

Cognitive Status and the Form of Indirect Anaphors^{*}

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1. Introduction. The prototypical anaphoric expression is one which is interpreted as coreferential with a previous expression in the discourse. An illustration is given in (1), where *the house* is to be interpreted as the mansion on Summit Avenue introduced in the first sentence.

- (1) *Her family lived in a large mansion on Summit Avenue.
The house had been built in 1902.*

A nominal phrase may also be ‘linked’ to the previous discourse without being coreferential with a previous expression, as in (2).

- (2) *When strangers come in the house Maynard will run away but not run entirely out of the room. He will run off to the side and the corner, and then he will kind of sidle around and he’ll look. [Frederickson tapes]¹*

The phrase *the room* in the second sentence of (2) must be interpreted as a room in the house introduced in the first sentence, and more specifically it must be the room that Maynard is in before he

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¹The ‘Frederickson tapes’ are transcribed recordings of conversations during family gatherings (1975-1987), collected by Karen Frederickson, secretary of the University of Minnesota Linguistics Department from 1979 to 1992.

runs away. Similarly, *the side* and *the corner* must be a side and a corner in the room that is mentioned in the first sentence. Following Erkü and Gundel (1987), we refer to expressions like *the room*, *the side* and *the corner* in (2) as indirect anaphors.

A characteristic property of indirect anaphors is that they generally do not allow coding with a pronoun (Garrod and Sanford 1982, Erkü and Gundel 1987) or a demonstrative determiner (Webber 1988).² Compare the sentences in (3) and (4), for example.

- (3) a. *Her family lived in a large mansion on Summit Avenue. **This house** had been built in 1902.*
b. *Her family lived in a large mansion on Summit Avenue. **It** had been built in 1902.*
- (4) a. *When strangers come in the house Maynard will run away but not run entirely out of **this room**.*
b. *When strangers come in the house Maynard will run away but not run entirely out of **it**.*

The anaphoric expression *the house* in (1) can be replaced with a demonstrative phrase, as in (3a) or a pronoun, as in (3b), without affecting the interpretation of the sentence. By contrast, the phrase *this room* in (4a) must be interpreted as a room already mentioned or present in the extralinguistic context (for example the room that the speaker is in); it cannot be an indirect anaphor like *the room* in (2). When indirect anaphors are replaced with pronouns, as in (4b), the interpretation changes completely. The pronoun *it* in (4b) can only be interpreted as the house

The facts in (1)–(4) show that pronouns and demonstrative phrases cannot typically serve as indirect anaphors. It is clear, however, that there cannot be a categorical restriction against

² So-called ‘situation anaphors’ as in (i) (see Fraurud 1992 and Hellman 1996) might appear to constitute an exception to this generalization as these are typically demonstrative pronouns.

(i) *Tom still hasn’t called. **That** really upsets me*

These differ from the indirect anaphors in (2), however, in that they do in fact refer to an entity directly introduced in the previous discourse, namely the situation or state of affairs introduced by a whole sentence or sequence of sentences. We will not be concerned with situation anaphors in this paper.

pronominal or demonstrative indirect anaphors, since sentences like those in (5)–(7) are perfectly acceptable.

(5) *Why is it that whenever the cat throws up, I'm the one that has to clean **it** up.*

(6) *Kaja's wallet was stolen. I hope they catch **that thief**.*

(7) *We drove to Boston twice. **These trips** took less than 5 hours. [Erkú and Gundel 1987]*

This paper will report on an investigation of the conditions under which pronouns and demonstrative phrases can occur as indirect anaphors. In section 2, we summarize the theory of reference understanding proposed in Gundel, Hedberg, and Zacharski (1993) and briefly review the predictions this theory makes about the cognitive status of pronominal and demonstrative indirect anaphors. Section 3 examines the distribution and use of such indirect anaphors in naturally occurring discourse, and reports on findings which indicate that they are relatively infrequent and primarily restricted to unplanned discourse. In section 4, we propose that indirect pronominal and demonstrative anaphors that do not meet the conditions for appropriate use of pronouns and demonstratives posited by Gundel, Hedberg and Zacharski (1993) are best analyzed as minor violations of the conditions for use of these forms, which the hearer can easily accommodate.

2. Indirect Anaphors and the Givenness Hierarchy. The fact that pronouns and demonstratives cannot typically serve as indirect anaphors follows naturally from the theory of reference understanding proposed in Gundel, Hedberg and Zacharski 1993 and earlier papers. The major premise of this work is that different determiners and pronominal forms signal different information about memory and attention state (cognitive status), as part of their conventional meaning. We propose six such cognitive statuses, which are implicationally related in the Givenness Hierarchy shown in (8).

(8) *The Givenness Hierarchy*
in uniquely type

focus > activated > familiar > identifiable > referential > identifiable

{it} {that
this
this N} {that N} {the N} {indefinite this N} {a N}

The cognitive statuses are part of the meaning of specific determiners and pronouns, and are thus necessary conditions for appropriate use of these forms. The relevant English forms are given in (8). Since the forms convey different information about the memory and attention status of the referent, they serve as processing signals which assist the addressee in accessing the interpretation that the speaker/writer intended. The lowest status (type identifiable) is least restrictive and the highest status (in focus) is most restrictive. As a simple illustration, consider the contexts in which the referring expressions in (9) can be appropriately used.

- (9) *I couldn't sleep last night*
- a. *A dog next door kept me awake*
 - b. *This dog next door kept me awake*
 - c. *The dog next door kept me awake.*
 - d. *That dog next door kept me awake.*
 - e. *This dog/that/this kept me awake*
 - f. *It kept me awake.*

The indefinite article in (9a) signals only that the addressee can identify the type of thing described. The indefinite determiner *this* in (9b) signals not only that the addressee is expected to identify the type of thing described, but that the speaker intends to refer to a particular dog and therefore expects the addressee to construct a representation of that dog by the time he has finished processing the sentence. The definite article *the* in (9c) signals that the addressee is expected to retrieve or construct a unique representation of the speaker's intended referent³ as soon as he has processed the nominal phrase in question.

³ In using the term 'uniquely identifiable', we do not intend to imply that there is only one object in the universe of discourse which fits the description or that the speaker assumes the addressee can necessarily identify the object in the world. Rather, we mean that in understanding the nominal phrase in question, the addressee should be able to assign a unique representation that is independent of the rest of the sentence. As Ward and Birner (1994:726, fn. 3) point out, 'uniquely identifiable'

The demonstrative determiner *that* in (9d) tells the hearer that he is familiar with (already has a mental representation of) the referent and therefore can uniquely identify it; the main difference between (9c) and (9d) then is that the definite article doesn't assume any previous familiarity with the referent, but the demonstrative determiner does. The demonstrative determiner *this* and the pronouns *this* and *that* in (9e) signal that the referent is activated (in working memory); these forms would therefore be appropriate only if the referent had recently been mentioned or was in the immediate extralinguistic context. And finally the personal pronoun *it* in (9f) tells the addressee that the referent is not only activated, but that his attention is currently focused on it.⁴

A crucial distinction between the Givenness Hierarchy and other 'referential scales' (Ariel 1988, *inter alia*) is that the statuses on the scale are in a unidirectional entailment relation, and are thus not mutually exclusive. It follows from this that use of a particular form not only signals that the associated cognitive status is met, it also signals that all lower statuses have been met. The theory thus correctly predicts that a given form can be used in coding phrases whose referents meet the minimal required status, and it can also be used in coding higher statuses. Different forms therefore only signal a *minimum* status. They are underspecified for, and therefore not inconsistent with, all higher statuses. For example, the referent of an NP with the definite article *the* in English may be just uniquely identifiable, or it may also be familiar, activated, or in focus, since these statuses all imply uniquely identifiable. Facts about the actual distribution of forms in naturally occurring discourse can be shown to result from interaction of the Givenness Hierarchy with Grice's

might have been a more appropriate term here. We have chosen to use 'uniquely identifiable', however, to avoid proliferation of terminology, and because we believe our sense of this term is the only relevant one for a theory of natural language interpretation. See also Green (1989) for this more pragmatic/cognitive use of the term 'uniquely identifiable'.

⁴ This is under the assumption that the pronoun *it* is unstressed. Stressed pronouns in English pattern like demonstrative pronouns and the proximal demonstrative determiner in that they require the referent to be activated, but not necessarily in focus.

Maxim of Quantity (1975). For example, the first part of this maxim (be as informative as required) predicts that an indefinite article will normally not be used when the addressee can be expected to uniquely identify the referent, since this form requires only type identifiability, and would therefore be insufficiently informative. For full, definite phrases, on the other hand, signaling identifiability is usually as much information as the addressee needs, given the descriptive content of the head noun and possible modifiers. Providing an explicit signal of a more restrictive cognitive status is therefore unnecessary. The second part of the Quantity Maxim (don't give more information than necessary) thus suggests an explanation for why the definite article is frequently chosen over a stronger form, the demonstrative determiner, and there is no implicature that the referent does not have the status associated with the stronger form. See Gundel, Hedberg and Zacharski (1993: 294-303) and Gundel and Mulkern (1998) for more details.⁵

Consider the bold-faced phrases in (10) as an illustration.

- (10) a. *A restudy of **pareiasaurs** reveals that **these primitive reptiles** are the nearest relatives of turtles.*
- b. ***The two groups** share numerous derived characters, such as a reduced presacral count, an acromion process, and a trochanter major, which are absent in other basal amniotes.*
- c. *Many traits long thought to be specific to chelonians also occur in pareiasaurs and must have evolved before **the distinctive turtle shell** appeared. [Michael S. Y. Lee, The Origin of the Turtle Body Plan, Science, vol. 261, 1993, p.1649].*

The phrase *these primitive reptiles* in (10a) is introduced by a proximal demonstrative determiner, which conventionally signals that the entity it refers to is at least activated (in short term memory). This forces identification with pareiasaurs, since they are the only entity that has been introduced up to this point. Notice that a definite article,

⁵ Gundel and Mulkern (1998) also consider a reanalysis of the facts in question within a relevance-theoretic framework.

which only signals that the referent is uniquely identifiable, would be theoretically possible here as well (since anything that is activated is also uniquely identifiable), but it wouldn't suffice to allow the addressee to easily identify the referent. The reason for this is that the descriptive content alone doesn't suggest association with pareiasaurs, especially if the reader doesn't know what pareiasaurs are. The next phrase, *the nearest relatives of turtles* signals only that the referent is at least uniquely identifiable. In this case, since it is a superlative, it is possible to associate a unique representation on the basis of what is encoded in the description alone. And since there is no reason to assume the addressee already has a representation corresponding to the nearest relatives of turtles in memory, a demonstrative (*these/those nearest relatives of turtles*) or a pronoun (*they*) would not be appropriate here. By contrast, the referent of the phrase *the two groups* in (10b) is not only uniquely identifiable, but activated, as it refers to two groups, namely turtles and pareiasaurs, which have been recently mentioned. The Givenness Hierarchy thus correctly predicts that a demonstrative determiner (*these/those two groups*) or even a pronoun (*they*) would have been appropriate as well, since anything which is activated is also uniquely identifiable. However, unlike *these primitive reptiles* in (10a), a form which explicitly signals activation is not necessary to allow the addressee to correctly identify the intended referent in this case, because the descriptive content makes it possible to easily associate the referent with the two groups mentioned in the previous sentence.

According to the theory summarized above, the definite article in English only requires the referent of the nominal expression to be uniquely identifiable; unlike pronouns and demonstratives, it does not signal that the addressee already have a representation of the intended referent in memory. The basis for assigning a unique representation may be, and most often is, previous familiarity, but this is not the only basis. The addressee could also construct a new unique representation based solely on the descriptive content encoded in the phrase or by accessing a 'bridging assumption' which links the phrase to an recently introduced entity. The latter process is what is involved in the case of indirect anaphors.

If we assume that indirect anaphors usually require the addressee to construct a new representation, this would explain why they can be coded with the definite article, but typically not by pronominal or demonstrative phrases.⁶ Our theory also allows us to explain why pronouns and demonstratives are possible as indirect anaphors in examples like those in (5)–(7), since in these cases processing the preceding discourse may actually require the addressee to construct a representation of the referent of the indirect anaphor before this form is encountered. If the cat threw up, there must be something that it threw up; if something was stolen, there must have been someone who stole it; if we drove to Boston twice, there must have been two trips. The entity in question would thus have been brought into focus, or at least activated, even though it does not have an explicit linguistic antecedent (cf. Bosch 1988).⁷

On the other hand, not all uses of indirect pronominal and demonstrative anaphors can be explained by the possibility of automatically constructing the referent as a result of processing the previous discourse. For example, processing *Barb* in (11) would certainly not require speaker N to construct or retrieve representations of both Barb and her husband.

- . (11) K.1: *Barb got it.*
N.2: *Catmopolitan?*
K.3: *Yeah.*
N.4: *Catmopolitan.*
K.5: *She got it.*
N.6: *Yup. I suspicion she was a cat in her other life.*

⁶ The view that indirect anaphors involve the construction of new representations is shared by most researchers, including Garrod and Sanford (1982), who posit a level of ‘implicit focus’ to account for such forms. According to these authors (pp. 26-27) ‘implicit focus’, unlike ‘explicit focus’, does not contain token representations of specific referents.

⁷ The question of what inferences are actually made in processing an utterance is beyond the scope of this paper (but see Hellman 1996 for an excellent critical overview of work which addresses this question.). The GHZ framework also has nothing to say about how an entity actually acquires a particular status. But see Gundel, Hedberg and Zacharski (1993) and Gundel (1998) for some discussion of this point.

K.7: *Oh did I tell you that **they** have a cat, they have two cats; one is Maynard and one's Dudley.*

[Frederickson tapes]

Barb's husband could therefore not be expected to be activated at the point when N encounters the pronoun *they* in K's utterance in 7.

Similarly, there is no reason to think that in processing the phrase *the big draw bridges* in (12), the addressee would automatically construct representations of grates on the bridge.

(12) *After checking into the beach house, I hung up the keys to the car and lived on the Helix. It took me all over, down to Jeckell Island, up to Savannah. She did great on the big draw bridges. I hate driving over **those grates**, but she was very steady. [alt.scooter]*

The referent of *those grates* would therefore not meet the necessary conditions for appropriate use of a demonstrative determiner, i.e., it would not be familiar.

3. Pronominal and Demonstrative Indirect Anaphors in Naturally Occurring Discourse. We have seen that the framework outlined in Gundel, Hedberg and Zacharski (1993) allows us to explain the fact that pronouns and demonstratives are typically not allowed as indirect anaphors, except in those (relatively rare) cases where an appropriate representation is automatically constructed as a result of processing the previous discourse. However, examples like (11) and (12) appear to be counterexamples to this account, since the referent of the pronominal and demonstrative indirect anaphors in these examples cannot be assumed to have the required cognitive status. What then allows the use of a pronominal and demonstrative indirect anaphor in examples like (11) and (12)? In this section, we report on a study which attempts to answer this question. Specifically the study addresses the following questions:

I. What types of pronominal and demonstrative indirect anaphors occur and how common are they?

II. Do these occurrences meet our proposed conditions on the appropriate use of pronouns and demonstratives? That is, when a demonstrative indirect anaphor is used can the referent be assumed to be at least familiar (for distal demonstratives

determiners) or activated (for proximal demonstratives); and when a pronominal indirect anaphor is used can the referent be assumed to be at least activated (for stressed pronouns) or in focus (for unstressed personal pronouns) at the point when the anaphor is encountered?

III. If not, do they require a revision of our theory or is there independent motivation for treating them as minor ‘violations’ of the rules, which are easily accommodated.

Our analysis is based on 109 naturally occurring examples. 48 instances were from spoken sources, including transcribed family conversations, interviews, court depositions, and miscellaneous examples overheard in casual conversations. 61 examples were from written sources, primarily from various Internet support groups.⁸ A summary of the forms in our corpus is given in Table 1.

Table 1. Summary of Indirect Anaphor forms

	<i>spoken</i>	<i>written</i>	<i>total</i>
<i>they</i>	23	26	49
<i>we/our</i> ⁹	14	16	30
<i>s/he</i>	4	9	13
<i>it</i>	1	6	7
<i>you</i>	1	0	1
<i>this N</i>	0	1	1
<i>that N</i>	5	3	8
<i>total</i>	48	61	109

Approximately half of the pronominal examples were the third person plural form *they*. Although the examples were almost evenly distributed between spoken and written sources, it should be noted

⁸Almost a third of the examples came from alt.support.eating-disorders.

⁹Note that we include some first and second person plural pronouns because the speaker or addressee, respectively, are only part of the intended referent here, and these pronouns can't be fully interpreted by simply linking up with the speaker or addressee and/or a coreferring phrase in the linguistic context.

that nearly all the written sources were closer to casual, unplanned speech than to planned writing. We found no examples of pronominal and demonstrative indirect anaphors in planned writing. We looked for examples of pronominal and demonstrative indirect anaphors in planned writing, but didn't find any.

As noted above, Gundel, Hedberg and Zacharski (1993) propose that pronouns and demonstrative determiners differ from the definite and indefinite article in that they signal that the hearer already has an existing representation of the referent in memory. If this theory is correct, we would expect that a distal demonstrative determiner will be used only if the speaker can reasonably assume that the addressee already has a representation of the referent in memory at the point when the phrase is encountered (familiar); a stressed personal pronoun, demonstrative pronoun, or proximal demonstrative determiner will be used only if the referent can be assumed to be not only in memory but in short term memory (activated); and an unstressed personal pronoun would be used only if the speaker can reasonably assume that the addressee's attention is currently focused on the referent (in focus). We would therefore expect to find pronominal and demonstrative indirect anaphors only when processing the previous discourse requires the addressee to construct a representation of the referent of the indirect anaphor as well, as in examples (5)–(7) above.

In fact, however, in the 109 examples we found, only ten—three demonstrative phrases and seven pronouns—could arguably refer to entities that were already in the addressee's memory at the point when the form was encountered, i.e., where the addressee would not be required to construct a new representation in processing the phrase in question. Some of these were similar to examples (7)–(9) above, where processing the previous discourse might require the addressee to construct a representation of the referent of the indirect anaphor. For example (13) and (14).

(13) *I have been tubed a couple of times, and **it** is uncomfortable going down.* [alt.support.eating-disorders]

(14) *Your nose, mouth and esophagus are all interconnected. It's like if you smoke, you can blow **it** out of your nose or*

mouth. Have you ever been laughing when you eat and it comes out of your nose? [alt.support.eating-disorders]

Other examples were less clear cut, but it seems plausible at least that the referent could be in focus (or at least activated) at the point when the indirect anaphor is encountered.

For example, in (15) it could be argued that the addressee would construct a representation of the class in which the final is held before the point at which he encounters the phrase *this boring class*.

(15) *Then I have my first pre-summer session final tomorrow. How am I supposed to study for **this boring class**.*
[alt.support. eating disorders]

Similarly, understanding the discourse in (16) would probably involve constructing a representation of a fishing line before the point when the line is actually mentioned.

(16) *My father was very stylish with any tool he worked with. Yeah, the fishing rod also. He was just beautiful, pick up a 4-ounce rod and throw **that line** across.* [Terkel 1980:125]

But the remaining examples of pronominal and demonstrative indirect anaphors in the data that we collected clearly did not meet the proposed conditions for appropriate use of pronouns and demonstratives. Two such examples were presented above in (11) and (12). Some additional examples are given in (17) and (18) below.

(17) *And for Kajuya, Microsoft is the best means to the end. "When you're in academia, you write papers and eventually **those ideas** get used by other people."*
[Wired, June 1996]

(18) *Even if I do get into this program, I'll feel like I don't really deserve it and that **they** just made a mistake... it's that little voice inside my head that forever says "L...**they**'re going to find out your little secret..they know that you're a big phony and that you really don't have it all together..they'll know it's just an act."*
[alt.support.eating disorders]

Even though one could expect academic papers to have some ideas in them, processing the sentence *when you're in academia, you write papers* wouldn't necessarily (or even normally) involve constructing a representation of the ideas in the papers. The referent of

the phrase *those ideas* in (17) would therefore not be familiar (already in the addressee's memory), at the point when the phrase is encountered. Similarly, in (18), the addressee's attention could not possibly be expected to be focused on the intended referent of *they* the first time this pronoun occurs.

4. Accommodation. If only ten of the examples collected could arguably meet the proposed conditions for appropriate use of a pronominal or demonstrative phrase, how can we account for the remaining cases? One possibility would be to consider these to be counterexamples to our theory, cases that either require a weakening of the proposed necessary conditions for appropriate use of the forms in question or that require a theory that treats indirect anaphors as a separate category. Earlier treatments of indirect anaphors have in fact taken the latter option, quite independently of the existence of pronominal and demonstrative indirect anaphors (cf. for example, Chafe (1994), Prince (1981), and Garrod and Sanford (1982)). But, as Gundel, Hedberg and Zacharski (1993) point out, this would miss the generalization that the vast majority of indirect anaphors (i. e., those introduced by a definite or indefinite article) obey exactly the same conditions as other noun phrases of similar form. It would also leave unexplained why indirect anaphors normally cannot be pronominal or demonstrative. Another option, and the one we shall argue for here, is to treat most instances of pronominal and demonstrative indirect anaphors as minor violations which involve loosening of the conditions for appropriate use of pronouns and demonstratives, but where the addressee can easily accommodate in order to interpret the form in question. Our position is thus similar to that of Cornish (1996: 39) who writes about pronouns without antecedents, "If [the] representation is assumed by a speaker to be salient in the interlocutor's model, but in fact it is not, then the interlocutor may be able to 'accommodate' it."¹⁰

¹⁰ The term 'accommodation' was introduced in the classic article by Lewis (1979) to refer to the process whereby contextual background conditions are intentionally treated as fulfilled, and thereby attain the status of actually being fulfilled. A similar sense is assumed by Heim (1982) to account for first mention definites which require creation of a new 'file card'. Heim identifies accommodation with 'bridging

An account based on accommodation is suggested by a number of factors. First, as already noted, examples of pronominal and demonstrative indirect anaphors are relatively rare compared to indirect anaphors in general, and they are found almost exclusively in casual speech. The examples we found in written sources were all in electronic mail and discussion groups where the language is more like casual spoken register than like planned writing.

To examine the relationship between the planned/unplanned aspect of text and the frequency of indirect pronominals and demonstratives we compared a 100,000 word sample of alt.support.eating-disorders posts to a 100,000 word sample taken from web pages discussing eating disorders. Our assumption is that newsgroup posts are relatively unplanned compared to web page text. The texts of both corpora were produced by a variety of writers. Based on a 5,000 word sample, we also estimated the number of indirect non-demonstrative full NP anaphors occurring in these 100,000 word corpora. The results are shown in table 2:

Table 2: Distribution of indirects in planned and unplanned text.

	<i>100,000 word planned text</i>	<i>100,000 word unplanned text</i>
<i>indirect pronominal and demonstrative anaphors</i>	2	9

inferences' in the psychological literature (Clark and Haviland 1977), and proposes it as a complement to her familiarity condition on definites. Accommodation is thus a part of her theory of definite reference. As noted above, the GHZ framework does not require an appeal to accommodation in order to account for non-familiar phrases (including indirect anaphors) headed by the definite article, since the definite article only requires that the referent be uniquely identifiable. The view of 'accommodation' we adopt here is also somewhat different from the Lewis/Heim notion in that we view accommodation as a kind of repair of minor violations of the rules which govern appropriate use of the form in question (part of performance rather than competence), and would therefore not expect it to be involved in the majority of instances in naturally occurring discourse (cf. Fraurud 1992, who found that the majority of definite article phrases in the corpus she examined were first-mentions)..

These findings offer clear support for the claims that indirect pronominal and demonstrative anaphors are relatively infrequent compared to indirect anaphors introduced by a definite or indefinite article, and that they occur more frequently in unplanned text than in planned text. Experimental evidence also suggests that speakers don't consider pronominal indirect anaphors to be completely felicitous. For example, Sanford et al. 1983 report that subjects presented with sentences containing pronouns without explicit antecedents would replace the pronoun with a full NP 83–92% of the time. This can be taken as indirect evidence that such forms are not consistent with native speakers' internalized knowledge of the language.

Finally, as we saw in §1, indirect pronominal and demonstrative anaphors are clearly not allowed under all conditions which allow other indirect anaphors, and the possibility of a bridging inference in itself does not license felicitous use of these forms; successful accommodation is possible only under the right conditions, and when speakers have reason to believe that these conditions aren't met, they self-repair, as in (19) and (20).

(19) *Host: Do you think the Molson Indie should continue in Vancouver.*

Caller: Yes we do. I say 'we'. The family do.

[2/4/97, Almanac, CBC radio, Vancouver]

(20) *Jean: I have a perfect example of that. When I was a poet in the schools, in the Kentucky system, we were organized.... I mean, we- ah- there were sculptors, poets, uhm, folk artists, uhm, a whole community of*

M: HmHm.

Jean: that -- actually, we were only brought together, uhm, on very specialized occasions, at the

beginning, sort of mid-year, ehm, from time to time, but it had a tremendous influence on me.

[Wisconsin Public Radio]

What then *are* the conditions that allow for successful and effortless accommodation? Since most of the examples we found involved personal pronouns, we will restrict the rest of the discussion to these forms.¹¹

In some cases, the need for the hearer to accommodate does not seem to be intended by the speaker. The entity doesn't have the status required by the form, but the speaker isn't very well attuned to the hearer's attention state and doesn't realize that the referent lacks the required status, or else (perhaps less likely) mistakenly believes it does. Example (11) appears to be a case of this type. In most cases, however, the need for hearer-accommodation seems to be intended by the speaker. The speaker knows the referent doesn't have the required status, but uses the form anyway because she knows the hearer can easily accommodate. Examples of this type are shown in (21)–(23).

(21) *I glued two pieces of paper together, and **it** flew.* [Heim 1982]

(22) *I'm an only child, um..my father died when I was 12. But I, I checked with her about, uh, what, when and how she went through menopause. I've been, I've been through, you know, I got, I got my checkups. I think the last time I went was about 4 months ago. I thought **they** routinely took an estrogen level thing.* [Cassell 1985]

(23) *It is very hard for me to feel supported after recently being discharged from an intensive treatment program. Today I got weighed and I gained a quarter of a pound and **they** think that I water loaded!! ha!* [alt.support.eating disorders]

¹¹ But see Apotheloz and Reichler-Beguelin (1999) for an interesting and detailed study of demonstrative indirect anaphors, which goes beyond the present work in also addressing the question of the function of such forms. In many of the examples cited by these authors, the use of a demonstrative may be licensed by the fact that the referent has been constructed as a result of processing the preceding utterance, as in our examples in (6) and (7) above. Such an explanation is not available for all cases, however. Since this article came to our attention only after the present paper was submitted, we will not discuss it further here.

In all three of these examples, a (possibly unstressed) pronominal is used even though the referent is not in focus, or even activated.

Most of our examples are like (22) and (23) in having a vague or impersonal character. As Fox (1987) says about examples like these, “the exact identity of the referent seems to be unimportant.” Such sentences can sometimes be replaced with an agentless passive with no loss of information, as in (24):

- (24) a. *The other therapy I had to say good-bye to was day treatment (where I'd been going off and on since January) -- but it wasn't my own decision. **They** kicked me out. Why? For being TOO SICK!*
[alt.support.eating-disorders]
- b. *The other therapy I had to say good-bye to was day treatment (where I'd been going off and on since January) -- but it wasn't my own decision. I got kicked out. Why? For being TOO SICK!*

Fox goes on to say, “the CLASS of referents is identifiable, however, and it is perhaps this identity which the recipient is being invited to ‘resolve’ by the use of the pronoun.” But our examples suggest that it would be relatively difficult in most cases for the speaker to formulate a relevant description. Thus, the phrase *the people at the hospital* in (25) is not much more informative than the indirect anaphor *they* in (22) and (23).

- (25) ***The people at the hospital** might up my prozac dose. I hate taking prozac. I am not that depressed. I mean I never like tried to kill myself except when I starved myself until my heart barely beat and they had to put an IV.*
[alt.support.eating-disorders]

We suggest then that a pronoun is used in such cases (in violation of the conditions for appropriate use of pronouns) because precise identification of the referent is not important. Use of a pronoun thus decreases speaker effort without very much disrupting ease of understanding, and the mutual processing load is thus low (cf. Clark and Wilkes-Gibbs 1986, Sperber and Wilson 1996).

Another property that distinguishes pronominal indirect anaphors whose referents are not in focus is that the reference cannot

be (even partially) resolved at the point when the anaphor is encountered. As pointed out by Yule (1982), Ziv (1996) and Cornish (1996), what is predicated of the pronoun in such cases is often crucial in reference resolution, i.e., the addressee must generally process the whole sentence before the pronoun is understood. This is in contrast with direct anaphors, and with indirect anaphors introduced by a definite article, whose referents can normally be resolved as soon as the form is encountered.¹² Example (16) is a particularly clear illustration of this point.

(26) *My mum bought an exercise tape and so I'll go nuts and play it in the morn and in the afternoon and do the added things she says for those that want a more intense workout (she = woman on exercise tape) [alt.support.eating-disorders]*

The initial interpretation is the speaker's mother, since she is in focus (or at least activated) at the point when the pronoun is encountered. It is not until the whole sentence is processed that the intended interpretation, the woman on the exercise tape, can be assigned.

Ziv (1996) suggests that the felicity of indirect pronominal anaphors depends on there being an explicitly introduced entity in the previous context which activates an appropriate script (Schank and Abelson 1975), where a script is defined as "a predetermined sequence of actions performed by stereotypical role players involving a well-known situation." When the action predicated of the anaphor can be associated with such a script, it enables the addressee easily access a contextual assumption (in the sense of Sperber and Wilson 1986) that serves as the bridging inference needed to interpret the referent of the pronoun. Thus, in (26), the phrase *exercise tape* might activate a script that includes a female instructor ('stereotypical role player') who instructs viewers on how to perform various exercises ('predetermined sequence of actions'). Many of our other examples of indirect pronominal anaphors whose referents were not in focus also seem to involve a script. Consider, for example, (27)-(29).

¹² Charolles (1999: 320) makes a similar point in a paper that came to our attention only after the present work was submitted.

- (27) *I am getting divorced. It's very hard with 2 kids, 4 and 3 yrs. old. But it's what I want and what **he** needs....Anyway, D. will get custody of the computer so I won't be around much longer. [alt.support.divorce]*
- (28) *Seven years of marriage. Yes **we** had our ups and downs, but now **she** says she doesn't love me anymore. [alt.support.divorce]*
- (29) *I had my second session since the eating disorder has come back. It is so disturbing. It was mostly good and had a lot of communication, but at one point **she** said that the part of me that didn't want to deal with the problem... [alt.support.eating disorders]*

In (27) and (28), the terms *divorce* and *marriage* are both associated with a script whose stereotypical role players include a person and his or her spouse. Given the actions that are predicated of the indirect pronominals in these examples, it is relatively easy to access an inference which would enable the addressee to interpret the referent of *he* in (27) as the speaker's husband and the referent of *we* in (28) as the married couple. Similarly, in (29) mentioning a therapy session makes accessible a script which includes a therapist, the referent for the indirect pronominal anaphor *she*.

While it is clear that scripts play an important role in making accessible the bridging assumptions needed to resolve the anaphoric phrases in question, it is important to note that this feature alone does not distinguish pronominal and demonstrative phrases from indirect anaphors in general. And it therefore cannot be the main factor which allows successful accommodation in the pronominal and demonstrative cases. What distinguishes the pronominal indirect anaphors is that the existence of a script is not in itself sufficient to allow interpretation of the anaphoric expression as soon as it is encountered. As seen in (26) above, what is predicated of the anaphoric expression is the main factor which allows for successful accommodation. This is true even if the predication does not involve stereotypical associated with the script. Consider (30) and (31), for example.

- (30) *I joined a company that had lost a million dollars the year before I came and made a million dollars profit at the end of my second year. I performed miracles for **them** in many*

ways. **They** had one of the toughest unions in the country. It took 7 months of negotiations, and I talked **their** representatives into a settlement. [Terkel 1980, p. 33]

- (31) *I cannot think of a greater disaster than Harvard becoming the arbiter of what happens to us. **They** have wonderful ideas and the world would be bankrupt without **them**, but there are other minds and other talents.* [Terkel 1980, p. 104]

Mention of a company in the first sentence of (30) activates a company script that presumably includes both managers and workers. But one can only determine that *them* refers to the management and *they* refers to the workers on the basis of what is said about the referents of the pronouns in both cases. Likewise, the intended interpretation of *they* and *them* in (31) can be accessed only after processing the whole sentence (or at least the first conjunct). Otherwise, *they* could refer to the students, administrators, or any other group that could be assumed to be part of a university script.

If the predication can apply equally well to a number of different roles, then the reference of the pronominal remains unresolved, as in (32).

- (32) *(asked about unofficial visits by police)*

A. ...*Since the trial, on two occasions they came by to tell me I got screwed.*

Q. *Did they explain to you how you got screwed?*

A. *No. They just said - one guy on a motorcycle drove up to me once and said it also.*

Q. *Did he explain what he meant?*

A. *No. He drove off. Gave me the thumb's up-- said "They tried to screw you, " gave me the thumbs up and left.*

Q. *"They" being whom? If you had an impression.*

A. *I'm assuming the prosecution. [O.J.Simpson deposition]*

A script is also not necessarily triggered by a single word. Thus, mention of a boat doesn't serve to bring people on the boat into focus in (33) (since it is unlikely that a display boat in a store will contain

people) although it does in (34). The particular situation described as well as general background knowledge need to be considered.

(33) *There's a boat store near my house. When I go for a walk I often walk past it. Last night I noticed a really nice cabin cruiser on display. #They waved at me.*

(34) *There was not a man, woman or child within sight; only a small fishing boat, standing out to sea some distance away. Harriet waved wildly in its direction, but they either didn't see her or supposed that she was merely doing some kind of reducing exercises. [Adapted from Dorothy Sayers, *Have his carcass* 1932, p.15; Gundel, Hedberg, and Zacharski 1993, example (16).]*

In some cases there is no clear script that the indirect anaphor could be linked to. For example, the indirect pronominal anaphors in (35)–(37) can be easily interpreted, but they do not seem to occupy some clear role in a previously evoked script.

(35) *I had no idea that to be a mountaineer, to be an Appalachian, to be a hillbilly, was somthin' a person would be remotely proud of. I was terribly ashamed of it and didn't want anybody to know when I left here. In Connecticut '39 and '40, I would try to talk the way they talked to show everybody I've risen above being a hillbilly. [Terkel 1980, p. 210]*

(36) *Lane Tech, where I go is a mixture. It's working class and there are a lot of wealthy people. It's too large, and it's not a nice place. The rich kids have their things, their Gucci shoes and their Marshall Field clothes, and they sit in their part and we sit in ours. [Terkel 1980, p. 445]*

(37) *I never had an image of myself. I was always struggling too hard. I've been working since I was 9 years of age. We were very very poor. [Terkel 1980, p. 66]*

5. Conclusion. This paper has provided further empirical support for the observation that indirect anaphors typically cannot be coded with pronominal or demonstrative phrases; and we have described a theory of reference that provides an explanatory account of this fact.

We have proposed further that when indirect pronominal and demonstrative anaphors do occur in naturally occurring discourse they are best analyzed as minor violations of the rules for appropriate use of pronouns and demonstratives which are easily accommodated by the addressee, partly because precise specification of the referent is often unnecessary. While the bridging inference required for interpretation of pronominal (and demonstrative) indirect anaphors is usually supported by a script evoked by the previous context, such a script is neither necessary nor sufficient for felicitous use of such forms. What is predicated is essential in resolving the reference. The indirect pronominal anaphor can generally not be interpreted until after the whole sentence is processed, and it is this property which distinguishes it from other anaphoric expressions, both direct and indirect, which conform to the cognitive statuses conventionally signaled by the forms in question.

Abstract

This paper reports on a study of pronominal and demonstrative indirect anaphors in English naturally occurring discourse. We show that only a small percentage of such forms meet the conditions for appropriate use encoded in the Givenness Hierarchy of Gundel, Hedberg and Zacharski (1993), and argue that they should be treated as minor violations which the hearer has to repair. Such an account is supported in part by the relative infrequency of the forms in question compared to other types of indirect anaphors, and by the fact that they occur primarily in unplanned, casual discourse.

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