

# The Hebrew Object Marker as a Type-shifting Operator

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## Abstract

The Hebrew object marker, *et*, is often taken to be a marker of accusative case. But in addition to its syntactic properties, *et* also seems to have semantic content. When the presence of *et* is optional, it can be seen that *et* affects the interpretation of the object in various ways that might include specificity, definiteness or distributivity. I propose that all these semantic effects can be given a uniform account by assuming that *et* is the overt realization of a lifting operator from entities to generalized quantifiers.

## 1 Introduction

It is well known that the object marker *et* usually precedes definite objects only:

- (1) a. dan kara et ha-sefer.  
Dan read et the-book  
'Dan read the book.'
- b. dan kara sefer.  
Dan read book  
'Dan read a book.'

However, it has also often been observed (cf. Glinert 1989, Wintner to appear, and many others) that the distribution of *et* cannot be accounted for in purely semantic terms, and that there are two notions of definiteness in Hebrew, semantic and syntactic. This can be seen by looking at the contrast in the following sentences:

- (2) a. dan kara et ha-sefer ha-ze.  
Dan read et the-book the-this  
'Dan read this book.'
- b. dan kara sefer ze.  
Dan read book this  
'Dan read this book.'

Semantically the object is definite in both sentences; but only in the first sentence there is formal marking of definiteness, and this is what *et* is sensitive to. Another example is the following pair:

- (3) a. dan kara et axad ha-sfarim.  
Dan read et one the-books  
'Dan read one of the books.'
- b. dan kara axad me-ha-sfarim.  
Dan read one of-the-books  
'Dan read one of the books.'

Again, despite the semantic equivalence of the objects in these two sentences, which are both partitives, *et* is used by most speakers only in sentence (a)<sup>1</sup>. Clearly, this is the result of the different syntactic structures of the two partitives.

For the vast majority of DPs in Hebrew, the presence or absence of *et* can be predicted from the syntactic structure of the object and from the presence of formal definiteness marking (Danon 2000). There is, however, a small number of cases where the use of *et* is optional. Consider, first, the partitives given in (3); for many speakers, *et* is optional in both cases:<sup>2</sup>

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<sup>1</sup> Prescriptive grammars allow only the possibilities in (3), but for many speakers *et* is optional in both structures. There is a great degree of variation among speakers with respect to these cases.

<sup>2</sup> The object in (3a) is a kind of cross-categorial genitive construction known as the Construct State (see for instance Siloni 1997). In (3b) the object is a 'regular' prepositional partitive construction.

- (4) a. dan kara et axad ha-sfarim. (=3a))  
 b. ?dan kara axad ha-sfarim.  
 c. dan kara exad me-ha-sfarim. (=3b))  
 d. ?dan kara et exad me-ha-sfarim.

In these cases, the choice whether or not to include *et* affects the semantics of the sentence. The use of *et* implies something that could informally be termed 'specificity' of the object: with *et*, there is a feeling that the object refers to a particular element out of the set of books, as opposed to the quantificational reading when *et* is omitted. The marginally acceptable (4d) is possible only under the 'specific' reading of the object; when the partitive does not refer to any particular book, speakers will not use *et*.

A similar pattern shows with the question word *ma* ('what'):

- (5) a. ma kanita?  
 what bought.2SG  
 'What did you buy?'  
 b. et ma kanita?

The use of *et* in front of *ma* implies that an appropriate answer should be a list of elements out of a known set; a quantificational DP such as *harbe sfarim* ('many books') is not a possible answer when *et* precedes *ma*, even though it is possible when *et* is not used.

The most interesting case is illustrated by the following pair: when the object is a conjunction of two or more definites, *et* can optionally precede each conjunct:

- (6) a. dan ra'a et ruti ve sara.  
 Dan saw et Ruti and Sara  
 'Dan saw Ruti and Sara.'  
 b. dan ra'a et ruti ve et sara.

This example shows that neither definiteness nor specificity are what we are looking for. The object is a conjunction of two definites, both with and without the second occurrence of *et*. As noted in Winter (2000a), the difference seems to be between a collective and a distributive reading: when *et* appears only once, in front of the entire conjunction, the preferred interpretation is a collective one in which Dan saw Ruti and Sara together. When *et* precedes each conjunct, we get a preference for a distributive interpretation ('Dan saw Ruti and Dan saw Sara, separately'). This can be seen if we use a verb which forces a collective reading of the object, such as *hifrid* ('separated') (or *hifgish* 'caused to meet', or *ixed* 'united'):

- (7) a. dan hifrid et ruti ve sara.  
 Dan separated et Ruti and Sara  
 'Dan separated Ruti and Sara.'  
 b. ??dan hifrid et ruti ve et sara.

Sentence (b) is odd and can only mean that Ruti was separated and Sara was separated.

To summarize, the problem is how to give a uniform account for the semantic effects related to *et*, which may show up as definiteness, specificity or distributivity.

## 2 Semantics of *et*

The explanation that I want to propose is that in addition to its syntactic functions, which account for its distribution in the majority of cases, *et* is not really semantically vacuous. Specifically, *et* acts as the overt realization of the standard lifting operation, which maps an individual of type *e* into a GQ. This implies that what follows *et* must have a denotation at type *e*. Following Partee (1987), I assume that noun phrases can have denotations at different types; I assume the following basic type assignments:

- definites like *the book*, *this book*, *the (three) books* or *Dan* denote individuals of type *e*;
- indefinites like *a book*, *books*, or *three books* denote sets of type  $\langle e, t \rangle$ ;
- quantificational DPs like *every boy*, *no boy* or *many boys* are GQs, of type  $\langle \langle e, t \rangle, t \rangle$ .

Unlike Partee, I assume that free type-shifting is restricted to the following operations:

- lifting from any type to any higher type
- following Reinhart (1997), I assume that a choice function variable can be applied to any set and select an individual from that set; existential closure then binds the CF variable. This mechanism allows us to derive the wide-scope, or so-called ‘specific’, interpretation of indefinites, by applying a choice function to the set denotation of an indefinite, which gives an individual out of that set, and applying EC high up.

Thus, the crucial modification to Partee's triangle is that there is no lowering from GQs to any lower type. Lifting is still assumed to be free, but lowering is only possible from type  $\langle e, t \rangle$  to type  $e$ , using a choice function.

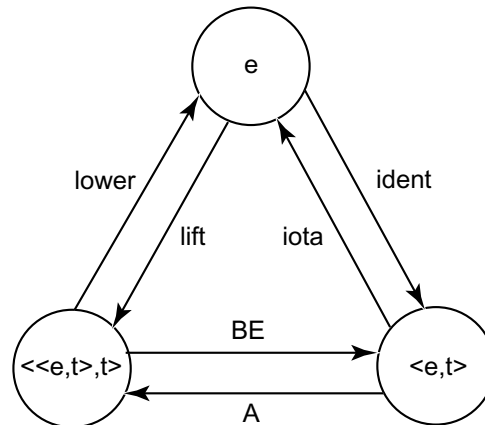


Figure 1: The Partee Triangle

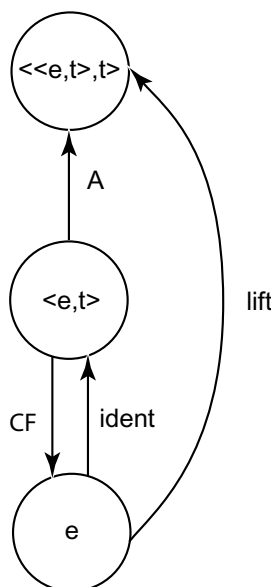


Figure 2: Modified Partee Triangle

## 2.1 Analysis of Data: Simple Definites and Indefinites

Using these assumptions, let us see how the proposed semantics of *et* works with some examples. Let's return to the simplest kind of definite object:

(8) dan kara et ha-sefer. (= (1a))

Here, the definite object is of type  $e$ ; *et* lifts it to a GQ, and we get the standard semantics for the sentence– the only thing which needs to be noted is that *et* here does overtly what is usually assumed to be an implicit operation of lifting the object to a GQ.

Compare this with a simple indefinite object:

(9) dan kara sefer. (= (1b))

Here, the object has a basic denotation at type  $\langle e, t \rangle$ . Lifting is a free operation which can be applied whenever needed; assuming that transitive verbs select a GQ, the object is lifted using the default lifting operator from  $\langle e, t \rangle$  to GQs.

Note that in these cases, with simple definites or indefinites, the semantic contribution of *et* is trivial, since lifting is required for independent reasons; in a language like English, which has no element similar to *et*, the same operations would apply, and the only difference would be that in English there is no phonetic realization of the lifting operator. It is therefore natural to think of *et* as the grammaticalization of an operator which is part of the universal semantics of VP interpretation.

## 2.2 Analysis of Data°: Partitives

Consider now the partitive *axad ha-sfarim* ('one of the books'). Assume, following Barwise and Cooper (1981), that the basic denotation of a partitive is the same as that of a common noun; *of the books* in *one of the books* denotes the same as *books* does. Thus, *axad ha-sfarim* has the same denotation as *sefer axad* ('one book') has, which is of type  $\langle e, t \rangle$ . Since the verb requires a GQ, lifting the set to a GQ produces the correct type for the object:

- (10) dan kara axad ha-sfarim. (= (4b))  
 axad ha-sfarim:  $\langle e, t \rangle$   
 lift $_{\langle \langle e, t \rangle, \langle \langle e, t \rangle, t \rangle \rangle}$ (axad ha-sfarim):  $\langle \langle e, t \rangle, t \rangle$

This is what happens when *et* is not used, and we get the quantificational interpretation. But when *et* precedes the object, as in (11), this derivation is blocked: since *et* maps a type  $e$  denotation into a GQ, the object must have a type  $e$  denotation before it is lifted to a GQ. To get this, we apply a CF to the set denotation of the partitive, which gives an individual out of that set:

- (11) dan kara et axad ha-sfarim. (= (4a))  
 axad ha-sfarim:  $\langle e, t \rangle$   
 CF(axad ha-sfarim):  $e$   
 et axad ha-sfarim:  $\langle \langle e, t \rangle, t \rangle$

The use of a CF is what produces the specific reading of the object. Applying *et* to the individual selected by this CF, the type  $e$  denotation is then lifted to a GQ, which can combine with the verb as usual.

## 2.3 Analysis of Data: Conjoined Objects

Using this mechanism, we can account for the distributivity effects with conjoined definites, as in example (6), repeated below:

- (6) a. dan ra'a et ruti ve sara. (= (6a))  
 b. dan ra'a et ruti ve et sara. (= (6b))

Assuming that definites are basically individual-denoting, there are two possible strategies for interpreting a conjunction of two definites: as a sum of individuals, as in Link (1983), or as a conjunction of GQs, as in Barwise and Cooper (1981). In (6a), if we apply the sum operator we get a type  $e$  denotation for the conjunction, which is the type required by *et*:

- (12) et (ruti ve sara):  
 lift( $r \wedge s$ )  
 = lift( $r + s$ )  
 =  $\lambda P.P(r + s)$

If, on the other hand, we lifted each conjunct to a GQ, the conjunction would turn out as a GQ, which is not an appropriate type for *et*. Thus we have only the first strategy when *et* appears only once. The collective interpretation of the object in this case can be attributed to the formation of the sum  $r + s$ , the sum of individual denotations of Ruti and Sara at type  $e$ .<sup>3</sup>

<sup>3</sup> Assuming that a distributivity operator can be applied freely, it is possible to derive a distributive

What happens when *et* precedes each conjunct individually? Since *et* lifts from type *e* to a GQ, the conjunction must be of GQs now. Therefore, the sum *r+s* is never formed in the derivation, and we only have the GQ denotation of each conjunct:

- (13) *et ruti ve et sara*:  
 $\text{lift}(r) \wedge \text{lift}(s)$   
 $= \lambda P.P(r) \wedge \lambda P.P(s)$   
 $= \lambda P.P(r) \cap \lambda P.P(s)$   
 $= \lambda P.P(r) \wedge P(s)$

Since the GQ interpretation of the conjunction is inherently distributive, we have the correct results.

Additional support for this analysis comes for comparing conjunctions to disjunctions. Unlike conjunctions, which are equally well-formed with or without *et* in front of each conjunct, disjunctions are much less acceptable when *et* does not precede each disjunct:

- (14)a. ??*dan ra'a et ruti o sara*.  
 Dan saw *et* Ruti or Sara  
*Dan saw Ruti or Sara.*'

- b. *dan ra'a et ruti o et sara*.

(14a) is somewhat marginal, and sounds natural mainly if the speaker does not know the name of the person Dan saw. The difference can be accounted for by noting that unlike *and*, which can be interpreted either as individual sum or as GQ intersection, *or* can only be interpreted at the level of GQs. Thus, the only way to get an interpretation for a conjunction where *et* does not precede each disjunct is by lifting each disjunct, even though *et* appears only in front of the first:

- (15) *et ruti o sara*:  
 $\text{lift}(r) \vee \text{lift}(s)$   
 $= \lambda P.P(r) \vee \lambda P.P(s)$   
 $= \lambda P.P(r) \cup \lambda P.P(s)$   
 $= \lambda P.P(r) \vee P(s)$

Note, however, that while the first disjunct, *r*, is lifted as a result of applying *et*, the lifting operator applied to the second disjunct *s* is implicit. Apparently, this does not lead to total ungrammaticality, but speakers would certainly prefer the option where *et* is repeated. This could follow from a generalization of the “Blocking Principle” proposed in Chierchia (1998), which states that type shifting is not allowed if the language has an overt element whose application would result in the same semantic value:<sup>4</sup>

Blocking Principle (‘Type Shifting as Last Resort’) (Chierchia 1998)

For any type shifting operator  $\tau$  and any *X*:

$*\tau(x)$

if there is a determiner *D* such that for any set *X* in its domain,

$D(X) = \tau(X)$

### 3 A Semantic Subject-Object Asymmetry

If *et* forces a certain kind of interpretation on the DP which follows it, we would expect to find differences in interpretation between objects and non-objects. This prediction turns out to be correct: certain DPs, which in general are ambiguous between an indefinite and a definite (or specific) reading, can only get the latter kind of interpretation when following *et*:

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reading as well. This seems empirically correct, as the collective reading is only the most prominent, but not the only, reading.

<sup>4</sup> I do not claim that *et* is a determiner, but simply that the basic idea behind Chierchia’s BP could be generalized to this case as well.

- (16)a. toshav ha-ir ne'ecar la-xakira.  
 resident the-city arrested to-interrogation  
 'A/the resident of the city was arrested for interrogation.'
- b. ha-mishtara acra et toshav ha-ir la-xakira.  
 the-police arrested et resident the-city to-interrogation  
 'The police arrested the resident of the city for interrogation.'

While the underlined subject in (16a) can easily get an indefinite reading (in fact, this is the most natural one), the same DP following *et* can only get a definite/specific reading, which without a suitable context would sound odd. Note that due to its syntactic structure, the object in (16b) must follow *et* for independent syntactic reasons (Danon 2000).

Accounting for this semantic contrast is straightforward: assuming that the DP *toshav ha-ir* ('resident of the city') has a basic interpretation as an indefinite of type  $\langle e, t \rangle$ , there are two possible ways of shifting it to an argument type: lifting to a GQ, which would result in an indefinite/existential reading, or lowering to type  $e$  using a choice function, giving rise to a specific reading. Following *et*, the first derivation is blocked because it would lead to type mismatch between *et* and the lifted object. We thus get only the specific reading in (16b).<sup>5</sup>

#### 4 Conclusion

To conclude, we see that an analysis of *et* as a lifting operator can account for semantic effects that arise in environments where *et* is optional. This analysis, which relies on the assumption that there are DP denotations at the three types described by the Partee triangle, provides evidence in favor of a theory that makes use of all three types, as opposed to theories that rely only on a subset of these three types, such as Barwise and Cooper (1981) or Winter (2000a). Furthermore, the analysis also provides support for theories that give a natural grouping of definites with specific indefinites as distinct from quantificational DPs, such as that offered by choice function analyses like Reinhart (1997) or Winter (2000b).

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<sup>5</sup> An alternative analysis is that the DP is ambiguous between a definite and an indefinite interpretation; *et* then forces the definite reading, which has type  $e$ .