

# On the Syntax of External Possession in Korean

REIKO VERMEULEN

*University College London*

## 1. Introduction

The relation of possession is expressed in great many ways across languages. One typical way is for the possessor to appear in the genitive case inside the nominal projection headed by the modified argument. However, a number of languages also permit the possessor to be realized as a separate constituent at the clausal level, especially if the modified argument is an object. Such externally realized possessors often behave like clausal arguments themselves, giving the appearance that the clause contains one too many argument for the type of predicate that heads the clause. This phenomenon is often referred to as ‘external possession’ in the literature (Payne & Barshi 1999) and is illustrated by the Korean example below.

- (1) Mary-ka John-ul ecey tali-lul cha-ss-ta  
Mary-Nom John-Acc yesterday leg-Acc kick-Past-Decl  
‘Mary kicked John’s leg yesterday.’

Here, *John*, a possessor of the object *tali* ‘leg’ bears accusative case and is realized externally to the object. That *John* does indeed occupy a position

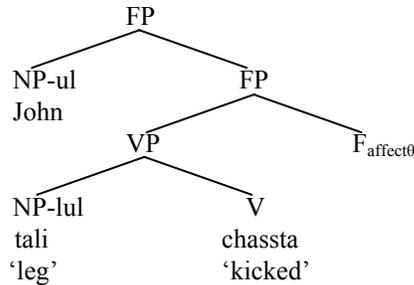
at the clausal level can be seen from the fact that a clausal adverbial such as *ecey* ‘yesterday’ can appear between the two accusative phrases. In the literature on Korean, the construction is known variously as the multiple accusative construction, the possessive accusative construction or the inalienable possessive construction.

A well-known property of this construction is that the external possessor is necessarily interpreted as ‘affected’ by the event described by the verb (Yoon 1989, 1990). This constraint is said to explain the unacceptability of examples such as (2): it is difficult to construe *Mary*, the external possessor of *moksoli* ‘voice’, as being affected by John hearing her voice.

- (2) \*John-i Mary-lul moksoli-lul tul-ess-ta  
 John-Nom Mary-Acc voice-Acc hear-Past-Decl  
 ‘John heard Mary’s voice.’ (Yeon 1999: 219)

It has recently been proposed that the external possessor is licensed in a specifier position of a designated functional projection, indicated as FP in (3), whose head assigns it an *affect*  $\theta$ -role (Ko 2005, Tomioka & Sim 2005<sup>1</sup> for Korean, Pytkänen 2002 for Hebrew, Lee-Schoenfeld 2006 for German). Tomioka & Sim (2005), for example, argue that FP and VP represent separate events, which are subsequently identified. Consequently, the example in (1) means ‘Mary affected John by kicking his leg’.

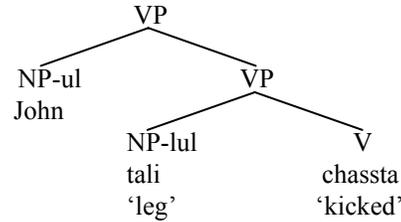
(3) Distinct Projection Approach



In this paper, I propose that the external possessor is in fact licensed within the VP, as in (4), and argue against the distinct projection approach.

<sup>1</sup> Tomioka & Sim (2005), in contrast to the others listed above, argue that the projection represented as FP in (3) is in fact headed by a lexical verb, a phonologically silent verb with the meaning *affect*. Thus, it is a lexical projection, VP, rather than a functional one. However, whether FP in (3) is lexical or functional does not affect the discussion in this paper. The crucial point is that it is a projection distinct from the VP headed by the overt, lexical verb.

## (4) VP approach



Specifically, I will argue that the external possession construction involves a thematic operation, which I will call ‘reassociation’. The operation essentially allows the external possessor to be licensed as an additional argument of the verb (Section 2). The proposal makes some correct predictions regarding the syntactic properties of the construction, which are difficult to capture under the distinct projection approach (Section 3). The proposal also has advantages over other previous analyses which adopt the VP approach, but adopt different types of thematic operations (Section 4). Finally, I argue that the affected interpretation arises due to pragmatics rather than due to a grammatically defined  $\theta$ -role with the meaning *affect* (Section 5).

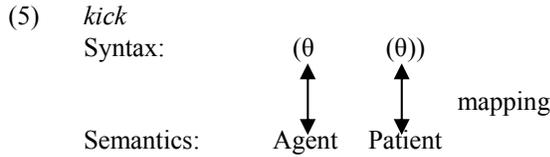
The paper concentrates on external possession involving object in Korean. Potential extension of the proposal to other types of constructions, such as external possession involving subject, which is attested in some languages, including Korean, is discussed in the concluding section (Section 6).

## 2. Reassociation

It is widely assumed that  $\theta$ -roles are purely syntactic objects and are mapped onto particular semantic representations only at the interface (Grimshaw 1990, Jackendoff 1983, 1990, Zubizarreta 1987, among many others). Thus, in the syntax, verbs such as *kick* simply have two  $\theta$ -roles in its  $\theta$ -grid and the  $\theta$ -roles are associated with their corresponding semantic roles *Agent* and *Patient* only at the interface, as illustrated in (5). More formally, assuming that the verb *kick* has a semantic representation like the one in (6a), the semantic roles refer to parts of this representation which are relevant for interpreting the arguments as *Agent* and *Patient* of a kicking event, namely the representations in (6b) and (6c), respectively. An argument that is assigned a particular  $\theta$ -role usually also replaces the variable in the semantic representation associated with that  $\theta$ -role.<sup>2</sup> In other words,

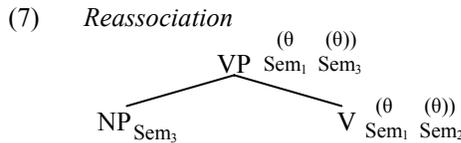
<sup>2</sup> The proposed analysis does not depend on the neo-Davidsonian approach to semantics. I adopt it here only because it allows simple exposition of which part of semantic information is associated with a  $\theta$ -role. Moreover, although the representations in (6b) and (6c) are presented as autonomous entities, I will remain agnostic as to their independent existence.

argument-licensing involves two processes:  $\theta$ -role assignment (syntactic licensing) and replacement of a variable in the associated semantic representation (semantic licensing).



- (6) a. *kick*:         $\lambda y \lambda x \lambda e$  [kicking (e) & Agent (e, x) & Patient (e, y)]  
 b. Agent:         $\lambda x \lambda e$  [Agent (e, x)]  
 c. Patient:        $\lambda y \lambda e$  [Patient (e, y)]

The view that  $\theta$ -roles and their associated semantic representations exist independently of each other suggests that a single  $\theta$ -role can, in principle, be associated with more than one semantic representation in the course of a derivation, if an intelligible interpretation can be obtained. More specifically, a derivation such as (7) should be possible. Here, the verb's internal  $\theta$ -role is associated with one semantic representation, *Sem*<sub>2</sub>, at V, but at VP it is associated with another representation, *Sem*<sub>3</sub>, which is linked to the verb's complement, NP. I argue that such an operation, which I call *reassociation*, is indeed possible and it licenses external possession.<sup>3</sup>

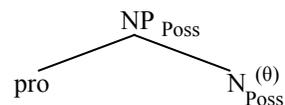


*Reassociation* is possible only if *Sem*<sub>3</sub> contains an unbound variable. Otherwise, an argument that may be assigned the verb's  $\theta$ -role reassociated with *Sem*<sub>3</sub> cannot be licensed semantically. When does such a situation arise, however? It arises if the NP in the above structure is headed by an argument-taking noun and if that argument is realized as a bound pronoun. A bound pronoun can, of course, function as a syntactic argument and therefore be assigned a  $\theta$ -role, but it translates as a variable in the semantics, because it depends on another item in the sentence for its interpretation.

The point is illustrated below in (8a) for the case of Korean external possession. The noun's possessor argument is realized as *pro* internally to the nominal projection. It is assigned the noun's  $\theta$ -role, but in replacing the

<sup>3</sup> The  $\theta$ -Criterion (Chomsky 1981) presumably applies to the combination of a  $\theta$ -role and its associated semantic representation. As such, reassociation does not cause a violation of the Criterion.

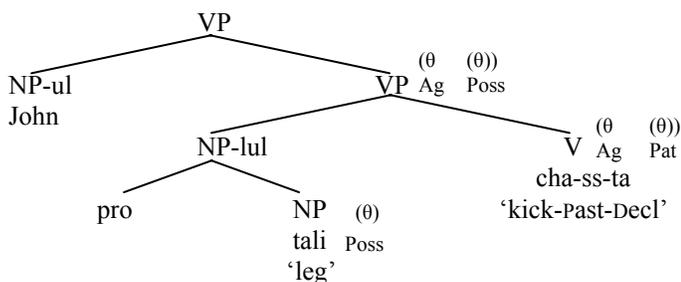
variable in the associated semantic representation *Poss*, shown in (8c), the pronoun, represented as *z*, leaves an unbound variable in the representation, as in (8d).<sup>4</sup> The absence of the associated  $\theta$ -role for *Poss* at NP indicates that the  $\theta$ -role has been assigned.

- (8) a. 
- b.  $\llbracket N \rrbracket$ :  $\lambda y \lambda x [n(x) \ \& \ \text{Possessor}(y, x)]$   
 c. Poss at N:  $\lambda y \lambda x [\text{Possessor}(y, x)]$   
 d. Poss at NP:  $\lambda y \lambda x [\text{Possessor}(y, x)](z) \rightarrow \lambda x [\text{Possessor}(z, x)]$

In the semantics, I argue that reassociation has the effect of introducing a lambda operator into the representation that would otherwise contain an unbound variable, as shown below.

- (9) *Reassociation*:  $\lambda x [\text{Possessor}(z, x)] \rightarrow \lambda z \lambda x [\text{Possessor}(z, x)]$

If (8a) appears as an internal argument of the verb, the verb's internal  $\theta$ -role can undergo reassociation with *Poss* and license an additional internal argument. This additional argument, I argue, is the external possessor, as illustrated in (10).

- (10) 

The external possessor *John* is licensed syntactically as a direct object of the verb, as it receives an internal  $\theta$ -role of a transitive verb, but is interpreted semantically as a possessor of the verb's thematic object, as the associated semantic representation specifies it as such. A slightly more detailed semantic derivation of this structure is provided in the appendix.

The structure in (10) has the effect that *pro* is bound by the external possessor *John*. Thus, as far as the binding is concerned, it is similar to cases where a pronoun is bound by a non-quantificational NP, as in the following example (Reinhart 1983).

<sup>4</sup> See Vergnaud & Zubizarreta (1992), Ura (1996), and references therein for the view that a possessee assigns its possessor a  $\theta$ -role.

- (11) John<sub>i</sub> loves his<sub>i</sub> mother and Bill<sub>j</sub> does [~~love his<sub>j</sub> mother~~] too.

Moreover, there is evidence for the existence of *pro* within the NP headed by the possessee argument. As noted by Cho (1992, 1993), a pronoun that is coreferential with the external possessor can be spelled out in this position:<sup>5</sup>

- (12) <sup>?</sup>Mary-ka John<sub>i</sub>-ul [(ku<sub>i</sub>-uy) tali]-ul cha-ss-ta  
 Mary-Nom John-Acc he-Gen leg-Acc kick-Past-Decl  
 (Cho 1992: 19)

A final remark on reassociation is that it involves a  $\theta$ -role of a verb. It therefore seems reasonable to assume that the representation with which the  $\theta$ -role undergoes reassociation would be linked to an argument of the verb. This seems to be in line with other kinds of thematic operations such as light verb constructions, which typically involve verb's arguments.

### 3. Predictions

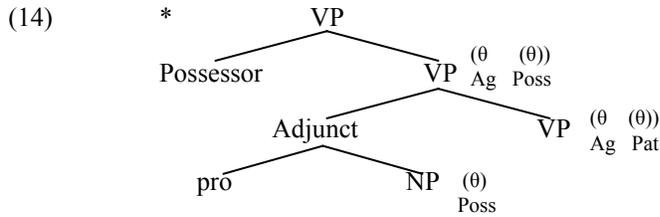
The proposed analysis makes three predictions regarding the syntactic behavior of the construction. The predicted properties are difficult to capture under the distinct projection approach. Firstly, the distinct projection approach, particularly Tomioka & Sim's (2005) implementation, assumes that two events are represented. It should therefore be possible to modify the lower VP in (3) consisting of the lexical verb and its thematic object with adverbials such as *tasi*, 'again', which is able to target the smallest event unit (von Stechow 1998, Son 2004 and references therein).<sup>6</sup> However, the prediction is not borne out, as illustrated by (13). That such modification does not result in semantic anomaly is shown by the grammaticality of the English translation. By contrast, the VP approach presented here predicts this property, as only one event is involved.

- (13) \*Mary-ka John-ul tasi tali-lul cha-ss-ta  
 Mary-Nom John-Acc again leg-Acc kick-Past-Decl  
 Intended: 'Mary affected (annoyed) John by again kicking his leg.'

Secondly, as mentioned above, reassociation involves arguments of the verb. Thus, it should be impossible for the possessee to be contained inside an adjunct, as illustrated below.

<sup>5</sup> Kitahara (1993) reports similar examples to those in (12) as ungrammatical. D.-I. Cho (1992, 1993) notes however that the acceptability of the example with an overt *pro* improves if the possessor is scrambled away from the *pro*, and attributes the effect to Avoid Pronoun Principle (Chomsky 1981). My informants agree with Cho's judgments.

<sup>6</sup> Thanks to Satoshi Tomioka for pointing this property of *again* out to me (p.c.).



The ungrammaticality of the example in (15a) shows that the prediction is borne out. Here, *cipwung* ‘roof’ is contained inside an adjunct and its possessor *cip* ‘house’ cannot be licensed externally. The grammatical example in (15b), where *cipwung* ‘roof’ is an internal argument of the verb, shows that the relation between *cip* ‘house’ and *cipwung* ‘roof’ is a type that can be supported by external possession.

- (15) a. \*Mary-ka cip-ul/ey/eyse cipwung-eyse  
 Mary-Nom house-Acc/Dat/on roof-on  
 John-ul cha-ss-ta  
 John-Acc kick-Past-Decl  
 ‘Mary kicked John on the roof of the house.’
- b. John-i cip-ul cipwung-ul busu-ess-ta.  
 John-Nom house-Acc roof-Acc destroy-Past-Decl  
 ‘John destroyed the roof of the house.’

Unless some independent restrictions are put in place, it is unclear how the above contrast can be accounted for under the distinct projection approach.

Finally, reassociation is potentially a recursive operation: as long as an intelligible interpretation can be obtained from the derivation, there is no restriction on its application. It should therefore be possible for an external possessor itself to be a noun that takes a possessor argument and to license a further external possessor. In other words, more than one external possessor should be permitted within a clause. The example in (16) shows that the prediction is correct (Yoon 1989, *inter alia*). *John* is the external possessor of *tali*, ‘leg’, which in turn is the external possessor of *olunccek* ‘right side’.

- (16) Mary-ka John-ul tali-lul olunccek-ul cha-ss-ta  
 Mary-Nom John-Acc leg-Acc right.side-Acc kick-Past-Decl  
 ‘Mary kicked the right side of John’s leg.’

The above observation is difficult to capture under the distinct projection approach. It would have to assume that the head that licenses an external possessor can be introduced into the structure recursively. However, from a theoretical point of view, this seems an undesirable claim to make, as heads responsible for introducing arguments, be they functional or lexical (see footnote 1), are not usually introduced into the structure recursively.

#### 4. Alternative Approaches in terms of a Thematic Operation

There have been other analyses of external possession in Korean that assume some sort of a thematic operation. Many assimilate their proposed thematic operations to  $\theta$ -identification (Higginbotham 1985, Speas 1990) or Function Composition (Williams 1994 or in the sense used in Categorical Grammar) with varying effects. In this section, I demonstrate in what ways the present analysis has advantages over them.

J. H.-S. Yoon (1989, 1990) argues that the relevant thematic operation is  $\theta$ -identification, where the verb's internal  $\theta$ -role is not assigned to the possessee, but is rather identified with or modified by the  $\theta$ -role in the possessee's argument structure. Similarly, J.-M. Yoon (1997), who argues that the relevant operation is Function Composition, proposes that the verb does not assign its  $\theta$ -role to the possessee. The verb simply 'combines' with the possessee, and the possessee's unassigned  $\theta$ -role is inherited by the argument structure of the verb. In both analyses, one implication is that the possessee is not licensed as an internal argument of the verb and as a consequence, it should not behave like one. However, this prediction is incorrect and there are two pieces of evidence for this.

Firstly, in Korean, nominative and accusative arguments can float quantifiers (Gerds 1987). It turns out that the external possessor as well as the possessee can host a floating quantifier:

- (17) a. Kay-ka haksayng-ul seys-ul tali-lul mul-ess-ta  
 dog-Nom student-Acc three-Acc leg-Acc bite-Past-Decl  
 'The dog bit three students on the leg.' (O'Grady 1991: 71)  
 b. John-un kemi-lul tali-lul seys-ul ppop-ass-ta  
 John-Top spider-Acc leg-Acc 3-Acc pull.out-Past-Decl  
 'John pulled out three of a spider's legs.'

Secondly, both the external possessor and the possessee can function as the subject of a resultative predicate, a property typical of direct object, and arguably subject, but not of indirect object or non-arguments (Wechsler & Noh 2001 and references cited there). The point is illustrated below for the external possessor in (18a) and for the possessee in (18b).

- (18) a. John-un Mary-lul yeppu-key [meli-lul kkak-(ass)]-ko  
 John-Top Mary-Acc pretty-Comp hair-Acc cut-Past -and  
 [iphi-ess-ta]  
 dress-Past-Decl  
 'John cut Mary's hair and dressed her and as a result she looks pretty.'  
 b. Mary-ka John-ul tali-lul mengtul-key cha-ss-ta  
 Mary-Nom John-Acc leg-Acc bruised kick-Past-Decl  
 'Mary kicked John's leg until the leg is bruised.'

Mailing & Kim (1992) also propose an analysis in terms of  $\theta$ -identification, although with a different interpretation from J. H.-S. Yoon (1989, 1990). Crucially, they argue explicitly that the external possessor is not an argument of the verb. However, as we just saw in (17a) and (18a), the external possessor also shows properties associated with direct object.

Cho (1992, 1993) and O'Grady (2002), on the other hand, claim that both the possessee and the external possessor receive a  $\theta$ -role from the verb, which allows a straight forward account of the observations in (17) and (18). The verb directly assigns a  $\theta$ -role to the possessee and the unassigned  $\theta$ -role in the possessee's argument structure is subsequently assigned 'compositionally' by the verb and the possessee together to the external possessor. Although the exact process of compositional  $\theta$ -role assignment is different for the two authors, the process is unrestricted in both analyses. Consequently, it is unclear how external possession involving an adjunct, which we saw above not to be possible (see (15)), can be ruled out.

### 5. Affectedness

Recall that the external possessor of an object is interpreted obligatorily as affected by the event described by the verb. The distinct projection approach accounts for this reading by claiming that the external possessor receives a  $\theta$ -role with the semantic role *affect*. I argue, however, following Shibatani (1994) and Yeon (1999), that the interpretation in fact arises due to pragmatics.

Shibatani claims that cross-linguistically, in constructions with additional arguments, such as external possession, adversative passive constructions (e.g., in Japanese, Korean, Chinese) and ethical dative constructions (e.g., in German, Spanish, Hebrew), the additional arguments must be interpreted as being 'integrated' into the event described by the rest of the clause. They can be integrated most easily if they are interpreted as an inalienable possessor of another argument in the clause and are therefore physically involved in the event. In the absence of such a possessive relation, they may also be integrated by being a participant adversely affected by the event. This claim accounts elegantly for many constructions Shibatani considers in which the additional arguments are interpreted as a possessor, but not affected by the event, or as adversely affected, but not as a possessor.

I agree with Shibatani's claim that the affected reading arises as a result of the external possessor being interpreted as a participant in the event. However, considering that in Korean, the accusative external possessor must be construed both as a possessor of the direct object and as affected, I believe that the possessive interpretation arises by means of reassociation. Moreover, on Shibatani's account, it is not entirely clear why the additional arguments must be interpreted as participants in the event in the first instance. Here, I provide a formal account as to why this is the case.

Recipients of  $\theta$ -roles in a verb's  $\theta$ -grid are generally considered to correspond to participants in the eventuality expressed by the verb. The associated semantic representations provide instructions as to how they participate in the eventuality. Thus, in the sentence in (19a), *John's dog* and *Mary's hamster* are understood as participants playing the roles of Agent and Patient in a eating event, respectively, because the verb *eat* has the  $\theta$ -grid indicated in (19b) and the  $\theta$ -roles are assigned to these constituents. On the other hand, the possessors *John* and *Mary*, which do not receive  $\theta$ -roles contained in the verb's  $\theta$ -grid, are not interpreted as participants of the eating event.

- (19) a. John's dog ate Mary's hamster.  
 b. ate ( $\theta$  ( $\theta$ ))  
     Ag Th

As we saw in Section 2, the external possessor of an object is assigned a  $\theta$ -role contained in the verb's  $\theta$ -grid. Consequently, the external possessor must be understood as a participant in the eventuality expressed by the verb. However, the semantic representation linked to the  $\theta$ -role assigned to the external possessor provides no relevant information concerning participation in the event described by the verb, as it does not have its source in the lexical meaning of the verb. The affected reading arises precisely under such a circumstance due to pragmatics. In the absence of relevant information, if an item is to be interpreted as a participant, it seems only natural that it is somehow affected by the event.

A pragmatic approach to the affected reading like this has advantages over attributing the interpretation to a specific  $\theta$ -role. Firstly, as noted by Shibatani (1994) and J.-M. Yoon (1997), it explains the widely reported, great variation among speakers on the acceptability of this construction.

Secondly, it also explains the fact that the manner in which the external possessor of an object is affected directly reflects our knowledge of the world. Thus, contrary to what is widely reported in the literature, an accusative external possessor need not be 'adversely' affected. It can be understood as 'positively' affected, as in (20), or be an inanimate item and therefore not be psychologically affected, as in (21).

- (20) Uisa-ka      Mary-lul      phal-ul      kochi-ess-ta  
 doctor-Nom    Mary-Acc    arm-Acc    cure-Past-Decl  
 'The doctor cured Mary's arm.'

- (21) Chelswu-ka    sap-ul      caru-lul      cap-ass-ta  
 Chelswu-Nom   shovel-Acc   handle-Acc   grab-Past-Decl  
 'Chelswu grabbed the handle of the shovel.'

(Tomioka & Sim 2005: 279)

Finally, an accusative external possessor is often reported less acceptable with a stative predicate. Nevertheless, there is a general consensus in the literature that the acceptability improves if the state described is modified in such a way that it becomes easier to construe the external possessor as being a participant in the eventuality (e.g., J. H.-S. Yoon 1989, 1990, J.-M. Yoon 1997, Yeon 1999). This is illustrated by the following examples. The example in (22a) is generally reported as less than perfect. However, as noted by J.-M. Yoon (1997), modification of the eventuality by an adverbial such as *ttwulecikey* ‘hard’, as in (22b), improves the acceptability. Similarly, in (23a), it is difficult to construe the possessor, *Yenghi*, as being a participant in a state in which someone likes her face. On the other hand, (23b), where the possessee argument has been replaced by *sengkyek* ‘personality’, is much more acceptable. Considering that liking someone’s personality is usually synonymous with liking that person, the possessor of the personality can be readily interpreted as being part of the state in which someone likes that possessor’s personality.

- (22) a. ??Chelswu-ka Yenghi-lul elkul-ul po-ass-ta  
 Chelswu-Nom Yenghi-Acc face-Acc see-Past-Decl  
 ‘Chelswu saw Yenghi’s face.’  
 b. Chelswu-ka Yenghi-lul elkul-ul ttwulecikey po-ass-ta  
 Chelswu-Nom Yenghi-Acc face-Acc hard see-Past-Decl  
 ‘Chelswu looked at Yenghi’s face hard [enough to make a hole in it].’  
 (modified from J.-M. Yoon 1997: 250-52)
- (23) a. \*Chelswu-ka Yenghi-lul elkwul-ul cohaha-n-ta  
 Chelswu-Nom Yenghi-Acc face-Acc like-Pres-Decl  
 ‘Chelswu likes Yenghi’s face.’ (J.-M. Yoon 1997: 250)  
 b. Nay-ka Swuni-lul sengkyek-ul coaha-n-ta  
 I-Top Swuni-Acc personality-Acc like-Pres-Decl  
 ‘I like Swuni’s personality.’ (Choo 1994: 129)

Thus, the acceptability of an example containing an accusative external possessor appears to be sensitive to the context, rather than to grammatical notions such as ‘stative’, which would be expected under the distinct projection approach and has been suggested by Tomioka & Sim (2005).

## 6. Concluding Remarks

The preceding sections argued that the external possessor of an object is licensed within VP, rather than in the specifier position of a designated projection distinct from VP containing the possessee and the verb. The various syntactic properties of the construction suggest that the claim is on the right track. Moreover, a pragmatic approach to the affected interpretation appears

to explain the speaker variation and the sensitivity to the context more naturally than an approach that assumes a grammatically defined *affect*  $\theta$ -role.

Introduction of a novel thematic operation such as *reassociation* however raises questions regarding its generality. Are there any other phenomena that can be accounted for by this operation? I would like to suggest that the answer is in the affirmative. Firstly, a number of languages exhibit external possession, some involving object, some involving subject (Payne & Barshi 1999). Following Yoon (1989, 1990), I hypothesize that the syntax of external possession is essentially the same cross-linguistically. What regulates the possibility of external possession in each language is the availability of case for the additional argument. In terms of the present proposal, languages may vary with respect to how they realize the possessor argument internally to the possessee NP, namely as *pro* (e.g. Japanese, Korean) or overt pronoun (e.g. Modern Standard Arabic, Hebrew) or they may not realize it at all (e.g. German), but my hypothesis is that the effect is the same: an unbound variable is present in the semantic representation associated with the possessee argument, whose value can be provided by means of reassociation.<sup>7</sup>

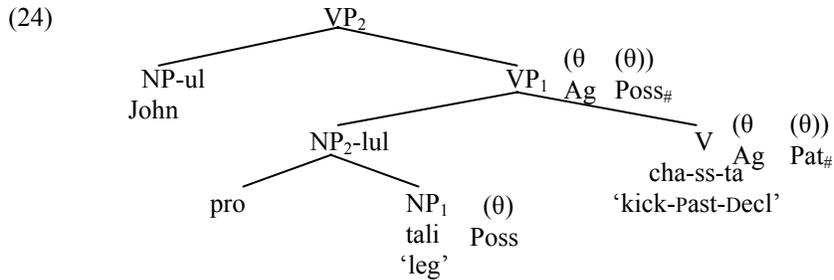
Besides external possession, it seems that the proposed operation can be carried over to other types of constructions such as the light verb construction in Italian. As discussed in detail by Samek-Lodovici (2003), Italian has two light verbs which take deverbal nominals as their complements, *fare* and *dare*. The choice between the light verbs is determined by the number of arguments the deverbal nominal has. *Fare*, whose heavy counterpart means ‘make’, takes nominals with one argument, while *dare*, whose heavy counterpart means ‘give’, takes nominals with two arguments. An account in terms of reassociation would provide a straightforward explanation for this observation: the number of verb’s  $\theta$ -roles available for reassociation determines the number of semantic arguments of the deverbal nominal that can be realized externally. (see Samek-Lodovici 2003, who proposes a similar operation to *reassociation*, and Vermeulen 2005a: Ch. 6 for further discussion)

## Appendix

The semantic derivation of the syntactic structure of external possession presented in this paper, reproduced below, is provided in (25). Much of the semantics of possession I am assuming here is due to Barker (1995).

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<sup>7</sup>See Vermeulen (2005b) for the lack of affected reading for an external possessor of a subject.



- (25)
- a.  $\llbracket \text{NP}_1 \rrbracket$ :  
 $\lambda y \lambda x [\text{leg}(x) \ \& \ \text{Possessor}(y, x)]$
  - b.  $\llbracket \text{NP}_2 \rrbracket$ :  
 $\lambda y \lambda x [\text{leg}(x) \ \& \ \text{Possessor}(y, x)](z)$  (where  $z = \text{pro}$ )  
 $\rightarrow \lambda x [\text{leg}(x) \ \& \ \text{Possessor}(z, x)] = z$ 's leg
  - c.  $\llbracket \text{VP}_1 \rrbracket$ :  
 $\lambda y_2 \lambda x_2 \lambda e [\text{kicking}(e) \ \& \ \text{Agent}(e, x_2) \ \& \ \text{Patient}(e, y_2)](z$ 's leg)  
 $\rightarrow \lambda x_2 \lambda e [\text{kicking}(e) \ \& \ \text{Agent}(e, x_2) \ \& \ \text{Patient}(e, z$ 's leg)]
  - d. Re-association:  
 $\lambda z \lambda x_2 \lambda e [\text{kicking}(e) \ \& \ \text{Agent}(e, x_2) \ \& \ \text{Patient}(e, z$ 's leg)]
  - e.  $\llbracket \text{VP}_2 \rrbracket$ :  
 $\lambda z \lambda x_2 \lambda e [\text{kicking}(e) \ \& \ \text{Agent}(e, x_2) \ \& \ \text{Patient}(e, z$ 's leg)] (john)  
 $\rightarrow \lambda x_2 \lambda e [\text{kicking}(e) \ \& \ \text{Agent}(e, x_2) \ \& \ \text{Patient}(e, \text{john's leg})]$

Assuming that *tali* 'leg' has the representation in (25a), the presence of *pro* internally to the possessee argument produces a semantic representation appropriate for re-association, one that contains an unbound variable, as in (25b). Obviously, a choice function or an iota operator must be introduced at some stage in this derivation to interpret *tali* 'leg' correctly. However, to facilitate straight forward exposition of the proposed operation, I simply represent the effect of application of such a function by replacing the resultant formula in (25b) by *z's leg*. *Z's leg* then replaces the variable *y* in the semantic representation associated with the verb's argument structure at VP, as in (25c). Re-association applies to this resultant representation, as it contains an unbound variable, *z*, with the effect that a lambda operator is introduced into the representation (25d). With the variable *z* now bound, the external possessor *John* can replace the variable, resulting in its being interpreted as a possessor of *tali* 'leg' (25e).

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