Pseudo-noun incorporation: A DP/VP approach*

Imke Driemel

Leipzig University

1. Raising and DP/NP accounts

Pseudo-noun incorporation (PNI) describes a phenomenon in which an argument forms a "closer than usual" relation with the verb. The syntactic consequence most often diagnosed for PNI is loss of case marking, potentially along with the lack of other functional material such as number marking and overtly expressed determiners. A correlating interpretive consequence is expressed by scope inertness. This paper focuses on the PNI properties of bare objects in Turkish and Tamil.[1] The case-scope correlation is demonstrated in (1) and (2), where caseless objects cannot take scope above negation or a universal quantifier.[2]

(1) *Case-scope correlation in Turkish*

a. Her çocuk kitap$^{\forall\exists,*\exists\forall}$ / kitab-ı^{def} okudu. *(Öztürk 2005: 67-68)*
every child.NOM book / book-ACC read
'Every child did book-reading / read the book.'

b. Hasan hediye$^{\neg\exists,*\exists\neg}$ / hediye-yi^{def} al-ma-dı. *(B. Özdemir, p.c.)*
Hasan.NOM present / present-ACC buy-NEG-PFV
'Hasan has not bought any present / the present.'

(2) *Case-scope correlation in Tamil*

a. Ella students-um pustagam$^{\forall\exists,*\exists\forall}$ / pustagath-ai$^{*\forall\exists,\exists\forall}$ padi-c-aaŋga.
all students.NOM-ADD book / book-ACC read-PST-3PL
'All students read a book.'

*I would like to thank Sandhya Sundaresan, Jegan Murugesan, Rajamathangi Shanmugam, and Aravindhan Sukumar for their insights and judgements on the Tamil data. Thank you also to Bilal & Fatoş Özdemir for their input on Turkish. This research was supported by the DFG-funded graduate program *Interactions of Grammatical Building Blocks* (IGRA) and the *Maria Weber Grant* of the *Hans Böckler Stiftung*.

[1] See Driemel 2020a for a larger scale study on a number of argument types, including indefinites, numerals, demonstratives, quantifiers, weak/strong definites and so on.

[2] If not indicated otherwise, data was elicited from four speakers of Tamil and two Turkish speakers.

b. Naan pustagam$^{\neg\exists,*\exists\neg}$ vanga-lle. *(Baker 2014: 18)*
1SG.NOM book buy-NEG
'I didn't buy (any) book.'

The common intuition of DP/NP accounts stems from the observation that pseudo-incorporated arguments are somehow reduced in their syntactic as well as their semantic capacity. Together with the fact that pseudo-incorporation seems to be restricted to occur with bare nouns and indefinites, both case loss and scope inertness are often traced back to the size of the argument. Pseudo-incoporated arguments are claimed to be NPs, denoting properties $\langle e,t\rangle$, which do not require case and cannot take scope (van Geenhoven 1998; Massam 2001; Dayal 2011). Recently developed case licensing accounts on Differential Object Marking (López 2012; Kalin 2018) incorporate the size restriction, which is argued to be the cause for lack of specificity/animacy interpretations.

PNI-ed objects additionally lack the ability to enter binding and control relations, shown in (3) for Turkish and in (4) for Tamil.[3]

(3) *No binding or control for caseless objects in Turkish*

a. Ali [çerçeve-sin-e$_{1/2}$]$_3$ resm*(-i)$_1$ —$_3$ koy-du. *(Öztürk 2009: 343)*
Ali frame-POSS.3SG-DAT picture-ACC put-PST
'Ali put the picture in its/his frame.'

b. Sen [PRO$_1$ silah-ı bırak-ma]-ya$_3$ suçlu*(-yu)$_1$ —$_3$ zorla-dı-n.
2SG weapon-ACC drop-NMLZ-DAT criminal-ACC force-PFV-2SG
'You forced the criminal to drop the weapon.'

(4) *No binding or control for caseless objects in Tamil*

a. Kumar [ata-ode$_1$ kadasi pakkam varai]$_2$ book*(-ai)$_1$ —$_2$
Kumar.NOM that-GEN last page until book-ACC
padi-c-aan.
read-PST-3SG.M
'Kumar read a book until its last page.'

b. Raja naai*(-ye)$_1$ [PRO$_1$ kutikk-a] kattaya-paduthi-n-aan.
Raja.NOM dog-ACC drink-INF compel-make-PST-3SG.M
'Raja forced a dog to drink.'

Lack of binding and control readings have been captured so far with raising analyses, where arguments need to raise or be merged in a dedicated case-assignment position from which control and binding can take place (Öztürk 2009; López 2012). Since raising analyses (Bhatt and Anagnostopoulou 1996; Kelepir 2001) focus on the case marked counterpart, they have little to say about the obligatory low scope readings of caseless objects, especially

[3]Since Turkish and Tamil are both SOV, bindee and control clause were dislocated form their base positions to ensure maximal proximity of object and verb, thereby controlling for the compactness requirement independently reported for some PNI languages. In contrast to Turkish, Tamil control clauses cannot be scrambled over the controller without losing the control reading.

if they are able to dislocate from base position, as for example Dayal (2011) has shown for Hindi. In contrast, DP/NP accounts do not predict the binding and control properties, with nothing else being said. Moreover, they must allow flexible c-selection as well as separate PNI-denotations for verbs to ensure semantic composition with properties.

2. Sequentially hybrid categories

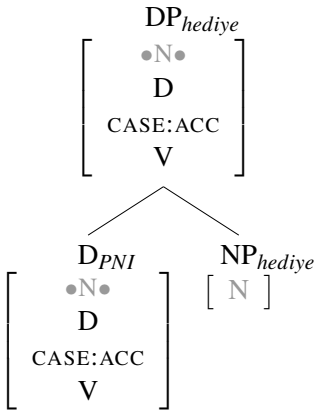
This account pursues the idea that the core properties of pseudo-noun incorporation are not related to *size* or *position* but to *category*. Pseudo-incorporated arguments transform from nouns into verbs during the course of the derivation—they are sequentially hybrid categories. The verbal nature is responsible for the case drop and the inability to take wide scope: Verbs are commonly taken to be incapable of inducing scope shift (Chomsky 2001; Harley 2004) and are cross-linguistically observed to constitute unsuitable hosts for case morphology (Nichols 1986; Moravcsik 2012). Pseudo-incorporated arguments are incapable to bind a pronoun since binding, that is the ability to introduce an index, is a property essentially tied to nominal categories (Baker 2004; Büring 2005). Furthermore, control relations cannot be established if we take control to be dependent on binding (Chomsky 1981; Manzini 1983).

The idea is implemented in a minimalist framework (Chomsky 1995) where syntactic structures are created via sequential application of Merge and Agree, triggered by morpho-syntactic feature lists (Stabler 1997; Müller 2010). Since features are ordered, they will be discharged one after another, beginning with the first feature in the list. Every probe and structure-building feature can only be targeted once. They get discharged, after they have undergone an operation, in order to make room for the next feature on the stack. We will assume that features become inactive (marked in gray) after they have taken part in a structure-building or Agree relation. Note that goal features do not have to get discharged for the derivation to converge. They do, however, nevertheless get discharged after they have taken part in an operation.

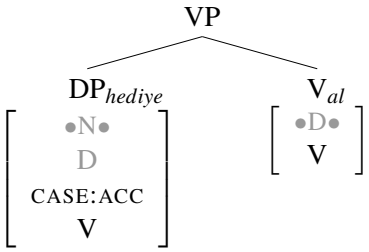
PNI properties are derived by a dedicated PNI determiner which contains a nominal [D] and a verbal [V] feature, where the former is ordered higher on the stack than the latter. Consequently, the nominal properties of PNI-ed arguments will be active early in the derivation and affect syntactic operations such as c-selection and θ-role assignment, while the verbal properties, that is the core PNI properties, will be active late and affect case morphology, scope, binding, and control.

The following trees in (5-7) provide a sample derivation for the PNI context in (1b), where Merge features are encoded as [•X•], while probes triggering Agree are marked as [∗X∗]. The DP in (5) presents the internal feature structure of a PNI-ed argument, while (6) shows how a PNI-ed argument is selected for by the verb. Since [D] is ordered higher on the feature stack than [V], the PNI-ed object gets c-selected like a proper argument, compare c-selection for the subject in (7). Structural case is assigned by the functional heads T and *v* (Chomsky 1995); a checking account is adopted, in which both probe and goal enter the derivation with valued case features but Agree requires matching. Proper arguments stay nominal throughout the derivation, whereas PNI-ed arguments behave like VPs for all operations following c-selection due to the active [V] feature, as is shown for *hediye* in (7).

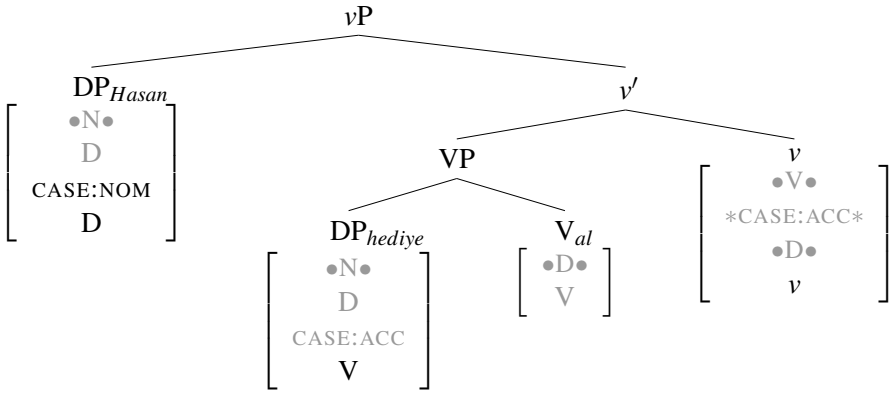
(5)



(6)



(7)



Before we derive each PNI property separately, let us address the spell out of the PNI determiner. In contrast to DP/NP accounts, the current approach relies on the presence of a determiner, thereby predicting it to be potentially overtly spelled out. Turkish as well as Tamil are bare argument languages, thus the lack of an exponent matches the general underspecification of the nominal domain in those languages. Potential evidence for the overt spell out of such a determiner comes from Maori (Chung and Ladusaw 2004) and St'át'imcets (Matthewson 1999) which each show two morphologically different indefinite determiners, one of which triggering obligatory low scope readings, shown in (8) for Maori. Chung and Ladusaw (2004: 28-29) report that low scope determiner *he* is only licensed in the absence of prepositions, thereby providing the morpho-syntactic connection typical for PNI contexts.

(8) *Low scope indefinites in Maori* *(Chung and Ladusaw 2004: 36-41)*

Kāore he$^{\neg\exists,*\exists\neg}$ / tētahi$^{\neg\exists,\exists\neg}$ tangata i waiata mai.
T.not a / a person T sing to.here
'No one at all sang. / A person didn't sing.'

2.1 Loss of case marking

Lack of case marking has no effect neither on co-variance relations with the verb nor on the case morphology of other non-incorporated arguments in the clause. This is demonstrated for subject PNI in Turkish.[4] The embedded clause in (9a) marks the subject with genitive case. The PNI-ed version in (9b), however, does not lead to lack of ϕ-agreement with the embedded verb. Moreover, the object in (9b) is not re-analyzed as the single case competitor of the clause, as it retains accusative in PNI contexts.

(9) *No ϕ-agreement interaction with case drop in Turkish*

a. Köy-e doktor-un gel-diğ-i-ni duy-du-m.
village-DAT doctor-GEN come-NLMZ-3SG-ACC hear-PFV-1SG
'I heard the doctor came to the village.'

b. Köy-e doktor gel-diğ*(-i)-ni duy-du-m.
village-DAT doctor come-NLMZ-3SG-ACC hear-PFV-1SG
'I heard a doctor came to the village.'

An interaction with ϕ-agreement is also missing in Tamil, shown in (10) for object PNI. There is a closed class of verbs which select for dative subjects and nominative objects and agree in ϕ-features with the direct object. Since Tamil has the option of default N.SG agreement, we expect N.SG agreement to be an option, for example in contexts which make non-specific object readings very likely. This prediction is not borne out, as (10) shows.[5]

(10) *Context: Mala is producing a play. She got a (random) boy to take part in the play.*

Mala-kku paiyan keḍa-cc-aan / *keḍai-cc-itu. *Tamil*
Mala-DAT boy(.NOM) get-PST-3SG.M / get-PST-3SG.N
'Mala got a boy.'

Based on these observation, I tentatively conclude that case loss happens in a post-syntactic module, counter-feeding and counter-bleeding any syntactic operations which could potentially be sensitive to caseless arguments. There is a variety of tools post-syntax offers to prevent case morphology from being realized. I will sketch a rule-based solution by making use of DM-style impoverishment rules, as they they are also frequently proposed for Differential Object Marking. These rules reduce morpho-syntactic feature bundles/lists by deleting sub-features and thus retreating to the general case, which is often an elsewhere marker that is spelled out as /∅/. We decompose structural case features as NOM: [−GOV,−OBL,+STRUC], ACC: [+GOV,−OBL,+STRUC], and GEN: [−GOV,+OBL,+STRUC], while lexical and inherent case features are encoded as [+GOV,+OBL,−STRUC, …]. The

[4] See Öztürk 2009 for scope, binding, and control tests that indicate the possibility of subject PNI in Turkish.

[5] Baker (2014: 33-34) uses this test to argue for the opposite conclusion. He notices that both default and full agreement is possible with the object *ponnu* 'girl' and DAT-NOM verbs. *Ponnu*, however, seems to be ϕ-variant generally, as it can trigger default agreement even in non-PNI contexts.

analysis is exemplarily shown for Turkish, see (11) for the case exponents and (12) for the impoverishment rule, where the [V] feature of the PNI determiner serves as a contextual trigger. Ideally, this rule is also in place for genuine verbal categories.

(11) *Vocabulary items for Turkish*

a. DAT, LOC, ABL $\leftrightarrow$ [+GOV,+OBL,−STRUCT,...]
b. /-(n)In/ $\leftrightarrow$ [+OBL,+STRUCT] (GEN)
c. /-(y)I/ $\leftrightarrow$ [+STRUCT] (ACC)
d. /-∅/ $\leftrightarrow$ [ ] (NOM)

(12) *Impoverishment rule for Turkish*

[+STRUCT] $\rightarrow \varnothing$ / [V]

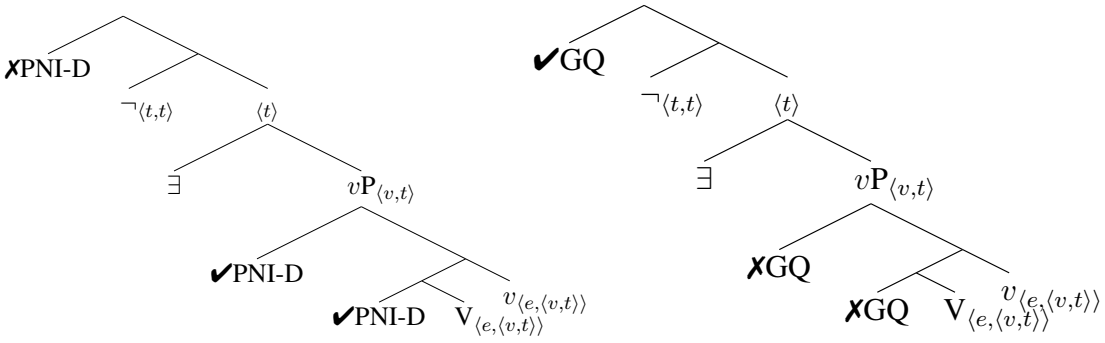
The rule captures case loss on both subjects and objects, a welcome result for Turkish since PNI is attested for both argument types. A similar analysis can be run for Tamil.

2.2 Scope inertness

The verbal nature of PNI-ed arguments is reflected in the semantic denotation of the PNI determiner. In Neo-Davidsonian event semantics (Parsons 1990; Kratzer 1996), verbal categories introduce events, while verbal projections denote event predicates $\langle v,t\rangle$. The PNI determiner denotes an existential quantifier that can only be interpreted within the event domain, see the lexical entry in (13) and the predicted scope behaviour in (14).

(13) $[\![\text{PNI-D}]\!] = \lambda P_{\langle e,t\rangle}\lambda Q_{\langle e,\langle v,t\rangle\rangle}\lambda e\exists z[P(z)\wedge Q(z)(e)]$

(14) *Scope properties of PNI-ed arguments vs. negation and generalized quantifiers*



Following Parsons (1990), existential closure applies to the event variable $\langle v\rangle$ after all core arguments are introduced. Consequently, $\langle v\rangle$ is no longer available outside the event domain. The Q argument in (13) enables a PNI-ed argument to directly combine with V, yet prevents it to be interpreted outside of the event domain.[6] In contrast, generalized quan-

[6]Subject PNI is possible if VP and v undergo event identification (Kratzer 1996), so that v' is of type $\langle e,\langle v,t\rangle\rangle$. More details are provided in Driemel 2020a.

tifiers are of type $\langle\langle e,t\rangle,t\rangle$ and, following the proposal by Landman (2000), need to raise out of the event domain to be interpreted. Hence, PNI-ed arguments such as the objects in (1a) and (2a) will not be able to scope above universal quantifiers. Moreover, negation does not apply below existential closure of the event variable (Penka 2010; Chung and Ladusaw 2004), thereby deriving the scope effects in (1b) and (2b).

2.3 Absence of binding and control readings

Baker (2004) determines the ability to bear a referential index as the one identifying trait that separates nouns from verbs. Tradtionally, binding is understood as a relation between nominals in A-positions (Chomsky 1981). Moreover, Büring (2005) proposes a binder rule specifically defined for DPs/NPs to introduce a binder prefix. Within the current account, PNI-ed arguments are no longer of a nominal category, once they have entered the derivation. Since introduction of a binder prefix must be blocked for verbal categories, we derive the absence of the bound readings in (3a) and (4a). Furthermore, under the assumption that control readings necessitate binding between the controller and PRO (Chomsky 1981; Manzini 1983; Landau 2015), we can extent the explanantion to (3b) and (4b).

3. Movement patterns of PNI-ed arguments

A final argument for the verbal status of PNI-ed arguments comes from distribution. Although both Tamil and Turkish are known to allow scrambling of case-marked arguments (Lehmann 1993; Kornfilt 1997), there is cross-linguistic variation emerging in PNI scenarios. While Tamil prohibits movement of caseless bare objects (Baker 2014),[7] Turkish shows no restrictions (Öztürk 2009), see (15) and (16) for clause-internal scrambling.

(15) *Movement restrictions in Tamil*

(*pustagam) naan (*pustagam) anda ponnu-kiʈʈe (pustagam) kuɖu-tt-een.
book 1SG.NOM book DEM girl-LOC book give-PST-1SG
'I gave a book to this girl.'

(16) *No movement restrictions in Turkish*

(ödev) öğretmen (ödev) öğrenci-ler-e (ödev) ver-di-∅.
homework teacher.NOM homework student-PL-DAT homework give-PFV-3
'The teacher gave homework to the students.'

According to the current approach, VP-movement should be excluded in Tamil but allowed in Turkish. This prediction is by and large borne out. Although post-verbal constituents are principally allowed in Tamil and thus suggest VP-movement, they receive narrow focus or are alternatively classified as pivots of (pseudo-)clefts, see (17) for the latter.

[7] Baker (2014) explains data such as (15) by arguing for a linear adjacency requirement in PNI scenarios. This theory can be ruled out on independent grounds, based on the fact that focus adverbs can intervene between caseless objects and verbs (Lehmann 1993: 112).

(17) *Post-verbal constituents in Tamil* (Sarma 1999: 60)

Shakuni dharmaa-kku kodu-tt-aan daayatt-ai.
Shakuni.NOM Dharma-DAT give-PST-3SG.M dice-ACC
'It is the dice that Shakuni gave to Dharma.'

Existing analyses of post-verbal phrases in Tamil specifically (Sarma 1999; Selvanathan 2017) as well as in Dravidian generally (Madhavan 1987) commonly assume that the post-verbal constituent either undergoes movement or is first-merged in focus/pivot position. I conclude that Tamil does not give rise to VP-movement.

Post-verbal structures in Turkish have similarly been analyzed by rightward movement (Kural 1997), thereby complicating the detection of VP-movement. Thus, we turn to long scrambling as a diagnostic for VP-movement. As a first step, observe that long scrambling is an option for caseless bare nouns in Turkish (18).

(18) *Long scrambling of caseless objects in Turkish* (Jo and Palaz 2018)

Kitap$_1$ ben [Ali-nin $\_\__1$ oku-duğ-un]-u düşün-mü-yor-um.
book I Ali-GEN read-NMLZ-3SG-ACC think-NEG-PRS-1SG
'I don't think that Ali does book-reading.'

As predicted, VPs can undergo long scrambling, see (19) and (20). However, due to the morphology on *oku* in (19) indicating a constituent potentially larger than a VP,[8] we additionally test for remnant VP-movement. As can be seen in (20), a remnant VP identified by the presence of a low manner adverb can undergo long scrambling in Turkish.

(19) *Long scrambling of VPs in Turkish?*

[Kitap oku-duğ-un]-u$_1$ ben [Ali-nin $\_\__1$] düşün-mü-yor-um.
book read-NMLZ-3SG-ACC 1SG.NOM Ali-GEN think-NEG-IPFV-1SG
'I don't think that Ali does book-reading.'

(20) *Long scrambling of remnant VPs in Turkish*

[$_{VP}$ hızlıca kitab-ı] ben [Ali-nin $\_\__{VP}$ oku-duğ-u]-nu
quickly book-ACC 1SG.NOM Ali-GEN read-NMLZ-3SG-ACC
düşün-m-üyor-um.
think-NEG-IPFV-1SG
'I don't think that Ali read(s) the book rapidly.'

This concludes our short excursion into the movement patterns of PNI-ed arguments, see Driemel 2020b for a more detailed discussion.

[8] Although see Gračanin-Yüksek and İşsever 2011 who take examples like (19) as evidence for long scrambling of VPs.

4. Conclusion

Pseudo-incorporated arguments are headed by a determiner that transforms from a nominal into a verbal category during the course of the derivation. The verbal nature is responsible for case drop, scope inertness, and the lack of binding and control readings. The categorial approach is able to account for a set of properties which were formerly only partially covered by DP/NP accounts and raising accounts. More importantly, the current account predicts distributional differences of PNI-ed arguments, showcased in this study by Tamil and Turkish. Since they turn from nouns into verbs, their movement patterns will mimick the respective movement pattern of VPs—a property neither DP/NP nor raising approaches can account for.

References

Baker, Mark. 2004. *Lexical Categories: Verbs, Nouns and Adjectives*. Cambridge, UK: Cambridge University Press.

Baker, Mark. 2014. Pseudo Noun Incorporation as Covert Noun Incorporation: Linearization and Crosslinguistic Variation. *Language and Linguistics* 15:5–46.

Bhatt, Rajesh, and Elena Anagnostopoulou. 1996. Object shift and specificity: Evidence from ko-phrases in Hindi. In *Papers from CLS 32*, ed. Lise Dobrin, Kora Singer, and Lisa McNair, 11–22. Chicago: Chicago Linguistic Society.

Büring, Daniel. 2005. *Binding Theory*. Cambridge, UK: Cambridge University Press.

Chomsky, Noam. 1981. *Lectures on Government and Binding*. Berlin: de Gruyter.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A Life in Language*, ed. Michael Kenstowicz, 1–52. MIT Press.

Chung, Sandra, and William A Ladusaw. 2004. *Restriction and Saturation*. Cambridge, MA: MIT Press.

Dayal, Veneeta. 2011. Hindi pseudo-incorporation. *Natural Language & Linguistic Theory* 29:123–167.

Driemel, Imke. 2020a. Pseudo-incorporation across languages. Doctoral dissertation, Leipzig University.

Driemel, Imke. 2020b. Pseudo-incorporation and its movement patterns. Ms., Leipzig University, accepted for *Glossa*.

van Geenhoven, Veerle. 1998. *Semantic Incorporation and Indefinite Descriptions*. Palo Alto: CSLI.

Gračanin-Yüksek, Martina, and Selçuk İşsever. 2011. Movement of Bare Objects in Turkish. *Dilbilim Araştırmaları* 22:33–49.

Harley, Heidi. 2004. Merge, conflation, and head movement: The First Sister Principle revisited. In *Proceedings of NELS 34*, ed. Keir Moulton and Matthew Wolf, 239–254. Amherst, MA: GLSA.

Jo, Jinwoo, and Bilge Palaz. 2018. Licensing Pseudo-Noun Incorporation in Turkish. Poster at NELS 49.

Kalin, Laura. 2018. Licensing and Differential Object Marking: The View from Neo-Aramaic. *Syntax* 21:112–159.

Kelepir, Meltem. 2001. Topics in Turkish syntax: Clausal structure and scope. Doctoral dissertation, MIT.

Kornfilt, Jaklin. 1997. *Turkish*. London: Routledge.

Kratzer, Angelika. 1996. Severing the external argument from its verb. In *Phrase Structure and the Lexicon*, ed. Johan Rooryck and Laurie Zaring, 109–137. Dordrecht: Kluwer.

Kural, Murat. 1997. Postverbal Constituents in Turkish and the Linear Correspondence Axiom. *Linguistic Inquiry* 28:498–519.

Landau, Idan. 2015. *A Two-Tiered Theory of Control*. Cambridge, MA: MIT Press.

Landman, Fred. 2000. *Events and Plurality: The Jerusalem Lectures*. Oxford, UK: Blackwell Publishing.

Lehmann, Thomas. 1993. *A Grammar of Modern Tamil*. Pondicherry: Pondicherry Institute of Linguistics and Culture.

López, Luis. 2012. *Indefinite Objects. Scrambling, Choice Functions, and Differential Marking*. Cambridge, MA: MIT Press.

Madhavan, Punnapurath. 1987. Clefts and pseudoclefts in English and Malayalam: a study in comparative syntax. Doctoral dissertation, CIEFL, Hyderabad.

Manzini, Rita. 1983. On Control and Control Theory. *Linguistic Inquiry* 14:421–446.

Massam, Diane. 2001. Pseudo noun incorporation in Niuean. *Natural Language & Linguistic Theory* 19:153–97.

Matthewson, Lisa. 1999. On The Interpretation of Wide-scope Indefinites. *Natural Language Semantics* 7:79–134.

Moravcsik, Edith A. 2012. The Distribution of Case. In *The Oxford Handbook of Case*, ed. Andrej L Malchukov and Andrew Spencer, 231–245. Oxford: Oxford University Press.

Müller, Gereon. 2010. On deriving CED effects from the PIC. *Linguistic Inquiry* 41:35–82.

Nichols, Johanna. 1986. Head-Marking and Dependent-Marking Grammar. *Language* 62:56–119.

Öztürk, Balkız. 2005. *Case, Referentiality and Phrase Structure*. Amsterdam/Philadelphia: John Benjamins.

Öztürk, Balkız. 2009. Incorporating agents. *Lingua* 119:334–358.

Parsons, Terence. 1990. *Events in the semantics of English*. Cambridge, MA: MIT Press.

Penka, Doris. 2010. *Negative Indefinites*. Oxford: Oxford University Press.

Sarma, Vaijayanthi. 1999. Case, Agreement and Word Order: Issues in the syntax and acquisition of Tamil. Doctoral dissertation, MIT.

Selvanathan, Naga. 2017. Cleft Constructions in Tamil and Anti-Agreement. Ms., National University of Singapore, Available at `https://ling.auf.net/lingbuzz/003681`, lingbuzz/003681.

Stabler, Edward. 1997. Derivational Minimalism. In *Logical Aspects of Computational Linguistics*, ed. Christian Retoré, 68–95. Heidelberg: Springer.

Imke Driemel
imke.driemel@uni-leipzig.de