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Possessors, Goals and the Classification of Ditransitive Predicates: Evidence from Hebrew

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1 Introduction

Across languages, ditransitive predicates often allow two different realization schemes for one of their arguments. A well known example of this is the English dative alternation, exemplified in (1), where the second object of *send* is realized either as a direct object or as a prepositional phrase. Against the background of the widely held assumption that differences in morphosyntax correspond to differences in semantic predicate-argument relations, accommodating such variable realization schemes poses a challenge for theories of the syntax-semantics interface.

(1) a. Ann sent a box to Beth. (Object–oblique)

b. Ann sent Beth a box. (Double object)

Isolating semantic factors that motivate or license the two coding strategies found in the dative alternation and its equivalents in other languages has been the goal of much research. One factor that has been pointed out by many authors (Pinker 1989; Jackendoff 1990; Krifka 1999; Harley 2003; *inter alia*) is the availability, for a given predicate, of two semantic structures, one associated with **causation of possession**, the other with **causation of directed motion**. For example, on the event semantics account of Krifka (2004), a ditransitive verb with the arguments 'Ann', 'Beth' and 'the box' involves one of the two meanings in (2).

(2) a. ∃e∃e'[AGENT(e, Ann) ∧ THEME(e, box) ∧ CAUSE(e,e') ∧ MOVE(e') ∧ THEME(e', box) ∧ GOAL(e', Beth)]

b. ∃e∃s[AGENT(e, Ann) ∧ THEME(e, box) ∧ CAUSE(e,s) ∧ s:HAVE(Beth, box)] (= Krifka 2004:7, (45))

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In (2a), an agent acts on a theme, causing it to move to a goal. In (2b), on the other hand, an agent acts on a theme, bringing about a state in which the theme stands in a possession relation to a possessor. In Krifka's analysis, as in many others, the causation of possession meaning corresponds or gives rise to a direct object realization of the non-theme argument, while the causation of directed motion meaning corresponds or gives rise to an oblique realization of that argument.

The core idea of this analysis – relating a realization frame with two core arguments to a causation of possession meaning, and a frame with a core argument and an oblique to a causation of directed motion meaning – can be found both in syntactic approaches (e.g. Harley 1995, 2003; Hale and Keyser 2002) and semantic approaches (e.g. Pinker 1989; Goldberg 1992; Gropen et al. 1989). Underlying such analyses is the assumption that these two meanings are available to all ditransitive verbs that participate in the alternation in English. However, recent work by Rappaport Hovav and Levin (2005) (henceforth RH&L, see also Levin and Rappaport Hovav 2002) reveals systematic behavioral differences between different ditransitive verbs. RH&L argue extensively that while verbs like *send* and *throw* have both a causation of possession (COP) and a causation of directed motion sense, verbs like *give* unambiguously encode a COP meaning. The fact that such verbs show the English dative alternation is, they claim, not motivated by semantic factors, but rather by information structural ones.

In this paper I demonstrate a systematic difference between the argument realization schemes available to different ditransitive verbs in Hebrew. As in English, Hebrew ditransitive verbs have two options for realizing their non-theme argument. This argument can occur with two prepositions, *el* and *le*, both roughly equivalent to English *to* (glossed as EL and LE in the examples)[1].

(3) a. hu Salax et ha-xavila **le**-sami
he send.PST.3MS ACC the-package LE-Sami
He sent the package to Sami.

b. hu Salax et ha-xavila **el**-sami
he send.PST.3MS ACC the-package EL-Sami
He sent the package to Sami.

I present new data bearing on the behavior of the pronominal forms of *el* and *le*. The full data set reveals that the distribution of the two prepositions is more complex than has been recognized in previous studies (Landau 1994; Botwinik-Rotem 2003). I argue, based on this data, that their distribution is in fact determined by the semantic type of the predicate they occur with. Specifically, building on RH&L's proposal that some ditransitives are monosemous and others polysemous, I suggest a basic distinction in the semantics of ditransitive verbs between:

[1] In Hebrew examples throughout, I use 'S' for the palatal fricative, 'x' for the velar fricative and ' for the glottal stop. Throughout this paper, I do not represent the voiceless and the voiced pharyngeal fricatives, since they are pronounced as a velar fricative and a glottal stop respectively in my variety of Hebrew.

— Verbs that encode **causation of possession** (COP, e.g. *give*).
— Verbs that encode **causation of change of location** (COL, e.g. *walk* (causative)).
— Verbs that are compatible with both meanings (e.g. *send*).

My claim is that the availability of two Hebrew realization schemes, with *le* and with *el*, corresponds to the availability, for a ditransitive verb, of the COP and/or the COL meaning respectively[2]. I demonstrate that the correlation between frames and meanings in Hebrew is more strict and more transparent than in e.g. English; while in English monosemous verbs can still show the dative alternation, in Hebrew, verbal meanings completely determine the distribution of prepositional marking. Hebrew verbs that show an alternation between the two marking schemes are analyzed as having a meaning that is underspecified between COP and COL, and is hence compatible with both. However, this can only be seen in the pronominal domain, where more distinctions are encoded than in full nominals. I also propose, based on suggestive crosslinguistic evidence, that the three-way semantic distinction above determines morphosyntactic patterns across languages.

2 The distribution of *el* and *le*

2.1 A first generalization

Hebrew ditransitives seem initially to fall into two classes, according to the realization of their non-theme argument. Some verbs, which I refer to as *type I* verbs, realize their non-theme argument either with *le* or with *el*. These are exemplified in (4). Other verbs of this type are given in (5)

(4) yosef holix et axiv el ha- / la- xeder
Yosef walked ACC brother.his EL the / LE.def room
Joseph walked his brother to the room.

(5) **Type I verbs**:
heziz 'move', *hixnis* 'put into', *lakax* 'take' (someone somewhere), *daxaf* 'push', *he'if* 'fly' (caus.), *hesi'a* 'drive'.

Other verbs, which I refer to as *type II*, realize their non-theme argument **only with *le***, to the exclusion of *el*. These are exemplified in (6). Verbs of this type are given in (7).

(6) dani natan le / *el nurit et ha-tapu'ax
Dani gave LE / EL nurit ACC the-apple
Dani gave Nurit the apple.

(7) **Type II verbs**:
maxar 'sell', *horiS* 'bequeath', *hilva* 'loan', *he'enik* 'endow', *kana* 'buy'

[2]By using *causation of change of location* rather than the standard *causation of directed motion* throughout this paper, I aim to differentiate the specifically locative meaning of verbs like causative *walk* from the more abstract meaning of transfer verbs like *send*. In principle, COL-verbs are verbs of causation of directed motion that are not compatible with caused possession readings.

From the meanings of the verbs in (5) and (7), and given the patterns available to them, a natural conclusion is that *el* is a marker of locational goals and can replace *le* with verbs that take locational goal arguments[3].

(8) ***el* and *le* realization schemes, first generalization**: (cf. Landau 1994):
(a) *le* can occur with any ditransitive.
(b) *el* can replace *le* in the context of directional goals.

The function of *el* as a marker of locational goals in Hebrew can be seen also outside the ditransitive domain:

(9) hitkaravti el ha-delet
approach.PST.1.SG EL the-door
I approached the door.

However, in the next section I show that this generalization is empirically inadequate.

2.2 Refining the generalization

A complication of the picture outlined so far is introduced by the realization schemes available to pronominal arguments of ditransitive verbs. Hebrew has a set of independent subject pronouns, but non-subject pronouns take the form of inflected prepositions. For example, a pronominal argument of *el* occurs as person-number-gender inflection on the preposition, as shown in (10)[4]. I will refer to the form realizing a preposition and its pronominal argument as the *inflected form* of the preposition.

(10) a. el ha-yeled
EL the-boy
to the boy

b. el=av
EL=3.M.SG
to him

Looking at the distribution of inflected prepositions with the two verb types discussed earlier, an interesting asymmetry arises. While type II verbs behave in accordance with the generalization in (8), the behavior predicted for type I verbs does not carry over to the pronominal domain. Type II verbs show the same realization schemes for pronominals as for NPs; in both cases only *le* and not *el* is licensed, as shown in (11).

(11) natati la / *eleha tapu'ax[5]
give.PST.1.SG LE.3.F.SG / EL.3.F.SG apple
I gave her an apple.

[3]For both verb classes, the relative order of the non-subject NPs is determined by various factors, most importantly information structure and animacy. What exactly these factors are is an important question which, to my knowledge, has not been thoroughly investigated. In any case, word order generalizations are orthogonal to the distributional generalizations I draw in this paper and to the theoretical explanation I offer for them. Hence I do not discuss them.

[4]The same is true of direct object pronouns, which are realized as inflection on the accusative marker *et*.

Type I verbs on the other hand, fail to license *le* with a pronoun, even though they license *le* with NPs. This can be seen in the context of relative clauses, which in Hebrew call for resumptive pronouns. Thus, the verb *holix* 'walk' that license either preposition in (4) fails to license *le* with a pronoun in (12). Another example is given in (13).

(12) ha-xeder$_i$ Se- yosef holix elav$_i$ / *lo$_i$ et axiv
the-room that- Yosef walked EL.3.M.SG / LE.3.M.SG ACC brother.his
The room that Joseph walked his brother into.

(13) a. ron heziz et ha-sapa el ha- / la mitbax
Ron moved ACC the -sofa EL the- / LE.DEF kitchen
Ron moved the sofa to the kitchen.

b. ron heziz elav /*lo et ha-sapa
ron moved EL.3.M.SG LE.3.M.SG ACC the-sofa
Ron moved the sofa there.

The behavior of pronouns clearly shows that, contrary to the accepted generalization in (8), it is not the case that *le* can always replace *el*. In particular, pronominal *le* cannot replace pronominal *el* with type I verbs. The generalization about the realization schemes available for ditrasitives must therefore be modified as in (14).

(14) ***el* and *le* realization schemes, modified generalization**:
a. In the non-pronominal domain, *le* can always replace *el*.
b. In the pronominal domain, *le* and *el* are mutually exclusive:
– *le* marks arguments of type II verbs.
– *el* marks arguments of type I verbs.

Cases in which both prepositions are available to mark full nominal arguments but where only *el* is available with a pronoun are not restricted to ditransitives. As shown in (15), some monotransitive verbs that occur with *el* such as *hitkarev* 'approach' in (9) above, show the same pattern.

(15) a. hitkaravti el ha- / la delet
approach.PST.1.SG EL the / LE.DEF door
I approached the door.

b. hitkaravti eleha / *la.
approach.PST.1.SG EL.3.SG.F / LE.3.SG.F
I approached it/her.

This exemplifies a general change in spoken Hebrew, where *le* is taking over the functions of *el* in the nominal domain. Against the backdrop of this process, the strong ungrammaticality of *le* in the pronominal domain is even more striking. This is discussed in more detail below.

[5]Inflected *le* is a clitic and must always immediately follow the verb if unstressed. The result is that in this and following examples involving pronouns, the order of the non-subject arguments will always be *le*-NP<Theme. This is a purely morphological fact about pronominal *le* and does not reflect any generalization about the relative order of the arguments of a ditransitive. As mentioned above, that order is determined by various factors, most importantly information structure.

2.3 A further complication

While the modified generalization in (14) holds for the data discussed so far, further data show it to be empirically inadequate. There are verbs whose behavior with nominal arguments groups them with type I verbs, i.e. they license both the *le* and the *el* realization scheme. However, unlike other type I verbs, these verbs also license both schemes with pronominal arguments. This is exemplified in (16):

(16) a. Salaxti le / el rina et ha-sefer
sent.PST.1.SG LE / EL Rina ACC the-book
I sent Rina the book.

b. Salaxti la / eleha et ha-sefer
sent.PST.1.SG LE.3.F.SG / EL.3.F.SG ACC the-book
I sent her the book.

I refer to verbs that behave like *Salax* 'send' as Type III verbs. A list of such verbs is given in (17).

(17) Type III verbs:
masar 'pass', *he'evir* 'transfer', *zarak* 'throw', *fikses* 'fax', *heSiv* 'return', *hevi'* 'bring'

The paradigm in (16) shows that inflected *el/le* are not in fact mutually exclusive as stated in (14). The new generalization that emerges from the full consideration of both nominal and pronominal data is stated in (14).

(18) ***el* and *le* realization schemes, new generalization:**
(a) In the non-pronominal domain *le* can always replace *el*
(b) In the pronominal domain:
— Type I verbs: *el*
— Type II verbs: *le*
— Type III verbs: *el* and *le*

The distribution of verbs and prepositional arguments is summarized in (19).

(19) **Realization of non-theme arguments with Hebrew ditransitive verbs**:

VERB		*le*	*le*+pron	*el*+pron	*el*
TYPE I:	*holix* 'walk' (causative)	+		+	+
TYPE III:	*Salax* 'send'	+	+	+	+
TYPE II	*natan* 'give'	+	+		

3 Explaining the distribution

The table in (19) shows a systematic correspondence between verb type and realization scheme for pronominals. While type III verbs alternate between pronominal *el* and *le*, the other types allow only one to the exclusion of the other. This strict correspondence is maintained for *el* with non-pronominals, but not for *le*: verbs that fail to license

pronominal *el* (i.e. type II verbs), also do not license non-pronominal *el*, but verbs that fail to license pronominal *le* nevertheless alternate between the two schemes with non-pronominals. In this section I suggest an analysis of what determines the availability of inflected prepositions for a given verb. I begin with the pronominal data, as it provides the more systematic pattern, and then move on to discuss the patterns of full NPs.

My proposal here is that the three verb types delineated by the realization patterns form three cohesive semantic classes, which can be informally characterized as follows:

— TYPE I: Verbs of **caused change of location** (*walk*, *move*)
— TYPE II: Verbs of **giving** (*give*, *sell*)
— TYPE III: Verbs of **transfer** (*send*, *pass*)

My hypothesis is that, in the pronominal domain, *el* is an allative marker, while *le* is a dative marker. The Hebrew dative is used for marking possessors/experiencers, while the allative is used to express goals. The distribution of pronominal *el* and *le* is determined by the availability for a verb of COL and COP meanings. Verbs of caused directed motion have only the COL meaning available to them, and are hence only compatible with pronominal *el*, the allative marker. Verbs of giving have only the COP meaning available, and are only compatible with *le*, the dative marker, for both pronouns and NPs. Verbs of transfer are underspecified: they describe events of transfer, which include transfer of location as well as, optionally, transfer of possession. Therefore, their meaning can be resolved to both COP and COL. The Hebrew pronominal data thus provide support for RH&L's claim that some ditransitive verbs are associated with only one event schema, while others are compatible with two.

That *el* is a marker of directional goals is uncontroversial and is clear from the examples discussed so far. That the preposition *le* is generally a marker of possessors, also outside the ditransitive domain, can be seen in so called "possessor raising" constructions such as (20), as well as in the run-of-the-mill possessive constructions, equivalent to English *have* constructions, as in (21).

(20) hu ganav li et ha-Sa'on
he stole LE.1.SG ACC the-watch
He stole my watch.

(21) yeS li Sa'on
exist LE.1.SG watch
I have a watch.

Whether or not a verb can occur with a particular inflected preposition depends therefore on its meaning, and whether that meaning is compatible with the function of the preposition. **Verbs of giving** encode causation of possession, their non-theme argument is a possessor, and they are therefore only compatible with pronominal *le*, the dative marker. **Verbs of caused directed motion** encode change of location, and are only compatible with the allative marker, pronominal *el*. **Verbs of transfer** have underspecified meanings. They encode causation of a movement from a source to a goal. This movement may or may not result in possession. Since conceptually such verbs

can describe events involving both a change of location and causation of possession, they can occur with either marker.

The meanings of the three verb classes can be represented as in (22), inspired by Krifka (2004):

(22) **Types of ditransitive meaning**:
(a) *natan* 'give' (COP reading):

$\exists e \exists s$ [AGENT(NP_{agent},e) $\wedge$ CAUSE(e,s) $\wedge$ s: HAVE($NP_{possessor}$, NP_{theme})]

(b) *holix* 'walk' (COL reading):

$\exists e \exists s$ [AGENT(NP_{agent},e) $\wedge$ CAUSE(e,s) $\wedge$ s: AT (NP_{theme},$NP_{location}$)]

(c) *Salax* 'send' (transfer reading):

$\exists e \exists e'$ [AGENT(NP_{agent},e) $\wedge$ CAUSE(e,e') $\wedge$ GO (e',NP_{theme}, NP_{goal})]

These representations capture the semantic distinctions between the three classes of verbs, thus accounting for the Hebrew data. Moreover, they have some decisive advantages over the standard decompositional analyses of ditransitives. The standard decompositional analyses of ditransitives discussed earlier posit both a causation of possession and a causation of location meaning for all ditransitives. The reason for this is that these analyses have generally focused on English, where verbs of giving and verbs of transfer both alternate[6]. However, the data discussed so far clearly shows that this is not the case for Hebrew, where only verbs of transfer (i.e. verbs like *Salax* 'send') alternate.

Even for alternating verbs, positing ambiguity between two lexical representations is not the most attractive solution. Analyses adopting polysemy for alternating verbs have generally assumed that in any particular use of an alternating verb, one argument realization scheme is selected, presumably determining which reading is intended. Intuitively, however, it is not the case that in every case one meaning is determined to the exclusion of the other. For example, neither *John sent Mary the book* nor *John sent the book to Mary* preclude the causation of possession reading. Nor does either of them preclude the causation of change of location reading. The reason for this is that the meaning of *send* is simply compatible with both meanings[7]. It therefore seems preferable to assign alternating verbs a meaning that is *underspecified* between COP and COL.

Such an underspecified meaning is exactly what the representations in (22) are supposed to model[8]. While the representations of *give* and *walk* both involve a stative argument[9], the meaning of transfer verbs like *send* specifies an event of transfer, in which the theme traverses a path towards the goal. This event of transfer is telic, but

[6]Later on I show that English does distinguish verbs like *give* and *send* from verbs of caused directed motion like causative *walk*.

[7]In some cases, the arguments of a 'send'-type verb can be incompatible with one of the meanings, and the corresponding realization is then precluded. Such cases are discussed in the next subsection.

[8]But see Beavers and Francez (to appear), who argue that the precise semantic relation between the meaning encoded by core and oblique realization schemes in ditransitives, as well as more generally, is more naturally characterized in terms of lexical entailments à la Dowty (1991) than in terms of predicate decompositions.

[9]As Krifka (2004) points out, the stative argument could be replaced by a propositional argument.

the nature of its result state is not specified by the verb, and is compatible with both a possessive HAVE-state as well as a locative AT-state. This explains the compatibility of verbs of transfer with both the COP and COL readings without assigning them two separate meanings.

Two points are in order in relation to these decompositional representations. First, it is clear that the actual events described by verbs encoding a COP reading such as *give* often involve motion along a path, similarly to verbs of transfer. However, this is a fact about the world, not about the meaning of verbs. A crucial point in lexical semantics, discussed in detail in DeLancey (1991), is that the verb meanings are not read off of the real world, but rather are grammaticized. While COP verbs are perfectly compatible with real-world events of transfer, they do not encode transfer, but only causation of possession. This is evidenced by various aspects of their behavior. For example, *give* in English can occur with NPs that cannot be construed as moving from a source to goal, such as *headache* in (23). For extensive discussion see RH&L.

(23) a. His babbling gave me a headache.

b. *His babbling / he sent me a headache.

Second, standard representations do not reflect the fact that the meaning of verbs of transfer does not entail that the goal of transfer has been achieved. It is well known that sentences such as *John sent Mary a letter* involve an implicature, rather than an entailment, that Mary got the letter. The question of how exactly to modalize the meanings of transfer verbs is irrelevant here, and I abstract away from it.

3.1 Pronominal vs. non-pronominal *le*

As the table in (19) shows, non-pronominal *le* can essentially occur with any ditransitive verb, even those verbs that strongly disallow inflected *le*.

One way to explain this is to say that type I verbs are monosemous with pronouns, but polysemous or underspecified with full NPs. This is an unlikely explanation, since the lexical semantics of verbs is not in general dependent on the category of a complement, but rather is a lexical property of verbs. If type I verbs are semantically underspecified or ambiguous between COP and COL semantics, then the pronominal nature of an argument should not change that. Furthermore, the pronoun/NP distinction does not determine semantics for any other class of verbs. I therefore maintain that type I verbs unambiguously encode COL semantics, and the explanation for the availability of uninflected *le* has a non-semantic explanation.

Why does pronominal *le* distribute differently than non-pronominal *le*? My hypothesis is that the distribution of non-inflected *le* is due to a process of generalization of *le* in contemporary spoken Hebrew: the functions of *el* are taken over by *le*. This is a general process, independent of the ditransitive domain. An example of this process in monotransitives was given in (15) above. Another example is provided by the monotransitive verb *hitga'age'a* 'miss (someone, something)'. This verb can in general take an argument marked by either *el* or *le*:

(24) hitga'aga'ti el ha- / la xaver Seli
miss.PST.1.SG. EL the / LE.DEF friend of.1.SG
I missed my friend.

In spoken contexts, native speakers much prefer *le* to *el* in a sentence like (24)[10]. However, this is not the case in the pronominal domain: (24) is categorically ungrammatical with inflected *le*:

(25) hitga'aga'ti * lo / elav
miss.PST.1.SG. LE.3.M.SG / EL.3.M.SG
I missed him.

Synchronically, then, the class of pronominals behaves differently from full NPs, and encodes distinctions that full NPs do not. This is by no means unusual. Crosslinguistically, it is common for the pronominal sub-class to make more distinctions than the class of NPs, cf. the preservation of case distinctions in English pronouns. The complementary distribution of inflected prepositions in Hebrew might be similarly diachronically motivated. In other words, it is possible that non-inflected *el* and *le* retain a distinction that has been lost in full NPs. Regardless of the diachronic aspects of these differences in Hebrew, any theory must account for the synchronic distribution of prepositional markers in both subclasses of nominals.

At this point it is possible to state an explanatory generalization about the distribution of the two prepositions *el* and *le*.

(26) **Final generalization**:
(a) *le* can always mark the non-theme NP argument of a ditransitive verb.
(b) Pronominal *le* is a marker of possessors
(c) Pronominal *el* is a marker of goals.
(d) Verbs with meanings compatible with both change of location and causation of possession occur with either preposition.

The relation between prepositions, verbs and meanings is represented graphically in (1).

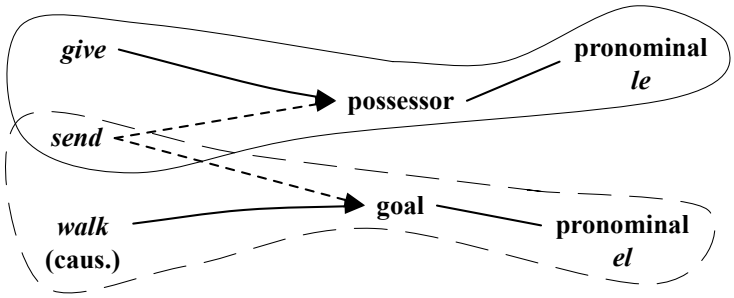

Figure 1: Clustering of verbs, meanings and prepositions.

3.2 Further evidence: The semantic nature of arguments

If transfer verbs indeed have a meaning underspecified between causation of possession and causation of change of location, then we expect that in contexts in which a

[10]Unfortunately, quantitative data, which would be illuminating here, are difficult to provide due to the lack of a corpus of spoken Hebrew.

more specific meaning is required for some reason, the verb will resolve to that meaning and the marking associated with it. There is in fact an array of such contexts, in which the semantic nature of the arguments of transfer verbs precludes either the causation of possession meaning or the directed motion reading. As predicted by the generalization in (26), the choice of meaning is reflected in the choice of pronominal preposition.

- **Causation of possession ruled out**:

There are two kinds of contexts in which the COP reading can be ruled out. First, it can be ruled out due to the semantic nature of the non-theme argument. Some non-theme arguments cannot be construed as possessors with verbs like *Salax* 'send'. In such cases, the verb cannot occur with pronominal *le*, as predicted. This is shown in (27). In (27a), the non-theme argument is the noun *kfarim* 'villages', which cannot be construed as possessing the theme, and pronominal *le* is ungrammatical. In contrast, the non-theme argument of (27b) is the noun *sarim* 'ministers', which can be construed as possessing the theme, and pronominal *le* is fine.

(27) a. ha-kfarim$_i$ Se- ha-memSala Salxa elehem$_i$ / *lahem$_i$ xayalim
the-villages that- the-government sent EL.3.M.PL / LE.3.M.PL soldiers
The villages to which the government sent soldiers.

b. ha-sarim$_i$ Se- ha-Sofetet Salxa elehem$_i$ / lahem$_i$ mixtavim
the-ministers that- the-judge sent EL.3.M.PL / LE.3.M.PL letters
The ministers to whom the judge sent letters.

Second, COP readings can be blocked by the theme argument. As pointed out by Botwinik-Rotem (2003), animate themes are not compatible with a possession reading, because animate things are not normally possessed. Indeed, pronominal *le* is unavailable in the presence of animate themes with verbs like *Salax* 'send', as shown in (28).

(28) a. dan Salax et ha-yladim el/le- rina
Dan sent ACC the-children EL/LE- Rina
Dan sent the children to Rina. (Botwinik-Rotem 2003:95, (26a))

b. dan Salax eleha /??la et ha-yladim
Dan sent EL.3.F.SG / LE.3.F.SG ACC the-children
Dan sent the children to her.

c. ?? yeS le rina et ha-yladim
be LE Rina ACC the-children
??Rina has the children.

(28c) shows a possessive construction in which the theme is animate is generally infelicitous. The sentence is infelicitous in a context in which it describes the result of a sending event. Of course, a similar sentence meaning *Rina has children* is perfectly grammatical, but describes inalienable possession, which conceptually cannot be the result of an event of causation of possession.

• **Causation of change of location reading ruled out**:

Abstract nouns that do not change physical location in transfer must be construed as possessed. For example, the theme *kadur* 'ball' in (29a) is a physical object that changes physical location in a transfer event described by the verb *masar* 'pass', and the recipient of this theme can be realized with either preposition in (29b). However, the abstract noun *misra* 'job' in (29c) is not something that can be caused to change location, only to change possession. As expected, the verb can only co-occur with pronominal *le* in this case.

(29) a. hu masar le/el merser et ha-kadur
he passed LE/EL Merser ACC the-ball
He passed Merser the ball.

b. hu masar lo /elav et ha-kadur
he passed LE.3.M.SG /EL.3.M.SG ACC the-ball
He passed him the ball.

c. hi masra lo /*elav et ha-misra
she passed LE.3.M.SG EL.3.M.SG ACC the-job
She passed the job on to him.

4 Crosslinguistic patterns

In this section I show that the constellation of data in figure (1) is not unique to Hebrew. The association of different morphosyntax with the three verb classes identified above is cross-linguistically quite robust, strengthening the view that the grammatical behavior of ditransitives is to a large extent determined by their semantics, and in particular by the semantic contrast argued for in the previous section.

If the account developed above is correct, it raises several expectations as to the behavior of ditransitives crosslinguistically. Specifically, if a language has different morphosyntactic means for encoding goals and possessors, then we expect the distribution of these coding schemes with ditransitives to carve out the three verb classes that the pronominal data carves out for Hebrew:
— Verbs that inherently encode causation of possession should tend not to allow goal marking on the non-theme argument.
— Verbs that inherently encode change of location should not allow possessor marking on their non-theme arguments.
— Verbs that are underspecified for these meanings should allow either marking, modulo the semantics of the arguments.

In what follows I discuss the relation between the Hebrew pattern and the English dative alternation. I argue that that the distribution of the double object construction and the *to*-variant is determined by similar semantic factors as the distribution of *el* and *le*. I then move on to discuss more general crosslinguistic patterns.

4.1 The English 'dative alternation'

The familiar English dative alternation is presented in (30).

(30) a. Tyrone sent Jerome the letter.

b. Tyrone sent the letter to Jerome.

Analyses of the English dative alternation commonly assume that alternating verbs are polysemous (cf. Green 1974; Oehrle 1976; Krifka 1999 and many others). The accepted view is that the double object (DO) variant (30a) is associated with a transfer of possession reading, while the *to*-variant (30b) is associated with a causation of directed motion reading.

As discussed earlier, RH&L argue that while some English alternating verbs are polysemous, others are monosemous. Specifically, they argue that verbs like *give* encode causation (rather than transfer) of possession, whereas verbs like *send* are ambiguous between causation of possession and directed motion. In terms of the analysis developed above, verbs like *give* are specified for COP semantics, whereas verbs like *send* have underspecified semantics. In this section I want to show that the availability of realization schemes in English (DO and *to*-variants) corresponds to the availability of COP/COL meanings in a way similar to *el/le* in Hebrew. As in Hebrew, in English the availability of either realization scheme can be blocked by the semantics of an argument. The English data, however, is complicated by the fact that verbs like *give* participate in the dative alternation, which would seem to indicate an underspecified semantics for them. However, I maintain following RH&L and others that the alternation shown by *give* and similar verbs is not motivated by the same semantic factors that generally motivate the dative alternation. English verbs of giving encode COP semantics in both variants. English is different from Hebrew (and from many other languages, as discussed in section 4.2) in allowing the oblique frame to realize the possessor argument of ditransitives.

Verbs of giving in English are restricted to a causation of possession reading. English *give* differs from *send* in that its non-theme argument must be a possessor. While this is a standard observation for *give* in the DO variant (Green 1974; Pinker 1989; Harley 2003, and many others), it is equally the case for the *to*-variant, as RH&L point out.

(31) a. *Maurice gave a book to Minneapolis.

b. *Maurice gave Minneapolis a book.

The restriction to possession is therefore a property of the *verb*, not just of one of the realization schemes. The same semantic property of verbs of giving is responsible for the unavailability of pronominal *el* with *natan* 'give' and other type II verbs in Hebrew.

An important difference between Hebrew and English, which obscures this parallel, is that English *to* is more general than Hebrew *el*, and can occur with *give* (see e.g. Levinson (2005) for a recent discussion of the different functions of *to* in the dative alternation). As several authors have pointed out, the occurrence of *give* with *to* is motivated by information structural constraints (Erteschik-Shir 1979; Arnold et al. 2000; Wasow 2002; Bresnan and Nikitina 2003, see also discussion in RH&L and Krifka (2004)), not by semantics. In other words, unlike Hebrew, English allows verbs encoding COP to alternate. Hebrew does not allow this, first because the allative marker *el* is semantically not as general as English *to*, and is restricted to locational goals, and second because the kinds of information structural effects that in English require a change

in grammatical relations (because of strict word order) can be achieved by word order in Hebrew.

In English, as in Hebrew, the meaning of verbs of transfer is underspecified between COP and COL. This is evidenced by the fact that, as in Hebrew, the meaning of such verbs can be determined by the semantic nature of the argument. In such cases, the distribution of the English DO and *to*-variants parallels that of Hebrew *el* and *le*.

COP readings can be blocked when the semantics of the non-theme argument is incompatible with possession. Since Oehrle (1976) and Green (1974) it is standardly observed that purely locational arguments such as place names are not possessors, and cannot occur felicitously in the DO construction with verbs like *send* :

(32) *John sent London a letter.

(32) is good only on an institutional reading (e.g. *the London office*)).This is the case not just for place names like London, but generally for spatial locations:

(33) a. *Teddy sent the front soldiers.

b. *John threw the garbage my abstract.

This data exactly parallels the unavailability in Hebrew of pronominal *le* for spatial goals with *Salax* 'send' (see 27 above).

COP readings can also be blocked by the theme argument. If the theme is animate, the causation of possession reading is unavailable for *send*, and so is the DO:

(34) a. John sent the boys to the principal.

b. *John sent the principal the boys.

Again, this is exactly parallel to the unavailability of pronominal *le* with animate themes with Hebrew type III verbs, as in the examples pointed out by Botwinik-Rotem (2003) ((28) above).

Finally, causative verbs of directed motion in English are restricted to goals, as they are in Hebrew. In other words, English, too, has type I verbs. As expected, the DO construction is not available for such verbs.

(35) a. The guards walked the prisoner to the visitor.

b. *The guards walked the visitor the prisoner.

c. My sister moved the books to the cellar.

d. *My sister moved the cellar the books.

This is exactly parallel to the unavailability of pronominal *le* with *holix* 'walked' and other type I verbs in Hebrew.

To summarize this section, I have shown that English ditransitive verbs form three different semantic classes, similarly to the three classes identified for Hebrew. The distribution of DO and *to*-variants follows a similar pattern as *le* and *el* in Hebrew. The English DO construction is associated with COP semantics, and the *to*-variant is associated with a COL semantics. The oblique realization scheme is unavailable with verbs

of giving in Hebrew. It is available for such verbs in English, but does not correspond to a COL reading as it does with verbs of transfer. The English dative alternation with verbs of giving is therefore in some sense a different phenomenon than that alternation with other verbs. The parallelism between Hebrew and English provides further support to the analysis of *el* and *le* proposed above, as well as for Rappaport Hovav and Levin (2005)'s claim that different classes of ditransitive verbs are associated with different semantics.

4.2 Other languages

The correlation between realization schemes and meanings argued for above is supported by crosslinguistic data. In their study of the realization schemes available for ditransitive verbs across languages, Croft et al. (2001) have found that ditransitives form the following implicational hierarchy:

(36) Ditransitivity Hierarchy: give > send > throw

Croft et al. show that this hierarchy is relevant for stating generalizations about the distribution of direct argument vs. oblique realization schemes in ditransitive constructions. In particular, they claim that:

(i) If there are constraints on the distribution of a ditransitive construction, the construction will be associated with the higher end of the Ditransitivity Hierarchy.

(ii) If there are constraints on the distribution of an oblique constructions, especially a spatial oblique construction, the construction will be associated with the lower end of the Ditransitivity Hierarchy.

The situation argued for above in Hebrew falls in nicely with Croft et al.'s generalization. There are constraints on the dative marker *le*, and its occurrence is associated with the higher end of the hierarchy, namely with verbs like *give*. And there are constraints on the distribution of the allative marker *el*, and its occurrence is associated with the lower end of the hierarchy, namely with verbs of caused directed motion like (causative) *walk* as well as verbs of transfer like *send*. I have not discussed the verb *zarak* 'throw' in Hebrew, but it behaves like *send*, i.e. it is a type III verb. Croft et al.'s hierarchy also reinforces the observation that the occurrence of the *to*-variant with English *give* is exceptional. In most languages, a verb meaning 'give' does not allow an oblique realization of the non-theme argument.

Refining the argument in Croft et al., Levin (2004) points out crosslinguistic generalizations as to verbs that allow the non-theme argument to be realized as a direct argument, as in the English double object construction. In (37) I compare data taken from Levin 2004 and some additional data to the distribution of Hebrew pronominal forms.[11]

Given the pattern outlined so far, we expect that a language which has two realization schemes for ditransitives, one in which the non-theme argument is a direct argument, and another in which it is oblique, will show two properties:

[11] The data from Levin (2004) is based on Chung and Gordon (1998) for Mandarin Chinese and Anagnostopoulou (2003, 2004) for Greek.

(a) The direct argument scheme should pattern like pronominal *le*.

(b) Verbs should be more likely to place restrictions on the direct argument scheme if they do not lexically encode possession.

In other words, we expect to find a parallelism between the distribution of inflected *le* and other realization schemes in which the non-theme is a direct argument, and we expect such realization schemes to correlate with COP meaning, i.e. with the high end of the Ditransitivity Hierarchy. In particular, we expect restricted acceptability of such realization schemes to occur with verbs that have underspecified meanings. I have shown that with such verbs, the availability of inflected *le*, as well as of the DO variant in English, is restricted by the semantic nature of the non-theme argument, which must be a possessor. In (37), '+ ' signifies availability of the relevant realization pattern, '+/–' indicates limited availability, conditioned on the non-theme argument being construable as possessor, and '–' indicated unavailability. I use '+/?' for cases where a pattern is available and I do not have data on whether or not it is restricted.

(37) **Availability of direct argument realization of non-theme argument**

VERB	Mandarin	Greek	German	Hebrew *le*+pron
'give'	+	+	+	+
'sell'	+	+	+	+
'send'	–	+/–	+/–	+/–
'throw'	–	+/?	+/–	+/–
'take'	–	+/?	–	–

The table clearly confirms the expectations for Greek, Mandarin and German. It also shows some interesting crosslinguistic variation. In particular, the constraints on the double object construction in Mandarin Chinese seem much more restrictive than the restrictions on the English first object or the Hebrew dative.[12] However, the variation maintains the direction predicted by Croft et al. (2001). There are restrictions on the double object construction in Mandarin, and this construction is associated with the higher end of the Ditransitive Hierarchy. The hierarchy and the table in (37) show that across languages, realization schemes for non-theme arguments of ditransitives align with verb classes in ways similar to their alignment in Hebrew. This strongly supports the idea that there are systematic semantic distinctions driving this alignment, of the kind argued for here. The fact that ditransitive verbs form an *implicational hierarchy*, rather than a set of mutually exclusive classes, supports the kind of semantic analysis provided earlier in this paper, namely one in which some verbs have meanings that are underspecified between the two main readings associated with the ditransitves: causation of possession and causation of change of location.

[12] As pointed out to me by Waltraud Paul, the Mandarin data is more complex. There are several issues involved, including the status of the lexeme *gei3*, the equivalent of English *to*, which also functions as a verb meaning 'give' in a serial verb construction (see e.g. Paul (1988) for discussion). Further research is required to determine the exact nature of the ditransitive domain in Mandarin.

5 Conclusions

This paper discussed the relation between the availability of argument realization schemes and the availability of verbal meanings. I have presented new data from the interaction of Hebrew prepositions with pronouns, that shows that the distribution of argument realization schemes in Hebrew ditransitives is determined by the availability of three verbal meanings: causation of possession, causation of change of location, and transfer.

The data reveal a three-way distinction among ditransitive verbs in Hebrew, similar to the one proposed by RH&L for English, supporting their claim that the ditransitive domain is not semantically uniform. The three identified verb classes determine similar morphosyntactic patterns across languages, highlighting the uniformity of the mapping from verbal semantics to morphosyntax.

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