

# Double Object Construction in Croatian: Arguments Against Appl<sup>0</sup>\*

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## 1 Introduction

This paper argues for the existence of the distinction between Double Object Construction (DOC) and *To-Dative* Construction (TDC) in Croatian. Moreover, the distinction is derived without making reference to an applicative head (Appl<sup>0</sup>) in DOC. Examples (1) and (2) respectively show a DOC and a TDC in English.

- |                               |                            |
|-------------------------------|----------------------------|
| (1) John gave Mary a book.    | Double object construction |
| (2) John gave a book to Mary. | To-dative construction     |

At first glance, (1) and (2) seem to express the same meaning: they describe an event in which the theme, the book, was given to the goal, Mary, by the agent, John. On closer examination, it becomes clear that the two structures are quite distinct not only in their syntax, but in certain semantic properties as well. The characteristics associated with DOC, but not with TDC include the following:

a) *Ban against nominalizations* (Kayne 1984, Marantz 1993, Pesetsky 1995). A TDC can be nominalized, as shown by (3), while DOC, in (4), cannot.

- |                                   |
|-----------------------------------|
| (3) the gift of the book to Mary  |
| (4) *the gift of Mary of the book |

b) "*Causative reading*" (Oehrle, 1976). Ditransitive sentences that are instances of DOC have a reading on which the subject is understood not as an agent, but rather as the cause of the goal's coming to possess the theme. The causative reading of (1) is loosely paraphrased in (5). Sentences that instantiate TDC do not allow for a causative reading. Thus (5) is not a possible paraphrase of (2).

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(5) If it weren't for John, Mary would not have written her book.

c) *Rigid quantifier scope between the goal and the theme* (Aoun & Li 1989, Bruening 2001). If in a DOC, both the goal and the theme arguments are quantified phrases, the goal obligatorily outscopes the theme, as shown in (6). By contrast, in TDC, the scope is free, as in (7).

(6) John gave a boy every coin. DOC:  $\exists > \forall$ ,  $*\forall > \exists$

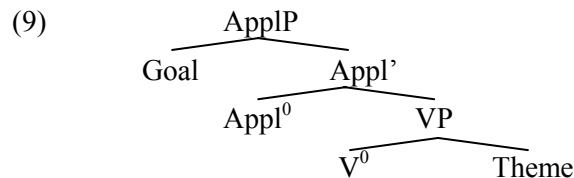
(7) John gave a coin to every boy. TDC:  $\exists > \forall$ ,  $\forall > \exists$

d) *Two-goal constructions* (Miyagawa & Tsujioka, 2004). In Japanese, the goal argument of some verbs, like *okuru* ('send') can denote either the possessor (*high goal*) or the location (*low goal*). The presence of a PP-goal (*low goal*) forces the "possessor" interpretation of the DP goal (*high goal*).

(8) Taroo-ga Hanako-ni Tokyo-ni nimotu-o okutta.  
 Taro.nom Hanako.DAT Tokyo-to package.ACC sent  
 'Taro sent Hanako a package to Tokyo.'

In (8), only the high goal, *Hanako-ni*, has the "possessor" interpretation (Hanako does not have to be in Tokyo to be understood as a prospective possessor of the book.) It has been noticed that in a DOC, the referent of the first object must be the prospective possessor of the referent of the second object (Gropen, Pinker et al., 1989). Thus, in a two-goal construction, only the DP that is obligatorily interpreted as the possessor of the theme corresponds to the goal argument in a simple ditransitive sentence. I take this correspondence to mean 'be theta-marked by the same head and occupy the same syntactic position.'

The observed syntactic and semantic differences listed in a) – d) have often been explained by appealing to an applicative head (Marantz 1993, McGinnis 1998, 2001, Anagnostopoulou 2005, Ura 2000, Cuervo 2003). Syntactically,  $\text{Appl}^0$  takes the VP as its complement, and the goal as its specifier, as illustrated in (9).



Its function is to establish a thematic relation between an "applied

argument”, the goal, and the event described by the verb.

In this paper I examine ditransitive constructions in Croatian, showing that the contrast between DOC and TDC exists also in this language, contrary to what a superficial inspection of the data might make us believe. I argue that syntactic and semantic differences between DOC and TDC can be accounted for without making reference to Appl<sup>0</sup>, or any other functional head responsible for introducing and theta-marking the goal. I claim that when the goal in a ditransitive construction is interpreted as a possessor or beneficiary, it is to be considered an argument of the verb, introduced as its specifier. On the other hand, when the goal bears a different theta-role, then it is introduced by a syntactic head other than the verb.<sup>1</sup>

The motivation for the proposed analysis comes from the following observations. First, syntactic and semantic properties of DOC in Croatian that can be explained by an applicative analysis can equally well be explained by an analysis that does not posit Appl<sup>0</sup>. Furthermore, an applicative analysis proves to be empirically inferior to the alternative pursued here, when it comes to accounting for nominalization facts in a class of Croatian ditransitive constructions. Applicative analyses, in one way or the other, explain the ban on nominalizations in DOC by the presence of Appl<sup>0</sup> in the structure. We will see that in Croatian, some ditransitive constructions freely nominalize, even though by all diagnostics they behave as DOCs, and should therefore contain Appl<sup>0</sup>. Thus, appealing to the crucial presence of Appl<sup>0</sup> as part of the explanation of nominalization patterns fails as far as Croatian data are concerned. Finally, the data from quantifier scope relations between the goal and the theme indicate that Appl<sup>0</sup>, if it were to be postulated, would have to be the only functional head in the structure that does not provide a scope domain. The inability of quantified phrases to raise to ApplP via Quantifier Raising (QR) makes Appl<sup>0</sup> different from other functional heads, a property we would like to explain in a principled manner. An analysis proposed here, which does not posit Appl<sup>0</sup> in the first place, avoids the problem altogether.

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<sup>1</sup> An obvious challenge for an analysis without Appl<sup>0</sup> is to explain the source of the applicative affix in Bantu, which appears on the verb in cases when the verb valency is changed so as to include the benefactive argument and which has been analyzed as the spell-out of Appl<sup>0</sup> (Baker, 1988; Marantz, 1993). See Marten (2003) for an alternative explanation for the appearance of the applicative suffix on the verb in Bantu languages Swahili, Bemba and Luganda.

The paper is organized as follows: in the next section I present an overview of the claims particular to Croatian data, which I will be arguing for in the paper. Sections 3 and 4 present a conceptual and an empirical argument against an applicative analysis respectively. In section 5 I show how the properties of a problematic word order V(erb)...D(ative)...A(ccusative) can be captured by the proposed analysis. Section 6 presents independent evidence for the functional head I posit in my analysis of TDC. In section 7 I discuss the adequacy for the data at hand of an analysis that posits a low applicative head, and section 8 contains concluding remarks.

## 2 Croatian data

Selectional properties of Croatian ditransitive verbs are similar to those in English, with one difference: Croatian ditransitive verbs never take an animate goal in the form of the PP.

- (10) a. Vid daje Hani poklon.  
 Vid gives Hana.<sub>DAT</sub> gift  
 ‘Vid is giving Hana a gift.’  
 b. \*Vid daje poklon u Hanu.  
 Vid gives gift in Hana.<sub>ACC</sub>

Furthermore, under neutral intonation, ditransitive sentences with animate goals appear in three different word orders, as shown in (11)-(13) below.

- (11) Dan Vidu daje knjigu. *D(ative)...V(erb)...A(ccusative)*  
 Dan Vid.<sub>DAT</sub> gives book.<sub>ACC</sub>  
 ‘Dan is giving Vid a book’
- (12) Dan daje knjigu Vidu. *V(erb)...A(ccusative)...D(ative)*  
 Dan gives book.<sub>ACC</sub> Vid.<sub>DAT</sub>
- (13) Dan daje Vidu knjigu. *V(erb)...D(ative)...A(ccusative)*  
 Dan gives Vid.<sub>DAT</sub> book.<sub>ACC</sub>

In the rest of the paper I examine these word orders against the properties characteristic of DOC listed in a) – d) of the Introduction and argue that DVA is an instance of DOC, and that VAD is an instance of TDC. The discussion of the third word order, VDA, will be postponed until section 5, where it will be shown that it is structurally ambiguous

between the two.

### 2.1 Two-goal constructions

In a Croatian sentence that contains two goals, a dative-marked DP (D) and a location PP, as in (14), varying the position of D affects its interpretation. While in (15), Vid is required to be in Zagreb for the sentence to be true, in (14), he can be anywhere, as long as he is the prospective possessor of the book. Moreover, (15) is vague as to who the intended possessor of the book is; it could be Vid, or it could be someone else, while Vid's place is merely the location where the book is sent. I take this to be evidence that in (14), D is interpreted as the possessor, while in (15) it is interpreted as a location.

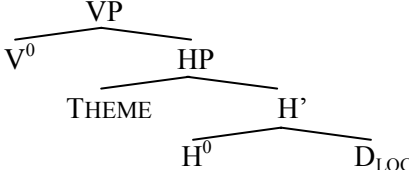
(14) Mia je Vidu poslala knjigu u Zagreb. *D...V...A...PP<sub>LOC</sub>*  
 Mia Aux Vid.<sub>DAT</sub> sent book.<sub>ACC</sub> in Zagreb.<sub>ACC</sub>  
 'Mia sent Vid the book to Zagreb.'

(15) Mia je poslala knjigu Vidu u Zagreb. *V...A...D...PP<sub>LOC</sub>*  
 Mia Aux sent book.<sub>ACC</sub> Vid.<sub>DAT</sub> in Zagreb.<sub>ACC</sub>

At this point I would like to suggest that the D that precedes the verb is an argument of the verb, theta-marked as a possessor/beneficiary ( $D_{POSS}$ ), while the D that follows the verb is an adjunct-like D denoting location ( $D_{LOC}$ ). Thus, DVA instantiates DOC, while VAD instantiates TDC. Based on this observation, I propose that DOC has the structure in (16), while TDC has a more elaborate structure in (17). The functional head  $H^0$  establishes an *end-up-at* relation between the theme and  $D_{LOC}$ .

(16)  *The structure for DOC*

The diagram shows a syntax tree for DOC. The root node is VP, which branches into  $D_{POSS}$  and  $V'$ .  $V'$  branches into  $V^0$  and THEME.

(17)  *The structure for TDC*

The diagram shows a syntax tree for TDC. The root node is VP, which branches into  $V^0$  and HP. HP branches into THEME and  $H'$ .  $H'$  branches into  $H^0$  and  $D_{LOC}$ .

The structures I propose for DOC and TDC predict that it should be possible for the two datives to occur in the same sentence. This prediction is borne out, as shown by (18):

- (18) Vid je Danu poslao knjigu Hani.  $D_{POSS}...V...A...D_{LOC}$   
 Vid Aux Dan.<sub>DAT</sub> sent book.<sub>ACC</sub> Hana.<sub>DAT</sub>  
 ‘Vid sent Dan the book to Hana (to Hana’s place).’

The proposed structures account for c-command asymmetries that hold between  $D_{POSS}$  and theme on the one hand, and theme and  $D_{LOC}$  on the other. In a DOC,  $D_{POSS}$  asymmetrically c-commands the theme, while in a TDC the theme asymmetrically c-commands  $D_{LOC}$ . This is shown in (19) and (20).<sup>2</sup>

- (19) a. Ivan je [svakom studentu]<sub>i</sub> dao njegovu<sub>i</sub> knjigu.  $D_{POSS}...V...A$   
 Ivan Aux every.<sub>DAT</sub> student.<sub>DAT</sub> given his.<sub>ACC</sub> book.<sub>ACC</sub>  
 ‘Ivan gave [every student]<sub>i</sub> his<sub>i</sub> book.’  
 b. \*Ivan je njezinom<sub>i</sub> vlasniku dao [svaku knjigu]<sub>i</sub>.  
 Ivan Aux her.<sub>DAT</sub> owner.<sub>DAT</sub> given every.<sub>ACC</sub> book.<sub>ACC</sub>  
 \*‘Ivan gave its<sub>i</sub> owner [every book]<sub>i</sub>.’
- (20) a. Ivan je dao [svaku knjigu]<sub>i</sub> njezinom<sub>i</sub> vlasniku.  $V...A...D_{LOC}$   
 Ivan Aux given every.<sub>ACC</sub> book.<sub>ACC</sub> her.<sub>DAT</sub> owner.<sub>DAT</sub>  
 ‘Ivan gave [every book]<sub>i</sub> to its<sub>i</sub> owner.’  
 b. \*Ivan je dao njegovu<sub>i</sub> knjigu [svakom studentu]<sub>i</sub>.  
 Ivan Aux given his.<sub>ACC</sub> book.<sub>ACC</sub> every.<sub>DAT</sub> student.<sub>DAT</sub>  
 ‘Ivan gave his<sub>i</sub> book to [every student]<sub>i</sub>.’

## 2.2 Causative reading

Under neutral intonation, DVA sentences have causative reading, while VAD sentences do not. This is obvious in examples such as (21), where the subject is non-agentive, and the only plausible reading the sentence might have is the causative one.

- (21) a. Rat je Krleži dao knjigu.  $D_{POSS}...V...A$   
 War Aux Krleža.<sub>DAT</sub> given book.<sub>ACC</sub>  
 ‘If it hadn’t been for the war, Krleža wouldn’t have written the book.’  
 b. <sup>??</sup>Rat je dao knjigu Krleži.  $V...A...D_{LOC}$   
 war Aux given book.<sub>ACC</sub> Krleža.<sub>DAT</sub>

The presence of the causative reading in DVA, but not in VAD sentences is another indication that the former has the structure of DOC,

<sup>2</sup> Relevant tests also show that  $D_{POSS}$  asymmetrically c-commands  $D_{LOC}$ . These data are omitted here for reasons of space.

while the latter is a TDC, given the parallel with English facts.

### 2.3 Nominalizations

If DVA instantiates DOC, we expect it not to be able to nominalize. Conversely, if VAD is a TDC, the prediction is that it will be able to form nominalizations. This is exactly what we find.

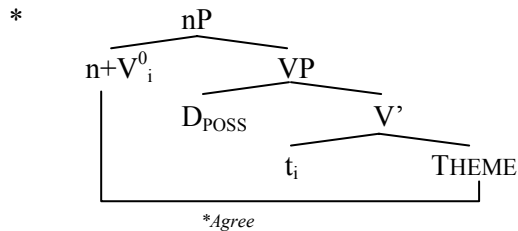
- (22) a. \*poklon Hani knjige  $V_{[NJ]...D...A}$   
           gift Hana.DAT book.GEN  
           \*‘gift of Hana of the book.’
- b. poklon knjige Hani  $V_{[NJ]...A...D}$   
           gift book.GEN Hana.DAT  
           ‘gift of the book to Hana.’

The contrast in (22) has been accounted for by appealing to the presence of a null functional head in the structure of DOC ( $Appl^0$  for Marantz 1993,  $G$  for Pesetsky 1995), which precludes nominalization of the verbal structure due to the violation of Myers’ generalization (Myers 1984):

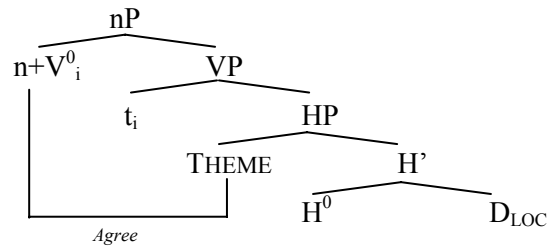
- (23) Zero-derived words do not permit affixation of further derivational morphemes.

Given that in my analysis it is TDC that contains a null functional head ( $H^0$ ), and yet it freely nominalizes, an alternative explanation for the contrast in (22) is needed. I propose that nominalizations of DOC are illicit because the genitive theme is not adjacent to the nominalized verb, i.e.  $D_{POSS}$  acts as an intervener for the genitive case assignment. In TDC, on the other hand, nothing intervenes between the nominalized verb and genitive theme.

#### (24) Nominalization of DOC (disallowed)



(25) *Nominalization of TDC (allowed)*



The contrast in (22) can thus be explained by the generalization in (26):

(26) *Shortest Case-Agree in Nominalization (SCAN)*

In a nominalized structure, the case licenser must agree with the closest DP.

2.4 *Quantifier Scope*

It has been shown (Aoun & Lee 1989, Bruening 2001, a.o) that quantifier scope between the goal and the theme in a DOC is frozen, while in a TDC it is free. In Croatian, DVA shows rigid quantifier scope (27), while in VAD the scope between the goal and the theme is free (28).

(27) Petar je jednom djetetu dao svaku čokoladicu. *D...V...A*  
 Petar Aux one.DAT child.DAT given every.ACC candy-bar.ACC  
 ‘Petar gave one child every candy-bar.’  $\exists > \forall, * \forall > \exists$

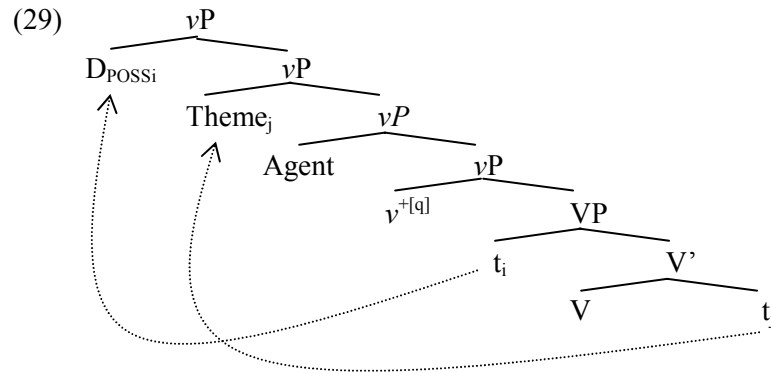
(28) Dan je poslao jedan dar svakom djetetu. *V...A...D*  
 Dan Aux sent one.ACC gift.ACC every.DAT child.DAT  
 ‘Dan sent one gift to every child.’  $\exists > \forall, \forall > \exists$

I follow Bruening (2001) in treating Quantifier Raising (QR) as a feature driven operation constrained by locality. I further assume that a quantified phrase of the semantic type  $\langle\langle e, t \rangle, t \rangle$ , must move (covertly) and merge with a node of type  $\langle t \rangle$  in order to be interpreted (Heim & Kratzer 1998). If in a DOC, both the goal and the theme are quantifiers, the first available site of type  $\langle t \rangle$  where they could be interpreted is the  $vP$  node. If the phase head  $v^0$  possesses a feature  $[q]^3$  that attracts quantifiers, then this feature will first attract the closer quantified phrase,

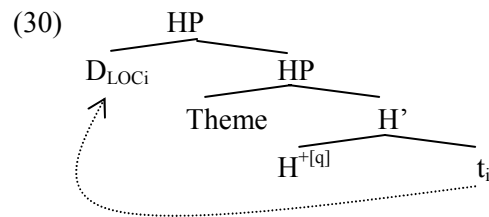
<sup>3</sup> Note that  $[q]$  must necessarily be optional, in order to allow structures that do not contain quantified phrases.



the goal, and next the one that is further away, the theme, which then has to tuck-in (Richards 1997).

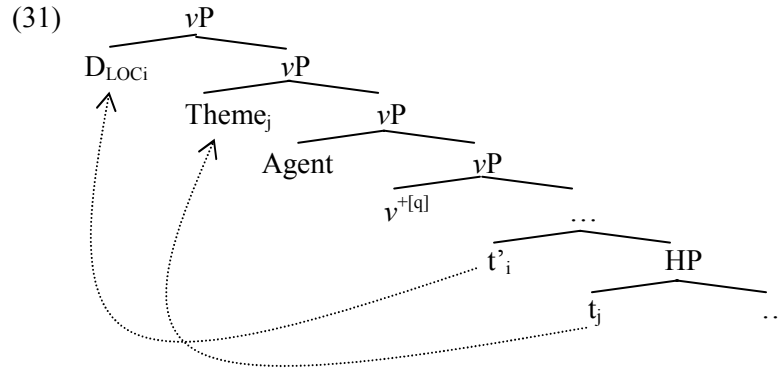


In a TDC, the  $vP$  contains two phrases of type  $\langle t \rangle$ :  $vP$  and  $HP$ . Both  $v^0$  and  $H^0$  can come with  $[q]$  feature or without it. If  $H^0$  *with* a  $[q]$  feature is merged into the structure,  $D_{LOC}$  outscopes the theme, as in (30), (regardless of whether the quantifiers continue raising to  $v^0$ ).<sup>4</sup>

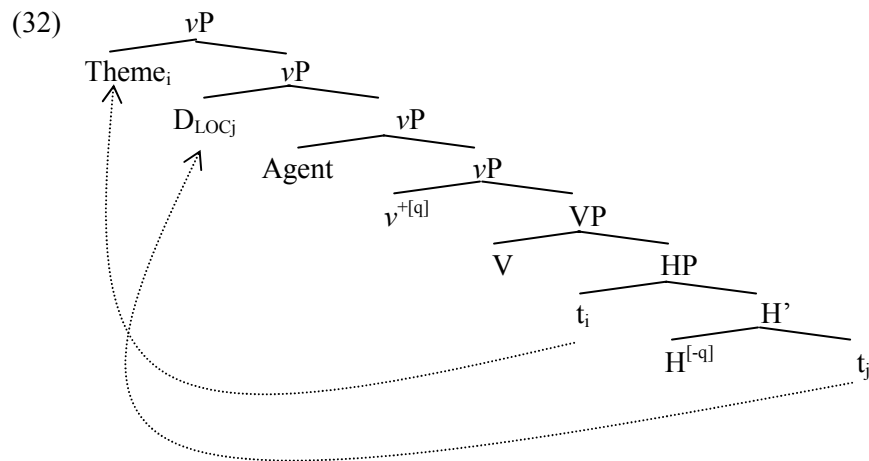


If  $v^0$  also contains the  $[q]$  feature, both quantifiers continue raising:

<sup>4</sup> Tucking-in is impossible in (30), because here, a quantifier is not interpretable in the tucked-in position.



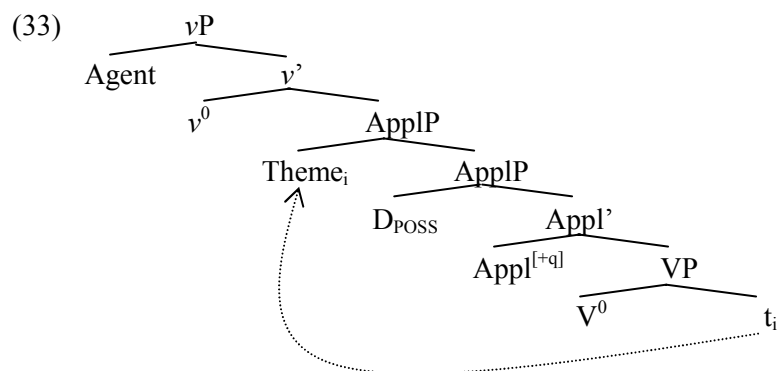
If  $H^0$  *without* a  $[q]$  feature is merged, both quantifiers are interpreted at the  $vP$  level, in which case the theme outscopes  $D_{LOC}$ .



All the arguments discussed in this section point to the conclusion that in Croatian, DVA word order instantiates DOC, while VAD word order instantiates TDC. We have also seen that a coherent theory of the differences between the two constructions can be developed without the need of introducing  $AppI^0$ , a functional head that introduces and theta-marks the goal. In the next section I present a conceptual argument against positing  $AppI^0$  in the structure of DOC, which rests on quantifier scope.

### 3 A conceptual argument against Appl<sup>0</sup>

Analyses that appeal to Appl<sup>0</sup> rely on neo-Davidsonian semantics in order to preserve compositionality of the proposed structures (Kratzer 1996). In such a framework, ApplP would have to be of the appropriate type for QR, namely  $\langle s, t \rangle$ , where  $s$  stands for the event argument. Assuming that this is the case, if Appl<sup>0</sup> is the head that introduces D<sub>POSS</sub>, it crucially must be unable to bear the [q] feature. Otherwise, the derivation in (33) which results in the unattested inverse scope in DOC would incorrectly be allowed.



Appl<sup>0</sup> would thus be the only functional head in the vP domain which is not a possible QR site. If Appl<sup>0</sup> is not posited, the problem does not arise.

### 4 An empirical argument against Appl<sup>0</sup>

Besides the conceptual considerations presented in the previous section, there are also empirical data that argue against Appl<sup>0</sup> in the structure of DOC. Consider the Croatian verb *opskrbiti* ('to supply'), whose first argument is accusative (A), and the second instrumental (INST). Under neutral intonation, it can appear in two word orders: *A...V...INST* and *V...A...INST*. With this verb, the accusative is understood as the possessor of the DP denoted by the instrumental, i.e. it behaves as if it were D<sub>POSS</sub>. The quantifier scope between the two objects is frozen, as shown by (34).

- (34) a. Dan je jednu farmu opskrbio svakim strojem. *A...V...INST*  
 Dan Aux one<sub>.ACC</sub> farm<sub>.ACC</sub> supplied every<sub>.INST</sub> machine<sub>.INST</sub>  
 'Dan supplied a farm with every machine.'  $\exists > \forall, * \forall > \exists$

- b. Dan je opskrbio jednu farmu svakim strojem. *V...A...INST*  
 Dan Aux supplied one<sub>.ACC</sub> farm<sub>.ACC</sub> every<sub>.INST</sub> machine<sub>.INST</sub>  
 ‘Dan supplied a farm with every machine.’  $\exists > \forall, * \forall > \exists$

These data indicate that the verb *opskrbiti* only appears in a DOC, and cannot instantiate TDC. I conclude that the sentence in (34) has the same structure as the sentence in (27), despite the quirky case marking. An applicative analysis would thus predict that structures containing this verb cannot form nominalizations (being DOCs, they would necessarily contain Appl<sup>0</sup>). However, this prediction is not borne out – nominalizations of this verb are quite natural, as shown by (35).

- (35) opskrba farme strojevima  
 supply farm<sub>.GEN</sub> machines<sub>.INST</sub>  
 ‘supply of the farm with machines’

On the other hand, the fact in (35) is correctly captured by SCAN. Since, due to the quirky case marking, it is the goal that in a nominalization bears the genitive case, SCAN correctly predicts that nominalizing the structure is possible.

## 5 VDA word order

So far, we have seen arguments that out of the three possible word orders in which ditransitive verbs appear in Croatian, VDA instantiates DOC, and VAD instantiates TDC. In the Introduction I briefly stated that the third possible word order, VDA, will be shown to be ambiguous between DOC and TDC. This is because this word order has properties of both structures. Its dative DP is understood as a possessor in a two-goal structure, as shown in (36), and if the subject of a sentence is non-agentive, the sentence has a causative reading, exemplified in (37).

- (36) Mia je poslala Vidu knjigu u Zagreb. *V...D...A...PP<sub>LOC</sub>*  
 Mia Aux sent Vid<sub>.DAT</sub> book<sub>.ACC</sub> in Zagreb<sub>.ACC</sub>  
 ‘Mia sent Vid the book in Zagreb.’

- (37) Rat je dao Krleži knjigu. *V...D...A*  
 war Aux given Krleža<sub>.DAT</sub> book<sub>.ACC</sub>  
 ‘If it hadn’t been for the war, Krleža wouldn’t have written the book.’

At the same time, sentences with this word order do allow for inverse scope between the goal and the theme. This is shown in (38).

- (38) Doktor je dao jednoj tajnici svaki karton. *V...D...A*  
 Doctor Aux given one.<sub>DAT</sub> secretary.<sub>DAT</sub> every.<sub>ACC</sub> file.<sub>ACC</sub>  
 ‘The doctor gave to one secretary every file.’  $\exists > \forall, \forall > \exists$

However, when a sentence with a non-agentive subject is used and both objects are quantified, the scope becomes rigid:  $D > A$ .

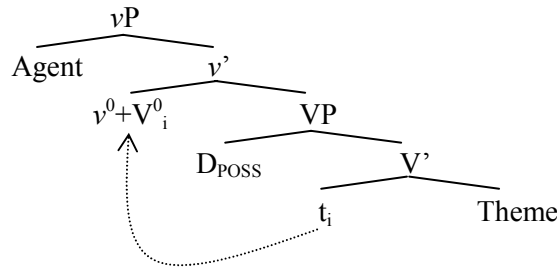
- (39) Rat je dao jednom piscu svaku knjigu. *V...D...A*  
 war Aux given one.<sub>DAT</sub> author.<sub>DAT</sub> every.<sub>ACC</sub> book.<sub>ACC</sub>  
 ‘The war gave an author every book.’  $\exists > \forall, * \forall > \exists$

Similarly, the scope between the dative and accusative freezes if the  $PP_{LOC}$  is added to the structure.

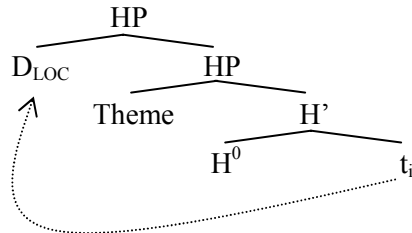
- (40) Dan je poslao jednom studentu svaku knjigu u Zagreb.  
 Dan Aux sent one.<sub>DAT</sub> student.<sub>DAT</sub> every.<sub>ACC</sub> book.<sub>ACC</sub> in Zagreb  
 ‘Dan sent one student every book to Zagreb.’  $\exists > \forall, * \forall > \exists$

The mixed properties of VDA can be accounted for if this word order can be derived either from a DOC structure, by the verb moving to  $v^0$ , as in (41), or from a TDC structure, by the  $D_{LOC}$  scrambling to adjoin the HP, as in (42).

- (41) VDA – underlyingly DOC



- (42) VDA – underlyingly TDC



This section completes the analysis of DOC in Croatian. We saw that the proposed structures and derivations derive all the semantic and syntactic properties of DOC/TDC in all three possible word orders in which Croatian ditransitive verbs appear. In the next sections I present independent evidence for the existence of the functional head  $H^0$ , and I discuss the applicative analysis that employs a *low* applicative head (Pykkänen 2002).

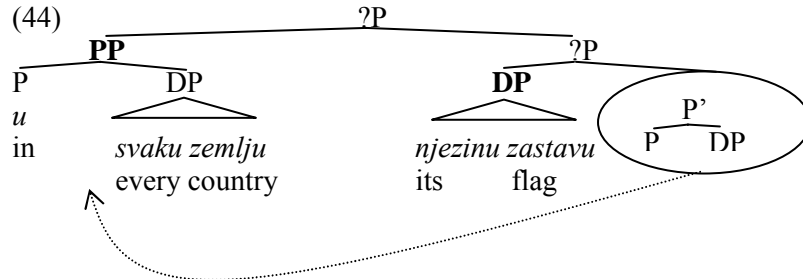
## 6 Independent evidence for $H^0$

The analysis of the contrast between DOC and TDC presented here does not posit a functional head ( $\text{Appl}^0$ ) that introduces and theta-marks the goal. However, it does posit a functional head ( $H^0$ ) that introduces (and theta-marks)  $D_{\text{LOC}}$  and other location phrases. From the conceptual point of view, these approaches might seem equally (un)desirable. Here I present an argument that shows that Croatian data cannot be accounted for without positing  $H^0$ , even if we keep  $\text{Appl}^0$  as the introducer of the benefactive/possessor. Thus, the comparison is not between the analysis with  $\text{Appl}^0$  vs. the analysis with  $H^0$ , but between the analysis with both  $\text{Appl}^0$  and  $H^0$  and the analysis with  $H^0$  only.

We have already seen that in Croatian, the object that linearly precedes the other also c-commands it. Consider an example in which the location phrase is a PP. Suppose that the PP contains a quantified DP, *svaku zemlju* ('every country') which binds a variable in the theme that follows it, as in (43). Suppose further that  $H^0$  is absent from the structure.

- (43) Hana je poslala u [svaku zemlju]<sub>i</sub> njezinu<sub>i</sub> zastavu.  
 Hana Aux sent in every<sub>.ACC</sub> country<sub>.ACC</sub> her<sub>.ACC</sub> flag<sub>.ACC</sub>  
 'Hana sent to [every country]<sub>i</sub> its<sub>i</sub> flag.'

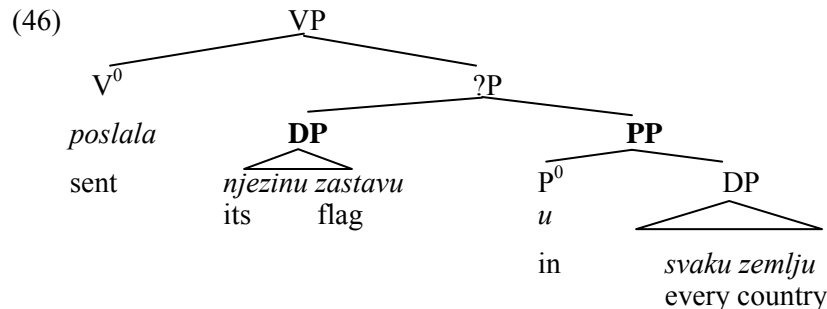
In order to obtain the word order in (43), the PP must have scrambled to a position that precedes the theme. Since in Croatian, overt prepositions cannot be stranded, the preposition, *u* ('in') must be pied-piped together with the DP. We thus obtain a structure in (44).



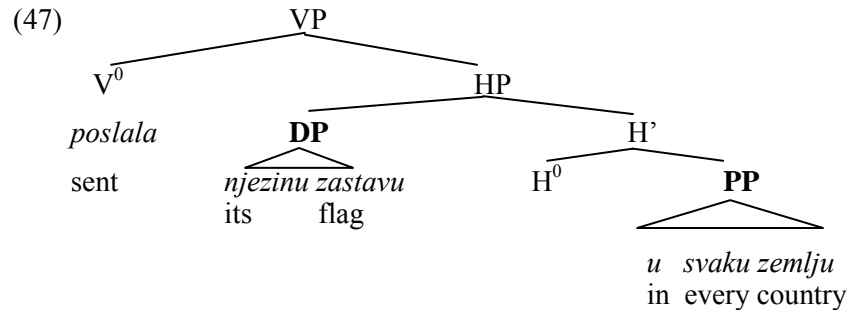
In (44), the quantifier, *svaku zemlju* ('every country') does not c-command the pronoun, *njezinu* ('her'), even though it *does* bind it. This is not surprising, since binding out of prepositional phrases in general seems to be allowed, as long as the relevant PP c-commands the variable to be bound. Thus, in (44), the nodes that seem to be relevant for determining c-command relations between the quantifier and the pronoun are the bold-faced PP and DP. If this is correct, it makes the following prediction: in the TDC word order in which the PP does not scramble, but instead follows the theme such as (45), backwards binding should be possible. This prediction is, however, not borne out.

- (45) \*Hana je poslala njezinu<sub>i</sub> zastavu u [svaku zemlju]<sub>i</sub>.  
 Hana Aux sent her.<sub>ACC</sub> flag.<sub>ACC</sub> in every.<sub>ACC</sub> country.<sub>ACC</sub>  
 'Hana sent its<sub>i</sub> flag to [every country]<sub>i</sub>.'

In other words, we expect the relevant nodes for determining c-command between the theme and the PP<sub>LOC</sub> to be those marked in the tree in (46) by bold-faced fonts, which *symmetrically c-command each other*.



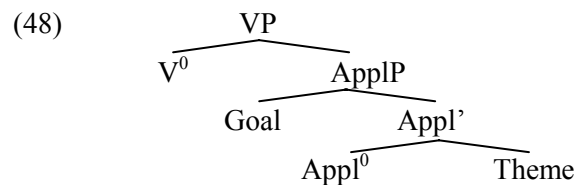
However, if the structure in (46) contains an additional functional head, between the theme and the PP<sub>LOC</sub>, as in (47), the c-command relation between PP<sub>LOC</sub> and DP no longer holds, and no binding is expected.



These data argue in favor of positing  $H^0$  in TDC *regardless* of whether  $Appl^0$  is posited in DOC or not. This constitutes independent evidence for positing  $H^0$  in the structure of TDC.

### 7 Low applicative head?

In this section, I briefly comment on the analysis in which DOC structure contains a low applicative head, proposed by Pylkkänen (2002). Pylkkänen proposes that the DOC in English (and other languages that have a low applicative head) contains a functional head below the verb, which establishes a relation ‘to/from-the-possession-of’ between the goal and the theme. The structure she proposes is given in (48).



Nothing in the analysis presented here excludes the syntactic tree in (48) as a possible correct representation for DOC in English (and Croatian DVA (and VDA) word orders). Crucially, given the semantic type of the low applicative, given in (49) below, ApplP would not be of the appropriate type for the QR of the theme, and the unattested quantifier scope (theme>goal) would be correctly excluded.

(49)  $\lambda x.\lambda y.\lambda f_{\langle e, s, t \rangle}.\lambda e.f(e, x)$  & theme (e, x) & to/from-the-possession (x, y).

However, we saw in the previous section that  $H^0$  is necessary, and that all the properties of DOC/TDC can be explained without reference to an



additional functional head present in DOC. More research is necessary to establish whether we need to appeal to the low applicative head as a separate functional head in the grammar in order to derive the properties that I believe can be derived by appealing to the verb alone.

## 8 Conclusion

In this paper I examined ditransitive sentences in Croatian. I proposed that out of the three possible word orders between the verb (V), the goal (D) and the theme (A), DVA is an instance of DOC, VAD is an instance of TDC, while VDA is ambiguous between the two. I developed a theory of the differences between DOC and TDC without positing Appl<sup>0</sup> in the structure of DOC. I showed not only that such a head is unnecessary for deriving DOC/TDC contrasts, but that it is also conceptually undesirable (since it would have to be the only functional head in the vP domain that does not provide a scope domain). I showed that an applicative analysis also fails empirically, in predicting that ditransitive structures containing an accusative and an instrumental argument do not nominalize, contrary to fact. Finally, I proposed that TDC obligatorily contains a functional head H<sup>0</sup>, and presented some independent evidence for it.

At the end of the paper I briefly discussed conceptual and empirical adequacy of the theory of DOC that posits a low applicative head (Pylkkänen 2002). I concluded that neither conceptually nor empirically does such an analysis share the problems of the one with the high applicative head, but it is unclear at the moment whether there is data which would make it empirically necessary.

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