Pronominal Reference to Inferred Antecedents
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1.   Introduction

Clark's (1977) notion of "bridging", the process by which referents of definite NP's can be inferred from entities mentioned explicitly in the discourse, was proposed to account for the inferrability evident in the use of such definite descriptions as <u>the murderer</u> in (1):

(1)   Lucy was killed yesterday. The murderer got away.

It has been assumed that inferences of this kind do not license the use of promominals,[i] as in:

(2)#   Lucy was killed yesterday. He got away.

Modern Hebrew provides an interesting counterexample with instances like (3) (the English counterpart of a Colloquial Hebrew sentence) occurring in spontaneous discourse:

(3)   I went to the post office and he wouldn't sell me any stamps.

The present paper will provide a characterization of the factors that license pronominal reference to inferred antecedents in a language like Hebrew. The proposal will turn out to be relevant to anaphoric reference to inferred antecedents in languages displaying similar properties.

2.   Backgound

Previous theories which acknowledge the existence of reference to inferred antecedents fail to predict the distribution of such cases.[ii] Even treatments which explicitly recognize the use of pronominals in referring to inferred antecedents do not aptly characterize the factors determining such instances nor specify their potential range. Thus, Ward et al.'s (1991) account of so-called anaphoric islands points out the significance of contextual considerations in making antecedents available for reference.[iii] Accordingly, the decontextualized sentence in (4):

(4)#   He is an orphan and he misses them.

exemplifies low degree of coherence and failure to refer to the parents (which is presumably part of the meaning of *orphan*) using the pronoun *them*, whereas the contextualized (5) indicates that such reference is possible in the appropriate circumstances:

(5)   'I haven't got a mother' said Johnny pathetically,   staring at his ham sandwich. 'I am an orphan.'

'Why, that's terrible, Johnny, when did it happen ?   You never told me you were an orphan.' Fitz was deeply

concerned. 'I am getting sort of used to it. They died when I was three.' (Ward et al.1991:467,example 34)

Yet in specifying the factors that are functional in the accessibility of the inferred antecedents in instances of anaphoric islands Ward et al.'s approach pertains to cases where there is a morphological or some other kind of paradigmatic relationship between the referring expression in question and its antecedent.[iv]

Gundel et al.'s (1993) cognitive status analysis allows such pronominal reference to inferred antecedents as in:

(6)   There was not a man, woman or child within sight; only a small fishing boat, standing out to sea some distance

away. Harriet waved widely in its direction, but they either didn't see her or supposed that she was merely   doing

some kind of exercises. (1993:282, example 16)

"when the link between the inferrable and its associated discourse entity is strong enough" (1993:282), yet they do not specify the conditions which make such a link "strong enough".   In discussing pronouns and their antecedents Brown and Yule (1983:220) mention the following example:

(7)   I was at the bus and he didn't stop at the right stop.

This is very much the type of example the data in Hebrew provides. Brown and Yule suggest, rather insightfully, that "the interpretation of the reference of these pronouns depends on what is predicated of them" (Brown and Yule 1983:219) yet, they fail to characterize the relevant properties of what needs to be predicated for such pronominals to be interpretable. The account proposed here will be shown to fill in this gap.

Robert's (1989) discussion of modal subordination and pronominal anaphora in discourse distinguishes between acceptable instances like:

(8)   Either there's no bathroom in this house or it's in a funny place. (which is attributed to B. Partee)

and unaceptable cases like:

(9)   Nine of the ten marbles are in the bag.

a.   It's under the couch.

vs.   b.   The missing marble is under the couch.

Roberts supports Heim's (1982) observation that we may not simply infer the existence of discourse referents. Heim argues that accomodation of antecedents for definite NP's requires that new file cards be cross referenced to some pre-existing file card and suggests that antecedents for pronouns cannot be accomodated similarly, due to their lack of descriptive content. Roberts attributes the well-formedness of sequences such as in (8) not to direct accomodation of antecedents for pronouns, but rather to "the independently required accomodation of appropriate hypothetical common grounds for nonfactual utterances" (which in turn, supply the requisite pronominal antecedents) (1989:705). Roberts states explicitly that this type of accomodation may not serve to introduce previously unmentioned discourse referents, new file cards in Heim's terms, to serve as antecedents for pronouns. The data evident in the present paper may be construed as counterexemplifying Heim's and Robert's claims, or else, as providing conditioning factors accessing existing file cards, e.g. by specifying types of "cross referencing."[v]

3.   **Licensing Pronominal Reference to Inferred Antecedents**

3.1.   **Relevance, script and prototype**

The factors licensing the interpretation of the pronominal in question in terms of an inferred antecedent involve some version of the Gricean Cooperative Principle, specifically, the Relevance Principle,[vi] and a utilization of the conceptual framework evident in script activation (of the type proposed in Schank and Abelson (1977) or Sanford and Garrod (1981)[vii]). The presumption of relevance is required to assure coherence and appropriate context selection (linguistic, situational, or general knowledge based[viii]). The mechanism by which this is achieved is provided by the script activation procedure extending Clark's notion of bridging to instances like those evident in (3), which involve bridging between a situation (going to a post office) and a pronominal element. A script is generally defined as a predetermined sequence of actions performed by streotypical role players involving a well-known situation. The activation of a script requires an explicit mention of a header (e.g. POST OFFICE, in the case of (3)) and a line, i.e. a property typically associated with a role player in the situation evoked by the script (e.g. SELLING STAMPS in (3)). It has been claimed (e.g. Schank and Abelson (1977)) that the conjunction of a Locale header(specifying the place and time for situations) and a prototypical role player is a very strong accessor of a script. Accordingly, the use of the pronoun which refers to the post-office clerk in (3) is licensed by the activation of a POST OFFICE script, involving a typical role player - the clerk - and a prototypical predicate - SELLING STAMPS. The default interpretation of the pronoun lacking the explicit linguistic antecedent would then be accessible via the assessment of the components of the relevant script. The predictability of the role player as well as the prototypicality of the predication about its referent in the relevant script are crucial for this determination. Evidence for this claim is provided by the inappropriateness or infelicity of the sentences in (11) and (12), where a non-stereotypical role player (a female car mechanic) and a non-prototypical predication (not feeling well) occur, respectively. These should be compared with the well-formed (10), which contains a stereotypical role player (a male car mechanic) engaging in a prototypical activity (fixing the car and taking the carburator apart).

(10)   hayiti hayom bamusax vehu perek li et hakarburator.
(I) was today in the and took to ACC the

garage   he apart me   carburator

'I was at the garage today and he took apart my carburator.`

(11)#   hayiti hayom bamusax vehi perka li et harkarburator.

(I) was today at the and she took to ACC the

garage   apart me   carburator   'I was at the garage today and she took apart my carburator.`

(12)# hayiti hayom   bamusax,   vehu   lo hirgiS tov.

(I) was today at the garage and he not feel good

'I was at the garage this morning and he didn't feel well.`

The lack of streotypical role player (in (11)) and prototypical predication in (12)) do not make the referents of the respective sentences accessible, and hence their infelicity.[ix] We have thus seen that the referent of the pronominal in question can be construed in terms of the script activation mechanism on the basis of prototypical predications and stereotypical role assignments.[x],[xi] We will now turn to a closer examination of the special properties of the referent in question.

3.2   The nature of the pronoun

Gundel el al. (1993) propose a Givenness Hierarchy which specifies the cognitive statuses associated with various referring expressions. They distinguish six implicationally related cognitive statuses ranging from mere type identifiability, through referentiality, unique identifiability, familiarity, activatedness and being in focus (at the current center of attention), where the highest ranked cognitive status, being in focus, necessarily possesses all of the lower ranking properties, but not vice versa. Accordingly, personal pronouns require, minimally, that their referents be familiar to the addressee,[xii] and, in addition, be activated, as all pronominals ought to be. Statuses lower on the Givennss Hierarchy, namely, those denoting uniquely identifiable, referential or type identifiable referents are clearly implicated as holding of the referent of a given pesonal pronoun, yet are insufficient on their own to trigger the occurrence of pronominals.

The referent of the pronominal expression under examination in the present paper constitutes a very peculiar entity the properties of which raise interesting questions with respect to the characterization of pronominals in general and the implicational hierarchy, in particular. The following datum indicates that in the cases of pronominals with inferred antecedents we may not be dealing with a uniquely identifiable referent, but rather with a role player activated by the appropriate prototypical predication in the context of the relevant script. Consider:

(13) titkaSri lairiya   vehi tistakel bamaxSev   call   the   municipality   and she will look   at the

computer   vetagid   lax bediyuk kama at xayevet   and will tell to you exactly how much

you owe

'Call the municipality and she will look at the cpomputer   and tell you exactly how much you owe.'

Note that the future time reference and the particular situation described suggest that the pronoun <u>hi</u> ('she') does not refer to a unique secretary, the description of which could be provided by the speaker. The speaker could in fact not have a particular person in mind upon uttering the sentence, nor would he expect the hearer to visualize anybody specific; rather the referent would be anybody who fits the description of the relevant prototypical role player in the script under discussion.[xiii] This use is akin to the attributive use of definite descriptions distinguished by Donnellan. In both instances an individual variable is introduced rather than an individual constant. Only the mechanics of the specification of the referent differ. The attributive use of the definite description introduces a variable, the referent being established by the content of the referring expression; in the case of the pronominal at hand, however, the lack of sufficient descriptive content inherent in pronouns is compensated for by the properties provided by the predication attributed of the role player in the relevant

script. [xiv]

An interesting case of script activation and generic reference via a prototypical role player and a prototypical characterization may be provided by the following:

(14)   Elizabeth Taylor lives like a princess. In fact, they   are all filthy rich there.

where *they* seems to refer to Hollywood stars. It appears that the proper name *Elizabeth Taylor* in conjunction with the stereotypical characterization (*lives like a princess*) triggers the Hollywood stars script (presumably by virtue of Elizabeth Taylor's prototypicality as a role player in this script). It is evident that a less prototypical member of the set of Hollywood stars would not have been as effective in triggering the relevant script. Likewise, a non-stereotypical predication (which is not systematically associated with the genus conjured up by the script) would not have fared as well in cases where pronoun inferrability is at issue, as is evident from the infelicity of the following:

(15)# Elizabeth Taylor went to town this morning. In fact, they are all very busy.

We have thus witnessed the necessary augmentation of Donnellan's conception of attributive uses of referring expressions to cover certain instances of pronominals.

4.   Conclusions and questions for further research

The factors licensing pronominal reference to inferred antecedents have been shown to include some version of the Gricean relevance maxim and a proper utilization of script activation. The relevant script activation mechanism would operate under conditions of prototypical role players and stereotypical predications in the appropriate script domain.

The pronominals evident in such references have been characterized as involving an attributive sense. Such an analysis would seem to imply that the distribution of pronominals of this type can, in principle, neither be predicted on the basis of the existing theories, formulated in terms of referring expressions, nor counterexemplify them. However, the second occurrence of a pronominal which is coreferential with the pronominal under examination in a given discourse would be legitimately used referentially and thus would be relevant to the predictions of theories like Gundel et al.'s. Consider the underlined pronoun in sequences like:

(16)   I went to the post office and he wouldn't sell me any stamps. <u>He</u> even refused to take my parcel.

Indeed, such second mentions (cf. Fraurud 1992)) would be activated by definition, in accordance with the predictions of Gundel et al. However, the characterizations of the pronouns in question in terms of the cognitive statuses of the implicational hierarchy, namely, 'familiar', 'uniquely identifiable', 'referential' and 'type identifiable' would require some illucidation. Thus, the following questions would seem to emerge: (a) What would 'familiar' amount to in the context under consideration ? (b) Would 'unique identifiability` mean what we intuitively associate with such characterizations ? It seems that basically only 'type identifiability' can be coherently attributed to such pronominals.[xv] Even as second mentions they do not amount to familiar entities in a non-trivial sense.[xvi] I will leave these issues for future research, after more data has been gathered with respect to attributive uses of referring expressions.

In fact, even the occurrence of the first mentions of the pronominals at hand, which may insightfully be characterized as involving attributivity, rather than mere referentiality, could be explicable in terms of activatedness, or rather activatability (in conformity with the predications of Gundel et al.). Thus, the accessibility of the appropriate script would make the referent of the pronominal expression in question activatable thereby facilitating its interpretability in the relevant context.

Footnotes

i.   Sanford and Garrod (1981:154) explicitly state that "pronouns can never be used to identify implied entities in the extended domain of reference".

ii.   Thus, Nunberg's (1978) conception of a pragmatic function linking the reference trigger to the reference target via a connector accounts for the mechanics of the interpretation of:
        (i) The mushroom sandwich wants some coke.
and Fauconnier's (1985) theory of Mental Spaces elaborating on Nunberg's connecting function accounts for the mecahnics of the interpretation of:
        (ii) Norman Mailer reads himself before going to sleep.
However, the two do not specify the relevant restrictions on such connectors. The same deficiency is evident in Wilson's (1992) attempt to account for reference determination by an appropriate application of the concept of relevance. Wilson's approach aims at providing the necessary tools for the proper interpretation of *the man* in sentences like the following:

(iii) Sean Penn attacked a photographer. The man was quite   badly hurt.

(iv) Sean Penn attacked a photographer. The man must be   deranged.

In addition, a terminological comment would seem to be appropriate at this point. Instances involving reference to inferred antecedents have been variously termed 'associative anaphors`, 'indirect, implicit or secondary anaphors' and even 'conceptual anaphors`.

iii.   Cf. Postal (1969) for an earlier treatment of anaphoric islands.

iv.   In fact sentence (5) contains an additional interesting instance of pronominal reference to an inferred antecedent. This is the pronoun it in Fitz's concerned reply. It seems to refer to the death of Johnny's parents. The only possible linguistic antecedent to which this can be attributed is orphan, and Fitz's question seems to pertain to the time when this status change occurred. Becoming an orphan obviously entails the death of the parents.

v.   It may be appropriate to mention a few examples which were previously discussed in the literature, but were not given a coherent treatment. Such are:

(i) Jack got married. She was unbelievably sweet. (Adapted from Ariel,1990:234) as well as:

(ii) Bill bled. It stained his shirt.

(iii) Bill vomited. It stained his shirt.

where it seems to refer to the blood and the material vomitted, respectively. It could, however, be claimed that in these cases it is the results of the act that made the shirt dirty, and not an entity in the universe of discourse that is inferred.(Cf. Tic Douloureux (1971) where these are characterized as "unmentionable", under the erroneous assumption that the class of such inferrables is restricted to "unmentionable bodily substances".) The characterization proposed in the current paper would seem to provide an appropriate account of such examples as well. Cf. also Ziv (1994) and Ziv and Grosz (1994) for instances of Right Dislocation involving inferences of the type discussed in this paper.

vi.   It is immaterial in the present context which particular variety is to be preferred, whether a Relevance Theoretic approach of the Sperber and Wilson (1986) type or some general Rationality Principle (of the type advocated by Kasher (1976, 1982) and Green (1990). Cf. Ziv (1988) for some relevant discussion.

vii.   In fact, Sanford and Garrod (1981:110) use the term "scenario" in referring to the account of reference determination utilizing some version of the script activation technique, since, in their conception, "one can think of knowledge of settings and situations as constituting the interpretive scenario behind a text."

viii.   See for example Ariel (1990) for a survey of context selection techniques guided by Relevance. Likewise, cf. Wilson (1992) where such an application is attempted in cases involving Clarkian bridges.

ix.   The referent in such sequences as (12) would become accessible if the mechanic's well being were interpreted as related to his

professional performance in the garage.

x.		This characterization may be construed, contra Roberts (1989), as an instance of direct accomodation of antecedents for pronouns. Alternatively, it could be regarded as a case of cross referencing to existing file cards activatable on the basis of the script mechanism. The latter view might obviate the need for Roberts' "modal subordination" in the relevant instances.

xi.		Reconsidering the accessible inferrable pronoun in the marriage example (foonote 5) as well as the so-called "unmentionables" suggests that these might be explicable on the basis of a similar scenario mechanism. Getting married involves a bride and a groom. In cases like ours where the groom is mentioned, the only other prototypical role player is the bride. The murder example (2) is apparently not uniquely associated with a prototypical scenario. The verb *kill* may be associated with accidental as well as intentional incidents, and likewise it may involve one or more killers. Note that if we replace it by *murder* and use the plural pronoun *they* the accessibility of the inferred pronoun is considerably enhanced. This is evident in:

		(i)		Lucy was brutally murdered last night. They escaped before the police got there.

The marble example (9a) may, likewise, be construed as ill-formed since no prototypical scenario is activated. Note, in this context, that the marble example allows for so-called "discourse deixis" as in:

		(ii)		Nine of the ten marbles are in the bag. The missing one is under the couch.

Cf. Landau (1995) for an interesting proposal where various anaphoric expressions are analyzed as instances of discourse deixis. The bathroom example (8) presents an interesting case where scenarios seem to be irrelevant.(Note that even if the house is not mentioned explicitly, the referent of the pronoun would be accessible.) Here the modal subordination mechanism appears to be appropriate.

xii.		This notion is defined in terms of unique identifiability by virtue of possessing a representation of the entity in memory. In cases where the referents have not been mentioned or perceived recently, they would be represented in long term memory.

xiii.		In fact, it is irrelevant to the characterization of the circumstances of the use of such pronominal expressions whether the speaker has a particular referent in mind. The crucial fact in this context is that the speaker cannot, and indeed does not, expect the hearer to identify the referent.

xiv.		As has been pointed out earlier, in cases where a non-prototypical predication is attributed to the role player in question (as in (12)) or in instances where a non-prototypical role player is involved (as in (11)) access to the relevant referent is either denied or else made considerably more difficult. (cf. Kantor (1977) where the term "inconsiderate discourse" is used for such "strained" cases of pronominal reference determination.)

		In addition, it is worth pointing out, in this connection, that the special use of the pronominal under consideration is not to be confused with the impersonal use of the pronoun *they*, as in examples like:

		(i)		They say the situation will get worse.

The conditioning factors on the use of both instances are, obviously, radically distinct; the pronoun under consideration may, but need not be, uniquely identifiable, whereas impersonal pronouns cannot, in principle, be uniquely identifiable. Likewise, in a language like Hebrew the impersonal can only be realized by 0 and not by an explicit pronominal. cf. Kave (1994) for an interesting discusssion of impresonal plurals in Hebrew.

xv.   Note that the predictions of Gundel et al.'s implicational hierarchy are counterexemplified under this assumption. These statuses on their own do not license the occurrence of pronominals of any variety.

xvi.   The question of their referentiality remains open at this stage. If their attributivity does not exclude a referential property, then a relevant sense of referentiality would have to be adopted. Gundel at al.'s characterization of this notion as indicating the particular object which the addressee has to access, either on the basis of the existing representation or on the basis of a construction of a new representation, still leaves unanswered the question of the nature of "the particular object".

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