stimulus is optimally relevant to an audience if and only if:
- a. It is relevant enough to be worth the audience's processing effort
 - b. It is the most relevant one compatible with the communicator's abilities and preferences

Once again, we must return to the basics of relevance theory to say what makes an input relevant enough to be worth processing. The processing of (4b), compared with (4c), involves the same act of reference resolution but demands that the hearer process more linguistic material. This should only be acceptable if the extra effort is rewarded with extra cognitive effects. I am claiming that this is exactly what happens in this case and that the extra effects that the speaker may wish to convey explain the various possibilities of creating acceptable utterances.

At this point, it may be useful to recall the types of cognitive effects that may be derived as outlined in Sperber and Wilson (2004). The processing of an input may lead to the strengthening of an already held assumption. When the utterance in (25) is addressed to Bill, it may lead to the strengthening of his assumption that Mary is an animal lover.

- (25) Mary likes cats

Alternatively Bill may have thought that Mary actually disliked animals. In that case (25), if provided by a reliable source, will contradict and eliminate this existing assumption, resulting in a second type of cognitive effect. The third type involves the derivation of a contextual implication. This occurs when the input combines with contextual assumptions to yield implications that follow from the input and context together, but from neither the input nor the context on its own. If Bill held the assumption in (26), then the input in (25) might lead to the contextual implication in (27).

- (26) People who like cats are generous people
(27) Mary is a generous person

The implication in (27) could not have been derived from the input or context alone, but is a result of the two combining. Given these three types of cognitive effect, I return to the examples in (4b) and (4c). The effects that will be derived from the additional conceptual information in the referring expression in (4b) depend on the

contextual assumptions available to the hearer. Consider the following possible contextual assumptions and their likely interaction with the input in (4b).

- (28) a. Pareiasaurs are primitive reptiles
 b. Pareiasaurs are primitive mammals

If the hearer of (4b) holds assumption (28a), then the utterance will have the effect of strengthening this assumption. The size of the effect will depend on the strength with which the hearer held (28a) to begin with and his judgement of the speaker's expertise and honesty. If, the hearer held assumption (28b), by contrast, then processing (4b) will lead to a contradiction and possible elimination of the hearer's assumption. Once again, the extra effect will depend on the hearer's assessment of the speaker's abilities and honesty. However, both utterances make it possible to derive cognitive effects that would not have been derived from the utterance in (4c). Now, consider a third possibility. The hearer holds no assumptions about pareiasaurs: he has never heard of them and has no idea what they are. He will still process the utterance with the expectation that it will be optimally relevant. Following the relevance theoretic comprehension procedure, he will test out the possible referents in order of accessibility, starting, in this case, with the set of pareiasaurs. Recall that as part of the interpretation process, the hearer must construct, 'an appropriate hypothesis about the intended contextual assumptions (in relevance-theoretic terms, implicated premises)' (Wilson and Sperber 2002: 261). An easily accessible contextual assumption in this case would be (29)

- (29) Pareiasaurs are primitive reptiles

This implicated premise is likely to be relevant in its own right, as a new piece of information and an assumption that may be useful in the processing of later utterances.⁴ So (4b) leads to a cognitive effect that would not have been derived if the utterance in (4c) had been used in its place. The extra effort of processing a complex demonstrative rather than a pronoun is offset by the extra rewards of the implicature in (29).

The relevance theoretic approach to communication stresses the importance of interpreting utterances in a context. When Gundel (2003) and Gundel and Mulhern (1998) discuss the examples in (4), they do so without reference to the discourse context in which they occur. A little research reveals that (4b) comes from a scientific

⁴ In many ways, (29) functions in the same way as a bridging assumption. However, I follow the view of Matsui (2000) that this is not a genuine bridging assumption, since there is an 'explicitly mentioned antecedent in the previous discourse' (2000: 20)

paper (Lee, 1993), and I suggest that the author has formulated his utterance so as to produce as many cognitive effects in as many readers as possible as efficiently as possible. Different readers will hold different assumptions, perhaps including those in (28), and so the potential for the derivation of the discussed cognitive effects is clear. However, I would like to suggest that this kind of manipulation of conceptual information to affect the implicit side of communication is not restricted to this kind of carefully formulated text book or academic style. Thus, consider the utterances in (30) and (31).

- (30) John_i went into town for his lunch. He_i was late back to the office
 (31) John_i went into town for his lunch. The rascal_i was late back to the office

In (30), the narrowing of the set of potential referents that is required from the hearer is minimal. He need only exclude potential referents with non-male attributes. When processing (31), however, the hearer is required to do more work. The referring expression limits the set of potential referents to those that have the attributes of being a rascal. Logically the hearer has two choices at this stage: he can either count John as belonging to this set or rule him out. Taking the second option would leave him with nothing on which to resolve reference. His expectation that the utterance will be optimally relevant would be disappointed. He is therefore likely to try the other option and construct the contextual assumption (32).

- (32) John is a rascal

Reference is resolved on John once again, as he remains the only, and therefore most accessible, potential referent. However, the extra effort that the hearer has put into processing this is rewarded with extra effects. The hearer now knows that the speaker holds the assumption in (32). This may be relevant in its own right as a piece of new information, or it might act as the input to a further inference by combining with a contextual assumption to lead to further contextual implications. An example of the sort of contextual assumption with which it might combine is given in (33), leading to the contextual implication in (34).

- (33) If you call someone a rascal, you are not impressed with his or her behaviour
 (34) The speaker is not impressed with John's behaviour

I suggest that in reality the use of a referring expression such as 'the rascal' is likely to lead to a whole range of weak implicatures based on assumptions about the nature of rascals and the speaker's opinion of John. The speaker has therefore produced a wide range of cognitive effects for only a little extra effort. In this way, the conceptually

encoded content has contributed to the inferential phase of communication, and we can view referring expressions as just one more device by which a speaker can communicate her message in an optimally relevant fashion. However, there is no guarantee that extra conceptual content will always result in more or different cognitive effects. Consider (35)

(35) ??John_i went into town for his lunch. The man_i was late back to the office.

The structures in (31) and (35) are the same. Both use a definite description to refer back to John. However, the co-reference between John and the definite descriptions is not judged to be equally acceptable in both cases⁵. The difference in acceptability of (31) and (35) lies in the processing effort that the referring expressions demand of the hearer and the effects that they offer in return. Whilst the narrowing that takes place in (30) is minimal, and the extra narrowing in (31) is rewarded with extra cognitive effects, this is not the case for (35). In (35), the hearer is required to narrow the set of potential referents to a sub-set which qualify as ‘men’. Given that John is the only potential referent in the discourse context, this is an unnecessary extra layer of narrowing. Having been asked to expend the effort required to carry out this extra narrowing and process the extra linguistic material, the hearer can expect to be compensated with extra effects. However, there are no obvious cognitive effects that can result from this. The only possible contextual assumption with which the input could combine is that in (36). Unless one was under the preconception that John was a dog, or other non-human, or perhaps a female, it is unlikely that the implicature in (36) would be relevant for the hearer either by strengthening existing assumptions, contradicting or eliminating existing assumptions, or combining with existing assumptions to yield contextual implications.

(36) John is a man

Thus, the extra effort required by (35) is wasted.

5.2 Procedural Information and Implicit Meaning

So far I have discussed the contribution that conceptual information makes to the explicit and implicit sides of communication, and we have seen how procedural information can affect the proposition expressed and therefore contribute to the

⁵ Neither Accessibility Theory nor the GHZ framework has anything to say about why this should be. Both treat definite descriptions as a unified set.

explicit phase. In this section, I examine the fourth logically possible combination: the effect that procedural information can have on the implicit side of utterance interpretation. I return to the examples in (4) and (5) and the contrast in acceptability of the alternations in determiner forms.

In section 4.3, I considered the spatial information encoded in the determiner of complex demonstratives and how such information may rule out possible referents and thus help the hearer to resolve reference. As discussed above, this extra layer of narrowing does not seem to be necessary for reference resolution in the case of (4). In both (4a) and (4b) ‘pareiasaurs’ is the most accessible potential referent and reference will be resolved on it. However, this is not to say that the indication of proximity carried by the determiner in (4) is redundant. When processing (4b), the hearer will still assume that the speaker is being optimally relevant, and is therefore entitled to expect that the speaker will not put him to gratuitous effort. As the procedural information encoded by the complex demonstrative is not necessary for deriving the explicit content, he should expect some other effect to justify its use. This indication of proximity is only appropriate when the spatial relation of the nominal is significant in some way, for example in contrast to some other non-proximal entity. Use of the complex demonstrative form ‘this/these N’ therefore results in an effect of contrasting the intended referent with some other entity of the same type. Both Reboul (1997) and Powell (2002) offer some suggestions as to how we might define the difference between complex demonstratives and definite descriptions and both seem to be tapping into this idea of contrast. As a result, they move us closer to understanding the procedures associated with these referring expression forms.

Reboul considers the procedural information encoded by the definite article and suggests that it restricts interpretation to ‘a set Q of objects of which one is N while all the others are not’ (1997: 8). Here, N corresponds to the conceptual information encoded by the definite description accompanying the determiner. Powell (2002) discusses the difference between definite descriptions and complex demonstratives in his work on reference. Complex demonstratives, he claims, are ‘communicative tools designed for a particular purpose, that purpose being to talk about particular members of the nominal class’ (2002: 226)”. He goes on to discuss how complex demonstratives contrast with definite descriptions: ‘the nominal of a definite description must be uniquely denoting, that of a complex demonstrative must not be uniquely denoting.’ (2002: 230). He sums up what could be seen as their procedural meaning as follows: “whereas a definite description ‘the F’ exploits, by dint of its linguistic meaning, the property of being a unique F in order to guide a hearer to the intended interpretation, a complex demonstrative ‘that F’ exploits the property of being a non-unique F to guide the hearer to an individual concept.’ Powell places particular emphasis on the idea that the nominal of a complex demonstrative is non-

unique, and is therefore picked out as one instance of an F in contrast to all the other instances of Fs.

I argued in 4.4 above that if the hearer follows the relevance theoretic comprehension procedure, the procedural information about spatial relations encoded by the complex demonstrative will be superfluous during the explicit phase of communication. However, it can be manipulated during the implicit phase to constrain the type of inferences that the hearer is likely to draw. The contrast in appropriateness of the resulting inferences helps to explain the difference in acceptability of the two utterances (4a) and (5a). We must then ask what role this procedural information plays in the interpretation, and how we might explain the contrast between (4a) and (5a) and the related examples in (6) and (7).

As discussed above, the hearer is seen as testing interpretive hypotheses in order of accessibility. Given the context set up by the previous utterance (4), the most accessible set of two groups for the interpretation of (5) should be that of the pareiasaurs and the turtles. Then the conceptual information provided should be enough to ensure that the hearer retrieves the intended referent, just as it was in (4).

Recall that the procedural information about spatial relations encoded by the complex demonstrative is only relevant if there is another potential referent in a different spatial relation to the speaker. Encoding of such information therefore leads to a contrast effect. No such effect occurs if the uniquely-denoting definite determiner form is used. In (5b), therefore, the two groups under discussion are set in contrast to other potential groups. This in turn gives rise to a weak implicature that there are other groups that do not share the same derived characteristics. The same implicature is not present in (5a), where the only two groups of any significance are the turtles and the pareiasaurs.

On this account, the contrast in acceptability between (4a, b) and (5a, b) does not result from any encoded level of Accessibility or Givenness, but from the appropriateness of the inferences derivable from each version. Both (5b), with its indication of contrast and (5a) without it are equally acceptable in the discourse context. However, the same parity does not exist with (4a) and (4b). Following my argument above, in (4b) 'these primitive reptiles' guides the hearer to an interpretation where the pareiasaurs are set in contrast to other potential groups of primitive reptiles. This is just what the speaker of (4) intends. It is these reptiles and not others that are the closest relatives of turtles. Logically, only one set of primitive reptiles can be 'the closest relatives of turtles' thus, an utterance where the intended referent is set in contrast to others is the most appropriate. If we take away the superlative, then the 'the/these' variants become equally acceptable, as in (6) and (7). Add the superlative back in, and we find the same contrast arising again, with only a marginal anaphoric epithet reading available.

- (37) a. ??A restudy of pareiasaurs reveals that *the primitive reptiles* were the largest in Africa
 b. A restudy of pareiasaurs reveals that *these primitive reptiles* were the largest in Africa

Thus the role of the demonstrative determiner and the procedural information that it contributes to the interpretation of the complex demonstrative is two-fold. It may help to narrow the set of potential referents and guide the hearer to the explicit meaning by encoding a procedure which further narrows the set of potential referents, or it may guide the hearer in the inferential phase of comprehension. When the resulting inferences are in conflict with the sense of the utterance an infelicity effect may occur.

Once again it is vital to remember that as determination of the explicit and implicit content takes place in parallel, the procedural information is ultimately a device by which a speaker's meaning is conveyed in an optimally relevant fashion.

6 Concluding Remarks

A crucial point to note about this approach is that the information encoded by the referring expression need not rule out all potential referents that are not in fact intended, but only those which might be equally accessible or more accessible to the hearer than the intended one. This conflicts with Ariel's interpretation and criticism of what she thinks a pure relevance theory approach would look like:

The relevance...account [s] assume that in reference retrievals a speaker guides an addressee by making sure he picks the right antecedent based on eliminating 'wrong' choices of competitors' (Ariel 1990: 85)

In fact, application of the relevance theoretic comprehension procedure predicts that any process that rules out all potential referents except the intended one would be likely to lead to a gratuitous expenditure of effort by the hearer and so would detract from optimal relevance. It follows that there should be an optimal referring expression in each case: one that restricts the set of potential referents just enough but no more than necessary. However, we have seen that there are often options open to the speaker as to which referring expression to choose. Relevance theory is a balancing act between effort and effect and so the speaker may quite legitimately choose to put the hearer to extra effort, so long as the effort is rewarded with extra effects on the implicit side of interpretation.

In this paper, I have tried to show how the choice and interpretation of referring expressions can be explained in the relevance-theoretic framework without the need to

introduce theory-external machinery. Referring expressions may encode both conceptual and procedural meaning which contributes to the retrieval of the proposition expressed, and can also provide constraints on the implicit phase of communication. These roles should not and can not be considered in isolation from each other.

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