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# Antipassive, clefting, and specificity

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## 1 Introduction

In ergative languages like Tagalog, absolutive DPs are typically interpreted as definite or specific, as in (1a), while oblique objects in antipassives receive a nonspecific interpretation<sup>1</sup>, as shown in (1b).

- (1) a. K-in-ain=ko            **ang isda.**  
      -Tr.Perf-eat=1sErg    Abs fish  
      “I ate the/\*a fish.”
- b. K-um-ain=ako        **ng isda.**  
      -Intr.Perf-eat=1sAbs    Obl fish  
      “I ate (a) fish.”

However, as noted by Schachter and Otnes (1972), Maclachlan and Nakamura (1997), and Rackowski (2002), this tendency can be overridden under certain circumstances. For example, in the *wh*-question in (2), the oblique object may be interpreted as specific.

- (2) Sino        ang k-um-ain        **ng isda?**  
      who       Abs -Intr.Perf-eat    Obl fish  
      “Who ate a/the fish?”

In this paper, I show how these specificity effects are accounted for straightforwardly in the analysis of Tagalog morphosyntax and phrase structure proposed by Aldridge (in preparation). Under this analysis, absolutive DPs receive a presuppositional interpretation because they are located outside VP at LF and mapped to the restrictive clause, in the sense of Diesing (1992). Oblique DPs, on the other hand, receive a nonspecific interpretation because they remain within VP and undergo existential closure at LF.

The fact that an oblique object may get a specific interpretation in a *wh*-question, I argue, is related to the structural properties of this clause type.

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<sup>1</sup>Coreman (1994), Bittner (1994), and Basilico (2003) cite similar examples from a variety of ergative languages.

*Wh*-questions take the form of pseudoclefts. The direct object is contained within the headless relative in subject position, which is located outside of the nuclear scope and receives a presupposed interpretation at LF. The embedded object is allowed a specific interpretation because it is part of this presupposition.

A key component of this analysis is that it is the verbal morphology, e.g. the transitive and intransitive infixes in bold in the above examples, which determines whether an internal argument raises out of VP or not. The resulting structural configuration then feeds semantic interpretation at LF. In section 4, I introduce an alternative analysis, which takes the opposite approach, claiming that it is the specificity of the direct object which induces raising. Morphology on the verb is then claimed to be features of this raised DP spelled out on T. I argue in the sections that follow that the specificity effects discussed in this paper argue against this alternative and in favor of the approach in which the derivation is driven by morphosyntactic features, leaving semantic interpretation to LF.

## 2 Specificity Effects in Declarative Clauses

In this paper, I propose an account of the above specificity effects, based on the ergative analysis of Tagalog syntax proposed by Aldridge (in preparation). The analysis takes as its theoretical foundation the theory of Multiple Spell-Out as proposed by Chomsky (2000, 2001a, 2001b). The status of *v*P as a phase and the Phase Impenetrability Condition (Chomsky, 2001b:5) play crucial roles in this account.

### (3) Phase Impenetrability Condition (PIC)

The domain of a phase head is not accessible to operations, but only the edge is.

The PIC dictates that movement of VP-internal material must first pass through the edge of *v*P, i.e. the outer specifier. In the case of object *wh*-movement, for example, *v* must have an EPP (or occurrence) feature to first draw this DP into its outer specifier. From this position in the edge of *v*P, the object is accessible to the [wh] feature on C and can undergo further movement to [Spec, C]. Direct movement from within VP to [Spec, C] would violate the PIC.

(4) What did you [<sub>vP</sub> t<sub>what</sub> [<sub>v'</sub> t<sub>you</sub> [<sub>v{EPP}</sub> [<sub>vP</sub> eat t<sub>what</sub> ]]]]?

It is assumed for English that EPP features are generated on  $v$  when needed. What I propose for ergative languages is that the appearance of EPP features on  $v$  is restricted.

Transitivity and EPP

- (5) a. Transitive  $v$  checks absolutive case and has an EPP feature, drawing the absolutive DP to its outer specifier.  
 b. Intransitive  $v$  has no EPP feature; the direct object in an antipassive does not raise out of VP.

This accounts for the hallmark characteristic of syntactic ergativity, i.e. only absolutive DPs can undergo A'-movement (cf. S/O Pivot (Dixon 1979, 1994)). For example, a relative clause can be formed on a direct object in a transitive clause, as in (a), but not on the oblique object in an antipassive.

- (6) a. libro-ng b-in-ili ni Mara?  
 book-Lk -Tr.Perf-buy Erg Maria  
 "book which Maria bought"  
 a. \*libro-ng b-um-ili si Maria?  
 book-Lk -Intr.Perf-buy Abs Maria  
 "book which Maria bought"

In (6a),  $v$  is transitive and therefore has an EPP feature, which attracts the absolutive (the null operator coindexed with the head of the relative clause) to its outer specifier. From there, it can be further attracted to the specifier of CP.

- (7) [<sub>CP</sub> Op [<sub>TP</sub> b-in-ili [<sub>VP</sub>  $t_{Op}$  [<sub>v</sub> ni Mara [<sub>v</sub>  $v_{[Abs, uD^*]}$  [<sub>VP</sub>  $t_{Op}$  ]]]]]]]  
 -Tr.Perf-buy Erg Maria

Since antipassive verbs are intransitive,  $v$  in (6b) has no EPP feature. Direct extraction of the operator from object position within VP violates the PIC, thereby accounting for the ungrammaticality of (6b).

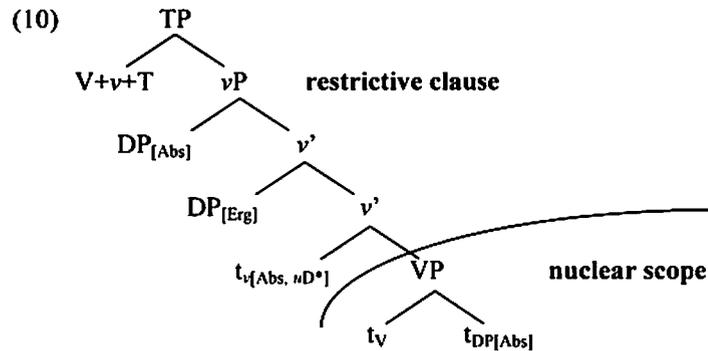
- (8) \* [<sub>CP</sub> Op [<sub>TP</sub> b-um-ili [<sub>VP</sub> ni Mara [<sub>v</sub>  $v$  [<sub>VP</sub>  $t_{Op}$  ]]]]]]]  
 -Intr.Perf-buy Erg Maria

The difference in interpretation between absolutive and oblique direct objects is also accounted for by the presence or absence of an EPP feature on  $v$ .

- (9) a. B-in-ili            ng babae            ang isda.  
       -Tr.Past-buy      Erg woman          Abs fish  
       "The woman bought the/\*a fish."  
       b. B-um-ili            ang babae            ng isda.  
       -Intr.Perf-buy    Abs woman          Obl fish  
       "The woman bought a/\*the fish."

According to Diesing's (1992) Mapping Hypothesis, a clause is divided into two parts at LF. Material inside VP is mapped to the nuclear scope, where it undergoes existential closure and receives a non-quantificational, existential interpretation. Material outside VP, on the other hand, is mapped to the restrictive clause and receives a quantificational or presuppositional reading.

In ergative languages, I have proposed that absolutive DPs raise out of VP to the outer specifier of  $vP$ , with the result that they will be mapped to the restrictive clause at LF. Therefore, absolutives must receive a presuppositional interpretation.



The oblique object in an antipassive, on the other hand, remains inside VP, since  $v$  is intransitive in antipassives and does not have an EPP feature. Consequently, the object will be mapped to the nuclear scope and undergo existential closure at LF to receive a nonpresuppositional reading.

This analysis does not, however, account for the possibility of a specific interpretation for the direct object in antipassive *wh*-questions. Since intransitive  $v$  has no EPP feature, the oblique object is not forced to raise out of VP. Therefore, it should be in the nuclear scope at LF.

- (11) Sino ang k-um-ain ng isda?  
 who Abs -Intr.Perf-eat Obl fish  
 "Who ate a/the fish?"

However, closer examination of the structure of *wh*-questions reveals a natural account for (11). As I argue in the next section, Tagalog *wh*-questions of the type in (11) are formed on pseudoclefts. The direct object is contained inside the headless relative which provides the presupposition of the clause and is located in the matrix subject position, outside of the domain of existential closure. As part of the presupposition, then, the embedded direct object can also receive a specific interpretation.

### 3 *Wh*-questions as Clefts

In this section, I argue that Tagalog *wh*-questions which are formed on DPs take the form of pseudoclefts. (12) is generally considered to be a pseudocleft in Tagalog. The predicate nominal, shown in italics, forms the matrix predicate, while the matrix subject consists of a free relative, indicated by brackets. This is the form generally attributed to pseudoclefts (Akmajian, 1970; Chomsky, 1977; Williams, 1983; Knowles, 1986; Boskovic, 1997; and others). Tagalog, as is the case with most Austronesian languages, does not have a copula; the predicate nominal alone functions as the matrix predicate. The subject relative clause is preceded by an absolutive case marker, given in bold.

- (12) *Isda* ang [b-in-ili ni Maria].  
 fish Abs -Tr.Perf-buy Erg Maria  
 "A fish is what Maria bought."

Evidence that the constituent following the absolutive case marker is a headless relative clause is given below, where *binili ni Maria* ("what Maria bought") is used as an NP in argument position.

- (13) Hindi-ko gusto ang **b-in-ili** ni Maria.  
 Neg-1sErg like Abs -Tr.Perf-buy Erg Maria  
 "I don't like what Maria bought."

In terms of pragmatic import, the relative clause part of a pseudocleft typically conveys given information, while the predicate nominal provides new and focused information (Prince, 1978; Bromser, 1984; Kamio, 1991;

Collins, 1991; Fitchner, 1993). This is also the case with (12) above, where it is understood by the hearer that Maria bought something. The predicate nominal *isda* (“fish”) supplies the missing information as to what it was that was bought.

The surface appearance of *wh*-questions is identical to the pseudocleft in (12). The nominal *ano* “what” appears in clause-initial position, followed by absolutive case marker and the same headless relative as above.

- (14) *Ano ang [b-in-ili ni Maria]?*  
 what Abs -Tr.Perf-buy Erg Maria  
 “What did Maria buy?”

In the discussion which follows, I show that *wh*-questions of this type are biclausal. Evidence for this comes from the location of second position clitics. Pronominal clitics in Tagalog attach to the first prosodic word within CP. (15a) shows the clitic attaching to the verb, (15b) to a focused PP, and (15c) to a time adverb.

- (15) a. *I-bi-bigay=ko ang bulaklak kay Maria.*  
 App-Red-give Abs flower to Maria  
 “I will give the flowers to Maria.”  
 b. *Kay Maria=ko i-bi-bigay ang bulaklak.*  
 to Maria=1sErg App-Red-give Abs flower  
 “I will give the flowers to Maria.”  
 c. *Bukas=ko i-bi-bigay ang bulaklak kay Maria.*  
 tomorrow=1sErg App-Red-give Abs flower to Maria  
 “I will give the flowers to Maria tomorrow.”

In a cleft, however, the clitic has to stay below the nominal predicate and absolutive marker which follows it. In (16) the 2<sup>nd</sup> person ergative pronoun attaches to the verb.

- (16) *Ano ang g-in-a-gawa=mo?*  
 what Abs Red-Perf-do=2sErg  
 “What are you doing?”

Clitics cannot move up to attach to the *wh*-word or the absolutive case marker.

- (17)a \*Ano=mo ang g-in-a-gawa?  
 what=2sErg Abs Red-Perf-do  
 “What are you doing?”  
 b. \*Ano ang=mo g-in-a-gawa?  
 what Abs=2sErg Red-Perf-do

If (16) were mono-clausal, the clitic should be able to move as high as the *wh*-word, given the structures below, where the *wh*-word has moved to [Spec, C].

- (18)\*[<sub>CP</sub> Ano=mo<sub>i</sub> [<sub>C</sub> ang [<sub>TP</sub> g-in-a-gawa *t<sub>i</sub>* ]]]?  
 what=sErg Abs Red-Perf-do  
 “What are you doing?”

Clearly, this mono-clausal structure does not explain the position of the clitic in (16). However, a bi-clausal cleft analysis does. The *wh*-word is not contained in the CP where the clitic originates. Therefore, the highest position available to the clitic in this clause is the verb *ginagawa*, as shown in (19). The operator in [Spec, C] is phonetically null and so cannot host clitics.

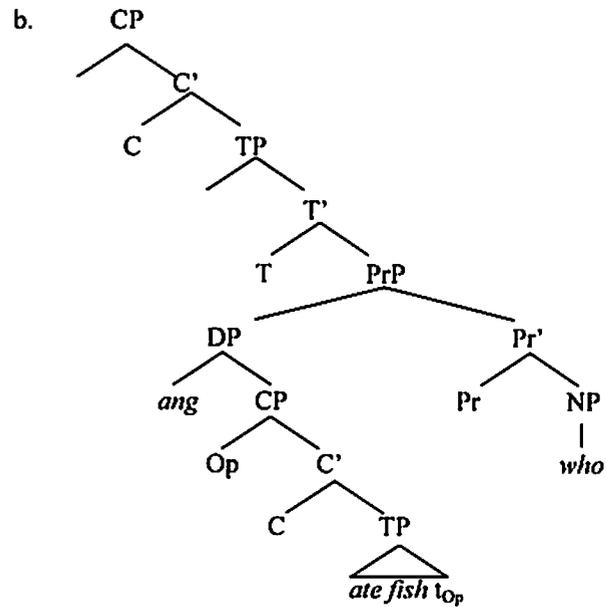
- (19)Ano<sub>i</sub> ang [<sub>CP</sub> Op<sub>i</sub> [<sub>TP</sub> g-in-a-gawa=mo *t<sub>i</sub>* ]]]?  
 what Abs Red-Perf-do=2sErg  
 “What are you doing?”

This analysis is further clarified by the contrast with *wh*-questions formed on XPs other than DPs. These questions are formed by conventional *wh*-movement to [Spec, C]. In these constructions, second position clitics do move up and attach to the *wh*-phrase.

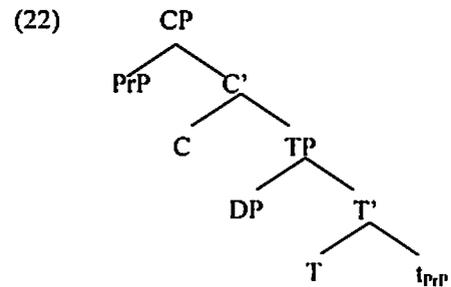
- (20)[<sub>CP</sub> Kailan=ka<sub>i</sub> [<sub>TP</sub> p-um-unta *t<sub>i</sub>* sa Maynila ]]]?  
 when=2sAbs -Intr.Perf-go Dat Maynila  
 “When did you go to Maynila?”

This indicates clearly that DP *wh*-phrases are not located in [Spec, C] of the clause containing the gap but rather in a higher position, i.e. the cleft predicate. The structure that I propose in Aldridge (in preparation) for the clefted questions is as follows. The *wh*-phrase forms the matrix predicate, merged inside PrP. The headless relative functions as the subject.

- (21)a. Sino ang k-um-ain ng isda?  
 who Abs -Intr.Perf-eat Obl fish  
 "Who ate a/the fish?"



In order to derive the predicate-initial word order, the headless relative raises to matrix subject position, and PrP fronts to [Spec, C].



Mapping at LF takes place in the following way. The headless relative is mapped to the matrix restrictive clause and therefore receives a

presuppositional reading. The embedded object, as part of this presupposition, is also free to receive a specific interpretation.

It should be pointed out that, since the embedded verb is intransitive, the embedded object is not forced to move out of VP within the relative clause. However, this does not necessarily force a nonspecific interpretation on the object. Diesing (1992) notes a parallel with German. Scrambling forces a presuppositional reading for the raised DP. But a DP which remains inside VP prior to Spell-Out can still undergo QR at LF and escape existential closure, if it is specific or quantificational. Therefore, a specific interpretation should still be possible for an oblique DP in an antipassive, since QR is available independent of whether *v* has an EPP feature.

#### 4 Alternative Analysis

In contrast to the analysis proposed above, identification of the absolutive in Rackowski's (2002) analysis of Tagalog takes place via a type of QR. To account for the different interpretations for direct objects in transitive and antipassive clauses, Rackowski proposes that VP-internal DPs undergo object shift to the  $vP^2$  phase edge when they are specific but remain inside VP when not. Under this analysis, the transitive and intransitive verbal morphology does not drive the derivation but rather is the reflex of an Agree relation between T the DP located in the highest specifier of  $vP$ . This Agree relation copies the case feature of the DP to T. Transitive morphology is spelled out when the DP has accusative case<sup>3</sup>, i.e. is a direct object which has specific reference and has moved to the outer specifier of  $vP$ . Intransitive morphology on the verb is the reflex of nominative case. This appears either when there is only one DP argument in the clause or when the direct object is nonspecific and remains inside VP. T then agrees with the external argument, which has nominative case.

The following example shows a transitive clause. Nominative and accusative case are assigned, respectively, to the external and internal arguments. Since the direct object is specific, it raises to the outer specifier of  $vP$ . This DP is now the closest to T and will enter into an Agree relation with T. As a result, its accusative case feature is spelled out on the verb as the transitive infix *-in-*.

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<sup>2</sup>Rackowski's analysis employs both  $vP$  and VoiceP. For simplicity, I refer only to  $vP$ .

<sup>3</sup>Unlike the current proposal, Rackowski assumes an accusative analysis of Tagalog.

- (23) [<sub>T</sub> K-in-ain<sub>{uCase}</sub> [<sub>vP</sub> isda<sub>{Acc}</sub> [<sub>v</sub> ko [<sub>VP</sub> t<sub>isda</sub> ]]]].  
 -Tr.Perf-eat fish 1sErg  
 "I ate the/\*a fish."

In the antipassive clause in (24), since the object is nonspecific, it will not shift to the phase edge. This leaves the external argument in the position closest to T. Consequently, T will spell out this DP's nominative case feature as the intransitive marker *-um-*.

- (24) [<sub>T</sub> K-um-ain<sub>{uCase}</sub> [<sub>vP</sub> ako<sub>{Nom}</sub> [<sub>VP</sub> ng isda]]].  
 -Intr.Perf-eat 1sAbs Obl fish  
 "I ate (a) fish."

In short, identification of the absolutive (the highest DP in *vP*) and spelling out of transitive or intransitive morphology on the verb are determined by semantic properties of the direct object. When the object is specific, it moves to the *vP* and causes transitive morphology to be realized on the verb. When this DP is nonspecific, it remains in VP, leaving the external argument to undergo Agree with T. This analysis then predicts that intransitive verbal morphology cannot appear when the direct object is specific. However, this possibility has already been observed in *wh*-questions above.

- (25) Sino ang k-um-ain ng isda?  
 who Abs -Intr.Perf-eat Obl fish  
 "Who ate a/the fish?"

Under Rackowski's analysis, the specific object would have to shift to the phase edge and be in a position to agree with T, spelling out its accusative case feature as transitive morphology. However, it is intransitive morphology which appears on the verb in this example.

Rackowski recognizes this as a potential problem and attempts to avoid it with the stipulation that in A'-extraction contexts, T carries a [*uOp*] feature in addition to its [*uCase*] feature and that these features are bundled together and must be checked with a single DP. If the object were to shift in (25), it would prevent T from checking its operator and case features with the operator in the external argument position.

- (26) [T̄ k-um-ain]<sub>[ $\mu$ Case,  $\mu$ Op]</sub> [<sub>VP</sub> isda]<sub>[ $\nu$ P sino]<sub>[Nom, Op]</sub> [<sub>VP</sub> *t*<sub>isda</sub> ]]]  
 -Intr.Perf-eat fish who  
 “Who ate a/the fish?”</sub>

The need for T to check both its [ $\mu$ Op] and [ $\mu$ Case] features with a single DP therefore prevents object shift in external argument extraction contexts. Rackowski claims that the object may receive a specific interpretation in its base position in VP, leaving the external argument operator in a position to agree with T and spell out its nominative case feature.

- (27) [T̄ k-um-ain]<sub>[ $\mu$ Case,  $\mu$ Op]</sub> [<sub>VP</sub> sino]<sub>[Nom, Op]</sub> [<sub>VP</sub> ng isda ]]]  
 -Intr.Perf-eat who Obl fish  
 “Who ate a/the fish?”

Rackowski’s analysis is thus able to avoid the potential contradiction posed by (25). However, her stipulated solution undermines the very mechanism which normally drives the derivation: specificity of the direct object.

## 5 Additional Evidence

Another problem for Rackowski’s analysis is that it predicts that a specific interpretation for an antipassive object should be possible any time the external argument is extracted. As we have seen, an oblique object contained in the relative clause of a pseudocleft can be interpreted as specific, since the containing relative clause gets a presuppositional reading at LF. However, I show in this section that when the containing relative clause is itself in the domain of existential closure, an embedded oblique object must also be nonspecific.

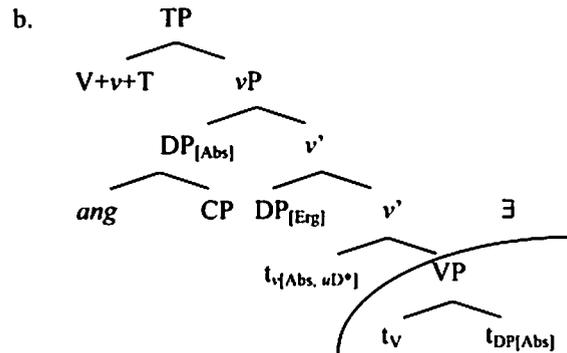
As discussed in section 2, the direct object in a declarative antipassive typically receives a nonspecific interpretation.

- (28) K-um-ain ang pusa ng daga.  
 -Intr.Perf-eat Abs cat Obl rat  
 “The cat ate a/\*the rat.”

However, if the oblique object is embedded inside a relative clause in argument position, interpretation of the object is dependent on the position in the matrix clause of the containing relative. If the matrix clause is transitive

and the relative is in direct object position, then the relative clause will be attracted by the EPP feature on *v* and raise out of the domain of existential closure. The relative clause as a whole will therefore receive a presuppositional interpretation. An embedded oblique object may also be interpreted as specific, just as in the case of pseudoclefts observed above.

- (29) a. B-in-ili=ko            ang pusa-ng        k-um-ain    ng daga.  
 -Tr.Perf-buy=1sErg   Abs cat-Lk        -Intr.Perf-eat Obl rat  
 “I bought the cat which ate a/the rat.”



If, however, the containing relative clause is itself the oblique object in a matrix antipassive, then the relative as a whole, including the embedded object must receive a nonspecific interpretation. This is expected, since the relative clause will remain inside VP and undergo existential closure at LF.

- (30) B-um-ili=ako            ng [pusa-ng        k-um-ain    ng daga]  
 -Intr.Perf-buy=1sAbs   Obl cat-Lk        -Intr.Perf-eat Obl rat  
 “I bought a cat which ate a/\*the rat.”

The contrast between (29) and (30) shows that mapping in the matrix clause plays a crucial role in determining specificity of an embedded oblique object. And since the relative clauses in both (29) and (30) are formed through extraction of the agent, specificity of the object is clearly not tied to the presence of an operator in external argument position, showing the inadequacy of Rackowski's (2002) account.

## 6 Conclusion

In this paper, I have shown how the analysis of Tagalog ergativity proposed by Aldridge (in preparation) accounts for different interpretive properties of direct objects in transitive and antipassive clauses. The key feature of the ergative proposal is the restriction of EPP features to transitive  $v$ . This ensures that a DP raises out of VP in transitive clauses, i.e. when this DP has absolutive status. Located in the  $vP$  phase edge at LF, this DP is then mapped to the restrictive clause and receives a presuppositional reading. In contrast, intransitive  $v$  does not have an EPP feature. Oblique objects in antipassives then typically remain inside VP and undergo existential closure at LF.

It is possible, however, for oblique objects to be specific in relative clauses. The presuppositional reading of the embedded object is dependent on a presuppositional interpretation for the containing DP. If the containing DP is mapped to the matrix restrictive clause, material inside the relative may also receive a presuppositional interpretation. If, however, the relative is inside the matrix nuclear scope, an embedded oblique object will also receive a nonspecific interpretation.

Finally, through comparison with an alternative analysis, I have additionally argued for a syntactic analysis driven by morphological features which leaves semantic interpretation to LF.

## References

- Akmajian, Adrian. 1970. On deriving cleft sentences. *Linguistic Inquiry* 1:147-168.
- Aldridge, Edith. In preparation. *Ergativity and Word Order in Austronesian Languages*. Doctoral dissertation, Cornell University.
- Basilico, David. 2003. The antipassive: low transitivity objects, syntactic inertness, and strong phases. Paper presented at the North American Syntax Conference. Montreal: Concordia University.
- Bittner, Maria. 1994. *Case, Scope, and Binding*. Dordrecht: Kluwer Academic Publishers.
- Bošković, Željko. 1997. Pseudoclefts. *Studia Linguistica* 51:235-277.
- Bromser, B. 1984. Towards a functional description of cleft constructions. *Lingua* 62:325-348.
- Chomsky, Noam. 1977. On *wh*-movement. In Culicover, W., T. Wasow, and A. Akmajian (eds.), *Formal Syntax*, 71-132. New York: Academic Press.
- Chomsky, Noam. 2000. Minimalist inquiries. In Martin, R. et. al. (eds.), *Step by Step: Essays in Minimalist Syntax in Honor of Howard Lasnik*, 89-155. Cambridge, Mass.: MIT Press.

- Chomsky, Noam. 2001a. Derivation by phase. In Kenstowicz, M. (ed.), *Ken Hale: A Life in Language*, 1-52. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 2001b. Beyond Explanatory Adequacy. MIT Occasional Papers in Linguistics 20.
- Collins, Peter. 1991. Pseudocleft and cleft constructions: A thematic and informational interpretation. *Linguistics* 29:481-519.
- Cooreman, Ann. 1994. A functional typology of antipassive. In Fox, B. and P. Hopper (eds.), *Voice: Form and Function*, 49-86. Amsterdam: John Benjamins.
- Diesing, Molly. 1992. *Indefinites*, Linguistic Inquiry Monograph 20, Cambridge, Mass.: MIT.
- Dixon, R.M.W. 1979. Ergativity. *Language* 55:59-138.
- Dixon, R.M.W. 1994. *Ergativity*. Cambridge University Press.
- Fichtner, Edward. 1993. Cleft sentences in English: A comprehensive view. *Word* 44.1:1-30
- Kamio, Akio. 1991. Cleft sentences and the territory of information. In Georgopoulos, C. and R. Ishihara (eds.), *Interdisciplinary Approaches to Language*, 353-371. Dordrecht: Kluwer Academic Publishers.
- Knowles, John. 1986. The cleft sentence. *Lingua* 69:295-317.
- Maclachlan, Anna and Masanori Nakamura. 1997. Case-checking and specificity in Tagalog. *The Linguistic Review* 14:307-333.
- Prince, Ellen. 1978. A comparison of *wh*-clefts and *it*-clefts in discourse. *Language* 54.4:883-906.
- Rackowski, Andrea. 2002. The structure of Tagalog: Specificity, voice, and the distribution of arguments. Doctoral dissertation, MIT.
- Schachter, P. and Fe T. Otanes. 1972. *Tagalog Reference Grammar*. Berkeley, Calif.: University of California Press.
- Williams, Edwin. 1983. Semantic vs. syntactic categories. *Linguistics and Philosophy* 6:423-446.

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