

Possessors move through the edge, too

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Abstract

This paper discusses possessor sub-extraction in Indonesian, Javanese and Madurese, and its implications for phase-based A-bar extraction of nominals. I show that possessors may extract from their possessive DPs and occur at the left edge of the clause. I argue that the suffix that occurs on the possessum (Indonesian *-nya*, Javanese *-ne*, Madurese *-Nah*) is the pronunciation of the functional head D rather than a pronominal possessor or resumptive pronoun. While the extraction of verbal arguments has been well studied in Indonesian languages, possessor sub-extraction provides a novel set of data that contributes to the discussion on the relationship between voice and nominal extraction. In these languages, voice morphology on the verb must reflect extraction of a low nominal, whether a verbal argument or a possessor. This pattern shows that the functional head Voice regulates A-bar extraction of all nominals that begin in the complement of the verb: the extracted nominal undergoes successive-cyclic movement through the edge of DP, then the edge of VoiceP, before landing in its surface position in CP. This movement is marked by morphological wh-agreement in the nominal and verbal domain. Possessor extraction thus has implications for theories of nominal extraction, phases and clause structure in Indonesian-type languages.

Keywords: possessor extraction, wh-agreement, Indonesian, Madurese, Javanese, voice

1 Introduction

This paper discusses A-bar movement of possessors in Indonesian, Javanese and Madurese, three Austronesian languages spoken primarily in parts of western Indonesia. These languages allow a possessor to occur external to its possessive DP, as in (1-3):¹

- (1) *Indonesian*
Siapa yang adik baca buku-nya?
who REL younger.sibling read book-D
'Who is it that little brother is reading (her) book?'
- (2) *Javanese*
wong sing buku-ne werno biru
person REL book-D color blue
'the person whose book is blue'
- (3) *Madurese*
Sapah se buku-nah e-bacah ale'?
who REL book-D PASS-read younger.sibling
'Whose book was read by little brother?'

The possessor may occur as a clefted element as in (1) and (3), or as the head of a relative clause as in (2). In both cases the possessor occurs at the left periphery in an A-bar position, separated from the rest of the clause by a relative morpheme, while the possessum occurs in an A position.

The first aim of the paper is to show that the relevant structures have been derived by movement of the possessor, rather than base generation of the possessor in its surface position. The argument is based on a comparison of the three languages, which are closely related. Indonesian, Javanese and Madurese are sometimes described as "Indonesian-type languages" because of similarities in their morphosyntax, particularly their voice systems (in contrast with Philippine-type languages, e.g. see discussion in Arka 2002; Himmelmann 2002; Cole et al. 2008; Blust 2013). Despite the close parallels in syntactic structure, I show that the pattern of nominal extraction in familiar Madurese diverges from that of polite Madurese, Indonesian and Javanese. This difference has consequences for the ability of a possessor to move to the left periphery in familiar Madurese, which is explained only if external possession is derived by the same syntactic mechanisms as nominal A-bar extraction. I show that external possession is subject to the same constraints that apply to the movement of verbal arguments: there is a correlation between the ability of a subject or object to extract and the ability of an external possessor to be associated with the same argument position. Furthermore, for the languages that allow object extraction, verbal morphology obligatorily marks the extraction; the same pattern applies when an external

¹ Data are from my fieldwork notes unless another source is cited. The Indonesian and Javanese data given in this paper are from the colloquial varieties spoken in East Java. My Madurese consultants are from Bangkalan and Jember; however, all Madurese data cited in this paper are from the Bangkalan (western) variety.

possessor is associated with that object. This is taken as evidence that possessors undergo A-bar extraction in Indonesian, Javanese and polite Madurese.

Second, while extraction of verbal arguments has been well studied in Indonesian-type languages, possessor extraction contributes a novel view on A-bar movement. Possessor extraction provides support for successive cyclic movement through the edge of VoiceP for all nominals. In the analysis proposed here for possessor extraction in these languages, one of the functions of the head Voice is to regulate the movement of any nominal from the complement of V. This also sheds new light on the nature of “subject-only” extraction in these languages, because it is the ability to escape from VoiceP, rather than a structural subject position, that determines the availability of extraction. The conclusion is that nominal A-bar movement is regulated low in the clause, by the functional head Voice.

The paper is organized as follows. Section 2 provides background on possessor extraction and nominal movement in these languages. In Section 3 I present possessor extraction data in Indonesian, Javanese and Madurese, showing that a movement analysis captures the patterns of extraction and verbal morphology. Section 4 discusses possessor movement through the edge of DP, then through the edge of VoiceP, which is driven by edge features on the functional heads D and Voice. Implications for Indonesian-type languages are discussed in Section 5. Conclusions are presented in Section 6, along with with remaining issues for future research.

2 Background

2.1 Preliminaries

My consultants speak varieties of Indonesian, Javanese and Madurese associated with East Java. A large portion of the data in this paper was collected during fieldwork with speakers from the cities of Surabaya and Malang. Data from spoken, colloquial varieties of each language are presented, unless otherwise noted. In addition to data from the familiar speech level of Madurese, I also present data from the polite speech level, which is a formal register but is primarily spoken rather than written.

External possession clauses occur infrequently, using a structure that can be interpreted as either a relative or a (pseudo-)cleft. Note that many of the examples therefore have two possible readings, corresponding to a relative clause or a clefted interpretation. For instance, (4) can either mean ‘Adi’s house that was destroyed yesterday’ (relative reading) or ‘It was Adi’s house that was destroyed yesterday’ (clefted reading).

(4) *Indonesian*

Rumah Adi yang di-rata-kan kemarin.

house Adi REL PASS-flat-APPL yesterday

‘It was Adi’s house that was destroyed yesterday.’

‘Adi’s house that was destroyed yesterday’

The clefted reading requires a certain information-structural context: information within in the relative clause must be presupposed. In speech, intonation as well as context disambiguate whether a cleft or relative is intended; the relative may also be embedded with

a clause, as expected. The glosses used throughout the paper do not necessarily indicate preference for a particular reading.

2.2 *Possessor extraction and external possession*

External possession is an umbrella term for constructions in which a possessor occurs outside of the constituent with which it has a possession relation. In a recent overview, Deal (2013) identifies two broad categories of external possession (sometimes called possessor raising). The first has properties similar to raising and control, occurring in infinitivals in complement position; these cases are attested in numerous languages (see e.g. Keenan 1972; Perlmutter & Postal 1983; Baker 1988; Landau 1999; Payne & Barshi 1999; among many others). The second type of external possession involves only subjects, and triggers information-structural effects; this type is found in languages such as Chickasaw, dialects of Flemish, Japanese, Korean and Tz'utujil.

Indonesian, Javanese and Madurese possessors that occur at the left edge of the clause, as illustrated in (1-3), appear to be distinct from the range of external possession intended to be included in Deal's typology. The possessors considered here are not limited to infinitivals and complement positions, but instead occur as the head of a pseudo-cleft or relative. Neither is the external possessor limited to subjects; external possession from object position is possible, as seen in (1). External possession can include either a *wh* possessor or a lexical possessor, and is not sensitive to inalienability, affectedness, part-whole relations or other conditions frequently associated with external possession. I take possessor extraction to be separate from phenomena that are generally labeled external possession or possessor raising.

However, it is worth mentioning that at least in Indonesian, some verbs allow an external possessor to occur in an A position:

- (5) *Indonesian* (Sneddon 1996: 279)
Jakarta sudah mulai ber-ubah wajah-nya.
Jakarta PERF begin INTR-change face-D
'The face of Jakarta has begun to change.'

- (6) *Indonesian*
Penyanyi itu me-rasa ter-ancam nyawa-nya.
singer that ACTV-feel INVOL-threaten soul-D
'The singer's life felt threatened.'

These potential cases of possessor raising are not included in this discussion, as my goal is to build a case for possessors that undergo A-bar extraction directly from possessive DPs, particularly in transitive active sentences. I identify cases of A-bar extraction by the occurrence of a relative morpheme separating the possessor from the rest of the clause as in (1-3); I assume that the external possession in (5-6) is derived by another process.² I leave

² Chung (2008) cites examples of a possessor occurring at the left edge of the clause without a relative morpheme, such as the copular clause in (i). However, the prosody suggests that the possessor in this case is a left-dislocated topic.

examples such as (5-6) for future investigation.

While possessor extraction has been noted in other languages, (e.g. Ross 1986; Szabolcsi 1992; Coon 2009; Gavrusseva 2000) it has not been widely discussed for languages related to Indonesian, Javanese or Madurese. Indonesian examples are briefly discussed in Chung 2008 and in grammars such as Sneddon 1996; Sneddon et al. 2012. External possessors in Madurese are mentioned in Davies 2003; 2010. Other Austronesian languages that have been noted to employ a similar cleft structure with an external possessor include Cebuano (Bell 1983) and Tagalog (Kroeger 1993).

2.3 *Nominal movement in Indonesian, Javanese and Madurese*

Before discussing possessor extraction, I review general extraction of nominals in these three languages, which have the properties of A-bar movement (or WH movement in the sense of Chomsky 1977 and subsequent). In Indonesian, Javanese and Madurese, a nominal that has undergone A-bar movement occurs at the left edge of the clause, and must be immediately followed by a relative morpheme:

- (7) *Indonesian*
Susan tahu Lani suka kue.
Susan know Lani like cake
'Susan knows Lani likes cake.'
- (8) Siapa yang Susan tahu suka kue?
who REL Susan know like cake
'Who does Susan know likes cake?'
- (9) *Javanese*
Lina senengi kue.
Lina like cake
'Lina likes cake.'
- (10) kue sing Lina senengi
cake REL Lina like
'the cake that Lina likes'
- (11) *Madurese*
Adi ng-akan mie.
Adi ACTV-eat noodles
'Adi is eating noodles.'
- (12) Sapah se ng-akan mie?
who REL ACTV-eat noodles

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- (i) Orang itu, delapan anak-nya.
person that eight child-D
'That person has eight children.' (cited from Wolff et al. 1992: 125)

‘Who is eating noodles?’

A-bar movement in each of these examples results in a gap, for both relatives (10) and moved-wh questions (8, 12) (in-situ wh questions are also possible in all three languages). While nominal extraction can be long-distance in Indonesian (8), Davies (2000; 2003) shows that long-distance movement is impossible in Javanese and Madurese. For Javanese and Madurese, nominal extraction is only possible out of a single clause for questions and relatives.

Nominal A-bar movement in all three languages is also sensitive to islands. It is not possible to extract out of a complex NP (13-14) or adjunct clause (15-16) in Indonesian:

(13) *Indonesian*

Susan dapat kesimpulan bahwa Lani suka kue.
Susan get conclusion that Lani like cake
‘Susan got the conclusion that Lani likes cake.’

(14) * Siapa yang Susan dapat kesimpulan suka kue?
who REL Susan get conclusion like cake
(‘Who did Susan get the conclusion likes cake?’)

(15) Ayah senang ketika me-lihat film itu.
Father happy when ACTV-see film that
‘Father was happy when he saw that film.’

(16) * Apa yang Ayah senang ketika lihat?
what REL Father happy when see
(‘What was Father happy when he saw?’)

Extraction out of a complex NP or adjunct clause is likewise impossible in Javanese and Madurese, but such movement would also be ruled out by the restriction on long distance movement in these languages. All three languages also disallow fronted PPs to occur with the relative morpheme (*yang/sing/se*), which is obligatory in cases of A-bar extraction. This is shown in the examples below, where PPs cannot occur with the relative morpheme, whether the preposition is stranded or pied-piped:

(17) *Indonesian*

Aku mau bertemu dengan Ibu guru.
1SG want meet with Mrs teacher
‘I will meet with the teacher.’

(18) * Siapa yang aku mau bertemu dengan?
who REL 1SG want meet with
(‘Who will I meet with?’)

(19) * Dengan siapa yang aku mau bertemu?
with who REL 1SG want meet

(‘With whom will I meet?’)

- (20) *Javanese*
Sepeda motor-e Rini kate di-dol karo adik.
motorbike-D Rini will PASS-sell by younger.sibling
‘Rini’s motorbike will be sold by little brother.’
- (21) * Sopo sing sepeda motor-e Rini kate di-dol karo?
who REL motorbike-D Rini will PASS-sell by
(‘Who will Rini’s motorbike be sold by?’)
- (22) * Karo sopo sing sepeda motor-e Rini kate di-dol?
by who REL motorbike-D Rini will PASS-sell
(‘By whom will Rini’s motorbike be sold?’)
- (23) *Madurese*
Sara mole darih roma-nah Fatima.
Sara go.home from house-D Fatima
‘Sara went home from Fatima’s house.’
- (24) * Roma-nah sapah se Sara mole darih?
house-D who REL Sara go.home from
(‘Whose house did Sara go home from?’)
- (25) * Darih roma-nah sapah se Sara mole?
from house-D who REL Sara go.home
(‘From whose house did Sara go home?’)

Some PPs and other adjuncts may occur in sentence-initial position without the relative morpheme, but I take such cases to be scrambling or base generation rather than A-bar movement. In addition to these properties of A-bar movement, in Section 3 I discuss another diagnostic for A-bar movement that is specific to these languages, which is active verbal morphology that is sensitive to movement.

I have already mentioned that wh-questions, pseudo-clefts and relatives have the same surface structure in these languages.³ Various authors have examined pseudo-clefts in Indonesian and related languages. See Kader 1976; Cole & Hermon 1998; Cole, Hermon & Aman 1999; Kroeger 2009 for Malay and Indonesian; for discussion in other Austronesian languages see Paul 2001; Pearson 2001; Davies 2003; Massam 2003; Aldridge 2014. Following previous analyses, I assume that pseudo-clefts involve operator movement, rather than movement of the nominal that is pronounced as the head of the relative or cleft. The null operator undergoes relative-internal movement to form a headless relative clause that is nominalized (e.g. ‘the one reading this book’ in (26)). This headless relative begins as the grammatical subject of a copular sentence (these languages have null copula). The predicate

³ Pseudo-clefts occur without an overt expletive element and copula, yet have a clefted interpretation.

of this copular sentence is the nominal that is pronounced as the head of the cleft, for example ‘Siti’ in (26). In the base word order of pseudo-clefts, the headless relative clause occurs first, followed by the clefted nominal. This is shown in (26), (28) and (30):

(26) *Indonesian*

Yang baca buku ini Siti.
REL read book this who
‘The one reading this book is Siti.’

(27) Siti yang baca buku ini.
Siti REL read book this
‘It is Siti who is reading this book.’

(28) *Javanese*

Sing buku-ne werno biru sopo?
REL book-D color blue who
‘The one whose book is blue, is who?’

(29) Sopo sing buku-ne werno biru?
who REL book-D color blue
‘Whose book is blue?’

(30) *Madurese*

Se e-bacah ale’ apah?
REL PASS-read younger.sibling what
‘The thing that was read by little brother, is what?’

(31) Apah se e-bacah ale’?
what REL PASS-read younger.sibling
‘What was read by little brother?’

The pseudo-cleft is derived by raising the predicate nominal to a sentence-initial focused position, resulting in the surface word order in (27), (29) and (31). Although the predicate nominal frequently occurs at the left edge of the clause, the examples above show that it may occur in either sentence-initial position or sentence-final position.⁴

I treat null operator movement as the strategy used in all cases of extraction (wh constituent questions, relatives and pseudo-clefts). In other words, I assume that the overt nominal does not undergo A-bar movement itself. It is always the null operator which undergoes movement within a relative clause, and I assume that this operator is subject to constraints on nominal movement, such as syntactic islands. Note that others authors have also treated null operator movement as the strategy for A-bar/WH movement in various

⁴ For Indonesian (and Malay), the distribution of focus particles also supports the predicate status of the clefted nominal. The focus particle *-lah* and the interrogative particle *-kah* may attach to predicates, but not subjects (Cole, Hermon & Aman 1999; Musgrave 2001). In (26-27) these particles may attach to *Siti*, but not to the headless relative.

languages, e.g. Chung 1998; McCloskey 2001; 2002; Reintges et al. 2006. For ease of exposition however, in this paper I refer to “nominal movement,” “possessor extraction,” etc. rather than “null operator movement” or “operator extraction.”

3 Possessor sub-extraction in three Indonesian-type languages

In this section I demonstrate that the external possessors in (1-3) are not base generated in their surface positions at the left edge of the clause. Rather, the possessor is extracted from its possessive DP to an A-bar position, while the possessum remains in situ, in an A position. Two primary pieces of evidence support the claim. First, across these three languages, the ability of the subject or object to be extracted predicts whether an external possessor can be associated with that argument. Second, the voice morphology that is correlated with nominal extraction in these languages is also sensitive to external possessors.

3.1 Extraction from subject position

I begin with possessive DPs that occur in the preverbal position of grammatical subjects. For each language, I show an example of internal possession, in which the possessor occurs within a possessive DP in subject position. The second example shows that the possessive DP (both possessum and possessor) may be extracted from subject position to the left edge of the clause, obligatorily followed by a relative morpheme (Indonesian *yang*, Javanese *sing*, Madurese *se*). Third, an example of an external possessor is given, where the possessor occurs at the left edge of the clause while the possessum remains in-situ as subject.

(32) *Indonesian*

Rumah Adi di-rata-kan kemarin.
house Adi PASS-flat-APPL yesterday
'Adi's house was destroyed yesterday.'

(33) Rumah Adi yang di-rata-kan kemarin.

house Adi REL PASS-flat-APPL yesterday
'It was Adi's house that was destroyed yesterday.'

(34) orang yang rumah-nya di-rata-kan kemarin

person REL house-D PASS-flat-APPL yesterday
'the person whose house was destroyed yesterday'

(35) *Javanese*

Buku-ne Rini di-woco adik.
book-D Rini PASS-read younger.sibling
'Rini's book was read by little brother.'

(36) Buku-ne Rini sing di-woco adik.

book-D Rini REL PASS-read younger.sibling
'It was Rini's book that was read by little brother.'

(37) Sopo sing buku-ne di-woco adik?
who REL book-D PASS-read younger.sibling
'Who is it that (her) book was read by little brother?'

(38) *Madurese (familiar)*
Kalambhi-nah Joko e-sasa.
clothing-D Joko PASS-wash
'Joko's clothing was washed.'

(39) Kalambhi-nah Joko se e-sasa.
clothing-D Joko REL PASS-wash
'It was Joko's clothing that was washed.'

(40) Sapah se kalambhi-nah e-sasa?
who REL clothing-D PASS-wash
'Who is it that (his) clothing was washed?'

Subjects are freely extracted in these languages, and (34), (37) and (40) show that an external possessor can be associated with a possessum in subject position. This is the case whether the external possessor is a *wh* word or lexical possessor.⁵ Subject extraction is not dependent on the thematic role of the nominal: (32-40) are passive clauses in which the Theme occurs in subject position, but subject Agents in active clauses behave similarly, as shown in (52-53).

One characteristic of the grammatical subject in these languages is that it must be definite or specific (Cole et al. 2002; Sato 2008; Davies 2010; Sneddon et al. 2012). Even though these languages typically allow *in situ* questions, with a *wh* phrase occurring in object position or as a prepositional object, since *wh* words are non-specific, an *in situ* subject question is disallowed.^{6,7} Interestingly, if the subject is a possessive DP, it is the definiteness of the possessor, rather than the definiteness of the possessum, that fulfills the subject requirement. This is illustrated below in Madurese. In contrast to the definite possessor *Joko* in (38), the generic noun *oreng* 'person' cannot occur as a possessor in subject position (41). The subject question in (42) is also not possible because the *wh* possessor renders the subject non-specific.

(41) *Madurese (familiar)*
* Kalambhi-nah oreng e-sasa.
clothing-D person PASS-wash

⁵ External *wh* possessors must be animate; this restriction does not apply to external lexical possessors.

⁶ Sneddon 2006 reports that this rule is relaxed in colloquial Jakartan Indonesian.

⁷ For my Indonesian consultants, *in-situ* subject questions are possible with *siapa* 'who,' if the questioned individual is included among the addressees: 'Who (among you)...?' The necessary context for this suggests that D-linking may play a role in subject *wh-in situ* (cf. Pesetsky 1987).

(‘Somebody’s clothing was washed.’)

- (42) * Kalambhi-nah sapah e-sasa?
clothing-D who PASS-wash
(‘Whose clothing was washed?’)
- (43) Kalambhi-nah sapah se e-sasa?
clothing-D who REL PASS-wash
(‘Whose clothing is it that was washed?’)

Instead, the entire subject may be clefted (43), or the external possessor can be clefted as previously shown in (40). Similar observations apply in Indonesian and Javanese:

- (44) *Indonesian*
* Rumah orang di-rata-kan kemarin.
house person PASS-flat-APPL yesterday
(‘Somebody’s house was destroyed yesterday.’)
- (45) *Javanese*
* Buku-ne sopo di-woco adik?
book-D who PASS-read younger.sibling
(‘Whose book was read by little brother?’)

The definiteness requirement in these languages means that wh possessors in subject position cannot be left in-situ.

3.2 *Extraction from object position*

Next, I turn to possessive DPs in postverbal object position. I demonstrate that the extraction facts are similar for Indonesian and Javanese, whereas the pattern deviates in familiar Madurese. Further investigation shows that the polite register of Madurese patterns with Indonesian and Javanese, rather than familiar Madurese.

Both Indonesian and Javanese allow extraction of an internal argument in an active transitive clause (47, 50). An external possessor may also be associated with a possessum in object position (48, 51).

- (46) *Indonesian*
Adik mem-baca buku gadis itu.^s
younger.sibling ACTV-read book girl that
(‘Little brother is reading the girl’s book.’)

^s In basic Indonesian active clauses without object extraction, pronunciation of the ACTV prefix on many verbs appears optional (though this is debated). This variability is not addressed here. Where the ACTV prefix is shown in the data, it indicates that its presence is grammatical; this crucially contrasts with clauses that have object extraction, where pronunciation of an ACTV prefix results in ungrammaticality.

- (47) Buku gadis itu yang adik baca/ * mem-baca.
 book girl that REL younger.sibling read/ ACTV-read
 ‘It is the girl’s book that little brother is reading.’
- (48) Siapa yang adik baca/ * mem-baca buku-nya?
 who REL younger.sibling read/ ACTV-read book-D
 ‘Who is it that little brother is reading (her) book?’
- (49) *Javanese*
 Aku kate m-oco buku-ne penulis iku.
 1SG will ACTV-read buku-D writer that
 ‘I will read that writer’s book.’
- (50) Buku-ne penulis iku sing aku kate woco/ * m-oco.
 book-D writer that REL 1SG will read/ ACTV-read
 ‘It is that writer’s book that I will read.’
- (51) penulis sing aku kate woco/ * m-oco buku-ne
 writer REL 1SG will read/ ACTV-read book-D
 ‘the writer that I will read (her) book’

When the internal argument is extracted in (47) and (50), the active voice prefix (Indonesian *meN-*, Javanese *N-*) cannot occur on the verb. Instead, a “bare verb” (i.e. no active voice morphology) is required for object extraction. Crucially, a bare verb is also required when an external possessor is associated with the object in (48) and (51). This contrasts with subject extraction from the same clauses, which are well-formed with the AV prefix:

- (52) *Indonesian*
 Adik yang mem-baca buku gadis itu.
 younger.sibling REL ACTV-read book girl that
 ‘It is little brother who is reading the girl’s book.’
- Javanese*
- (53) Aku sing kate m-oco buku-ne penulis iku.
 1SG REL will ACTV-read buku-D writer that
 ‘It is I who will read that writer’s book.’

Additionally, in-situ object wh questions are compatible with AV morphology on the verb:

- (54) *Indonesian*
 Adik mem-baca buku siapa?
 younger.sibling ACTV-read book who
 ‘Whose book is little brother reading?’

- (55) *Javanese*
 Aku m-oco buku-ne sopo?
 1SG ACTV-read buku-D who
 ‘Whose book was I reading?’

The bare verb, then, is obligatory only when the extraction occurs from object position.

The correlation between object extraction and null voice morphology in active clauses has been well discussed in the literature for varieties of Indonesian and related languages (e.g. Saddy 1991; Voskuil 1996; 2000; Cole & Hermon 2005; Aldridge 2008; Arka & Manning 2008; Cole et al. 2008; Fortin 2009; Davies 2010; Yanti 2010; Sato 2012; among others). The data presented here show that the pattern also applies to a set of overlooked nominals: possessors. In active transitive clauses in Indonesian and Javanese, a bare verb is obligatory with object extraction, but not subject extraction; a bare verb is also obligatory when the external possessor is associated with the object, but not when associated with the subject.

Familiar Madurese provides a contrast with Indonesian and Javanese; the internal argument of an active transitive clause cannot be extracted (Davies 2010; Jeoung 2017).

- (56) *Madurese (familiar)*
 Ale’ m-acah buku-nah Tono.
 younger.sibling ACTV-read book-D Tono
 ‘Little brother read Tono’s book.’
- (57) * Buku-nah Tono se ale’ m-acah/bacah.
 book-D Tono REL younger.sibling ACTV-read/read
 (‘It was Tono’s book that little brother read.’)
- (58) * Sapah se ale’ m-acah/bacah buku-nah?
 who REL younger.sibling ACTV-read/read book-D
 (‘Who was it that little brother read his book?’)

(57) illustrates that object extraction in familiar Madurese is not possible, whether the verb is bare or has the active prefix. Likewise, an external possessor cannot be associated with a possessum in object position in (58), whether the verb is bare or affixed. We have already seen that in familiar Madurese, it is possible to extraction the Theme from subject position in a passive clause (39); the subject (external argument) of an active transitive clause may also be extracted, and does not require a bare verb:

- (59) *Madurese (familiar)*
 Ale’ se m-acah buku-nah Tono.
 younger.sibling REL ACTV-read book-D Tono
 ‘It was little brother who read Tono’s book.’

Familiar Madurese therefore diverges from the pattern seen Indonesian and Javanese. While subject extraction is licit in familiar Madurese, object extraction is not possible; and external possessors can only be associated with subjects, but not objects.

The availability of extraction, then, is correlated with the availability of external possession across Indonesian, Javanese and familiar Madurese: if a subject or object can be extracted from a certain position, then an external possessor may be associated with a possessum in that position. I take these facts to indicate that external possessors must undergo the same type of movement as verbal arguments, such that the mechanisms that allow or prevent the extraction of a verbal argument will also apply to its possessor. This is further supported by additional observations from the polite register of Madurese.

An unusual fact about Madurese is that the familiar and polite registers behave differently with regard to argument extraction (Jeoung 2017). The familiar register allows only subject extraction, but the polite register allows a possessive DP to be extracted from both subject position (61) and object position (63).

(60) *Madurese (polite)*

Buku-epon pak ustadz e-maos sareng rajih-epon.
 book-D Mr teacher PASS-read by wife-D
 ‘Teacher’s book was read by his wife.’

(61) Buku-epon pak ustadz se e-maos sareng rajih-epon.

book-D Mr teacher REL PASS-read by wife-D
 ‘It was Teacher’s book that was read by his wife.’

(62) Kaulah lastareh m-acah buku-epon imam ka’dissah.

1SG PERF ACTV-read book-D imam that
 ‘I already read that imam’s book.’⁹

(63) Buku-epon imam ka’dissah se kaulah lastareh bacah/ * m-acah.

book-D imam that REL 1SG PERF read/ ACTV-read
 ‘It was that imam’s book that I already read.’

Polite Madurese therefore displays the same pattern as Indonesian and Javanese, which allow both subject and object extraction.¹⁰ Also consistent with this pattern, object extraction in polite Madurese disallows the active prefix on the verb (63).

If possessors undergo A-bar extraction as verbal arguments do, this predicts that polite Madurese will pattern with Indonesian and Javanese in allowing an external possessor to be associated with a possessum in either subject or object position. This is the case:

(64) *Madurese (polite)*

Pak ustadz se buku-epon e-maos sareng rajih-epon.
 Mr teacher REL book-D PASS-read by wife-D

⁹ While *maos* ‘read’ is used only in the formal register, *bacah* ‘read’ can be used in both familiar and polite registers.

¹⁰ It is possible that the various registers in Javanese have differences in extraction, but this has not yet been reported in the literature. Registers in Indonesian are less clearly differentiated than in Madurese and Javanese, but to my knowledge, extraction does not differ according to politeness.

‘It was Teacher that (his) book was read by his wife.’

- (65) Imam ka’dissah se kaulah lastareh bacah/ * m-acah buku-epon.
imam that REL 1SG PERF read/ ACTV-read book-D
‘It was that imam that I already read (his) book.’

Also predicted is the fact that the verbal morphology is required to be bare when the external possessor is associated with the object in (65).

To summarize this section, the ability of a subject or object to be extracted is correlated with the ability of an external possessor to be associated with that argument position. I take this as evidence that the possessor undergoes A-bar extraction from an argument position to its surface position at the left periphery of the clause. An alternate analysis, in which the possessor is base-generated in its surface position, does not account for the subject-object asymmetry in verbal morphology; it is difficult to explain why a high base-generated possessor requires a null active voice prefix when the possessum is the object, but not when the possessum is the grammatical subject. By contrast, the pattern is easily explained under the present analysis. A-bar movement of a possessor is subject to the same constraints as A-bar movement of an argument. Given that subjects may be freely extracted in Indonesian, Javanese and polite Madurese, but objects may be extracted only with null active voice morphology, it follows that the possessors of these arguments show the same pattern. In a similar vein, subjects and their possessors may be extracted in familiar Madurese, but objects and their possessors may not. This is consistent with much previous work in Indonesian languages that observes obligatory null verbal morphology as indicative of A-bar movement of the internal object (Saddy 1991; Voskuil 1996; 2000; Cole & Hermon 2005; Aldridge 2008; Arka & Manning 2008; Cole et al. 2008; Sato 2008; Fortin 2009; Davies 2010; Yanti 2010; Sato 2012; Jeoung 2017; among others).

3.3 *The suffix -nya/-ne/-Nah in internal possession*

In this section I discuss the status of the suffix that occurs on the possessum: *-nya* in Indonesian, *-ne* or *-e* in Javanese, and *-Nah* in Madurese. For Indonesian, when this suffix occurs in internal possession, it is sometimes called a possessive linker or ligature (e.g. Sneddon 1996; Arka 2013), but with an extracted possessor, it has been assumed to be a resumptive pronoun (e.g. Voskuil 2000; Musgrave 2001; Chung 2008).

I propose an analysis in which the suffix that occurs in internal possession is the same as that which occurs in possessor extraction. This is straightforward in Javanese and Madurese, since the suffix consistently occurs with both internal and external possessors (with the exception of Javanese possessors that are clitic pronouns; see Table 1). In Indonesian, the suffix *-nya* is optionally pronounced in internal possession, but obligatorily pronounced when the possessor has been extracted. This analysis of *-nya/-ne/-Nah* is supported by the following evidence: first, the suffix and the definite morpheme in each language share the same distribution and identity in form, suggesting that they are both the functional head D; second, the suffix may co-occur with personal pronouns, names and other possessors in internal possession, which indicates that the suffix is not pronominal. I also argue that the possessor may be a *pro* argument, which derives the default 3 person interpretation of *-nya/-ne/-Nah*.

To begin, these suffixes independently occur as definite morphemes in each language. Recall that subjects in these languages must be definite or specific. The suffixes in (66-68) mark the subject as definite, and the clause is ill-formed without it:

- (66) *Indonesian*
 Tempat-*(nya) bagus buat foto~foto.
 place-D good make photo~PL
 ‘The place was good for photos.’
- (67) *Javanese*
 Ali-ali emmas-*(e) ce’ larang-e.
 ring gold-D very expensive-INTENS
 ‘The gold ring is very expensive.’
- (68) *Madurese*
 Ghuruh-*(nah) penter.
 teacher-D smart
 ‘The teacher is smart.’

These are non-possessive contexts; note that the form of the the suffixes that occur in possessive DPs is identical to the definite morphemes in (66-68). This identity in form extends to variable morphological alternations in Javanese: there is optionality between *-ne* and *-e* for many speakers, who accept or produce both forms suffixed to the same N, in both definite contexts and possessive contexts. For Madurese, the first segment of the suffix *-Nah* is phonologically conditioned by the preceding segment (Stevens 1968; Davies 2010); the same set of allomorphs occur as definite suffixes and possessive suffixes in Madurese. (The Indonesian suffix *-nya* is invariant.) This identity in form and distribution suggests that these suffixes are the functional head D; see Section 4.1 for trees showing possessive DP structure.

Table 1: Possessive DPs with pronominal possessors.

	<i>rumah</i> ‘house’ + possessor		
	-D + possessor	pronominal clitic	∅ + possessor
<i>Indonesian</i> ¹¹			
1SG ‘my house’	rumah-nya aku ¹²	rumah-ku	rumah aku
2SG ‘your house’	rumah-nya kamu	rumah-mu	rumah kamu
3SG ‘his/her house’	rumah-nya dia	-	rumah dia
<i>pro</i> possessor	rumah-nya <i>pro</i>	-	-
cf. ‘Rika’s house’	rumah-nya Rika	-	rumah Rika
cf. ‘whose house’	rumah-nya siapa	-	rumah siapa

¹¹ There is competition between the use of a free pronoun and clitic in Indonesian possessive DPs. In colloquial speech, speakers prefer the clitic, but also find the free pronoun possible.

¹² The co-occurrence of *-nya* with a pronominal possessor is reported to be more common in emphatic or affective contexts; see also footnote 19 for Javanese.

<i>Javanese</i> ¹³ 1SG ‘my house’ 2SG ‘your house’ 3SG ‘his/her house’ <i>pro</i> possessor cf. ‘Rika’s house’ cf. ‘whose house’	omah-ne aku ¹⁴ omah-ne kamu omah-ne dewe’e omah-ne <i>pro</i> omah-ne Rika omah-ne sopo	omah-ku omah-mu - - - -	- - - - -
<i>Madurese</i> 1SG ‘my house’ 2SG ‘your house’ 3SG ‘his/her house’ <i>pro</i> possessor cf. ‘Rika’s house’ cf. ‘whose house’	- roma-nah hedah roma-nah aba’eng roma-nah <i>pro</i> roma-nah Rika roma-nah sapah	tang kancah - - - - -	- - - - -

In all three languages, these suffixes co-occur with personal pronouns in possessive DPs. See Table 1, which shows the possessum ‘house’ with a representative set of pronominal possessors.¹⁵ Two observations are worth noting about the forms in Table 1. The first is that in Javanese and Madurese, the suffix is required in all possessive DPs (with the exception of clitic possessors in Javanese and the unusual 1 singular clitic *tang* in Madurese).^{16,17} The possessum is suffixed with *-ne/-Nah* with both internal and external possessors. For Javanese and Madurese, then, there is little reason to believe that *-ne/-Nah* is a resumptive pronoun when the possessor has been extracted. Extraction of the possessor merely leaves the possessum and suffix in situ, as expected. This is also the analysis that I pursue for Indonesian below, although the multi-functionality of Indonesian *-nya* requires additional discussion.

¹³ The Javanese suffix is listed as *-ne*, but as already mentioned, it can variably occur as *-e* in the same positions.

¹⁴ Like Indonesian, the co-occurrence of *-ne* with a pronominal possessor is not common in Javanese, but is associated with emphatic or affective contexts.

¹⁵ Javanese and Madurese have considerable regional variation in personal pronouns, as well as dedicated sets of pronouns for different registers (see e.g. Uhlenbeck 1978; Suharno 1982; Errington 1998 for Javanese; Davies 2010 for Madurese). Table 1 is not intended to be a comprehensive summary of the pronominal system in each language; this subset of singular pronouns is used to illustrate the main points under discussion.

¹⁶ Clitic possessors may compete with the suffix for a single position; it is also possible that after *-nya/-ne/-Nah* a strong form of the pronoun is required for prosodic reasons.

¹⁷ My consultant reports that using the 1 person free pronoun as a possessor, i.e. *roma-nah engko*, is possible in some dialects of Madurese.

The second point illustrated in Table 1 is that for Indonesian, Javanese and Madurese, there is no 3 possessive pronoun. This departs from the view in previous literature, which is that the suffix *-nya/-ne/-Nah* is a pronominal possessor, and that it has 3 person features (e.g. Sneddon 1996; Errington 1998; Davies 2010; Sneddon et al. 2012; Arka 2013). Instead of a 3 person pronominal analysis for *-nya/-ne/-Nah*, I propose a silent *pro* possessor, a reasonable assumption given that these are *pro*-drop languages and silent arguments are very common. Consider again the examples in (66-68), in which a noun is suffixed with *-nya/-ne/-Nah*. In non-possessive contexts, this is interpreted as a definite morpheme. However, if a possessor is salient in the discourse, these are interpreted as 3 person possessives (examples repeated with possessive glosses):

- (69) *Indonesian*
 Tempat-nah *pro* bagus buat foto~foto.
 place-D good make photo~PL
 ‘Her place was good for photos.’
- (70) *Javanese*
 Ali-ali emmas-e *pro* ce’ larang-e.
 ring gold-D very expensive-INTENS
 ‘Her gold ring is very expensive.’
- (71) *Madurese*
 Ghuruh-nah *pro* penter.
 teacher-D smart
 ‘His teacher is smart.’

The *pro* possessor explains why these possessive DPs are interpreted as 3 person; a *pro* argument receives a default 3 person interpretation. This proposal derives the same interpretive result as a 3 person pronominal analysis for *-nya/-ne/-Nah*, but has the advantage of simplicity, making the distribution of the suffix consistent across all forms in Table 1. The reason that *-nya/-ne/-Nah* is compatible with 1, 2 and 3 arguments is that it does not bear any phi features. Under this view, it is not necessary to stipulate that the suffix on the possessum is sometimes a linker/ligature, but sometimes also a 3 person possessor. This analysis also accounts for the ability of the suffix to co-occur with a 3 pronoun.

Let us turn specifically to Indonesian, which shows a different pattern than Javanese and Madurese: the suffix *-nya* is not required in internal possession, as shown in the last column of Table 1. Most authors describe possessive DPs in Standard Indonesian without *-nya* (e.g. Sneddon et al. 2012), although examples of *-nya* in possessive DPs are also reported (Arka 2013). I find that in colloquial Indonesian, the suffix can optionally occur between the possessum and possessor (except when the possessor is a clitic pronoun):

- (72) *Indonesian*
 Buku(-nya) dia biru, kalau buku(-nya) Desy kuning.
 book-D 3SG blue as.for book-D Desy yellow
 ‘His book is blue, but Desy’s book is yellow.’

- (73) Uang(-nya) orang kaya cepat di-keluar-kan.
 money-D person rich quick PASS-exit-APPL
 ‘Rich people’s money is quickly spent.’

In Indonesian, the variable pronunciation of *-nya* as in (72-73) is sometimes reported to be the result of contact with various local languages, or attributed to regional differences. However, for my Indonesian consultants, (72-73) are possible both with and without the suffix, with no semantic consequence. (Recall that the definiteness of a possessive DP depends on the definiteness of the possessor; pronunciation of *-nya* does not carry definite semantics.) Analogous examples in Javanese and Madurese demonstrate the parallel internal structure of these possessive DPs across all three languages:

- (74) *Javanese*
 Buku-ne dewe’e biru, lek buku-ne Desy kuning.
 book-D 3SG blue as.for book-D Desy yellow
 ‘His book is blue, but Desy’s book is yellow.’

- (75) Duwit-e wong sogih endang di-tokk-e.
 money-D person rich quick PASS-buy-APPL
 ‘Rich people’s money is quickly spent.’

- (76) *Madurese (familiar)*
 Buku-nah Adi bhiruh, mon buku-nah Desy kuning.
 book-D Adi blue as.for book-D Desy yellow.
 ‘Ali’s book is blue, but Desy’s book is yellow.’

- (77) Pesse-nah oreng soghi dhulih e-pa-keluar.
 money-D person rich quick PASS-CAUS-exit
 ‘Rich people’s money is quickly spent.’

I conclude that Indonesian differs from Javanese and Madurese in that the suffix is optionally pronounced in internal possession. But like Javanese and Madurese, the suffix is obligatory with a *pro* possessor.¹⁸

For the sake of completeness, I briefly note some other uses of Indonesian *-nya* that have been reported in the literature, without attempting to provide an analysis of all occurrences of this form. It is clear that *-nya* has different functions in contexts other than possession and definite marking, and these have received varied analyses by previous authors (see Musgrave 2001; Sneddon et al. 2012; Arka 2013; Kroeger 2014 for recent treatments of Indonesian *-nya*.) My purpose in outlining these cases is to demonstrate that a unified analysis for all cases of *-nya* is unlikely. The approach that I have pursued here is to show that specifically in cases of possession, *-nya* is the same suffix that marks definiteness on nominals. Other occurrences of *-nya* do not involve possession, but rather another function. For instance, *-nya* is used in the formation of evidential, modal and adverbial expressions

(Arka 2013):¹⁹

(78) *Indonesian*

Ke-lihat-an-nya Djoko sakit demam.
NMLZ-see-NMLZ-NYA Djoko sick fever
'Apparently, Djoko was sick with fever.'

(80) Pokok-nya kita saling me-maham-i.
primary-NYA 1SG.INCL each.other ACTV-understand-APPL
'Most importantly, we understand each other.'

(79) Arka (2013: 35)

Harus-nya kamu datang.
must-NYA 2SG come
'You should have come.'

-*Nya* can also attach to transitive verbs and prepositions:²⁰

(81) *Indonesian*

Ibu mem-per-indah baju-ku dengan men-jahit-(nya).
Mother ACTV-CAUS-beautiful shirt-1SG with ACTV-sew-NYA
'Mother adorned my shirt by sewing it.'

(82) Arka (2013: 34, with glosses modified)

Perintah-ku pada-nya untuk tak kemana-mana.
order-2SG to-NYA for NEG to.anywhere
'My order to him is that (he should) not go anywhere.'

Unlike internal possession however, when *-nya* is cliticized to a transitive verb or a preposition, it cannot co-occur with another pronoun or nominal:

(83) *Indonesian*

* Ibu mem-per-indah baju-ku dengan men-jahit-nya itu/saku.²¹
Mother ACTV-CAUS-beautiful shirt-1SG with ACTV-sew-NYA that/pocket
('Mother adorned my shirt by sewing it/a pocket.')

(84) * Perintah-ku pada-nya dia untuk tak kemana-mana.

¹⁹ Note that for non-possessive instances of *-nya*, I have used a neutral gloss of *-NYA* instead of *-D*.

²⁰ In (81-82), *-nya* appears to replace a 3 person argument. For possessives, I have proposed that a *pro* possessor requires pronunciation of *-nya*. This idea might be extended more generally, such that *-nya* marks the presence of a *pro* argument in (81-82). I leave this as an avenue for future research.

²¹ The deictic pronoun *itu* is used here instead of 3SG *dia* because *dia* is reserved for human (or animate) arguments.

order-1SG to-NYA 3SG for NEG to.anywhere
'My order to him is that (he should) not go anywhere.'

The suffix *-nya* can also occur with left-dislocated topics:

- (85) *Indonesian* (modified from Voskuil 2000: 207)
Surat ini, saya yang me-nulis-(nya).
letter this 1SG REL ACTV-write-NYA
'As for this letter, it is I who wrote it.'

In (85) *-nya* occurs in the position where a resumptive pronoun might be expected (i.e. the position of a trace or copy). Crucially however, (85) cannot be derived via A-bar movement: if the internal argument has been extracted, active voice morphology is disallowed on the verb. In addition, the topic *surat ini* does not occur with the relative morpheme *yang*, which is obligatory in all relatives and clefts. These properties cast doubt on a uniform analysis for possessive *-nya* and the other varied functions of *-nya*.

Returning to all three languages, I have argued against a pronominal analysis of the suffix *-nya/-ne/-Nah* as a 3 possessive form. The pronominal view must stipulate that the suffix is accidentally homophonous between a 3 possessive pronoun and another morpheme that occurs between the possessum and possessor. Having shown that *-nya/-ne/-Nah* is not a pronominal form in internal possession (cf. Table 1; examples (95-97)), a resumptive analysis for external possession is no longer supported. A resumptive view of *-nya/-ne/-Nah* fails to explain why 1 and 2 forms cannot occur resumptively in cases of possessor extraction. Furthermore, a resumptive analysis for *-nya* would predict that this form can be used resumptively for typical (non-possessive) DP extraction, which is not possible:

- (86) *Indonesian*²²
* Apa yang adik baca-nya?
what REL younger.sibling read-NYA
(‘What did little brother read?’)

Finally, another approach might be to consider *-nya/-ne/-Nah* a type of clitic doubling; cases of possessive doubling are attested in other languages. However, analogous doubling with 1 and 2 clitics is impossible; see examples (112-117). It is not clear why doubling would be limited to 3 person possessors.

In summary, the suffix *-ne/-Nah* is obligatory in Javanese and Madurese possession, whether the possessor is internal or external. In Indonesian, the suffix *-nya* is optionally pronounced with internal possessors (but not with clitic pronouns). In all three languages, the suffix is obligatory with a non-overt (*pro*) possessor, and when the possessor has been extracted. In the next section, I return to possessor extraction, and argue that the suffix *-nya/-ne/-Nah* is the head D.

4 Deriving possessor extraction

²² Only Indonesian is used to illustrate this point because Indonesian allows the suffix *-nya* to cliticize to active verbs; this is not possible in Javanese and Madurese.

In this section, I argue that the external possessor undergoes movement through the edge of DP, then the edge of VoiceP, before landing in its surface position in the CP domain. This movement is driven by the edge feature [D] on D and Voice, which indicates that these are phase heads. A-bar movement of the possessor is morphologically marked for each phase: the functional head D must be pronounced as a suffix on the possessum, while the head Voice must be a null prefix on the verb. I argue that this special morphology is a type of wh-agreement.

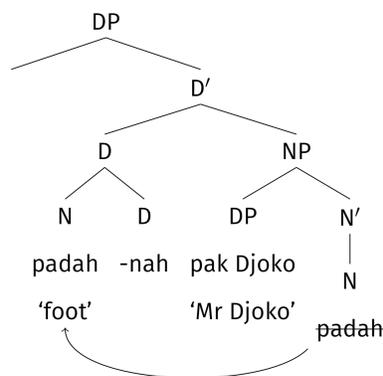
4.1 *Possessors escape possessive DPs through SpecDP*

In the first step of extraction, a possessor must move through the edge of its possessive DP; from the specifier of DP, it is available for further movement. Szabolcsi (1992) proposes similar movement for Hungarian possessor extraction, observing that possessors cannot move directly from their base-generated positions, but must pass through the specifier of the noun phrase as an escape hatch. In a different approach, Gavruseva (2000) proposes that possessors in Hungarian, Tzotzil and Chamorro must first undergo DP-internal A-movement to AgrP in order to check uninterpretable phi features, followed by A-bar movement to SpecDP. I do not pursue Gavruseva's argument for possessor movement through AgrP, which has little motivation in Indonesian-type languages. However, in the following analysis, the movement of the possessor is indeed driven by formal features in the syntax, and this movement has a morphological consequence: the obligatory pronunciation of D on the possessum.

For possessive DPs such as the Madurese example in (87), I assume the structure in (88) for all three languages:

- (87) *Madurese*
 padha-nah pak Djoko
 foot-D Mr Djoko
 'Mr Djoko's foot'

- (88) Possessive DP structure



The possessor is merged in the specifier of NP (recall that the “possessor” can have a number of different semantic relations with the “possessum” in these languages, and is not limited to relations that are inalienable, part-whole etc.). The possessum undergoes head movement to D, so that the possessum is suffixed with -D and spelled out as the suffix *-nya/-ne/-Nah*. This derives the surface word order of possessive DPs, in which the possessum precedes the possessor.

The following examples in Indonesian provide evidence for the structure in (88). First consider a noun with a nominal complement in (89); the complement follows the head N. In a possessive construction, the possessum (head N) must undergo head movement to D. Examples (90-92) show that it is not possible for the complement to raise with the head N and precede the possessor (while retaining the meaning ‘book of children’s stories’).

- (89) *Indonesian*
 buku [cerita anak]
 book story child
 ‘book of children’s stories’
- (90) * buku [cerita anak] Siti
 book story child Siti
- (91) * buku [cerita anak] -nya Siti
 book story child -D Siti
- (92) * buku-nya [cerita anak] Siti
 book-D story child Siti
- (93) * buku-nya Siti [cerita anak]
 book-D Siti story child
- (94) buku Siti [tentang cerita anak]
 book Siti about story child
 ‘Siti’s book about children’s stories’

Interestingly, (93) shows that when N raises to D, the nominal complement cannot be stranded after the possessor. Instead, a periphrastic PP construction must be used (94). A similar pattern holds for PP adjuncts that modify the head noun, illustrated below in Javanese. The PP is usually postnominal (95), but cannot occur between possessum and possessor (96-97). Instead, the PP must occur outside the possessor (98).

- (95) *Javanese*
 murid [teko’ Jakarta]
 student from Jakarta
 ‘a student from Jakarta’
- (96) * murid-e [teko’ Jakarta] Siti
 student-D from Jakarta Siti

(97) * murid [teko' Jakarta] -e Siti
student from Jakarta -D Siti

(98) murid-e Siti [teko' Jakarta]
student-D Siti from Jakarta
'Siti's student from Jakarta'

And an adjective modifying the possessum also cannot occur in its usual postnominal position, as shown below in Madurese. The adjective cannot undergo head movement with the head N (100), nor is it possible for the adjective to be separated from the nominal it modifies (101).²³ Like nominal complements, a periphrastic strategy must be used, in this case a relative structure (102):

(99) *Madurese*
mored tengghi
student tall
'a tall student'

(100)* mored tengghi -nah Siti
student tall -D Siti

(101)* mored-dhah Siti tengghi
student-D Siti tall

(102) mored-dhah Siti se tengghi
student-D Siti REL tall
'Siti's student who is tall'

It is a stipulation that in these languages, adjectives and nominal complements cannot be stranded after head movement in possessive DPs. The fact that PPs may be stranded (94, 98) suggests that PPs may be adjoined higher in possessive DPs (when a PP and an adjective co-occur, the PP always occurs outside the adjective).

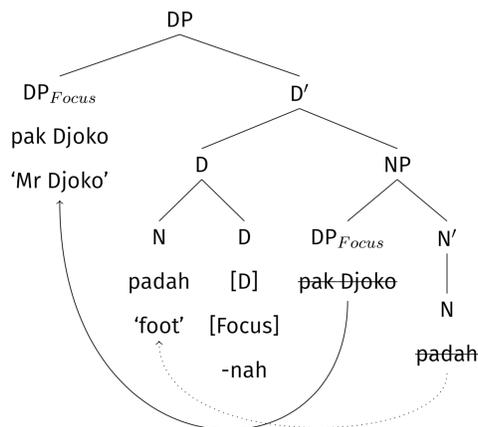
The patterns observed above apply across all three languages, and support the head movement shown in (88). This structure derives the surface word order for possessive DPs with nominal complements, PP adjuncts and adjectival modifiers.

In the first step of possessor extraction, the possessor in (103) undergoes movement driven by an edge feature [D] on the functional head D. This feature attracts the closest DP in

²³ My consultants have judgments that deviate from the Madurese data reported in Davies & Dresser 2005, where adjectives may occur between the possessum and possessor; my consultants find these examples ill-formed. The few exceptions are idiomatic compounds such as *oreng tua* 'parents' (literal: 'old person'), which occurs inside the suffix in *oreng tua-nah Siti* 'Siti's parents' (literal: 'Siti's old people').

its c-command domain, and raises it to its specifier to check [D].²⁴ As previously mentioned, A-bar extraction is limited to nominals in these languages: only a DP may be clefted or relativized, whereas PP, AP and other adjuncts cannot.

(103) Possessor sub-extraction from DP



All extracted nominals are focused, so the feature [D] probes together with a [Focus] feature. I have previously shown that either the matrix DP or its possessor may be extracted. It is the feature [Focus] that determines whether the entire possessive DP or its possessor is extracted. The interpretive difference between these has to do with focus:

(104) *Madurese*

Padha-nah pak Djoko se e-obhadh-ih sareng dokter.
 foot-D Mr Djoko REL PASS-medicine-APPL by doctor
 'It was Mr Djoko's foot that was treated by the doctor.'

(105) Pak Djoko se padha-nah e-obhadh-ih sareng dokter.

Mr Djoko REL foot-D PASS-medicine-APPL by doctor
 'It was Mr Djoko that (his) foot was treated by the doctor.'

In (104), the focused DP is 'Mr Djoko's foot' whereas in (105) the focus is solely on the possessor 'Mr Djoko.' In the first case, the matrix DP bears [Focus]; in the second, the possessor DP that has raised to the specifier bears [Focus]. Since [D] and [Focus] probe together, the closest goal must also bear both [D] and [Focus].

Movement to the edge of the DP is required for a possessor to be extracted. It is worth mentioning that the possessor does not surface this position, at the left edge of the DP. The reason is that movement obtains through null Operator movement. Recall that extraction in these languages employs a cleft strategy in which a null Operator undergoes movement inside a relative clause; the clefted nominal is generated separately as the predicate of a

²⁴ Movement of *Pak Djoko* is shown for expository purposes here, although I assume that this movement obtains via null Operator movement (Section 2.3); see further discussion below.

copular clause (see Section 2.3). Thus, in (103) it is a null Operator that raises to SpecDP before moving on to the next phase edge, SpecVoiceP. (The possessor cannot be pronounced at the edge of the VoiceP phase either.) The clefted DP can only be pronounced sentence initially or sentence finally because it is generated external to the relative clause.

When the possessor moves through SpecDP, it triggers obligatory morphology on the possessum, the suffix *-nya/-ne/-Nah*. I take these suffixes to be a type of wh-agreement that occurs in possessor extraction. Cross-linguistically, wh-agreement appears as special morphology that is a reflex of A-bar movement (or wh-movement). Wh-agreement morphology frequently occurs as a morpheme that is used elsewhere in the language, but without semantic content; it merely reflects syntactic movement. This is consistent with *-nya/-ne/-Nah*: as a result of possessor A-bar movement through the edge of DP, the possessum must occur with the suffix, which marks movement but does not carry definite semantics. Although wh-agreement has been frequently observed in complementizer systems, it has also been attested in the verbal domain (Zaenen 1983; Georgopoulos 1985; Tuller 1986; Chung & Georgopoulos 1988; Haik 1990; Watanabe 1996; Chung 1998; Reintges et al. 2006). I propose that possessor extraction in Indonesian, Javanese and Madurese exhibits wh-agreement within the DP.

Wh-agreement differs from other types of morphological agreement in that it typically does not register phi features of the moved argument. If *-nya* is a type of wh-agreement, *-nya* is predicted to be compatible with 1 and 2 person possessor extraction. As the examples below show, these suffixes can indeed occur with 1/2 possessors:

(106) *Indonesian*

% Aku/kamu yang rumah-nya di-rata-kan kemarin.
 1SG/2SG REL house-D PASS-flat-APPL yesterday
 ‘It is I/you whose house was destroyed yesterday.’

(107) % Rumah-ku/rumah-mu yang di-rata-kan kemarin.
 house-1SG/house-2SG REL PASS-flat-APPL yesterday
 ‘It is my house/your house that was destroyed yesterday.’

(108) *Javanese*

% Aku/kamu sing buku-ne werno biru.
 1SG/2SG REL book-D color blue
 ‘It is I/you whose book is blue.’

(109) Buku-ku/buku-mu sing werno biru.
 book-1SG/ book-2SG REL color blue
 ‘It is my book/your book that is blue.’

(110) *Madurese (familiar)*

* Engko’/ % hedah se buku-nah e-bacah ale’.
 1SG 2SG REL book-D PASS-read younger.sibling
 ‘It is I/you whose book was read by little brother.’

(111) Tang buku/ buku-nah hedah se e-bacah ale’.

1SG.GEN book book-D 2SG REL PASS-read younger.sibling
'It is my book/your book that was read by little brother.'

As indicated by the symbol %, some speakers find 1 or 2 possessor extraction very unusual in Indonesian and Javanese, and prefer pied-piping of the possessum as in (107) and (109).²⁵ In Madurese, 1 possessors cannot be extracted, and there is disagreement about extraction of 2 possessors.²⁶ However, all speakers agree that given an appropriate information-structural context for clefting of a 1/2 possessor, the suffix *-nya/-ne/-Nah* is obligatory.²⁷

This is consistent with an analysis of *-nya/-ne/-Nah* as wh-agreement, which does not register the phi features of a moved argument. If the suffix reflected phi features, we might expect that 1/2 clitic pronouns could occur instead of *-nya/-ne/-Nah*. However, this is not the case, as shown below in Indonesian and Javanese:

(112) *Indonesian*

* Aku yang rumah-ku di-rata-kan kemarin.
1SG REL house-1SG PASS-flat-APPL yesterday
(‘It is I whose house was destroyed yesterday.’)

(113)* Kamu yang rumah-mu di-rata-kan kemarin.
2SG REL house-2SG PASS-flat-APPL yesterday
(‘It is you whose house was destroyed yesterday.’)

(114) *Javanese*

* Aku sing buku-ku werno biru.
1SG REL book-1SG color blue
(‘It is I whose book is blue.’)

(115)* Kamu sing buku-mu werno biru.
2SG REL book-2SG color blue
(‘It is you whose book is blue.’)

²⁵ Disagreements among consultants about the acceptability of 1 or 2 possessor extraction may be caused by the overall infrequency of possessor sub-extraction, and its typical occurrence with 3 possessors. I do not know of other languages in which 3 possessors may sub-extract while 1 and 2 possessors may not.

²⁶ It is not surprising that 1 possessors cannot sub-extract at all in Madurese, as shown in (110). Recall that the 1 singular possessive pronoun in Madurese is unusual: *tang* is a proclitic form used only in genitive constructions, for a 1 singular possessor. This is illustrated in (111), where the possessive DP is *tang buku* ‘my book’ rather than *buku-nah engko*. This is likely the reason that extraction of *engko* is ruled out.

²⁷ The declarative pseudo-cleft construction requires the information in the relative clause to be presupposed. For example, the required context for (106) is as follows: Speaker A returns from a trip and remarks that he heard that a house in his neighborhood had been destroyed. He wonders if the owner of the house knows what happened. Speaker B replies, *Aku/kamu yang rumahnya diratakan kemarin* ‘It is I/you whose house was destroyed yesterday!’

Madurese does not have separate clitic forms for pronouns, but a (resumptive) 1 or 2 pronoun is not possible instead of *-Nah*:

(116) *Madurese (familiar)*

* Engko' se tang buku e-bacah ale'.
1SG REL 1SG.GEN book PASS-read younger.sibling
(‘It is I whose book was read by little brother.’)

(117)* Hedah se buku hedah e-bacah ale'.
2SG REL book 2SG PASS-read younger.sibling
(‘It is you whose book was read by little brother.’)

I have proposed that extraction of a possessor proceeds through the edge of the DP, and that this movement triggers wh-agreement within DP. In the following section I extend this idea to VoiceP: in all three languages, extraction through the edge of VoiceP is marked by wh-agreement on the head Voice in active transitive clauses.

4.2 *Possessors extract through SpecVoiceP*

A possessor that has first moved to the specifier of a possessive DP, next undergoes successive-cyclic movement through the edge of VoiceP, before landing in its surface position in the CP domain. I assume that the extended verbal structure of the clause includes both *vP* and VoiceP, which I take to be the highest verbal projection and the domain relevant for successive-cyclic movement, or a phase.²⁸ The voice prefixes on the verb are the spellout of the functional head Voice. In basic active clauses, this head is realized as *meN-* in Indonesian, *N-* in Javanese, *N-* or *a-* in Madurese.²⁹ It is this head that is also phonologically null when there is extraction from object position. External arguments are generated in the specifier of VoiceP (Pylkkänen 2008; Harley 2013; Legate 2014), and raised to the position of grammatical subjects, SpecIP, to satisfy [EPP] on I.^{30,31}

In an active clause, the derivation of possessor extraction from object position begins with an active Voice head that bears the features [D] and [Focus]. The [D] feature was previously discussed for DP-internal movement: it attracts the closest DP to its specifier, but does not target other categories such as PP or AP. [D] on Voice triggers phase-based movement through the edge of the verbal domain. This type of movement is proposed in Chomsky 1986, 2000 (through the edge of *vP*) and also implemented in various analyses of Indonesian and Austronesian languages (Rackowski & Richards 2005; Aldridge 2008; Cole et al. 2008; Sato 2008; 2012; Legate 2014; van Urk & Richards 2015; Aldridge 2017). These

²⁸ Causative prefixes in these languages are hosted in *vP* (cf. Legate 2014). These prefixes do not interact with possessor extraction.

²⁹ See Davies 2010 on the distribution of *N-* and *a-* in Madurese, which is not relevant for the present discussion.

³⁰ In active voice, the derived subject position generally must be filled in these languages. VP fronting is also possible in active voice, resulting in variations in word order, but does not occur with the clefts and relatives that are discussed here.

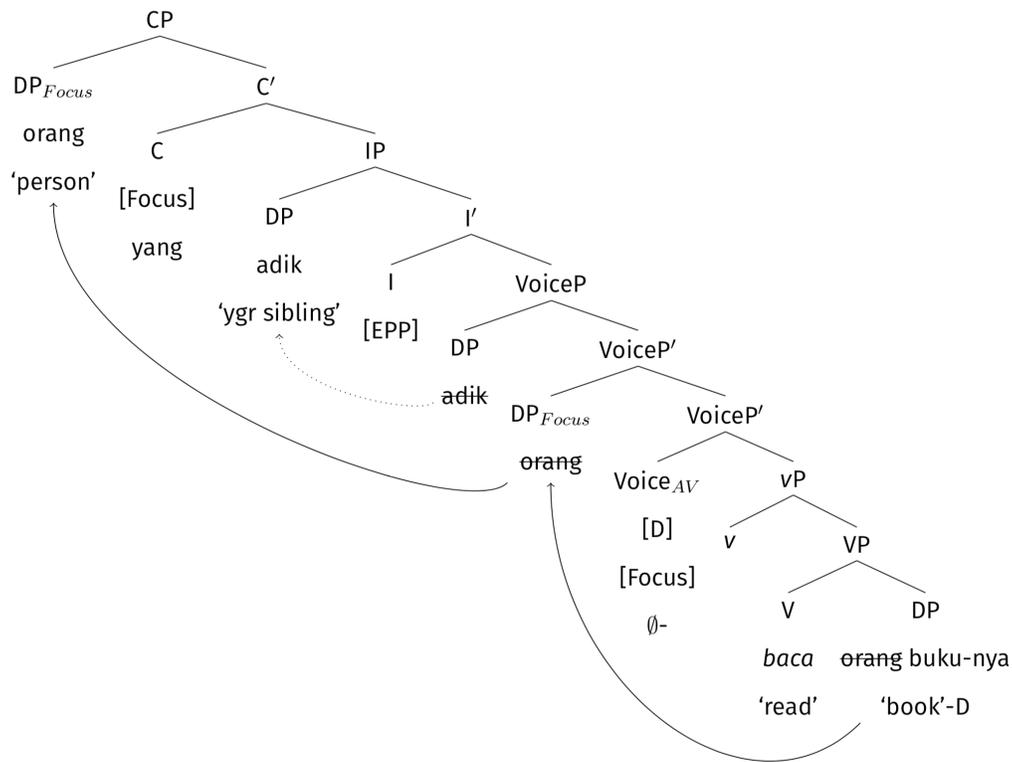
³¹ I use IP instead of TP because tense is not overtly marked in Indonesian clauses.

analyses share the view that one of the functions of voice morphology is to mark nominal movement through the edge of the phase.

For nominals in object position, [D] and [Focus] probe together to attract the closest DP goal that bears both [D] and [Focus]. This DP is raised to SpecVoiceP. This is illustrated in (119) with the Indonesian possessor *orang* ‘person.’

- (118) *Indonesian*
orang yang adik baca buku-nya
 person REL younger.sibling read book-D
 ‘the person that little brother read (his) book’

- (119) Possessor extraction from object position in active clause^{32, 33,34}



Once the possessor is raised to the edge of the phase in SpecVoiceP, it is available for further

³² Note that in (119), DP-internal movement of the possessor is not shown; see discussion surrounding (103). The possessor *orang* is shown for expository purposes; possessor movement obtains via a null Operator, as previously discussed in Section 2.3.

³³ In (119) the possessor is tucked in (cf. Richards 1999) below the specifier hosting the external argument. Assuming [EPP] on I targets the closest DP eligible for movement, the external argument rather than the possessor is raised to SpecIP.

³⁴ (119) shows the root *baca* ‘read’ in the node V. The formation of the phonological word that includes the heads Voice-v-V is not shown here.

movement. The possessor must first move to the edge of DP, then to the edge of VoiceP, in order to be visible to a probe on C; nominals within a lower phase are not visible for movement operations. Although Voice in active clauses is usually pronounced as the prefix *meN-/N-/a-*, when Voice bears the feature [D], triggering obligatory movement, it is realized as a null prefix (for related discussion of the null prefix in cases of extraction, see Cole & Hermon 2005; Cole et al. 2008; Sato 2008; 2012).

This analysis holds for Indonesian, Javanese and polite Madurese, which allow object extraction and object possessor extraction. In familiar Madurese however, since objects and their possessors cannot extract, the active Voice head does not bear the [D] feature. Nominals cannot raise to the edge of VoiceP from object position, and consequently are not visible to a probe on C, which cannot probe into a lower phase. As a result, objects and their possessors cannot be extracted in familiar Madurese; and since Voice never bears the [D] feature, active verbs always bear a voice prefix.

For the external argument (and its possessor) in an active clause, movement to a higher position does not require [D] on the Voice head, because the external argument is generated in the specifier of Voice and therefore is already on the edge of the phase; it is visible for further movement. The [EPP] feature on I first raises the external argument to the grammatical subject position in SpecIP, where it may then be found by a probe on C. Since the external argument in an active clause does not interact with [D] on the Voice head, extraction of this nominal never has consequences for voice morphology; a bare verb is not required for subject extraction. Similarly, the internal argument (and its possessor) in a passive clause are first raised to grammatical subject, and can be extracted from SpecIP. The passive voice morphology is required when the internal argument occurs as subject; however, further extraction from subject position is not reflected by a change of verbal morphology.

5 Implications of possessor extraction

5.1 Phase heads D and Voice

Since movement through vP and CP was proposed in Chomsky 2000; 2001, successive-cyclic movement based on phases has been implemented in analyses of many other languages (for discussion in Indonesian-type languages, see Aldridge 2008; Cole et al. 2008; Sato 2008; 2012; Legate 2014; Aldridge 2017). I have provided novel data from possessor extraction that also supports phase-cyclic movement: in Indonesian, Javanese and Madurese, possessor extraction requires local movement through phases. The possessor undergoes A-bar movement through SpecDP, then SpecVoiceP, before landing in CP. The evidence for this type of successive-cyclic movement includes the suffix required on the possessum (in Indonesian), which marks DP-internal A-bar movement, and the null prefix on the verb (in Indonesian, Javanese and Madurese), which marks A-bar movement through VoiceP. The implication is that D and Voice are phase heads in Indonesian-type languages; the edge feature [D] on a phase head triggers obligatory movement of a nominal through its edge.

In Section 4.1 I argued that Indonesian *-nya* is a type of morphological wh-agreement in cases of possessor extraction. Extending this to the verbal domain, the (lack of) active verbal morphology in Indonesian, Javanese and Madurese also has the properties of wh-agreement: A-bar movement over the verb triggers a special form (i.e. a null prefix). The null prefix has no semantic content (i.e. the verb remains active and transitive), but merely marks

syntactic movement. One implication of this view is that morphological wh-agreement correlates with phases in Indonesian, Javanese and Madurese; wh-agreement surfaces as realization (or null realization) of the phase heads Voice and D. To my knowledge, wh-agreement in the DP domain has not been reported in other languages (see Watanabe 1996; Reintges et al. 2006 for cross-linguistic generalizations about wh-agreement). The Indonesian data present here provide novel evidence for the phasehood of D, as well as morphological wh-agreement within the DP.

5.2 *Revisiting A-bar extraction in Indonesian-type languages*

Possessor extraction also brings new insight to analyses of Indonesian-type voice systems. First, the head Voice does not only determine the argument structure of the clause (i.e. transitivity; or whether an external argument is hosted in its specifier), but also the movement of DPs. Since the possessor is not an argument of the verb, but rather a possessive argument of N, it is interesting that movement of the possessor is constrained by Voice in the same way that verbal arguments are. If the voice system regulates movement of possessor DPs, then Voice is concerned with all DPs that shift out of VoiceP, not just verbal arguments. Whereas morphological voice marking typically indicates the position of verbal arguments (for example, the Theme in an active clause remains low, while the Theme in a passive clause occurs as subject), when nominal extraction has occurred in an active clause, morphological voice marking *also* serves as a reflex of nominal movement through VoiceP. When sub-extraction of the possessor from object position occurs in Indonesian, Javanese and polite Madurese, the null voice prefix is required (just as when the full object DP is extracted). The object of the verb has not shifted, since the head N, the possessum remains in its merged position. Yet extraction of a non-argument, the possessor, requires that the voice morphology reflect that a DP has moved through the edge of VoiceP.

This discussion about possessor extraction calls for a re-examination of analyses of DP extraction. For example, Cole, Hermon & Yanti (2008) propose that in Indonesian, either the case or the thematic role of the shifted nominal agrees with the morphological voice marker on the verb; a morphological filter prevents conflicting features on the verb and the extracted DP. Possessors present a challenge to this type of analysis because both the object (matrix DP) and its possessor can be extracted with a null voice marker. Assuming that abstract genitive or possessive case is assigned to the possessor, while its matrix DP bears abstract accusative case, both types of nominals could not extract with the same null voice prefix. A similar argument applies to a mismatch in theta roles between an argument and its possessor. This analysis faces further challenges when a subject undergoes long distance extraction from an embedded clause (see Saddy 1991 for extended discussion). Long-distance subject movement from an embedded clause requires a bare verb in the matrix clause, collapsing the case/thematic distinction between subjects and objects.

Despite the difficulties that possessor extraction poses to this particular analysis, the general proposal set forth by Cole, Hermon & Yanti is that voice morphology in Indonesian instantiates a type of agreement. I have also suggested that voice morphology is a type of agreement in Indonesian, i.e. wh-agreement, and that this analysis applies to Javanese and Madurese as well. Since wh-agreement does not reflect phi features cross-linguistically, and often does not register case or thematic features, the mismatches mentioned above do not pose a problem. When nominals undergo A-bar movement through the edge of VoiceP in

active clauses, the null voice prefix is a reflex of this movement.

5.3 *Implications for the left periphery in Indonesian-type languages*

Possessor extraction also provides new observations about the organization of the left periphery of the clause. I have argued that the availability of possessor extraction from object position, and the extraction of objects in general, is regulated low in the clause, by Voice. If a nominal can escape VoiceP (or is already on the edge of VoiceP), then it can undergo A-bar extraction. Languages like familiar Madurese, in which subjects can be extracted but objects cannot, do not allow Voice to bear an edge feature [D] that raises nominals to SpecVoiceP.

Other theories offer an alternative explanation for the impossibility of object extraction in a language such as familiar Madurese. Some authors have accounted for “subject-only” extraction in some Austronesian languages (like familiar Madurese) by invoking some variation of feature inheritance (Chomsky 2005; 2008; Fortuny 2008; Legate 2011; 2014). Inheritance is motivated by the close relationship between C and T cross-linguistically. In Austronesian languages, feature inheritance is further motivated by the properties of the highest or leftmost argument, which appears to have both A and A-bar properties, which might follow if C and T are not distinct in these languages (e.g. Pearson 2005; Rackowski & Richards 2005).

Inheritance accounts for the impossibility of object extraction in familiar Madurese in the following way. Legate (2011; 2014) proposes under-inheritance, in which the formal features on C can fail to be inherited by T. The result is that CP and TP are not projected separately, but rather form a single combined projection: let us call this CTP. When the specifier of CTP is filled (by a subject or topic), no structural position is available for another DP to raise to. Therefore, object extraction is impossible in active clauses, because the external argument already occupies the single position available at the left periphery. The effect of under-inheritance is that only one nominal can occur in a high position in the clause in familiar Madurese and other Austronesian languages with “subject-only” extraction.

Alternatively, recent theories of head-splitting (Martinović 2015; see also Erlewine 2017) posit that some of the features on a functional head can split off and re-project a new head. Head-splitting of CTP results in the traditional division between TP and CP. If this head does not split however, the single head (CT) could host only one argument in its specifier; just as with under-inheritance, a preverbal subject would prevent another argument from moving to a high position.

If under-inheritance or failure of head-splitting is correct for a language that does not allow any object extraction, then we expect that familiar Madurese could not host two arguments at the left periphery of the clause, i.e. one argument in CP and another in TP(IP). Recall that objects cannot extract in familiar Madurese; (58) is repeated here as (120):

(120) *Madurese (familiar)*

* Sapah se ale' m-acah/bacah buku-nah?
who REL younger.sibling ACTV-read/read book-D
(‘Who was it that little brother read his book?’)

Under a theory of under-inheritance or failure of head-splitting, (120) is not possible because the subject position is filled, so no structural position exists as a landing place for an

extracted possessor. However, this also predicts that possessor extraction from subject position is impossible, since an argument already fills the specifier of CTP. We have already seen that this prediction is not borne out: two distinct positions do exist at the left periphery in familiar Madurese; (3) is repeated here as (121):

(121) *Madurese (familiar)*

Sapah se buku-nah e-bacah ale'?
who REL book-D PASS-read younger.sibling
'Whose book was read by little brother?'

The possessor and the possessum simultaneously occur in separate A and A-bar positions, the latter separated from the rest of the clause by the relative morpheme *se*. Possessor extraction, therefore, shows that under-inheritance and head splitting do not account for the impossibility of object extraction, at least in familiar Madurese. In familiar Madurese, a traditional split between C and T(I) remains, with (at least) two positions for nominals at the left periphery of the clause (SpecCP and SpecIP). For other languages of the area that do not allow object extraction, possessor extraction may provide a useful diagnostic to test whether the clause has two structural positions high at the left periphery.

6 Conclusion

This paper investigates novel possessor extraction patterns in Indonesian, Javanese and Madurese that have not previously been reported in the literature. I have shown that syntactic movement, rather than base generation, derives the surface position of external possessors in these languages. I have argued that the suffix on the possessum is not a resumptive pronoun, but rather pronunciation of the head D. Under this novel view, there is no 3 possessive clitic in these languages; rather, a *pro* possessor with *-nya/-ne/-Nah* derives a 3 person interpretation. Possessors first escape their possessive DPs by A-bar movement through the specifier of DP, then the specifier of VoiceP. The null voice prefix on an active verb not only marks the extraction of an object, but must also mark the extraction of a possessor from object position. This is evidence that the functional head Voice regulates A-bar extraction of all nominals passing through its specifier.

Possessor extraction provides support for D and Voice as phase heads in Indonesian, Javanese and Madurese. I have proposed that phase-cyclic syntactic movement is driven by the features [D] and [Focus] on phase heads Voice and D. Furthermore, I have argued that obligatory pronunciation of the nominal suffixes *-nya/-ne/-Nah* and the obligatory null voice prefix in all three languages are a type of morphological wh-agreement triggered by A-bar movement. Another implication of possessor extraction data is that the organization of the left periphery in these languages shows a structural distinction between CP and TP(IP), with a traditional division of features associated with C and T. In sum, this paper has attempted to bring novel possessor extraction data to the rich discussion on voice and nominal extraction in Indonesian-type languages.

6.1 Remaining Issues

This paper has focused on sub-extraction from subject and object positions. The analysis predicts that possessor sub-extraction will be possible only from positions that allow DP extraction. Here I briefly explore this possibility in complex NPs and adjunct clauses in Indonesian, as well as ditransitives in Indonesian and Javanese.³⁵

In previous examples (13-16), we have already seen that DPs may not extract out of complex NPs or adjunct clauses in Indonesian, which predicts that sub-extraction of possessors should not be possible from the same environments. The prediction is borne out:

(122) *Indonesian*

Susan dapat kesimpulan bahwa Lani lebih suka kue Fetty.
 Susan get conclusion that Lani more like cake Fetty
 ‘Susan got the conclusion that Lani prefers Fetty’s cake.’

(123)* Siapa yang Susan dapat kesimpulan Lani lebih suka kue-nya?
 who REL Susan get conclusion Lani more like cake-D
 (‘Who is it that Susan got the conclusion that Lani prefers their cake?’)

(124) Ayah senang ketika me-lihat piala adik.
 Father happy when ACTV-see trophy younger.sibling
 ‘Father was happy when he saw little brother’s trophy.’

(125)* Siapa yang Ayah senang ketika lihat piala-nya?
 who REL Father happy when see trophy-D
 (‘Who is it that Father was happy when he saw their trophy?’)

Similar possessor sub-extraction from complex NPs and adjunct clauses is ruled out in Javanese and Madurese as well; but since all long-distance movement is not possible in these languages, the reason for the unacceptability of the possessor movement is not clear.

Next, I look at extraction from ditransitive clauses, beginning with Madurese. (127) and (128) show that Madurese does not allow extraction of a Recipient/Goal/Beneficiary, which I will call the applicative object. As expected, possessors may also not extract from this position (129).

(126) *Madurese (polite)*³⁶ (Davies 2010: 283, glosses modified)

Embhuk ng-errem-eh ebuh paket.
 elder.sister ACTV-send-APPL mother package
 ‘Big sister sent Mother a package.’

(127)* Sapah se embhuk kerrem-eh paket?
 who REL elder.sister send-APPL package
 (‘Who did big sister send a package?’)

³⁵ Thanks to an anonymous reviewer for comments that led to the development of this discussion.

³⁶ These sentences can be used in either familiar or polite speech, as the verb *kerrem* is compatible with both. Neither register allows extraction of the Recipient/Goal/Beneficiary.

(128)* oreng se embhuk kerrem-eh paket
person REL elder.sister ACTV-send-APPL package
(‘the person that big sister sent a package’)

(129)* Sapah se embhuk kerrem-eh ghuruh-nah paket?
who REL elder.sister send-APPL teacher-D package
(‘Who is it that big sister sent their teacher a package?’)

Contrary to expectation, the correlation between argument extraction and possessor sub-extraction does not appear to hold for ditransitives. Indonesian and Javanese do allow extraction of an applicative object:

(130) *Indonesian* (examples (130-133) modified from Sato 2012: 43)
Kamu mem-beli-kan ibu-mu bunga.
2SG ACTV-buy-APPL mother-2SG flower
(‘You bought your mother flowers.’)

(131) Siapa yang kamu beli-kan/ * mem-beli-kan bunga?
who REL 2SG buy-APPL/ ACTV-buy-APPL flower
(‘Who did you buy flowers (for)?’)

(132) *Javanese*
Kowe n-uko-kke ibu-mu kembang.
2SG ACTV-buy-APPL mother-2SG flower
(‘You bought your mother flowers.’)

(133) Sopo sing kowe tuko-kke/ * n-uko-kke kembang?
who REL 2SG buy-APPL/ ACTV-buy-APPL flower
(‘Who did you buy flowers (for)?’)

Note that extraction is only possible for a Beneficiary/Goal/Recipient, i.e. the higher of the two ditransitive arguments; extraction of the Theme ‘flower’ is not possible.³⁷ Contrary to expectation, a possessor cannot be extracted from an applicative object that remains in situ:

(134) *Indonesian*
* orang yang kamu beli-kan istri-nya bunga
person REL 2SG buy-APPL wife-D flower
(‘the person that you bought his wife flowers’)

³⁷ The judgments of my consultants differ from those reported in Sato 2012. For Sato’s consultants, the Theme can be extracted over the Goal/Recipient in formal/Standard Indonesian and Kendal Javanese: see his examples (18b, 19b). This is not possible for the Indonesian and Javanese speakers that I consulted; similar extraction is also impossible with ‘give’-type ditransitives (cf. Kaswanti Purwo 1995); examples are omitted due to space considerations.

(135) *Siapa yang kamu beli-kan istri-nya bunga?
who REL 2SG buy-APPL wife-D flower
(‘Who is it that you bought his wife flowers?’)

(136) *Javanese*

*wong sing kowe tuko-kke bojo-ne kembang
person REL 2SG buy-APPL wife-D flower
(‘the person that you bought his wife flowers’)

(137) *Sopo sing kowe tuko-kke bojo-ne kembang?
who REL 2SG buy-APPL wife-D flower
(‘Who is it that you bought his wife flowers?’)

Sub-extraction of the possessor from the applicative object is not possible even though the verb does not bear the active voice prefix in (134-137). Thus the previously noted correlation, between the extractability of a subject or monotransitive object and the extractability of its possessor, does not extend to applicative objects in ditransitive clauses.

The impossibility of possessor extraction from the applicative object position, then, presents a puzzle: why cannot the possessor of the applicative object be extracted? At the present time this remains unanswered. However, I note that another thematic argument position shares this unexplained property: the base position of external arguments, or SpecVoiceP (cf. Pytkänen 2008; Harley 2013; Legate 2014). In active clauses, a DP that is generated as an external argument in SpecVoiceP moves out of its thematic position and raises to subject position, SpecIP. In contrast, these languages have another clause type, an Object voice clause, in which the external argument remains in SpecVoiceP while the Theme becomes grammatical subject.³⁸ In Object voice, the external argument cannot be moved at all, but remains in its thematic position. Possessor sub-extraction cannot be tested in Object voice in Indonesian, Javanese and Madurese: the external argument in Object voice is restricted to a limited set of DPs, usually pronouns and names (see Chung 1976; Sneddon 1996; Nomoto 2006; Sneddon 2006; Cole et al. 2008; Jeoung 2017). This means that complex arguments such as possessive DPs are ruled out in this position. However, Musgrave (2001) shows that this external argument cannot launch floating quantifiers in Indonesian Object voice. In related languages, Legate 2014 demonstrates the impossibility of floating quantifiers from an Agent in Acehnese Object voice, and Arka 2003 presents similar observations in Balinese. This thematic position, then, does not appear to allow sub-extraction in a variety of languages. Like the base position of applicative objects, it is not well understood why SpecVoiceP does not allow this type of movement. I leave this as an open issue that requires further investigation.

³⁸ The properties of Indonesian Object voice are described in Chung 1976; Guilfoyle et al. 1992; Cole et al. 2008. In Javanese, only certain varieties may have Object voice (see Cole, Jonczyk & Lilley 1999; Sato 2012). In Madurese, Object voice is used only in the Polite register (see Jeoung 2017).

Abbreviations

APPL = applicative, ACTV = active voice, CAUS = causative, D = definite morpheme, INCL = inclusive, INTR = intransitive, INTENS = intensifier, INVOL = involitive, NEG = negation, NMLZ = nominalizer, PASS = passive voice, PERF = perfective, REL = relative

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Competing Interests

The author has no competing interests to declare.

References

- Aldridge, Edith. (2008). Phase-based account of extraction in Indonesian. *Lingua* 118(10). 1440-1469.
- Aldridge, Edith. (2014). Predicate, subject, and cleft in Austronesian languages. *Sophia Linguistica* 61. 97-121.
- Aldridge, Edith. (2017). ϕ -feature competition: A unified approach to the Austronesian extraction restriction. In *Proceedings of the 52nd meeting of the Chicago Linguistic Society (CLS)* 52.
- Arka, I Wayan. (2002). Voice systems in the Austronesian languages of Nusantara: Typology, symmetry and undergoer orientation. <http://hdl.handle.net/1885/41058>.
- Arka, I Wayan. (2003). *Balinese morphosyntax: A lexical-functional approach*. Pacific Linguistics 547. Canberra: The Australian National University.
- Arka, I Wayan. (2013). On the typology and syntax of TAM in Indonesian. In John Bowden (ed.), *Tense, aspect, mood and evidentiality in languages of Indonesia* (NUSA 55), 23-40. Jakarta: Atma Jaya Catholic University.
- Arka, I Wayan & Christopher Manning. (2008). Voice and grammatical relations in Indonesian: A new perspective. In Peter K. Austin & Simon Musgrave (eds.), *Voice and grammatical relations in Austronesian languages*. Stanford, CA: CSLI Publications.
- Baker, Mark C. (1998). *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.
- Bell, Sarah J. (1983). Advancements and ascensions in Cebuano. In David M. Perlmutter (ed.), *Studies in Relational Grammar* 1, 143-218. Chicago: University of Chicago Press.
- Blust, Robert. (2013). *The Austronesian languages*. Asia-Pacific Linguistics: Open Access Monographs. <http://hdl.handle.net/1885/146289>.
- Chomsky, Noam. (1977). On wh movement. In Peter W. Culicover, Thomas Wasow & Adrian Akmajian (eds.), *Formal syntax*, 71-132. New York: Academic Press.
- Chomsky, Noam. (1986). *Barriers* (Vol. 13). MIT Press.

- Chomsky, Noam. (2000). Minimalist inquiries: The framework. In Roger Martin, David Michaels & Juan Uriagereka (eds.), *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, 89–155. Cambridge, MA: MIT Press.
- Chomsky, Noam. (2001). Derivation by phase. In Michael Kenstowicz (ed.), *Ken Hale: A life in language*, 1–52. Cambridge, MA: MIT Press.
- Chomsky, Noam. (2005). Three factors in language design. *Linguistic Inquiry* 36. 1-22.
- Chomsky, Noam. (2008). On phases. In Robert Freidin, Carlos P. Otero & Maria Luisa Zubizarreta (eds.), *Foundational issues in linguistic theory*, 133-166. Cambridge, MA: MIT Press.
- Chung, Sandra. (1976). On the subject of two passives in Indonesian. In Charles N. Li (ed.), *Subject and topic*, 57-98. New York: Academic Press.
- Chung, Sandra. (1998). *The design of agreement: Evidence from Chamorro*. Chicago: University of Chicago Press.
- Chung, Sandra & Carol Georgopoulos. (1998). Agreement with gaps in Chamorro and Palauan. In Michael Barlow and Charles A. Ferguson (eds.), *Agreement in Natural Language*, 251-267. Stanford, CA: CSLI Publications.
- Chung, Sandra. (2008). Possessors and definiteness effects in two Austronesian languages. In Lisa Matthewson (ed.), *Quantification: A cross-linguistic perspective*, 179-224. *North Holland Linguistic Series: Linguistic variations* 64. Chicago: Emerald.
- Cole, Peter & Gabriella Hermon. (1998). The typology of wh-movement: Wh-questions in Malay. *Syntax* 1(3). 221-258.
- Cole, Peter & Gabriella Hermon. (2005). Subject and non-subject relativization in Indonesian. *Journal of East Asian Linguistics* 14(1). 59-88.
- Cole, Peter, Gabriella Hermon & Norhaida Aman. (1999). Clefted questions in Malay. Ms.
- Cole, Peter, Gabriella Hermon, Kozue Inoha & Yassir Tjung. (2002). A constraint on wh in situ in Javanese. *MIT Working Papers in Linguistics* 44. 91-106.
- Cole, Peter, Gabriella Hermon & Yanti. (2008). Voice in Malay/Indonesian. *Lingua* 118(10). 1500-1553.
- Cole, Peter, Elizabeth Jonczyk & Jason Lilley. (1999.) A note on extraction from object position in Javanese and other Javanic languages. *Proceedings of AFLA* 6. 87-93.
- Coon, Jessica. (2009). Interrogative possessors and the problem with pied-piping in Chol. *Linguistic Inquiry* 40(1). 165-175.
- Davies, William D. (2000). Against long movement in Madurese. *Proceedings of AFLA* 7. 33-48.
- Davies, William D. (2003). Extreme locality in Madurese wh-questions. *Syntax* 6(3). 237-259.
- Davies, William D. (2010). *A grammar of Madurese*. New York: DeGruyter Mouton.
- Davies, William D. & Craig A. Dresser. (2005). The structure of Javanese and Madurese determiner phrases. *UCLA Working Papers in Linguistics* 12. 57-72.
- Deal, Amy Rose. (2013). External possession and possessor raising. In Martin Everaert and Henk C. van Riemsdijk (eds.), *The Wiley Blackwell companion to syntax, 2nd edition*, 1-32. Hoboken, NJ: Wiley-Blackwell.
- Erlewine, Michael Yoshitaka. (2017). Why the null complementizer is special in complementizer-trace effects. In Claire Halpert, Hadas Kotek, & Coppe van Urk (eds.), *A pesky set: Papers for David Pesetsky* 80, 371-380. Cambridge, MA: MIT Press.
- Errington, James J. (1998). *Shifting languages: Javanese Indonesian interaction and identity*,

- Vol. 19. Cambridge: Cambridge University Press.
- Fortuny, Jordi. (2008). *The emergence of order in syntax*, Vol. 119. Amsterdam: John Benjamins Publishing.
- Gavruseva, Elena. (2000). On the syntax of possessor extraction. *Lingua* 110(10). 743-772.
- Georgopoulos, Carol. (1985). Variables in Palauan syntax. *Natural Language and Linguistic Theory* 3(1). 59-94.
- Guilfoyle, Eithne, Henrietta Hung & Lisa Travis. (1992). Spec of IP and Spec of VP: Two subjects in Austronesian languages. *Natural Language and Linguistic Theory*, 10(3). 375-414.
- Haik, Isabelle. (1990). Anaphoric, pronominal and referential Infl. *Natural Language and Linguistic Theory* 8(3). 347-374.
- Harley, Heidi. (2013). External arguments and the Mirror Principle: On the distinctness of Voice and v. *Lingua* 125. 34-57.
- Himmelman, Nikolaus P. (2002). Voice in western Austronesian: An update. *The history and typology of western Austronesian voice systems*, 7-16. Canberra: Pacific Linguistics.
- Jeoung, Helen. (2017). On the number of voices in Madurese. *Journal of the Southeast Asian Linguistics Society* 10(1). 16-35.
- Kader, Mashudi B. H. (1976). *The syntax of Malay interrogatives*. Burnaby, BC: Simon Fraser University dissertation.
- Kaswanti Purwo, Bambang. (1995). The two proto-types of ditransitive verbs: The Indonesian evidence. In Werner Abraham, Talmy Givón & Sandra A. Thompson (eds.), *Discourse grammar and typology: Papers in honor of John W. M. Verhaar*, 77-99. Philadelphia: John Benjamins.
- Keenan, Edward L. (1972). Relative clause formation in Malagasy. *The Chicago Which Hunt* 169(89). 348-71.
- Kroeger, Paul. (1993). *Phrase structure and grammatical relations in Tagalog*. Stanford, CA: CSLI Publications.
- Kroeger, Paul. (2009). Malagasy clefts from a western Malayo-Polynesian perspective: Comments on the paper by Hans-Martin Gartner. *Natural Language and Linguistic Theory* 27(4). 817-838.
- Kroeger, Paul. (2014). External negation in Malay/Indonesian. *Language* 90(1). 137-184.
- Landau, Idan. (1999). Possessor raising and the structure of VP. *Lingua* 107. 1-37.
- Legate, Julie Anne. (2011). Under-inheritance. Paper presented at the 41st meeting of the North East Linguistic Society (NELS), University of Toronto.
- Legate, Julie Anne. (2014). *Voice and v: Lessons from Acehnese*. Cambridge, MA: MIT Press.
- Martinović, Martina. (2015). *Feature geometry and head-splitting: Evidence from the morphosyntax of the Wolof clausal periphery*. Chicago, IL: The University of Chicago dissertation.
- Massam, Diane. (2003). Questions and the left periphery in Niuean. *Cornell Working Papers in Linguistics* 19. 94-106.
- McCloskey, James. (2001). The morphosyntax of wh-extraction in Irish. *Journal of Linguistics* 37(1). 67-100.
- McCloskey, James. (2002). Resumption, successive cyclicity and the locality of operations. In Samuel D. Epstein and T. Daniel Seeley (eds.), *Derivation and explanation in the Minimalist Program* 5, 184-226. Malden, MA: Blackwell.

- Musgrave, Simon. (2001). *Non-subject arguments in Indonesian*. Melbourne: University of Melbourne dissertation.
- Nomoto, Hiroki. (2006). Voice in colloquial Malay relatives. In Yoichiro Tsuruga, Nobuyuki Miyake & Yuji Kawaguchi (eds.), *Gengojouhougaku Kenkyuuhoukoku* 12, 97-116. Tokyo: Tokyo University of Foreign Studies.
- Paul, Ileana. (2001). Concealed pseudo-clefts. *Lingua* 111(10). 707-727.
- Payne, Doris & Immanuel Barshi (eds.) (1999). *External possession* Vol. 39. Philadelphia: John Benjamins Publishing.
- Pearson, Matthew. (2001). *The clause structure of Malagasy: A Minimalist approach*. Los Angeles, CA: University of California Los Angeles dissertation.
- Pearson, Matthew. (2005). The Malagasy subject/topic as an A'-element. *Natural Language and Linguistic Theory* 23(2). 381-457.
- Perlmutter, David M. & Paul M. Postal. (1983). The relational succession law. In David M. Perlmutter (ed.), *Studies in Relational Grammar* 1, 30-80. Chicago: University of Chicago Press.
- Pesetsky, David. (1987). Wh-in-situ: Movement and unselective binding. In Eric Reuland & Alice ter Meulen (eds.), *The representation of (in)definiteness*, 98-129. Cambridge, MA: MIT Press.
- Pylkkänen, Liina. (2008). *Introducing arguments*, Vol. 49. Cambridge, MA: MIT press.
- Rackowski, Andrea & Norvin Richards. (2005). Phase edge and extraction: A Tagalog case study. *Linguistic Inquiry* 36(4). 565-599.
- Reintges, Chris H., Philip LeSourd & Sandra Chung. (2006). Movement, wh-agreement, and apparent wh-in-situ. In Lisa L. S. Cheng & Norbert Corver (eds.), *Wh-movement: Moving on*, Vol. 42, 165-194. Cambridge, MA: MIT Press.
- Richards, Norvin. (1999). Featural cyclicity and the ordering of multiple specifiers. *Current Studies in Linguistics* 32. 127-158.
- Ross, John Robert. (1986). *Infinite syntax*. Norwood, NJ: Ablex Publishing Corporation.
- Saddy, Douglas. (1991). Wh scope mechanisms in Bahasa Indonesia. *MIT Working Papers in Linguistics* 15. 183-218.
- Sato, Yosuke. (2008). *Minimalist interfaces: Selected issues in Indonesian and Javanese*. Tucson, AZ: University of Arizona dissertation.
- Sato, Yosuke. (2012). Successive cyclicity at the syntax-morphology interface: Evidence from standard Indonesian and Kendal Javanese. *Studia Linguistica* 66(1). 32-57.
- Sneddon, James Neil. (1996). *Indonesian: A Comprehensive Grammar*. New York: Routledge.
- Sneddon, James Neil. (2006). *Colloquial Jakartan Indonesian*, Vol. 581. Canberra: Pacific Linguistics, Research School of Pacific and Asian Studies, The Australian National University.
- Sneddon, James Neil, K. Alexander Adelaar, Dwi Noverini Djenar & Michael Ewing. (2012). *Indonesian: A Comprehensive Grammar*. Routledge.
- Stevens, Alan. (1968). *Madurese Phonology and Morphology*, Vol. 52. New Haven: American Oriental Society.
- Suharno, Ignatius. (1982). *A descriptive study of Javanese*, No. 45. Canberra: Department of Linguistics, Research School of Pacific Studies, Australian National University.
- Szabolcsi, Anna. (1992). *The noun phrase*. Los Angeles, CA: University of California Los Angeles dissertation.

- Tuller, Laurice A. (1986). *Bijjective relations in Universal Grammar*. Los Angeles, CA: University of California Los Angeles dissertation.
- Uhlenbeck, Eugenius M. (1978). *Studies in Javanese morphology*, Vol. 19. Seattle: University of Washington Press.
- van Urk, Coppe & Norvin Richards. (2015). Two components of long-distance extraction: Successive cyclicity in Dinka. *Linguistic Inquiry* 46(1). 113-155.
- Voskuil, Jan. (1996). *Comparative morphology: Verb taxonomy in Indonesian, Tagalog and Dutch*, Vol. 21. The Hague: Holland Academic Graphics.
- Voskuil, Jan. (2000). Indonesian voice and A-bar movement. In Ileana Paul, Vivianne Phillips & Lisa Travis (eds.), *Formal issues in Austronesian linguistics*, 195-214. Dordrecht: Springer Netherlands.
- Watanabe, Akira. (1996). *Case absorption and wh-agreement*. Dordrecht: Kluwer Academic Publishers.
- Wolff, John U., Didi Oetomo & Daniel Fietkiewicz. (1992). *Beginning Indonesian through self-instruction* Vol. 3. Ithaca, NY: Cornell University, Southeast Asia Program.
- Yanti. (2010). *A reference grammar of Jambi Malay*. Newark, DE: University of Delaware dissertation.
- Zaenen, Annie. (1983). On syntactic binding. *Linguistic Inquiry* 14(3). 469-504.