Capturing Object Sharing in Ditransitives

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Recent work at the syntax-semantic interface (Pylkkänen 2002, and works influenced by her) has, by combining insights from previous analyses, reached the conclusion that multiple object constructions (applicatives, ditransitives) split into 'high' and 'low' constructions (see Jeong 2006 for extensive discussion). High Applicatives (HA) express relations between an individual (AO; applied object) and an event (1), and Low Applicatives (LA), relations between two individuals, IO and DO, indirect and direct object, respectively, (2).

(1) $[_{vP}\ v^{o}\ [_{HApplP}$ IO $[HAppl^{o}\ [_{VP}\ V^{o}$ DO$]]]]$

(2) $[_{vP}\ v^{o}\ [_{VP}\ V^{o}\ [_{LApplP}$ IO $[LAppl^{o}$ DO$]]]]$

In this paper I will not cast doubt on the high/low distinction, but instead show that it is incomplete. In particular, I will argue that it fails to capture a key aspect of the semantics of low applicatives. (High applicatives will remain untouched.) After characterizing this key aspect, I will propose a way to capture it. My proposal will relate low applicatives to serial verb and resultative constructions in terms of object sharing. If correct, it will provide an additional argument for the claim that movement into theta-position is licit.

1. Introducing Object-sharing

Many ditransitive events include a transitive action with an intended result, which itself is stative: something is located at some place or object, or something is in possession of some person. These two predicates can characterize the result of an action performed on z. The combination of a transitive action with a two-place stative result is usually linked by means of a shared argument. For example, if I sent a letter, and you received the letter, 'the letter' is the shared argument.

My main concern in this paper will be change-of-possession verbs like *give*, *send*, *buy*, etc. (I focus on these low applicative-enriched verbs, as I have nothing to add to Pylkkänen's discussion of high applicatives.) The third argument of these verbs is typically a recipient, a human or animate being who comes into possession of an object.

If we now turn back to representations like (2), it is obvious that such a structure is incomplete. In Pylkkänen's representation, a key factor of the meaning of low applicatives is missing. The structure in (2) correctly captures the resultative part of the meaning of LA: the fact that if 'John sent Mary a book', *Mary got the book*. Note that (2) is very close to a small clause/possessive DP structure (cf. Harley 2002). But (2) fails to express what Pietroski (2003) calls the 'transfer' part of the meaning of LA, that is, the fact that if 'John sent Mary a book', *John sent the book* (with the intention of getting the book to Mary). Since the intended meaning is 'Mary got a book as a result of John's having sent it', the fact that 'John sent a book' needs to be represented; otherwise, one can never be sure about the source of 'the book', that is, one could imagine a scenario such that John sent a gift card from Barnes and Noble's to Mary and she bought a book with the gift card that she had been received from John. This situation cannot be described as '*John sent Mary a book*.' This is not what the low applicatives mean.

In light of this fact, Pietroski makes a good case that for the transfer aspect of meaning of low applicatives, DO is clearly an argument of the verb. This is readily captured by means of a standard representation for ditransitives like (3).

(3) $[_{vP}$ Ext. Arg. $v^{o}\ [_{VP}$ DO $[V^{o}$ IO$]]]$

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But although (3) is adequate at some semantic level, it is quite clear that it is inadequate syntactically, based on various asymmetries between IO and DO, where IO is superior to DO (see Barss and Lasnik 1986; Jeong 2006).

The central proposal of this paper is that *both* (2) and (3) are needed to fully account for the properties of LAs. Specifically, I propose that (2) and (3) be combined in a way that is very reminiscent of serial verb constructions: as an object sharing structure. To make my proposal clear, I will first illustrate the object sharing property of serial verbs, which has been thoroughly investigated in the literature.

A common descriptive characterization of serial verb constructions, which are widely observed in West African languages and Creole languages, is that they are clauses that have a single tense node, but two or more verbs, with no overt markers of coordination or subordination. Among various characteristics of serial verb constructions, 'object-sharing' has been by far in the center of interest, because of the issue of how to formally represent the property of object-sharing.

As is well-known, in serial verb constructions (e.g. (4)), an object has a dual thematic status, a fact that has often been captured in terms of the object of Verb-1 necessarily binding a phonetically null argument (*pro*) of Verb-2 (5a), which is more or less equivalent to control constructions as in (5b).

(4) Òzó lé èvbàré ré (Edo)
Ozo cook food eat
'Ozo cooked and ate food'

(5) a. Òzó lé èvbàré$_i$ ré *pro*$_i$
≈ Ozo cooked food and ate *it*
b. John persuaded Mary$_i$ [PRO$_i$ to leave]
≈ John persuaded *Mary* that *she* should leave

Baker and Stewart (2002) claim that serial verb constructions are like relative clauses in the sense of Williams (1980) in that the second verb phrase is in effect an adjoined structure predicated to the first verb phrase, and that in (consequential) serial verb construction (CSVC), the empty object of a second verb is *pro*, which is coindexed and corefers with the object of a first verb. The reason they assume *pro* in CSVC is that the second verb is a transitive verb and thereby it introduces vP2, whose head is a transitiviser, assigning accusative Case (roughly, their *v*P is like AGRoP).

(6) a. Musa du etsi kun (Nupe)
Musa cook yam sell
'Musa cooked a yam and sold it'

b. [$_{\text{VoiceP}}$ *Musa* [Voice^{o} [$_{\text{AspP}}$ Asp^{o} [$_{v\text{P}}$ [$_{v\text{P}}$ v^{o} [$_{\text{VP}}$ *yam*$_i$ *cook*-V^{o}]] [$_{v\text{P}}$ v^{o} [$_{\text{VP}}$ *pro*$_i$ *sell*-V^{o}]]]]]]
case case

As a starting point for my alternative, I would like to point out that argument sharing is not restricted to serial verb constructions; it is also a property of (obligatory) control structures. This property of obligatory control is standardly captured in terms of binding (co-indexing) of an empty argument (PRO) (much like *pro* in serial verbs), but it follows more straightforwardly under Hornstein's (1999) analysis, where 'PRO' and the controller are the same element (ensuring coreference). Taking Hornstein's lead, I would like to argue that argument sharing is the result of movement driven by the checking of a theta-feature. Specifically, I claim that the *pro* posited by Baker and Stewart in the context of serial verb constructions is actually a trace/copy left behind after movement of 'a yam' (6b). (Movement here must proceed sideways, at a point where the two VPs haven't been connected yet, to avoid a CED-violation/ban on movement out of adjuncts. For extensive motivation for this kind of movement, see Nunes 2004, Hornstein 2001.) The movement operation is illustrated in (7).

(7) a. $[_{VP}$ *yam*$_i$ *cook*-V^o] $[_{VP}$ <*yam*>$_i$ *sell*-V^o]

sideward movement

b. $[_{vP}$ *Musa* *v*^{o} $[_{VP}$ $[_{VP}$ *yam*$_i$ *cook*-V^o]] $[_{VP}$ <*yam*>$_i$ *sell*-V^o]]]]]]

Movement readily captures why co-construal of the objects of the shared verbs in serial verbs is necessary. It literally captures object sharing, unmediated by an empty category like *pro*. It seems to me that literal object sharing offers the possibility to capture the unified macro-event semantics that characterizes serial verbs that Pietroski focuses on. The idea, which I will also express below in the context of low applicatives, is that by ensuring co-indexing of objects via movement/object-sharing, the syntax forces the semantics to interpret all the subevents that relate to the shared object contained within a VP-domain as 'connected' parts of a whole event structure expressed within the VP-shell. Put differently, if the Object 1 that relates to Event E is the same as the Object 2 that relates to Event E', by transitivity, E and E' are related to one another, which I assume is interpreted as E and E' being part of a macro-event. (Note that I am not claiming that argument-sharing immediately and necessarily entails event-unification. There are other conditions on event-union (all sub-events must be contained within one VP-shell; sub-events cannot be separated by Tense-nodes specified for different values, etc.). All I am claiming is that in the situations in VP-shells where one wants event-unfication, literal argument-sharing via movement ensures it.)

It is this notion of object sharing which I would like to extend to double object constructions. That is, I would like to argue that the object-sharing properties of low applicatives to be syntactically encoded via movement of the relevant object from one theta-position to another.

2. Deriving the semantics of double object constructions

As already mentioned, in order to grasp the complete meaning of *John sent Mary a book*, we need both (2) and (3) to represent the *transfer* of *x* and the coming of *x* into *possession* of *y*, as a *result* of the transfer of *x*. So, there are two key aspects of low applicatives to capture: the dual role of *x*, and the connection between the events that each are responsible for assigning a role to *x*. Based on my discussion of serial verbs, I argue that these key aspects of low applicatives can be made to follow if we find a way for the direct object to reside in Spec VP (transfer-role) and in the complement position of the low applicative head (possession-role), and if both positions are connected via movement, as in (8).

(8) $[_{vP}$ *John* $[v^o$ $[_{VP}$ *a book*$_i$ $[V^o$ $[_{LApplP}$ IO $[LAppl^o$ <*a book*>$_i$]]]]]

In (8), DO starts off in a projection where it thematically related to IO (this is essentially (2)). DO then moves to SpecVP, where it becomes a direct argument of the verb (essentially as in (3)). Following Hornstein (1999), I assume that a theta-role can drive movement just like any other formal feature: *a book* checks two theta features, one with LAppl head, i.e. possessee, and the other with the verb *sent*, i.e. theme. By doing so, we can capture the full semantics of low applicative.

Having discussed the semantic consequences of a structure like (8), I now want to address some syntactic issues that arise under this derivation. Note that in order for DO to reach SpecVP, it has to cross IO, in apparent violation of Relativized Minimality (Rizzi 1990). There are two possible solutions to circumvent the minimality problem, or rather, two ways of expressing the same intuition that somehow IO doesn't count when DO moves to SpecVP.

The first implementation would amount to assuming that IO moves overtly to a position higher than the final landing site of DO, and then let DO move in a separate covert component, after the intervening IO has become a trace. Assuming that traces don't count for intervention (Chomsky 1995, 2001; Uriagereka 1988), no minimality problem will result. The sequence of operations is illustrated in (9-10).

(9) $[_{vP}\ \textit{Mary}_j\ [_{vP}\ \textit{John}\ [v^o\ [_{VP}\ V^o\ [_{LApplP}\ <\textit{Mary}>_j\ [LAppl^o\ \textit{a book}]]]]]]$

(10) $[_{vP}\ \textit{Mary}_j\ [_{vP}\ \textit{John}\ [v^o\ [_{VP}\ \textit{a book}_i\ [V^o\ [_{LApplP}\ <\textit{Mary}>_j\ [LAppl^o\ <\textit{a book}>_i]]]]]]]$

Alternatively, one could avoid resorting to a separate covert component and claim, with Chomsky (2001), that locality is computed not strictly derivationally, but upon completion of a given domain (a phase, for Chomsky). Specifically, Chomsky argues that no minimality/intervention effect will result at the *v*P-level if the potential intervener raises beyond the landing site of the element whose movement it may block, by the time the *v*P level is completed, as schematized in (11). (Note that this 'phase'-based solution to the minimality problem requires DO to bear inherent case, otherwise, DO would block movement of IO even if minimality is evaluated at the phase-level. However, IO movement is possible if DO bears inherent case, which has been argued to be inert for purposes of attraction to a case-assigning head (see McGinnis 1998 for independent evidence for this claim.)

(11) * $[_{vP}$ X … [Y … [**W** …[t_Y]]]]

√ $[_{vP}$ W X [Y … [$\boldsymbol{t_W}$ … [t_Y]]]]

3. Low Applicatives and Resultatives

So far I have claimed that movement of DO into the specifier position of VP in the domain of low applicatives is necessary for DO to get its second theta-role, which is assigned by V – thereby capturing the fact that DO bears a dual thematic role in low applicatives. As far as I can see, this theta-role driven movement of DO is necessary to fully represent the thematic relations of the sort that we see in the current study. While the previous section approached the object-sharing issue from the point of view of serial verb constructions, in this section I will focus on the relationship among subevents that follows from object-sharing by taking a closer look at resultative constructions in general.

That there is a semantic connection between serial verbs, ditransitives of the English type and resulatives is not new; what is new here is that the present approach emphasizes the structural and derivational uniformity among these three constructions, from which semantic similarity follows. Notice that I am not claiming that all three constructions are identical; there are differences that argue for keeping the three constructions distinct. For example, not all languages need to have all three constructions if they have one or two. But my main point in this section is that there are enough similarities to warrant a closer look.

Resultative constructions (RCs) are single clause constructions comprising two predicates, a main predicate and a result predicate; neither predicate is introduced by a conjunction, adposition, or complementizer. Semantically, RCs express a relation of causation between the eventualities described by the main and result predicates. (12) illustrates a typical transitive adjectival resultative construction.

(12) John hammered the metal flat

The understood thematic relations of subject and object to the event of the main predicate *hammered* is that *John* is the agent of hammering and *the metal* is its patient; and as a result of *John's hammering the metal*, *the metal* went through a change of state and became flat. Simply put, (12) can be paraphrased as (13).

(13) John hammered the metal and it (the metal) became flat (as a result of John hammering it)

By now such object-sharing paraphrases should be familiar. What we see in (13) is a dual thematic role for the object and an event-unification that are strongly reminiscent of serial verb and low applicative constructions. It is therefore natural to try to extend to resultatives the theta-driven movement analysis I have pushed for these constructions. In a nutshell, I will argue that the shared element will move from within its thematic position in the small clause to another thematic position inside the main VP-domain.

Consider typical transitive verbs like *paint* that participate in resultative constructions.

(14) a. John painted the wall blue
b. John painted the wall and it (the wall) became blue

In (14), *the wall* is involved in two thematic relations: *the wall* is *what John painted* and also *what became blue*. It starts out as a specifier of small clause, receiving or checking its theta-feature with the adjective, and then moves from there to Spec VP, where *the wall* receives its second theta role from V. By receiving two theta-roles, the object connects the two events, and thereby it brings them together into one big-event.

(15) $[_{vP}$ *John* $[v^{o}$ $[_{VP}$ *the wall*$_i$ $[V^{o}$ $[_{\text{Small-Clause}}$ <*the wall*>$_i$ *blue*]]]]]

V Θ V Θ

case

When it comes to resulatives involving intransitive, specifically unergative verbs like *run*, several cases must be considered, as shown in (16).

(16) a. John ran himself tired
b. John ran his Nikes threadbare

Let me focus on the so-called 'fake reflexive' cases (16a) first. If I am correct, movement must be involved to provide the necessary glue among subevents. And movement can be implicated if we follow Hornstein (2001) in taking reflexives to be modified copies left by movement. Specifically, in this context, a copy of *John*, which moves from Spec SC to Spec vP.

(17) $[_{vP}$ *John*$_i$ $[v^{o}$ $[_{VP}$ *ran*-V^{o} $[_{\text{Small-Clause}}$ <*John*>$_i$*-self tired*]]]]

In (17), *John* starts out as a specifier of the resultative small clause, where it receives a theta-role from *tired*. I assume that *John* also receives inherent case in this position, a point I come back to momentarily. V is introduced, but the verb *run* doesn't have additional theta-role to assign, so no movement of *John* occurs. But *v* needs to assign agent theta-role, and the only candidate here is *John*, so *John* moves to Spec of vP. This is the key difference between unergatives and transitives in resultative constructions. In the former, movement targets Spec*v*P; in the latter, SpecVP. The difference derives from the different thematic requirements imposed by the two types of verb.

Back to the structure (17), I assume that *himself* must be pronounced (**John ran tired*), but for a reason different from Hornstein (2001). According to Hornstein, reflexives found in situations like *John likes himself* are pronounced to avoid the creation of a chain that would bear multiple cases. At first sight, Hornstein's claim appears to cover the relevant data discussed here. Like Hornstein, I assume that each pronounced copy must be case-licensed, hence SpecSC is a case position, specifically

for me, an inherent case position. (I also assume that *v* in unergative contexts is defective; that is, it cannot be as full-fledged *v* as in transitive context; what I mean by 'defective' is that it has no ability to assign accusative case. So the ungrammaticality of **John ran himself* follows at once.) But even if I treat SpecSC as a case-position, I cannot adopt Hornstein's claim that a copy-reflexive is required in each case position, since I would then predict '*John painted the wall itself blue*' to be the PF form of the derivation in (15), since *the wall* would head a chain to which two cases have been assigned. So, I conclude that case is a necessary, but not a sufficient condition for copy-pronunciation. So, if case cannot be the factor forcing a copy to be pronounced as a trace, why should the copy-reflexive surface in (17)?

The generalization appears to be that if an element bears multiple distinct thematic relations within a thematic domain, each relation must be realized overtly and each copy, suitably modified, must be case-licensed (see Grohmann 2003 for the first explicit claim to this effect). What counts as distinct? For Grohmann, any theta-role counts as distinct. But this is too strong, as it would also predict '*John painted the wall itself blue*' to be correct. For me, Agent and 'resultee' (often called 'Attribute' or 'Theme') must be distinct; they are prototypical cases of [External] and [Internal] roles. But 'resultee' and 'Theme', being both prototypical [Internal] roles count as non-distinct, hence don't require multiple-copy pronunciation. Put differently, 'resultee' and 'theme' are basically two different names for the same thematic value, hence they count as non-distinct. Notice indeed that so far the multiple thematic relations we have dealt with all involve [internal] theta-roles (assigned in SpecVP, in the complement of LApplP, and in SpecSC). So for these cases, no multiple copy-pronunciation is required (we therefore capture the badness of **the lake froze itself solid*/**John painted the wall itself blue* by saying that since *the lake*/*the wall* bear two non-distinct theta-roles, only one copy of the chain they head must be pronounced.).

Consider now the following examples.

(18) a. John cried his eyes red
b. *John cried his mother's eyes red

While (18a) is acceptable, (18b) isn't. In the spirit of Hong (2005), and Kayne (2002), I would like to suggest that in (18) the pronoun *his* is a residue of movement of *John*, like the reflexive pronoun *himself* in (17); here are how the derivations in (18a) and (18b) proceed.

(19) a. John cried his eyes red
b. $[_{vP}$ *John*$_i$ $[v^o$ $[_{VP}$ *cried*-V^o $[_{\text{Small-Clause}}$ <*John*>$_i$-*'s eyes red*]]]]

(20) a. *John cried his mother's eyes red
b. $[_{vP}$ *John*$_i$ $[v^o$ $[_{VP}$ *cried*-V^o $[_{\text{Small-Clause}}$ [[<*John*>$_i$-*'s*] *mother*]*'s eyes red*]]]]]

In (19), *John's eyes* receives a theta role from the adjective *red* within the small clause, then when *v* is introduced, which needs to discharge agent theta role, attracts *John* to its specifier position; note that *John* is the only possible argument to check agent theta role with *v*, *John's eyes*, not being [+animate], cannot. The badness of (20) is straightforward: this follows from the A-over-A constraint. If one has to move an argument from the SC to check theta role with *v*, it should be *John's mother* since it is animate and could receive the Agent theta-role from *v*.

Let me now turn to unaccusatives. Some unaccusatives appear to allow for resultative complements (21), like *steam* and *boil*, while others, like *arrive*, don't. The adjective in (44) is a depictive phrase.

(21) a. The clothes steamed dry
b. The kettle boiled dry

(22) John arrived tired

The key difference appears to be that unaccusatives like *arrive* can never be used in a transitive context (in English, for reasons that are not completely clear) (24), whereas *steam* or *boil* can, as in (23).

(23) a. John steamed the clothes dry
b. I boiled the kettle dry

(24) *John arrived Mary tired

I take this to mean that *steam* and *boil* can license SpecVP in addition to a complement, whereas verbs like *arrive* cannot. Accordingly, *steam* and *boil* allow for the following derivations depending on in which context they will appear.

(25) a. The clothes steamed dry
b. $[_{TP}$ *The clothes*$_i$ $[T^o$ $[_{VP}$ <*the clothes*> *steamed*-V^o $[_{Small\text{-}Clause}$ <*the clothes*>$_i$ *dry*]]]]

4. Conclusion

In this paper, I have argued that the recent treatment of ditransitives of the English kind as LAs offered by Pylkkänen (2002) is incomplete semantically-speaking, as it only captures half of the thematic properties of the construction. To remedy this problem I have argued that ditransitives involve object-sharing, captured via theta-driven movement, a derivational process that they share with serial verbs and resultative constructions. I have argued that object-sharing viewed as movement may be the source of macro-event formation, the glue that connects subevents together. If correct, the present paper offers yet another argument for movement into theta-position.

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