Tonal reflexes of movement in Asante Twi*

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Abstract
We argue that Asante Twi has a process of tonal overwriting on verbs that are crossed by an A′-dependency. It is shown that this view captures the distribution of the process across ex-situ focus constructions, relative clauses and adverbial clauses, which are all contexts involving operator movement. Furthermore, we illustrate that this process is unbounded and applies to each verb in a long-distance dependency. We therefore conclude that this is a reflex of successive-cyclic movement through *v*P. Additionally, we provide a detailed study of resumption in Asante Twi, arguing that despite island-insensitivity, resumption is still derived by movement. Finally, the morpho-phonological side of the phenomenon is investigated. It is shown that overwriting affects only those affixes below *v* and not those above, which follows from cyclic Vocabulary Insertion. This also provides support for Kandybowicz' (2015) assumption that aspect and negation are lower than *v*P in Asante Twi.

1 Introduction

There is a well-known, yet still poorly understood, tonal alternation in Asante Twi originally noticed by Schachter & Fromkin (1968). As (1a) shows, both syllables of the verb *kita* are low-toned in an ordinary declarative clause. However, when the object is wh-moved, both of these tones surface as high (1b).

(1) a. Ámˈmá **kita** bayéɛ́.
Ama hold yam
'Ama is holding yam.'

b. Déɛ́n$_1$ na Ámˈmá **kítá** ___$_1$?
what FOC Ama like
'What is Ama holding?'

The productivity and robustness of this low-high alternation has been independently corroborated at various points in the literature (Schachter 1973; Marfo & Bodomo 2005; Marfo 2005*a*,*b*; Fiedler & Schwarz 2005; Schwarz & Fiedler 2007; Ameka 2010; Genzel 2013). Nevertheless, it has generally been assumed that it is a specific quirk of the *na*-focus construction (e.g. Marfo 2005*a*,*b*; Genzel 2013). In this paper, we will argue that the high tone insertion in (1b) is actually a reflex of successive-cyclic $\overline{\text{A}}$-movement through Spec-*v*P. There are a number of arguments that

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point to this conclusion, in particular the fact that high-tone insertion is found in a wider range of Ā-constructions and also that the process is unbounded.

In standard phase theory (Chomsky 2000, 2001), long-distance extraction must proceed 'successive-cyclically' (cf. Chomsky 1973, 1977, 1986), making a stop at the edge of each intermediate phase (*v*P and CP), as shown in (2).

(2) *Successive-cyclic movement*:
[$_{CP}$ Who do you [$_{vP}$ ___ think [$_{CP}$ ___ that Mary [$_{vP}$ ___ [$_{VP}$ likes ___]]]]] ?

A considerable body of empirical evidence has amassed in support of the claim that phasal domains constitute (at least) both *v*P and CP (for overviews, see Boeckx 2008; Georgi 2014, 2017; Citko 2014; van Urk 2015). These varied arguments come from PF interface phenomena (Legate 2003; Adger 2007; Kratzer & Selkirk 2007; Kahnemuyipour & Megerdoomian 2011; Sato 2012), the presence of overt material at intermediate positions (du Plessis 1977; McCloskey 2000; Felser 2004; Wiland 2010; Manetta 2010), interpretational effects along the movement path (Barss 1986; Fox 1999; Nissenbaum 2000; Legate 2003; Sauerland 2003) and the opaque licensing properties of moved items at intermediate positions, e.g. with inversion (Kayne & Pollock 1978; Torrego 1984; Henry 1995), gaps (Thiersch 1978; van Urk & Richards 2015) and discourse particles (Bayer et al. 2016). However, some of the most direct and compelling evidence for successive-cyclic movement comes from languages that exhibit dedicated morphological reflexes of movement (Lahne 2008; Georgi 2014, 2017). For example, Bennett et al. (2012) show that Ā-movement in Defaka triggers the morpheme *-ke* on the verb (3b). Furthermore, cases of long-distance movement show this marking on verbs in both clauses (3c).

(3) ke-*marking in Defaka* (Bennett et al. 2012:296f.):

a. Amanya ómgbinya sóno á ama-ma kí!á !té ?
Amaya shirt buy her give-NFUT market at
'Amaya bought a shirt for her at the market.'

b. Tári$_1$ ndo Amanya ómgbinya sóno ___$_1$ ama-**ke** kí!á !té ?
who FOC Amaya shirt buy give-KE market at
'Who did Amaya buy a shirt for at the market?'

c. Ándu$_1$ ndo Bomá faa-**ke** [$_{CP}$ iní ___$_1$ été-**ke**]
canoe FOC Boma say-KE they have-KE
'It's a canoe that Boma said they have.'

Tonal overwriting in Asante Twi has a very similar profile, as it also affects all verbs crossed by Ā-movement in a long-distance dependency. In (4), the low-toned syllables in both the matrix and the embedded verb alternate to high in the wh-movement construction in (4b).

(4) a. [$_{CP}$ Kofí **kaé** [$_{CP}$ sɛ Ámꜜmá **kita** bayéréˊ]]
Kofi remember that Ama hold yam
'Kofi remembers that Ama is holding a yam.'

b. [$_{CP}$ Déɛ́n$_1$ na Kofí **káé** [$_{CP}$ sɛ Ámꜜmá **kítá** ___$_1$]] ?
what FOC Kofi remember that Ama hold
'What does Kofi remember that Ama is holding?'

We will therefore argue that tonal overwriting on the verb tracks whether successive-cyclic movement has taken place in that clause. In particular, we analyze overwriting as being triggered by a floating high-tone that is the realization of a phase head *v* bearing a checked edge feature. This adds to the already significant body of literature on reflexes of successive-cyclic movement, but also provides a good example of a reflex of movement at the *v*P level, which is still a somewhat contentious issue (e.g. Keine 2016, 2017; Dayal 2017). Furthermore, tonal overwriting provides a clear case of a purely phonological reflex of syntactic movement. While similar phenomena have been reported, e.g. downstep deletion in Kikuyu (e.g. Clements et al. 1983; Zaenen 1983; Clements 1984*a*,*b*), downstepping in Igbo (Amaechi & Georgi to appear), and soft mutation in Welsh (Willis 2000; Borsley et al. 2007), they have either not yet been sufficiently explored or come with additional complications and caveats.

In addition, we provide evidence that, despite showing island-insensitive resumption, $\overline{\text{A}}$-constructions in Asante Twi are derived by genuine syntactic movement, tracked by tonal overwriting. This conclusion is supported by the fact that island effects correlate with the availabilty of a resumptive pronoun as well as the divergent properties of genuine base-generated topic constructions. Finally, we also provide a systematic investigation of the scope of the overwriting process, showing that only affixes orignating lower than *v*P are affected by high-tone insertion. It is shown that this *affix generalization* follows from independently-motivated assumptions about clause structure in Asante Twi put forward by Kandybowicz (2015).

This paper is organized as follows: Section 2 outlines the phenomenon of tonal overwriting, previous approaches and provides additional data motivating a movement-based analysis. The following Section 3 justifies the movement analysis in the light of island-insensitive resumption, demonstrating that a movement analysis is still well-motivated. Section 4 discusses the morpho-phonological side of the phenomenon. It is shown that only certain types of affixes are subject to overwriting and that this follows from the syntax of the verbal domain. Finally, Section 6 concludes.

2 High tone overwriting in Asante Twi

Asante Twi is a dialect of the Kwa language Akan, spoken in Ghana (Dolphyne & Kropp Dakubu 1988; Kropp Dakubu 2009). It is an SVO, terraced-level tone language with a distinction between high and low tones, as well as downstep. The syllable is typically assumed to be the tone bearing unit (see Dolphyne 1988:53; Kügler 2016*b*:92f., cf. Abakah 2005:110ff.). An example of a simple

declarative sentence in Asante Twi is given in (5).[1]

(5) Papá Kofí re-frɛ́ né bá.
father Kofi PROG-call his child
'Papa Kofi is calling his child.' (Dolphyne 1988:57)

Since Schachter & Fromkin (1968), it has been reported that Asante Twi exhibits a tonal overwriting processes where underlying low-toned verbs become high in particular contexts. The most widely-discussed context involves *ex situ* focus constructions (see Schachter 1973; Boadi 1974; Marfo & Bodomo 2005; Marfo 2005*b*; Fiedler & Schwarz 2005; Genzel 2013). This focus strategy involves displacement of a constituent to the left of the focus particle *na* (see e.g. Boadi 1974; Saah 1988; Ameka 1992; Ermisch 2006, 2007; Amfo 2010; Genzel & Kügler 2010; Ofori 2011; Pfeil et al. 2015). In this construction, it has been noted that verbal roots with underlying low tones surface as high (sometimes referred to as the 'link tone'; Fiedler & Schwarz 2005:115). In (6a), the verb *wɔ* ('be') bears a low tone, however in the corresponding example (6b) with subject focus, the tone of the verb changes to high.

(6) a. Kofí **wɔ** Ényirési
Kofi be England
'Kofi is in England.'

b. Kofí$_1$ na ɔ$_1$-**wɔ́** Ényirési
Kofi FOC 3SG.SBJ-be England
'It is Kofi who is in England.' (Schachter & Fromkin 1968:209)

The same effect can be seen in the following example. The verb *ba* ('come') is low-toned in a discourse-neutral declarative clause (7a). If the subject is focused, the tone on the verb surfaces as high (7b). It is particularly interesting to note that the low-toned past tense marker *-a* and the person marker *me-* are not affected. We return to this in Section 4.1.

(7) a. Me-**ba**-a há.
1SG-come-PST here
'I came here.'

b. Mé na me-**bá**-a há.
1SG FOC 1SG-come-PST here
'It is I who came here.' (Boadi 1974:19, Genzel 2013:207f.)

High tone overwriting also applies if an object is fronted. Furthermore, the process extends to fronting of wh-phrases, since *ex situ* wh-questions are also a sub-type of the *na*-focus construction. As (8) shows, the verb becomes high-toned when wh-object is moved.

[1] All non-cited data come from the first co-author of the paper, who is a native speaker of Akan and has native intuitions about the Asante Twi and Fante dialects. Crucial judgments haven been cross-checked with other native speakers of the Asante Twi dialect. High tones are marked with an acute accent (e.g. *á*) and low tones are generally unmarked (but sometimes with a grave accent *à*). Downstepped high tones are marked with a superscript exclamation mark (ꜜ). Note that we focus on Asante Twi in particular here since other dialects of Akan (such as Fante) exhibit tonal polarity where the corresponding low-toned habitual verb stems in Asante Twi actually surface with high tones even in discourse-neutral contexts (see Abakah 2005:123ff.). While Akan has a rich array of segmental phonological processes such as assimilation (Schachter 1969) and ATR harmony (Casali 2012; Kügler 2015), we follow standard Akan orthography and do not represent such processes graphemically, unless immediately relevant.

(8) a. Ámꜜmá **pɛ** bayéré
Ama like yam
'Ama likes yam.'

b. Déén$_1$ na Ámꜜmá **pé** ___$_1$?
what FOC Ama like
'What does Ama like?'

In the corresponding *in situ* variant, the low tone on *pɛ* ('like') remains unaffected.

(9) Ámꜜmá **pɛ** déén ?
Ama like what
'What does Ama like?'

An important point, to which we return in detail in Section 3, is that extraction of an animate DP triggers obligatory resumption in the base position (10b). Even with resumption, we still observe high tone overwriting.

(10) a. Yaw **ma**-a Saka sika
Yaw give-PST Saka money
'Yaw gave Saka money.'

b. Hwáń$_1$ na Yaw **má**-a no$_1$ sika?
Who FOC Yaw give-PST 3SG.OBJ money
'Who did Yaw give money to?'

In bisyllabic verbal roots, the process of tonal overwriting also singles out low tones. For example, the LL root *kita* in (11a) becomes HH in the presence of an extracted object (11b).[2]

(11) a. Kofi **kita** bayéré
Kofi hold yam
'Kofi is holding a yam.'

b. Bayéré$_1$ na Kofi **kítá** ___$_1$
yam FOC Kofi hold
'It is yam that Kofi is holding.'

The same can be seen with the HL stems such as *nóm* ('drink') which also bear the HH tonal sequence in the presence of wh-movement (12b).

(12) a. Esi **nóm** nsúó
Esi drink water
'Esi drinks water.'

b. Déén$_1$ na Esi **nóḿ** ___$_1$?
what FOC Esi drink
'What does Esi drink?'

Although the existence of this reflex has been rather widely reported and experimentally corroborated (e.g. Genzel 2013:208; Korsah & Murphy 2016:229ff.), the nature of this process is still poorly understood. Most of the previous literature assumes that high-tone overwriting is a construction-specific quirk of the *na*-focus construction (e.g. Boadi 1974:19; Marfo 2005*b*:79; Genzel 2013:207f.). This becomes particularly clear in Marfo (2005*b*), which is to our knowledge

[2]Note that this process is not limited to extraction of arguments. Tonal overwriting is also found with extraction of adjuncts such as *dabén* ('when') (ib) and *ɛhéńfá* ('where') (id).

(i) a. Kofi bɛ́-**waré** Ámꜜmá ɔkyéná
Kofi FUT-marry Ama tomorrow
'Kofi will marry Ama tomorrow.'

b. Dabén$_1$ na Kofi bɛ́-**wáré** Ámꜜmá ___$_1$?
when FOC Kofi FUT-marry Ama
'When will Kofi marry Ama?'

c. Safoá nó **da** pónó nó só
key DEF lie table DEF on
'The key is on the table.'

d. Ɛhéńfá$_1$ na safoá nó **dá** ___$_1$?
where FOC key DEF lie
'Where is the key?'

the only explicit analysis of this phenomenon to date. We will illustrate his analysis on the basis of the example in (13b).

(13) a. Kofí **re-boá** Á!bénáá
Kofi PROG-help Abenaa
'Kofi is helping Abenaa.'

b. Kofí$_1$ na ɔ$_1$-**ré-bóá** Á!bénáá
Kofi FOC 3SG.SBJ-PROG-help Abenaa
'It is Kofi who is helping Abenaa.'

Marfo (2005*b*) proposes the following derivation for the *na*-focus construction in (13b). First, the syntactic structure in (14) is mapped onto phonological phrases, roughly corresponding to each XP (14a) (cf. Truckenbrodt 1999; Selkirk 2011). Subsequently, a rule of 'focus restructuring' moves the boundary of the initial ϕ-phrase to include the Spec-TP position, i.e. the subject (14b). The next process is 'prosodic raising' that maps the expanded ϕ domain created in the previous step onto the next highest domain in the Prosodic Hierarchy (Selkirk 1986; Nespor & Vogel 1986), i.e. the intonation phrase (*I*) (14c). Now, it is important to note that Marfo (2005*b*) assumes that there is an 'inserted' floating H-tone which is lexically associated with the focus marker *na*. For reasons that are relatively unclear, 'this inserted H prefers to dock on a constituent at the left-edge of a succeeding *I*, irrespective of its syllable structure. This left-edge constituent happens to be the verb' (Marfo 2005*b*:108f.) (14d). After the high tone has been repositioned, it triggers spreading throughout the verbal stem, as in (14e), a process Marfo (2005*b*:109) refers to as the 'inserted H spread rule'.

(14) *High tone overwriting by prosodic restructuring* (Marfo 2005*b*:108f.):

	[$_{\text{FocP}}$ Kofí [$_{\text{Foc}'}$ na [$_{\text{TP}}$ ɔ- [$_{\text{VP}}$ re-boá Á!bénáá]]]]	⇒	
a.	(Kofí na$^{\text{H-}}$)$_\phi$ (ɔ-)$_\phi$(re-boá)$_\phi$ (Á!bénáá)$_\phi$	⇒	(*Mapping from XPs to p-phrases*)
b.	**(**Kofí na$^{\text{H-}}$ (ɔ-)$_\phi$**)$_\phi$** (re-boá)$_\phi$ (Á!bénáá)$_\phi$	⇒	(*Focus Restructuring*)
c.	**(**Kofí na$^{\text{H-}}$ (ɔ-)$_\phi$**)$_I$** ((re-boá)$_\phi$ (Á!bénáá)$_\phi$)$_I$	⇒	(*Prosodic Raising*)
d.	(Kofí na (ɔ-)$_\phi$)$_I$ (**H-**(re-boá)$_\phi$ (Á!bénáá)$_\phi$)$_I$	⇒	(*H-tone shift*)
e.	(Kofí na (ɔ-)$_\phi$)$_I$ (**H-**(**ré-bóá**)$_\phi$ (Á!bénáá)$_\phi$)$_I$		(*Inserted H spread rule*)

Many aspects of Marfo's (2005*b*) analysis are problematic, however. First, there does not appear to be any independent motivation for the prosodic 'restructuring' processes he proposes, beyond the data they are designed to capture. Furthermore, the core assumption of his analysis is that the high tone that triggers spreading in the verbal stem is associated with focus marker *na*. The main motivation for this comes from the observation that the superficially similar *déɛ́*-construction does not trigger tonal overwriting, as shown by (15b).

(15) a. Á!má$_1$ na Kofi **ré-bóá** nó$_1$
Ama FOC Kofi PROG-help 3SG.OBJ
'It is Ama who Kofi is helping.'

b. Á!má$_1$ déɛ́ Kofi **re-boá** / ***ré-bóá** nó$_1$
Ama TOP Kofi PROG-help PROG-help 3SG.OBJ
'As for Ama, Kofi is helping her.' (Marfo 2005*b*:110)

However, it will be shown that this assumption cannot be maintained in the light of new data from long-distance extraction. Furthermore, closer inspection reveals that *déɛ́*-constructions do

not share the same movement derivation as their *na* counterparts, despite their putative semblance (see Section 3.4). Instead, we argue that the tonal alternation in Asante Twi is a reflex of successive-cyclic movement. Descriptively, whenever $\overline{\text{A}}$-movement takes place in a clause, then the low tones of the verb in that clause are replaced by high tones. More technically, it will be shown that this can be modelled as the allomorphic realization of a *v* head bearing an edge feature as a floating high tone. The following section provides arguments against the characterization of overwriting by high tones as an idiosyncratic property of the morpheme *na*, and in favour of an analysis in terms of a phonological reflex of $\overline{\text{A}}$-movement.

2.1 Tonal overwriting as a reflex of Ā-movement

This section presents evidence in support of the claim that high tone overwriting in Twi verbs is triggered by the presence of an $\overline{\text{A}}$-dependency, and is not specific to the *na*-focus construction. The first piece of evidence involves new data from long-distance dependencies where it is shown that the process affects all verbs along the extraction path. The second argument comes from the fact that the tonal overwriting is found in contexts other than focus constructions, namely relative and adverbial clauses. These contexts can all be unified as involving an $\overline{\text{A}}$-dependency of some kind.

2.1.1 Long-distance dependencies

Recall that for examples such as (16), Marfo (2005*b*) proposed that the high tone that triggers overwriting on the verb is lexically associated to the *na* focus particle. Consequently, the tonal overwriting process is a construction-specific property of *na*-constructions.

(16) a. Ámˈmá **kita** bayéɛ́.
Ama hold yam
'Ama holds yam.'

b. Déɛ́n$_1$ na Ámˈmá **kítá** ___$_1$?
what FOC Ama like
'What does Ama hold?'

What previous literature on this phenomenon neglected to consider was long-distance dependencies. These reveal a very important characteristic of the low/high-alternation, namely that it is an unbounded process. If extraction takes place from an embedded clause to a focus position in the matrix clause, then both the matrix and embedded verbs exhibit high-tone overwriting. In (17b), the matrix verb *kaé* ('remember') and the embedded verb *kita* ('hold') both surface with high tones.

(17) a. [$_{CP}$ Kofí **kaé** [$_{CP}$ sɛ Ámˈmá **kita** bayéɛ́]]
Kofi remember that Ama hold yam
'Kofi remembers that Ama is holding a yam.'

b. [$_{CP}$ Déɛ́n$_1$ na Kofí **káé** [$_{CP}$ sɛ Ámˈmá **kítá** ___$_1$]] ?
what FOC Kofi remember that Ama hold
'What does Kofi remember that Ama is holding?'

The same effect can be seen with different verbs in (18).

(18) a. [$_{CP}$ Kwame **nim** [$_{CP}$ sɛ́ Ámˈmá **hu**-u Efua]]]
Kwame knows that Ama see-PST Efua
'Kwame knows that Ama saw Efua.'

b. [$_{CP}$ Hwáń$_1$ na Kwame **níḿ** [$_{CP}$ sɛ Ámˈmá **hú**-u no$_1$]]]
who FOC Kwame knows that Ama see-PST 3SG.OBJ
'Who does Kwame know that Ama saw?' (cf. Boadi 1990:81)

The unbounded nature of this process is further illustrated by example (19), which contains two levels of embedding. In the case of extraction, the low tones on both the embedded verbs and the matrix verb alternate to high (19b).

(19) a. [$_{CP}$ Kofí **nim** [$_{CP}$ sɛ́ Ésí á-**ka** [$_{CP}$ sɛ́ Ámˈmá **pɛ** bayéɾɛ́]]]
Kofi know that Esi PERF-say that Ama like yam
'Kofi knows that Esi has said that Ama likes yam.'

b. [$_{CP}$ Bayéɾɛ́$_1$ na Kofí **níḿ** [$_{CP}$ sɛ Ésí á-**ká** [$_{CP}$ sɛ Ámˈmá **pɛ́** —$_1$]]] ?
yam FOC Kofi know that Esi PERF-say that Ama like
'It's yam that Kofi knows that Esi has said that Ama likes.'

Consider this now in the light of Marfo's (2005*b*) analysis discussed in the previous section. The intuition is that a floating H tone originates on *na* and then docks onto the closest verb. Such an analysis cannot account for the fact that all verbs along the extraction path are raised to high, since there is only ever a single high tone associated with the focus marker. Thus, it seems impossible to maintain the idea that the high tone originates on *na* in the light of these data. If one wished to maintain the construction-specific view of tonal overwriting, one could formulate a rule stating that all verbs in a *na*-focus construction are raised to high.

However, this would be problematic in light of (20). As (20b,d) show, extraction of a matrix argument does not affect the embedded verb. Thus, it is not only the construction-type, but also the origin of the displaced constituent that must be taken into account when defining where tonal overwriting takes place.

(20) a. Kofí **ka**-a [$_{CP}$ sɛ́ ɔ-**dɔ** Ámˈmá]
Kofi say-PST that 3SG.SBJ-love Ama
'Kofi said that he loves Ama.'

b. Hwáń$_1$ na ɔ$_1$-**ká**-a [$_{CP}$ sɛ́ ɔ-**dɔ** Ámˈmá] ?
who FOC 3SG.SBJ-say-PST that 3SG.SBJ-love Ama
'Who said that he loves Ama?'

c. Kofí ká **kyeɾɛ́**-ɛ Yaw [$_{CP}$ sɛ Ámˈmá **so**] ?
Kofi say show-PST Yaw that Ama be.big
'Kofi told Yaw that Ama is fat.'

d. Hwáń$_1$ na Kofí ká **kyéɾɛ́**-ɛ no$_1$ [$_{CP}$ sɛ Ámˈmá **so**] ?
who FOC Kofi say show-PST 3SG.OBJ that Ama be.big
'Who did Kofi tell that Ama is fat.'

On the other hand, these data make perfect sense under the view that high tone overwriting on verbs tracks the presence of $\bar{A}$-movement in that clause. Thus, this kind of tonal overwriting patterns exactly like other established reflexes of successive-cyclicity in that they are only found in domains crossed by movement, for example in Kikuyu (Clements 1984*a*:47), Defaka (Bennett et al. 2012:297), Kitharaka (Muriungi 2005:48) and Indonesian (Saddy 1991:194).[3]

2.1.2 Relative clauses

Another argument against the idea that tonal overwriting is specific to the *na*-construction comes from the fact that the low/high alternation is also found in relative clauses. Relative clauses in Asante Twi are not obviously related to *na*-focus constructions and instead involve the relative complementizer *áa* preceding the pivot constituent of the relative construction (see Saah 2010; McCracken 2013) (21). As (21) shows, the underlyingly low-toned verb *hu* ('see') bears a high-tone when it occurs inside a relative clause (21b).

(21) a. Kofi **hu-u** kŕataá nó.
Kofi see-PST paper DEF
'Kofi saw the paper.'

b. [$_{DP}$ Kŕataá nó$_1$ [$_{CP}$ áa Kofi **hú-u-ɛ́** ___$_1$ nó]] da [$_{PP}$ pónó nó só.]
paper DEF REL K. see-PST-YE CD lie table the on
'The paper that Kofi saw is on the table.'

Although much previous work on this tonal alternation has focused exclusively on focus constructions, its presence in relative clauses can be found in earlier literature, i.e. since at least Schachter (1973:23). For example, while Saah (2010) does not discuss the tonal alternation on the verb, it can be seen in many of his examples, such as (22b).

(22) a. Ɔbáá nó **waré**-e Kofí
woman DEF marry-PST Kofi
'The woman married Kofi.'

b. [$_{DP}$ Ɔbáá$_1$ [$_{CP}$ áa ɔ$_1$-**wáré**-e Kofí nó]] fi Aburí
woman REL 3SG.SBJ-marry-PST Kofi CD be.from Aburi
'The woman who married Kofi is from Aburi.' (Saah 2010:92)

Fiedler & Schwarz (2005:122), on the other hand, explictly mention the tonal alternation, reporting that in (23b) 'the verb in the relative clause changes its tone pattern in adopting a H tone'.

(23) a. Wo **bɔ**-ɔ abrántie nó.
2SG hit-PST boy DEF
'You hit the boy.'

[3] It is worth noting that there are other kinds of tonal overwriting in Asante Twi. For example, Dolphyne (1988) discusses high-tone spreading in associative constructions and Paster (2010) discusses low tone overwriting in the imperative (see Section 4.1). Certain kinds of prefixes also trigger tonal alternations on verb roots (Schachter & Fromkin 1968; Paster 2010) (see Section 4.2). As far as we can tell, these processes are fully independent of the particular kind of high-tone overwriting described here.

b. [$_{DP}$ Abrántie nó$_1$ [$_{CP}$ áa wo-**bɔ́**-ɔ nó$_1$ nó]] yɛ m-adámfuɔ
boy DEF REL 2SG-hit-PST 3SG.OBJ CD COP 1SG-friend
'The boy whom you hit is my friend.'

(Fiedler & Schwarz 2005:122)

Similar to the *na*-construction discussed in the previous section, this tonal overwriting is also an unbounded process, triggered on all verbs crossed by long-distance relativization (24).

(24) *Long distance relativization*:

a. Me-nim [$_{CP}$ sɛ́ óbíárá á-**te** [$_{CP}$ sɛ́ Kofi á-**ka** [$_{CP}$ sɛ́ ɔ-**dɔ**
1SG-know that everybody PERF-hear that Kofi PERF-say that 3SG.SBJ-love
ɔbáá nó]]]
woman DEF.
'I know that everybody has heard that Kofi has said that he loves the woman.'

b. Me-hu-u [$_{DP}$ ɔbáá nó$_1$ [$_{CP}$ áa óbíárá á-**té** [$_{CP}$ sɛ Kofi á-**ká** [$_{CP}$
1SG-see-PST woman DEF REL everybody hear-PST that Kofi PERF-say
sɛ ɔ-**dɔ́** nó$_1$ nó]]]]
that 3SG.SBJ-FUT-love 3SG.OBJ CD
'I saw the woman whom everybody has heard that Kofi has said that he loves her.'

The existence of the low/high-alternation inside relative clauses also follows from our hypothesis that it is a reflex of successive-cyclic movement, since both head-internal and head-external approaches to relative clauses posit some kind of $\overline{\text{A}}$-movement originating inside the relative CP (for overviews, see e.g. Alexiadou et al. 2000; de Vries 2002; Bhatt 2015; Salzmann 2017*b*). At this point, it is important to mention the fact that we find resumption inside relative clauses (and also in *na*-constructions) if the tail of the dependency corresponds to an animate DP. Nevertheless, Section 3 argues that these resumptive dependencies still involve genuine movement.

2.1.3 Adverbial clauses

A further context beyond the *na*-focus construction where the tonal alternation can be found is adverbial clauses. Dolphyne (1988:69) points out that there is a distinction between the tonal patterns of verbs in what she refers to as a 'subordinate clause'. What Dolphyne (1988) is actually referring to is tone raising inside an adverbial clause, since this effect is not found in clausal complements. An example of this is given in (25).

(25) a. Kofí **re-bisá** nó.
Kofi PROG-ask him
'Kofi is asking him.'

b. [$_{CP}$ Kofí **ré-bísá** nó nó ná] Sɛ́bɛ́ á-da.
Kofí PROG-ask him CD when Sebe PERF-sleep
'While Kofi was asking him, Sebe was asleep.' (Kügler 2016*a*:40)

Although we observe the low/high-alternation here, this is clearly not an instance of a focus construction (note that high-toned *ná* here is a subordinating conjunction). The fact that there does not seem to be any overt movement inside the adverbial clause could be viewed as a chal-

lenge to our claim that tonal overwriting is a reflex of Ā-movement. However, it has already been argued on independent grounds that there is movement of a covert operator in adverbial clauses (see e.g. Geis 1970, 1975; Larson 1987, 1990; Johnson 1988; Thompson 1995; Demirdache & Uribe-Etxebarria 2004; Haegeman 2007, 2010; Zentz 2014; Kusumoto 2017). The main empirical motivation for this comes from ambiguities found in temporal adverbial clauses such as those in (26), originally noticed by Geis (1970).

(26) a. Joan left before Harry told her to. (Geis 1970:127)
b. I saw Mary in New York after John said that she left. (Larson 1987:261)
c. The professor wrote the letter after the student said he needed it. (Zentz 2014:375)

In each of these cases, there are two possible readings: one in which the adverbial refers to the time of the matrix event (e.g. *saying*), and another where it refers to the time of the embedded event (*leaving* or *needing*). One influential analysis of this ambiguity involves positing movement of a null operator inside the adverbial clause (see e.g. Geis 1970:127; Larson 1987:261; Larson 1990:178; Demirdache & Uribe-Etxebarria 2004:171; Haegeman 2007:293). If the temporal operator is merged in the matrix clause of the adverbial, then we derive the high construal when it moves to Spec-CP (27a). However, the operator can also be merged in the embedded clause and then moved successive-cyclically to the matrix clause to derive the low construal (27b).

(27) I saw Mary in New York after John said that she left.
a. $[_{PP}$ after $[_{CP}$ Op_1 $[_{TP}$ John said $[_{CP}$ that she left] t_1]]]
High construal: 'The speaker saw Mary after hearing from John that she had left.'
b. $[_{PP}$ after $[_{CP}$ Op_1 $[_{TP}$ John said $[_{CP}$ t_1 that she left t_1]]]]
Low construal: 'The speaker saw Mary after the point of her reported departure.'

Assuming that there is also Ā-movement of a null operator in Twi temporal adverbial clauses such as (25b), then the presence of tonal overwriting is unsurprising. Cross-linguistically, we also find movement reflexes in adverbial clauses in other languages such as Irish (McCloskey 2001) and also Akɔɔse (Zentz 2014). In (28), the movement-related complementizer a^L that triggers lenition is found inside a temporal adverbial (see Section 2.2 for more discussion).

(28) nuair **a** tháinig siad 'na bhaile
when a^L came they home
'when they came home' (McCloskey 2001:71)

If tonal overwriting in Twi adverbial clauses results from movement of a null operator, then we might expect the presence or absence of the movement reflex to correlate with different interpretations. While Geis ambiguities of the kind found in English prove rather difficult to reconstruct faithfully in Asante Twi, the following example is highly suggestive of such an effect:

(29) [$_{CP}$ Op$_1$ Kofí **ré**-ká t$_1$ [$_{CP}$ sɛ ɔ-**pɛ** Ámˈmá] nó ná] Sébé á-da
Kofi PROG-say that 3SG.SBJ-like Ama CD when Sebe PERF-sleep
'While Kofi was saying that he likes Ama, Sebe was asleep.'

In (29), the adverbial clause clearly refers to the time of the saying event, rather than the state expressed by the verb *pɛ* ('like'). As such, we have an obligatory high construal of the temporal operator, i.e. no movement takes place in the embedded clause. This is reflected by the fact that tonal overwriting is found on the matrix verb (on the prefix *re*), but not on the embedded verb, suggesting that the null operator originates in the matrix in (29).

2.2 A movement-based analysis

This section will try to formalize the assumption that tonal overwriting is a reflex of movement. The standard approach to locality in Minimalism comes from *phase theory* (Chomsky 2000, 2001, 2008). Central to phase theory is the *Phase Impenetrability Condition*, given in (30).

(30) *Phase Impenetrability Condition* (Chomsky 2000:108):
In phase α with head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operations.

While the exact inventory of phase heads is still a matter of debate, there is a general consensus that it includes at least *v*P and CP, as proposed by Chomsky (2001:13). The consequence of this is that a wh-phrase is not accessible to a probe on C once the complement of *v* has undergone Spell-Out (31a). In order to allow for wh-movement of objects, it was proposed that 'edge features' can be added to phase heads in order to allow moving operators to escape transfer (Chomsky 2000:109; Chomsky 2001:34; Chomsky 2008:149; also see Müller 2011:2f. and Kandybowicz 2009:321f.). Thus, in order for a wh-object to move to Spec-CP, an edge feature (that will simply be represented as an EPP feature following Chomsky 2000) is added to the *v* head, triggering movement to its specifier (31b). Subsequently, the wh-phrase is accessible to the movement probe on C and the wh-phrase will move its criterial position in Spec-CP (31c).

(31) a. [$_{CP}$ C$_{[wh]}$ [$_{TP}$ T [$_{vP}$ *v* [$_{VP}$ V wh]]]]
b. [$_{vP}$ *wh* [$_{v'}$ *v*$_{[\text{EPP}]}$ [$_{VP}$ V ⟨wh⟩]]]
c. [$_{CP}$ C$_{[wh]}$ [$_{TP}$ T [$_{vP}$ *wh* [$_{v'}$ *v*$_{[\text{EPP}]}$ [$_{VP}$ V ⟨wh⟩]]]]

The result of this is that long distance extraction must involve movement through each intermediate Spec-*v*P and Spec-CP position, as shown in (32).

(32) *Long distance successive-cyclic movement*:
[$_{CP}$ *wh* [$_{C'}$ C$_{[\text{EPP}]}$ … [$_{vP}$ — [$_{v'}$ *v*$_{[\text{EPP}]}$ V [$_{CP}$ — [$_{C'}$ C$_{[\text{EPP}]}$ … [$_{vP}$ — [$_{v'}$ *v*$_{[\text{EPP}]}$ [$_{VP}$ V —]]]]]]]]]

In (32), each of the heads through which successive-cyclic movement passes bears a (checked)

edge feature. A straightforward way of capturing morphological reflexes of successive-cyclicity is to make the realization of a particular head sensitive to whether or not it bears such a feature. In other words, we can posit a contextual allomorph of certain phase heads that tracks whether or not that head bears an edge feature, and thus indirectly whether or not successive-cyclic movement took place via the specifier of that head.[4] Consider the classic case of Irish complementizer allomorphy in (33). While the ordinary declarative complementizer takes the form *go* as in (33a), the presence of an $\overline{\text{A}}$-dependency in a clause leads to the other complementizer form *a* (33b,c).

(33) *Complementizer alternation in Irish* (McCloskey 1979:54,150f.):

a. Dúirt mé [$_{\text{CP}}$ **gu**-r shíl mé [$_{\text{CP}}$ **go** mbeadh sé ann]
said I *go*-PAST thought I *go* would.be he there
'I said that I thought that he would be there.'

b. [$_{\text{DP}}$ an fear [$_{\text{CP}}$ Op **a** shíl mé [$_{\text{CP}}$ ___ **a** bheadh ___ ann]]]
the man a^{L} thought I a^{L} would.be there
'the man that I thought would be there'

c. [$_{\text{CP}}$ cen t-ursceal **a** mheas me [$_{\text{CP}}$ ___ **a** duirt se [$_{\text{CP}}$ **a** thuig se ___]]] ?
which novel a^{L} thought I a^{L} said he a^{L} understood he
'Which novel did I think he said he understood?'

McCloskey (2002) analyzes the reflex of movement by specifying distinct Vocabulary Items that realize whether a C head has triggered intermediate movement steps, i.e. whether a head bears an edge feature (however see Noonan 1999, 2002 and Bošković 2008:209,fn.19 for some criticism of this view).[5] In clauses in which no movement has taken place, the form *go* simply realizes the category feature of C (34b). However, if the C head also bears an EPP feature (i.e. edge feature) that was inserted to facilitate successive-cyclic movement, then this complementizer will be realized by the a^{L} (34a) rather than *go*, given standard assumptions about the ordering of VIs relative to specificity (e.g. Halle & Marantz 1993:124; Halle 1997:428; Embick 2015:95).

(34) *Vocabulary Items for Irish* (cf. McCloskey 2002:203):

a. [C, EPP] ↔ a^{L}

b. [C] ↔ *go*

[4] It is important to note however that this is only straightforward for transparent reflexes which occur uniformly along the extraction path (what Georgi 2014 calls *Pattern I reflexes*). As Georgi (2014, 2017) discusses, there are also patterns which mark exclusively final or non-final movement steps, which can motivate treating the reflex as a realization of Spec-Head wh-agreement.

[5] There is an additional complementizer a^{N} (triggering nasalization of the following segment) that occurs with resumptive dependencies (i).

(i) an ghirseach a-r ghoid na síogaí **í**
the girl a^{N}-PST stole the fairies her
'the girl that the fairies stole away' (McCloskey 2002:189)

McCloskey argues that this results from a base-generated *pro* in Spec-CP that binds the resumptive pronoun *í* directly. Thus, no movement is involved in an example such as (i). Thus, we would have to refine the Vocabulary Items in (34) to involve an OP(erator) feature, as McCloskey (2002) suggests. Such cases are not relevant for the Twi data. Although Asante Twi has overt resumptives with animates, they behave exactly like gaps do and also show movement effects (see Section 3).

We can then adopt an entirely analogous approach for tonal overwriting in Asante Twi. For long distance wh-movement such as (35b), there will be successive-cyclic movement through each *v*P and CP projection triggered by an edge feature on the corresponding phase head, as in (32).[6]

(35) a. [$_{CP}$ Kofí **kaé** [$_{CP}$ sɛ Á$^{!}$má **kita** bayéré]]]]]
Kofi remember that Ama hold yam
'Kofi remembers that Ama is holding a yam.'

b. [$_{CP}$ Déɛ́n na Kofí [$_{vP}$ ___ **káé** [$_{CP}$ ___ sɛ Á$^{!}$má [$_{vP}$ ___ [$_{VP}$ **kítá** ___]]]]] ?
what FOC Kofi remember that Ama hold
'What does Kofi remember that Ama is holding?'

The fact that tonal overwriting occurs on verbs points to the conclusion that this reflex is on *v* rather than C. As a first approximation, overwriting can be analayzed as a floating tone that spreads through the verb. This is captured by the following Vocabulary Items for *v* in Asante Twi, where the more specific exponent of *v* with an edge feature is realized as a floating H tone:

(36) *Vocabulary Items for v (preliminary)*:
a. [*v*, EPP] ↔ H-
b. [*v*] ↔ Ø

The core intuition will be that the floating H tone realized on *v* then triggers 'tonal overwriting' throughout the *v*+V complex, as shown in (37). The finer details of how tonal overwriting is derived, as well as discussion of which affixes are affected, is provided in Section 4.

(37) *Tonal overwriting of v+V* :

For cases such as (20b), where movement only takes place in the matrix clause, an edge feature

[6] Titov (2019:29f.) follows Boadi (1974) and Ofori (2011) in assuming that *na*-focus constructions are actually bi-clausal structures, where the focus particle *na* is the result of phonological fusion of the copula *ne* and the relative marker *áa*. In particular, Titov (2019) treats this as an underlying inverse pseudocleft with fusion of *ne* and *áa* (i).

(i) [$_{TP}$ Kofi$_i$ [$_{VP}$ ne [$_{CP}$ aa ɔ$_i$-ba-a ha]]]
Kofi is REL 3SG.SBJ-come-PST here
'Kofi is who came here.' (Titov 2019:30)

This is not a plausible synchronic analysis for the *na*-construction, however, since free/headless relative clauses in Twi do not take the *áa* relative marker, but rather the topic marker *déɛ́* (ii) (Boadi 2005:155ff.).

(ii) Me-hu-u [$_{CP}$ Op$_i$ **déɛ́** ɔ$_i$-guáne-e-ɛ nó]
1SG-see-PST TOP 3SG.SBJ-escape-PST-YE CD
'I saw who escaped.' (Boadi 2005:157f.)

Furthermore, despite some similarities between focus constructions and relative clauses (e.g. regarding tone), there are also superficial differences such as the distribution of the clausal determiner (CD). While the CD is obligatory with relative clauses (Saah 2010:100), they are typically optional in *na*-focus constructions. This difference would be unexpected if they shared the same underlying source.

will only be inserted on matrix *v*. Thus, the floating H tone will only trigger overwriting on the matrix verb.

3 Movement and resumption in Asante Twi

So far, we have not yet addressed the fact that we often find resumptive pronouns in constructions which we are assuming to involve movement. In many languages, resumptive $\overline{\text{A}}$-dependencies do not show the typical properties of movement (i.e. island-sensitivity, reconstruction) and have often been analyzed as base-generation. If this were true for Asante Twi, this would undermine the analysis of tonal overwriting as a reflex of movement, since this effect is also found with resumption. In this section, we will argue that, despite the lack of island-sensitivity, resumption is still best treated as the result of a movement derivation.

Descriptively, the pattern we observe is that resumptive pronouns obligatorily appear in the base position of animate, but not inanimate DPs (e.g. Saah 1988:23f.; 1994:101f.; Saah & Goodluck 1995:383). Consider the following example involving a double object construction. If the animate indirect object is extracted, then the resumptive pronoun *nó* must appear in its base position (38b). However, if the inanimate direct object is extracted (38c), then no resumptive pronoun may appear and we instead find a gap.

(38) a. Yaw ma-a Saka siká.
Yaw give-PST Saka money
'Yaw gave Saka money.'

b. Hwáń$_1$ na Yaw má-a {*___$_1$ / no$_1$ } sika?
Who FOC Yaw give-PAST 3SG.OBJ money
'Who did Yaw give money to?'

c. Déɛ́n$_1$ na Yaw má-a Saka { ___$_1$ / *no$_1$ }?
what FOC Yaw give-PST Saka 3SG.OBJ
'What did Yaw give to Saka?'

Taking this pattern at face value, it is conceivable that dependencies with gaps and resumptives could have radically different derivations. For example, it has been proposed that whereas displaced constituents leaving a gap are generated by movement (39a), resumption involves base-generation and binding (39b) (e.g. Chomsky 1977:80f.; Bayer & Salzmann 2013:305).

(39) a. [$_{CP}$ DP$_1$ [$_{TP}$ … [… ___$_1$]]] *(Movement)*

b. [$_{CP}$ DP$_1$ [$_{TP}$ … [… *pro*$_1$]]] *(Binding)*

These two diferrent types of structures have been argued to be discernable on the basis of movement diagnostics such as island-sensitivity. For example in Hebrew, an object resumptive can occur inside a Complex NP Island (40a), but an object gap may not (40b) (see McCloskey 1979:32f. for similar facts in Irish).

(40) *Island sensitivity with gaps in Hebrew* (Borer 1984:221,223):

a. raʔiti ʔet ha-yeled$_1$ she- dalya makira [$_{DP}$ ʔet ha-ʔisha [$_{CP}$ she- ʔohevet
saw.1SG ACC the-boy that Dalya knows ACC the-woman that loves
ʔoto]]
him
'I saw the boy that Dalya knows the woman who knows him.'

b. *ze ha-sefer$_1$ she- ʔoto$_1$ raʔiti [$_{DP}$ ʔet ha-ʔish [$_{CP}$ she- katav ___$_1$]]
this the-book that him saw.1SG ACC the-man that wrote
'This is the book that I saw the man that wrote.'

This would then seem to follow from the structures in (39); a movement derivation is postulated only when we find island-sensitivity, i.e. with gaps. A somewhat surprising fact about Asante Twi is that we find island-sensitivity neither with resumptives (41) nor with gaps (42) (Saah 1994; Saah & Goodluck 1995; Goodluck et al. 1995):

(41) *Island insensitivity with resumptives* (Saah 1994:172; Korsah 2017:117):

a. Hwáń$_1$ na wo-hú-u [$_{DP}$ onipa ko [$_{CP}$ áa ɔ-bɔ́-ɔ **nó**$_1$ nó]] ?
who FOC 2SG-see-PST person DEF REL 3SG.SBJ-hit-PST 3SG.OBJ CD
'Who did you see the person who hit?' (*CNP island*)

b. Á$^{!}$má na Kofí bísá-a [$_{CP}$ sɛ́ hwán na ɛ-dɔ́ **nó** nó]
Ama FOC Kofi ask-PST that who FOC 3SG.SBJ-love 3SG.OBJ CD
'It is Ama who Kofi asked who loves.' (*wh-island*)

(42) *Island insensitivity with gaps* (Saah 1994:172,197):

a. Déɛ́n na wo-níḿ [$_{DP}$ onipa ko [$_{CP}$ áa ɔ-tɔ́-ɔ-ɛ́ ___$_1$ nó]] ?
who FOC 2SG-know person DEF REL 3SG.SBJ-buy-PST-YE CD
'What do you know the person that bought?' (*CNP island*)

b. Deɛn$_1$ na Mary bisa-a [$_{CP}$ sɛ́ hwán na ɔ-yɛ-e ___$_1$ nó] ?
what FOC Mary ask-PST that who FOC 3SG.SBJ-make-PST CD
'What did Mary ask who made?' (*wh-island*)

This led Saah (1994) to propose that the constructions involve base-generation of a constituent in the left-periphery, which binds a resumptive pronoun *in situ*. $\bar{A}$-constructions with gaps (42) are then assumed to involve binding of a null resumptive pronoun (Saah 1994:172f.). Such a derivation then contradicts the present proposal for tonal overwriting since it would mean that long-distance dependencies would not involve movement. In fact, it seems difficult to see what property of $\bar{A}$-constructions high tone overwriting on verbs would be tracking. One possibility would be successive-cyclic *binding*. In Irish, there is a dedicated complementizer form for resumptive dependencies, namely a^N (McCloskey 1979, 2001, 2002). Long-distance dependencies involving resumptives involve the complementizer a^N are insensitive to islands (McCloskey 1979:34), which leads to the conclusion that they do not involve movement. For resumptive dependencies, McCloskey (2002:199) reports that it is possible for each complementizer between the binder and resumptive to be marked with the complementizer a^N, which reflects base generation of a proform in its specifier. This can be seen in (43a), which is analyzed as chain of successive binding dependencies reaching down to the resumptive pronoun (RP) (43b).

(43) a. [$_{DP}$ an bhean [$_{CP}$ **a** raibh mé ag súil [$_{CP}$ **a** bhfaighinn *uaithi* é]]]
the woman a^N was I hope a^N get from.her it
'the woman that I was hoping that I would get it from

b. [$_{DP}$ … [$_{CP}$ pro_i [$_{C'}$ a^N [$_{TP}$ … [$_{CP}$ pro_i [$_{C'}$ a^N [$_{TP}$ … RP_i]]]]]]]

In this analysis, we observe a particular reflex on all heads between the RP and its binder. However, there is no necessity to have binding be successive-cyclic. Since base-generation is mainly motivated by island-insensitivity, then binding by *pro* must be able to cross clause boundaries. Indeed, this means that the intermediate positions need not be filled by other binders, giving rise to 'mixed' chains such as (44a). Here, the intermediate C head does not select a *pro* binder in its specifier and therefore surfaces in its default form *go* (44b) (McCloskey 2002:190).

(44) a. [$_{DP}$ fir [$_{CP}$ **ar** shíl Aturnae an Stáit [$_{CP}$ **go** rabh *siad* díleas do'n Rí]]]
men a^N thought Attorney the State *go* were they loyal to.the king
'men that the Attorney General thought they were loyal to the king'

b. [$_{DP}$ … [$_{CP}$ pro_i [$_{C'}$ a^N [$_{TP}$ … [$_{CP}$ *go* [$_{TP}$ … RP_i …]]]]]]

The major difficulty in developing an analogous proposal for Asante Twi is that it does not have mixed chains of the kind found in Irish. Furthermore, we find a wide range of movement diagnostics (e.g. crossover and reconstruction effects) that are difficult to capture in the absence of movement (see Section 3.3) (see Adger & Ramchand 2005; Rouveret 2008; Pan 2016 for Agree-based analyses for resumptives without reconstruction effects).

Instead, we will argue that a movement-based account of tonal overwriting can be maintained under the assumption that resumption amnesties island violations. This effect of so-called 'intrusive' resumption is even found in languages without grammatical resumption (45) where it functions as a kind of Last Resort (cf. Shlonsky 1992).

(45) *Resumptives inside islands in English* (Ross 1986:260f.):

a. I just saw that girl who$_1$ [$_{DP}$ Long John's claim [$_{CP}$ that *she*$_1$ was a Venusian]] made all the headlines

b. King Kong is a movie which$_1$ you'll laugh yourself sick [$_{CP}$ if you see *it*$_1$]

The following sections will show that once we take the full range of facts into account, a much clearer picture emerges: Extraction of a DP always triggers resumption in its base-position. However, there are independent constraints on the realization of inanimate pronouns that also apply to resumptive pronouns. Following Korsah (2017), it will be shown that movement of inanimate DPs does in fact show overt resumption in a well-defined set of contexts. This means that pseudo-gaps such as those in (42) are actually phonologically null resumptive pronouns. If it is a general property of Asante Twi resumptives that they circumvent island violations, then the lack of island-sensitivity with nominal extraction can be straightforwardly accounted for. This conclusion will be bolstered by the fact that island effects are found with extraction of categories that lack resumptives, namely VPs and PPs. Since resumptive pronouns also show a wide range

of reconstruction effects, we conclude that resumptives are the phonological realization of lower copies generated by movement. The final piece of the puzzle is provided by the *déɛ́*-construction, which lacks tonal overwriting. While this was previous taken as evidence for the construction-specific nature of high tone insertion, we show that this construction systematically lacks reconstruction effects, and therefore involves base-generation rather than movement. This lends further support to the conclusion that $\overline{\text{A}}$-movement is the trigger of high tone overwriting, even in the presence of resumption.

3.1 On nominal resumption in Asante Twi

Recall that examples such as (38) initially suggest that extracted animate arguments require resumptive pronouns (46a), while inanimate object arguments seem to leave gaps in their base position (46b) (e.g. Saah 1992). However, this section shows that the 'gap' in (46b) is actually a phonologically null resumptive pronoun, subject to a general process of pro-drop.

(46) a. Hwáń$_1$ na Yaw pɛ́ {*__$_1$ / no$_1$ }?
Who FOC Yaw like 3SG.OBJ
'Who does Yaw like?'

b. Déɛ́n$_1$ na Yaw pɛ́ { __$_1$ / *no$_1$ }?
what FOC Yaw like 3SG.OBJ
'What does Yaw like?'

The fact that third person inanimate object pronouns are obligatorily phonetically null has long been observed in the literature on Akan grammar (cf. Riis 1854:60, Christaller 1875/1964:85). As the following examples from Osam (1996:160) shows, a pronoun with an inanimate referent is obligatorily null (47b).

(47) a. Kofi bɛ-tɔn [$_{DP}$ dua no]$_i$
Kofi FUT-sell tree DEF
'Kofi will sell the tree.'

b. Kofi bɛ-tɔn { __$_i$ / *no$_i$ }
Kofi FUT-sell 3SG.OBJ
'Kofi will sell it (the tree).'

Although this is the general rule, there are at least three contexts in which inanimate pronouns are obligatorily pronounced. These include clause-final adverbs (48a) (Saah 1994), change-of-state verbs (48b) (Boadi 1971; Osam 1996), and with secondary predicates (48c) (Korsah 2017).

(48) *Contexts for inanimate pronoun realization*:

a. Kofi bɛ-tɔn *(no$_i$) ɔkyena
Kofi FUT-sell 3SG.OBJ tomorrow
'Kofi will sell it (e.g. the tree) tomorrow.'

b. Kofi bu-u *(no$_i$)
Kofi break-PST 3SG.OBJ
'Kofi broke it (e.g. the chair).'

c. Kuukua té [$_{SC}$ *(no$_i$) mónó]
Kuukua pluck 3SG.OBJ fresh
'Kuukua plucks it (e.g. the flower) fresh.'

Putting aside what unifies these contexts for a moment, it is clear that the expected application of the inanimate pro-drop rule in Asante Twi is blocked in the contexts in (48). Furthermore, we see the same effect with resumptive pronouns corresponding to inanimates. While inanimate

resumptives must be normally be dropped (49a), as we saw in (42), the presence of a clause-final VP-adverb forces it to appear overtly (49b).[7]

(49) *Inanimate resumption with clause final adverb*:

a. Aduane nó$_1$ na Kofí pɛ́ (***no**$_1$)
food DEF FOC Kofi like 3SG.OBJ
'It's the food that Kofi likes.'

b. Aduane nó$_1$ na Kofí pɛ́ *(**no**$_1$) anɔpá
food DEF FOC Kofi like 3SG.OBJ morning
'It's the food that Kofi likes in the morning.'

Again, while we do not find resumptives corresponding to inanimate objects with most verbs (50a), change-of-state predicates such as *bu* ('break') trigger overt resumption (50b).

(50) *Inanimate resumption with change of state verbs*:

a. Akonwa nó$_1$ na Kofi kŕá-a (***no**$_1$).
chair DEF FOC Kofi import-PST 3SG.OBJ
'It's the chair that Kofi imported.'

b. Akonwa nó$_1$ na Kofi bú-u *(**no**$_1$).
chair DEF FOC Kofi break-PST 3SG.OBJ
'It's the chair that Kofi broke.'

Finally, when the antecedent of a resumptive is an argument of a secondary predicate, it cannot be omitted, as shown in (51) (also see Korsah 2017:25).

(51) *Inanimate resumption with secondary predication*:

a. Aduane nó$_1$ na Kofí pɛ́ [$_{SC}$ *(**no**$_1$) hyehyéehyé]
food DEF FOC Kofi like 3SG.OBJ very.hot
'It's the food that Kofi likes very hot.'

b. [$_{DP}$ Aduane nó$_1$ [$_{CP}$ áa Kofí pɛ́ *(**no**$_1$) hyehyéehyé nó]] nie
food DEF REL Kofi like 3SG.OBJ very.hot CD this
'This is the food that Kofi likes very hot.'

From the preceding discussion, it is clear that the absence of inanimate resumptives patterns follows conditions on the realization of object pronouns more generally. Showing that this effect is also found in other Kwa languages, Korsah (2017) argues that inanimate object pronouns regularly undergo PF deletion and shows that all contexts where the object pronoun is obligatorily pronounced constitute situations where it has escaped the deletion operation, for principled

[7] It is important to note that this is not simply an effect of 'clause-finality', since structurally higher clause-final material, such as the question particle *anaa*, does not license an inanimate pronoun (ib) (also see Korsah 2017:27f.).

(i) a. Kofí di *(nó) anɔpá
Kofi eat 3SG.OBJ morning
'Kofi eats it in the morning.'

b. Kofí di (*nó) anaa ?
Kofi eat 3SG.OBJ Q
'Does Kofi eat it?'

Furthermore, adding a pause before the adverb in examples such as (ib) and (49b) lead to the disappearance of the pronoun. As a reviewer suggests, this may highlight the role of prosodic phrasing, i.e. pro-drop applies when the pronoun is final in its intonation phrase (see Reglero 2007 on with wh-in-situ in Spanish). Furthermore, the special intonation of the yes-no question in (ib) may also have a similar effect (as also noted by the reviewer).

reasons. We refer the interested reader to Korsah (2017) for details of the analysis. As far as the present paper is concerned, we will assume that the absence of an inanimate resumptive pronoun in Asante Twi actually involves phonological non-realization of a syntactically-present resumptive pronoun.

3.2 Islands appear with true gaps

The previous section established that the 'gaps' found with extracted inanimate DPs are actually phonologically unrealized resumptive pronouns. Thus, they behave on a par with overt resumptives in circumventing island violations. A clear prediction of this would be that, if an extracted category lacks a resumptive pronoun, then island effects should re-emerge. This is exactly what we find with extracted PPs and VPs. In (52a), we observe that Asante Twi has PPs headed by the postposition *mú* ('in'). While it is possible to extract this constituent in focus constructions such as (52b), it does not leave a resumptive pronoun in its base position. We can verify that this pronoun is not just phonologically deleted, as was the case with inanimate DPs, by adding a clause final adverb. We observe that there is still an obligatory gap (52c).

(52) *Extracted PPs lack resumptives*:

a. Kofí da [$_{PP}$ akonwá nó mú]
Kofi lie chair DEF in
'Kofi is lying in the chair.'

b. [$_{PP}$ Akonwá nó mú] na Kofí dá { ___$_{PP}$ / *hɔ }
chair DEF in FOC Kofi lie there
'Kofi is lying IN THE CHAIR.'

c. [$_{PP}$ Akonwá nó mú] na Kofí dá (*hɔ) anɔpá.
chair DEF in FOC Kofi lie there morning
'Kofi lies IN THE CHAIR in the morning.'

Furthermore, PPs can also undergo long-distance movement across a finite clause boundary (53).

(53) [$_{PP}$ Akonwá nó mú] na Ama níḿ [$_{CP}$ sɛ Kofí dá ___$_{PP}$]
chair DEF in FOC Ama know that Kofi lie
'Ama knows that Kofi lies IN THE CHAIR.'

However, we now observe that PP extraction differs from DP extraction in that it is sensitive to Complex NP islands (54) and wh-islands (55).

(54) *PP extraction from Complex NP island*:

a. Amma nim [$_{DP}$ neá ńtí [$_{CP}$ áa Kofi dá [$_{PP}$ akonwá nó mú]]]
Ama know thing because.of REL Kofi lie chair DEF in
'Ama knows the reason why Kofi lies in the chair.'

b. *[$_{PP}$ Akonwá nó mú] na Ama níḿ [$_{DP}$ neá ńtí [$_{CP}$ áa Kofi dá ___$_{PP}$]]
chair DEF in FOC Ama know thing because.of REL Kofi lie
'Ama knows the reason why Kofi lies IN THE CHAIR.'

(55) *PP extraction from wh-island*:

a. Amma bisá-a [$_{CP}$ sɛ́ bré bɛ́n na Kofi dá-a [$_{PP}$ akonwá nó mú]]
Ama ask-PST that time Q FOC Kofi lie-PST chair DEF in
'Ama asked when Kofi lies in the chair.'

b. *[$_{PP}$ Akonwá nó mú] na Amma bísá-a [$_{CP}$ sɛ́ bré bɛ́n na Kofi dá-aɛ ___$_{PP}$]
chair DEF in FOC Ama ask-PST that time Q FOC Kofi lie-PST
'Ama asked when Kofi lied IN THE CHAIR.'

This difference in island obviation between PP and DP extraction follows naturally if it is linked to the availability of a resumptive pronoun.

Another extractable constituent that lacks resumptives is the verb phrase. As Hein (2017) shows, VPs can undergo long-distance focalization (56).

(56) [$_{VP}$ dán sí]-é na Ámˈmá ká-a [$_{CP}$ sɛ́ Kofí á-yɔ́ ___$_{VP}$]
house build-NMLZ FOC Ama say-PST that Kofi PERF-do
'Ama said that Kofi BUILT A HOUSE (not bought a car)' (Hein 2017:9)

Since Asante Twi lacks VP proforms and thereby resumptive pronouns, the clear prediction is that extraction of VPs should also show island effects. As Hein (2017) reports, this is preceisely what we find. Movement of a VP out of a Complex NP or wh-island is ungrammatical (57).

(57) *Island sensitivity of VP movement* (Hein 2017:10):

a. ?*[$_{VP}$ dán sí]-é na mé-ń-té-e [$_{DP}$ atétɛ́sɛ́m bíárá [$_{CP}$ sɛ́ Kofí
house build-NMLZ FOC 1SG-NEG-hear-PST rumour.PL any that Kofi
á-yɔ́ ___$_{VP}$]]
PRF-do
'I didn't hear any rumours that Kofi has BUILT A HOUSE.'

b. ?*[$_{VP}$ dán sí]-é na Ámˈmá bísá-a [$_{CP}$ sɛ dabɛ́n na Kofí yɔ́-ɔ-ɛ́
house build-NMLZ FOC Ama ask-PST that when FOC Kofi do-PST-YE
___$_{VP}$]

'Ama asked when Kofi BUILT A HOUSE.'

These facts strongly support the idea that the lack of island-sensitivity with nominal extraction is linked to obligatory resumption. As soon as a resumptive strategy becomes impossible, as with PPs and VPs, then island effects re-emerge. Of course, this could still mean that the derivation of PP and VP focalization involves movement, whereas nominals are exclusively base-generated. Aside from the conceptual objection that a unified approach to focalization (via movement) would be most desirable, we actually find a number of properties of resumptive dependencies that are typically associated with movement, e.g. reconstruction and crossover effects. These are presented in the following section.

3.3 Movement diagnostics

3.3.1 Binding reconstruction

The first diagnostic will consider involves reconstruction of a moved phrase to satisfy the conditions on binding (Chomsky 1981). As Saah (1989:18) shows, the reflexive *hó* in Asante Twi is subject to Condition A, in that it must be bound be a local c-commanding antecedent (58a). In order to test whether this is truly reconstruction in the presence of resumption, we create an analogous embedded context to (58a) and include a clause-final adverb, which will force an inanimate resumptive to appear. As (58b) shows, coreference between the reflexive and the embedded subject is possible, thereby indicating reconstruction to the position of the resumptive.

(58) *Reconstruction for Condition A*:

a. Kofí$_{i}$ dwene [$_{CP}$ sɛ́ Ámˈmá$_{j}$ bɛ-pírá [$_{DP}$ ne hó$_{j/*i}$]]
Kofi think that Ama FUT-hurt 3SG.OBJ REFL
'Kofi$_{i}$ think that Ama$_{j}$ will hurt herself$_{j/*i}$'

b. [$_{DP}$ Ne hó$_{j/*i}$]$_{1}$ na Kofí$_{i}$ dwéné [$_{CP}$ sɛ Ámˈmá$_{j}$ bɛ-pírá **no**$_{1}$ ɔkyena]
3SG.OBJ REFL FOC Kofi think that Ama FUT-hurt 3SG.OBJ tomorrow
'It is herself$_{i}$ that Kofi thinks that Ama$_{i}$ will hurt tomorrow.'

Further evidence for reconstruction to the position of the resumptive pronoun comes from variable binding (Aoun et al. 2001; Sichel 2014). This effect has been shown for Arabic by Aoun & Benmamoun (1998). A fronted expression containing a variable bound by a quantifier reconstructs at the resumption site (59a). If the resumptive is higher than the binder (59b), the result is ungrammatical due to lack of c-command.

(59) a. *Mʕalləmt-o*$_{i}$ fakkarto ʔənno kəll walad$_{i}$ ʕaṭee -**ha**$_{i}$ hdiyye
teacher.F-his thought.2SG that every boy gave.3S -her gift

b. **Mʕalləmt-o*$_{i}$ fakkarto ʔənno ʕaṭee -**ha**$_{i}$ kəll walad$_{i}$ hdiyye
teacher.F-his thought.2SG that gave.3S -her every boy gift
'His teacher, you thought that every boy gave her a gift.'

(Aoun & Benmamoun 1998:581)

In Asante Twi, we see a similar effect. A variable bound by a quantified expression is still grammatical even if this DP is fronted with a resumptive in its base position (60b).

(60) a. *Abán biárá*$_{i}$ dwéne [$_{DP}$ *ne*$_{i}$-máńfóɔ́ yíe-yɔ́ hó] dáá
government every think POSS-people well-be self every day
'Every$_{i}$ government thinks about the well-being of its$_{i}$ people every day.'

b. [$_{DP}$ *ne*$_{i}$-máńfóɔ́ yíe-yɔ́ hó]$_{1}$ na *abán biárá*$_{i}$ dwéné **no**$_{1}$ dáá
POSS-people well-be self FOC government every think 3SG.OBJ every day
'It's the well-being of its$_{i}$ people that every$_{i}$ government thinks about every day.'

However, it is important to establish that reconstruction for variable binding is also found across clausal boundaries. Schneider-Zioga (2009) has argued for Kinande that, while reconstruction for variable binding is found in monoclausal environments (61a), it becomes impossible under

non-local extraction (61b).

(61) *Reconstruction asymmetry in Kinande* (Schneider-Zioga 2009:49):

a. [$_{DP}$ Ekitabu kiwe$_{i/j}$]$_1$ kyo obuli mukolo$_j$ akasoma ___$_1$ kangikangi]
book his WH-AGR every student read regularly
'It is his book$_{i/*j}$ that every student$_j$ reads regularly.'

b. [$_{DP}$ Ekitabu kiwe$_{i/*j}$]$_1$ kyo ngalengekanaya [$_{CP}$ nga kyo obuli mukolo$_j$
book his WH-AGR think.1SG that WH-AGR every student
akasoma ___$_1$ kangikangi]
read regularly
'It is his book$_{i/*j}$ that I think that every student$_j$ reads regularly.'

This leads her to propose a non-movement based account of long-distance dependencies in Kinande, involving successive operator-binding configurations, similar to the analysis of the Irish example in (43) (*iterative prolepsis*; also see Finer 1997; Davies 2003; Boeckx 2008:98). Importantly, reconstruction e ffects in Asante Twi also pertain in bi-clausal contexts, as (62) shows for variable binding (see Section 3.6.1 for islands).

(62) [$_{DP}$ *ne*$_i$-máńfóɔ́ yíe-yɔ́ hó]$_1$ na Kofí níḿ [$_{CP}$ sɛ *abán* *bíárá*$_i$ dwéné
POSS-people well-be self FOC Kofi know that government every think
no$_1$ dáá]
3SG.OBJ every day
'It's the well-being of its$_i$ people that Kofi knows that every$_i$ government thinks about every day.'

This would be unexpected on an iterative prolepsis account of long $\overline{\text{A}}$-dependencies, but is entirely consistent with the approach here.

3.3.2 Weak crossover

Another potentially revealing diagnostic comes from 'weak crossover' (WCO) effects, which are found when an extracted operator crosses a coreferent element in a non-commanding position (63a) (e.g. Postal 1971; Wasow 1972; Koopman & Sportiche 1982; Safir 1984; Lasnik & Stowell 1991; Ruys 2000).

(63) a. *Who$_1$ does [$_{DP}$ his$_1$ boss] dislike ___$_1$? (Lasnik & Stowell 1991:688f.)

b. *Who$_1$ does [$_{DP}$ the bastard's$_1$ mother] love ___$_1$? (Ruys 2004:131)

In Asante Twi, resumptive $\overline{\text{A}}$-dependencies give rise to WCO effects both with pronouns (64b,c) and lexical epithets (64d).[8]

[8] Titov (2019) disputes the existence of WCO in Akan. This is not too surprising, however, since WCO is known to be a somewhat fragile diagnostic, subject to inter-speaker variation (see e.g. Salzmann 2017*b*:197). Regarding WCO with resumptives in Swedish, Asudeh (2012:245) remarks 'as is common with weak crossover judgments, there is some speaker uncertainty and variation here. For some speakers, the judgments are quite robust, through.' (also see Baker & Kramer 2018:1045 on WCO variation in Amharic). As far as we can tell, the situation is similar in Asante Twi, with some speakers having robust sensitivity to WCO. Speakers without WCO might be employing a logophoric strategy, or treating the possessor as the resumptive (i.e. Left-Branch Extraction). Examples such as (64d) become relevant in this regard because epithets do not function as resumptives in Asante Twi and are generally

(64) *Weak Crossover in Asante Twi*:

a. Hwáńᵢ na ɔᵢ-tán néᵢ-núá (nó) ?
who FOC 3SG.SBJ-hate POSS.3SG-brother CD
'Who$_i$ hates his$_i$ brother?'

b. ??Hwáńᵢ na néᵢ-núá tán nóᵢ (nó) ?
who FOC POSS.3SG-brother hate 3SG.OBJ CD
'Who$_i$ does his$_i$ brother hate?'

c. ??Déɛ́nᵢ na néᵢ-wura hyé-e nóᵢ (nó) ?
what FOC 3SG.POSS-owner burn-PST 3SG.OBJ CD
'What$_i$ did its$_i$ owner burn?'

d. ??Hwáńᵢ na [$_{DP}$ gyimífóɔ́ nóᵢ ɛ́-maamé] hú-u nóᵢ (nó) ?
what FOC fool DEF 3SG.POSS-mother see-PST 3SG.OBJ CD
'Who$_i$ did the fool's$_i$ mother see?'

The existence of WCO with resumption in Asante Twi provides evidence that the resumptive pronoun behaves like the a trace of the $\bar{A}$-movement in (63). In fact, this is what is reported for Vata by Koopman & Sportiche (1982), where resumptives behave like traces in triggering WCO effects (65).

(65) *Weak Crossover with resumptives in Vata* (Koopman & Sportiche 1982:143):

*Àlɔ́ᵢ [ɔ̀ᵢ nɔ́] gùgù nā ɔ́ᵢ mlì là
who his mother think that 3SG.OBJ left WH
'Who$_i$ did his$_i$ mother think left?'

One could try to argue that base-generation and $\bar{A}$-binding of the resumptive also creates the same configuration for WCO. However, in langauges like Irish where such an analysis has been proposed, we do not find WCO effects with resumption (66a), unlike with gaps (66b) (also see Safir 1996 on English).

(66) *No WCO with resumptives in Irish* (McCloskey 2011:110):

a. [$_{DP}$ fear$_i$ [$_{CP}$ a d'fhág [a$_i$ bhean] **é**$_i$]]
man a^N left his wife him
'the man$_i$ who his$_i$ wife left him$_i$'

b. *[$_{DP}$ fear$_i$ [$_{CP}$ a d'fhág [a$_i$ bhean] ___$_i$]]
man a^L left his wife
'the man$_i$ who his$_i$ wife left e_i'

Thus, it seems that resumptives resulting from base-generation and binding are often not sufficient to induce WCO in other languages. Consequently, the fact that Asante Twi shows weak crossover effects suggests that the resumptive is generated by movement, as with island-sensitive resumption in Vata for example.

assumed to be anti-logophoric (e.g. Dubinsky & Hamilton 1998).

3.3.3 Scope reconstruction

More evidence for reconstruction to the position of a resumptive involves quantifier scope ambiguities. In particular, the availability of pair-list readings in wh-questions with a universal quantifier is often assumed to involve reconstruction of the wh-phrase to a position below the quantifier (e.g. Agüero-Bautista 2001; Panitz 2014). Consider the following Spanish example from Agüero-Bautista (2001:172), where a pair-list answer is reported to be possible even in the presence of a resumptive pronoun in the base position of the extracted wh-phrase:

(67) A quién$_1$ dijo cada testigo [$_{CP}$ que María **le**$_1$ quería pegar] ?
A whom said each witness that Maria him wanted hit.INF
'Who did each witness say that Maria wanted to hit? (∀ ≻ *wh*, *wh* ≻ ∀)

In Asante Twi, we also find that a resumptive dependency still permits wide-scope of the universal quantifier, i.e. a pair-list reading (68).

(68) a. Obi ka-a [$_{CP}$ sɛ́ abofrá bíárá dɔ Kofí]
someone say-PST that child every love Kofi
'Someone said that every child loves Kofi.' (*∀ ≻ ∃, ∃ ≻ ∀)

b. Hwáń$_1$ na Kofí ká-a [$_{CP}$ sɛ́ abɔfrá bíárá dɔ́ **no**$_1$] ?
who FOC Kofi say-PST that child every love 3SG.OBJ
'Who did Kofi say that every child loves?' (∀ ≻ *wh*, *wh* ≻ ∀)

This is important since it rules out the possibility of deriving this scopal relation via Quantifier Raising over the wh-phrase (É. Kiss 1993), since QR is typically assumed to be a clause-bound process (e.g. May 1985; Larson & May 1990). Thus, the only way to derive the availability of a pair-list reading in (69) is by reconstruction to the position of the resumptive pronoun.

3.3.4 Idiom reconstruction

A final diagnostic for reconstruction of displaced material to the position of the resumptive comes from the interpretation of idiom chunks (Brame 1968; Schachter 1973; Vergnaud 1974). Following Chomsky (1993:38f.), a standard assumption is that the idiomatic interpretation of phrasal idioms requires adjacency at LF. Thus, if part of an idiom chunk is $\overline{\text{A}}$-moved (69), then it must reconstruct to its base position in order to receive a non-literal, idiomatic interpretation.

(69) a. [$_{DP}$ the headway$_1$ [$_{CP}$ that we made ___$_1$]] was satisfactory (Schachter 1973:31)
b. Those strings$_1$, he wouldn't pull ___$_1$ for you (Gazdar et al. 1985:238)

In Asante Twi, as in many other Kwa languages, there are so-called *inherent complement verbs* (ICVs), which are fixed VP chunks that have a non-literal, idiom-like interpretation (Nwachukwu 1985; Essegbey 1999, 2010; Korsah 2016*b*). For example, the VP *to ndwom* ('throw song') has the non-compositional interpretion 'to sing' (70b) (Kandybowicz 2015:266). We find that, even when the complement of an ICV is extracted, the idiomatic interpretation is maintained. In (70b), resumption is obligatory with extraction of *ndwom* due to the clause-final adverb, nevertheless the idiomatic interpretation is still available. From this, we can conclude that the NP reconstructs to

the position of the resumptive at LF.

(70) a. Kofí to-o ndwóm énóra
Kofi throw-PST song yesterday
'Kofi sang yesterday'

b. Ndwóm$_1$ na Kofí tó-o **no**$_1$ énóra
song FOC Kofi throw-PST 3SG.OBJ yesterday
'It was SINGING that Kofi did yesterday.'

Similar facts hold in other languages. For example, in Hebrew relative clauses with resumption we also find idiom reconstruction (71).

(71) [$_{DP}$ ha-ec$_1$ [$_{CP}$ še-hu tipes al-**av**$_1$]]
the-tree that-he climbed on-it
'the high position he took' (Sichel 2014:661)

3.4 Base generation in *déɛ́*-constructions

Further evidence for the fact that resumptive dependencies involve movement comes from the *déɛ́*-construction. Recall it was contrasts such as those in (15), repeated below as (72), that led Marfo (2005*b*) and others to conclude that high tone overwriting was an idiosyncractic property of the *na*-construction. As (72b) shows, there is a superficially similar construction involving the left-peripheral particle *déɛ́* that lacks the tonal reflex entirely.

(72) a. Á!má$_1$ na Kofi **ré-bóá** nó$_1$
Ama FOC Kofi PROG-help 3SG.OBJ
'It is Ama who Kofi is helping.'

b. Á!má$_1$ déɛ́ Kofi **re-boá** / ***ré-bóá** nó$_1$
Ama TOP Kofi PROG-help PROG-help 3SG.OBJ
'As for Ama, Kofi is helping her.' (Marfo 2005*b*:110)

However, the *déɛ́*-construction turns out to be the exception that proves the rule. Under the present analysis, the lack of tonal overwriting in (72b) must indicate that these constructions are not derived by movement and, in fact, there is evidence that the *déɛ́*-construction involves a base-generated left-peripheral topic.

The *déɛ́*-construction has sometimes been described as a variant of the focus construction, but this seems to be a mischaracterization. Boadi (1974) and Saah (1994:142) assume that *déɛ́* is a marker of (non-exhaustive) focus, however it actually displays the properties of a topic construction (see e.g. Saah 1992:236f.; Ermisch 2006:58f.). For example, the pivot of the *déɛ́*-construction cannot contain new information, e.g. in the question-answer pair in (73) (cf. Marfo 2005*b*:93).

(73) A: Hwáń na ɔ-ré-sómá abofrá nó?
who FOC 3SG.SBJ-PROG-send child DEF
'Who is sending the child?'

B: Baá na ɔ-ré-sómá abofrá nó
Baah FOC 3SG.SBJ-PROG-send child DEF
'It is Baah who is sending the child'

B′: #Baá déɛ́ ɔ-re-somá abofrá nó
Baah TOP 3SG.SBJ-PROG-send child DEF
'As for Baah, he is sending the child'

Furthermore, wh-phrases, which constitute new (non-given) information, are not possible in the *déɛ́*-construction (as originally noted by Boadi 1974:53), further supporting the conclusion that *déɛ́* is a marker of topic, rather than focus:

(74) *Hwáń déɛ́ Baá re-kyeá nó?
who TOP Baah PROG-greet 3SG.OBJ
Int. 'Who is Baah greeting?' (Marfo 2005*b*:83)

Having established that *déɛ́*-constructions are topic constructions, it is interesting to note that there is a cross-linguistic tendency for topic constructions to involve base-generation. If this were also the case for Asante Twi, then the absence of movement reflexes in these constructions would not be surprising. For example, Collins (1993, 1994) shows that Ewe has a reflex of successive-cyclicity involving optionality in the form of the pronoun in embedded clauses. In the presence of local movement dependency, the embedded 3SG.OBJ pronoun can optionally take the form *wò* (75b). Interestingly, Collins (1993) notes that this effect is absent in topic constructions (75c), which leads him to the conclusion that they involve base-generation.

(75) *No movement reflex in Ewe topic constructions* (Collins 1993:179,182):

a. Kofi gblɔ [$_{CP}$ be é/*wò fo Kɔsi]
Kofi said that he hit Kosi
'Kofi said that he hit Kosi.'

b. Kofi$_1$ ɛ me gblɔ [$_{CP}$ be é/wò fo ——$_1$]
Kofi FOC 1SG said that he hit-3SG.OBJ
'It is Kofi that I said s/he hit'

c. Kofi$_1$ de me gblɔ [$_{CP}$ be é/*wò fo-e$_1$]
Kofi TOP 1SG said that he hit-3SG.OBJ
'As for Kofi, I said that s/he hit him.'

In fact, we find supporting evidence for the absence of movement in *déɛ́*-constructions from the lack of reconstruction effects found with other resumptive $\bar{A}$-dependencies.[9] For example, we do not find reconstruction for idiomatic interpretation for some speakers (see Section 3.3.4). Consider the verb phrase *gya nán* ('leave leg') that has the idiomatic reading 'to defecate' (76).

[9] A reviewer points out an interesting example in which a d*éɛ́*-construction is embedded under a focus construction. Here, we still observe tonal overwriting on the verb (i).

(i) [$_{CP}$ Hwáń$_1$ na [$_{TopP}$ ɔnó$_1$ deɛ [$_{TP}$ ɔ$_1$-**pé** agórɔ́]]]
who FOC he TOP 3SG.SBJ-like game
'Who likes to play?'

While we cannot investigate this construction in detail, there are a number of potential analyses that would be consistent with our proposal. One such analysis is that the subject simply moves across a base-generated topic pronoun. The alternative would be to assume that a moving phrase can exceptionally stop at Spec-Top (and trigger resumption) en route to its final landing site (however, we might expect to find a D-linked interpretation). For now, we have to leave further investigation of such examples to future research.

(76) Ɔ-gya-a ne-nán [$_{PP}$ wɔ dán nó mú]
3SG.SBJ-leave-PST 3SG.POSS-leg LOC room DEF inside
a. 'He defecated in the room.'
b. *Lit.* 'He left his leg in the room.'

We observe that, under displacement, the idiomatic reading is still available in *na*-focus constructions (77a), but disappears with *déɛ́* (77b). This follows if (77b) does not involve movement.

(77) a. Ne-nán$_1$ na ɔ-**gyá**-ɛ —$_1$ [$_{PP}$ wɔ dán nó mú]
3SG.POSS-leg FOC 3SG.SBJ-leave-PST LOC room DEF inside
(i) 'It's defecating that he did in the room.' (✓*idiomatic*)
(ii) 'It's his leg that he left in the room.' (✓*literal*)
b. Ne-nán$_1$ déɛ́ ɔ-**gya**-ɛ —$_1$ [$_{PP}$ wɔ dán nó mú]
1SG.POSS-leg TOP 3SG.SBJ-leave-PST LOC room DEF inside
(i) #'As for defecating, he did it in the room.' (**idiomatic*)
(ii) 'As for his leg, he left it in the room.' (✓*literal*)

We also find the same pattern with a different (subject) idiom *ne-hó dáné* (lit. 'turn oneself'), which can have both the literal meaning of 'change one's looks', but also the idiomatic meaning of 'become pregnant'. Importantly, an $\overline{\text{A}}$-extraction of the idiom chunk in (78a) preserves both readings, whereas the idiomatic reading is lost in the base-generated *déɛ́*-construction (78b).[10]

(78) a. Ne-hó$_1$ na —$_1$ á-dáné
3SG.POSS-self FOC PERF-turn
(i) 'She is PREGNANT (as opposed to being sick).' (✓*idiomatic*)
(ii) 'HER LOOKS have changed (as opposed to her name changing).' (✓*literal*)
b. Ne-hó$_1$ déɛ́ —$_1$ a-dáné
3SG.POSS-self TOP PERF-turn
(i) #'As for being pregnant, she is indeed.' (**idiomatic*)
(ii) 'As for her looks, they have changed.' (✓*literal*)

Another asymmetry between *na*- and *déɛ́*-constructions pertains to another putative reflex of movement noted by Korsah (2016*a*, 2017). As we have seen, subject extraction triggers obligatory resumption on the verb. There are two types of 3SG.OBJ subject pronouns in Asante Twi; ɔ- for animate referents (79a), and ɛ- for inanimate referents (79b) (see Korsah 2017:106).[11]

[10] An anonymous reviewer provides the following example in which the idiomatic reading of the idiom *ka ne mpaboa so* ('to polish one's shoe'), i.e. 'to be drunk', is also possible in the *déɛ́*-construction (ib).

(i) Ne-mpaboa$_1$ deɛ ɔ-a-ka —$_1$ so
3SG.POSS-shoe TOP 3SG.SBJ-PERF-polish on
a. 'As for being drunk, he is indeed.' (✓*idiomatic*)
b. 'As for polishing his shoe, he's indeed accomplished it.' (✓*literal*)

If there are certain idiom chunks that license idiomatic readings even under base-generation, this is not necessarily fatal for our analysis, since idioms are known to vary with regard to their 'transparency', i.e. their ability to participate in syntactic dependencies (see e.g. Fraser 1970; Nunberg et al. 1994). For example, one could assume that only some idioms, such as the one in (i), are able to control the (null) pronoun in a base-generation structure, whereas others cannot and would therefore require reconstruction to derive an idiomatic interpretation.

[11] There are a couple of, still poorly understood, exceptions to this basic picture. As discussed by Korsah (2017:111),

(79) a. Kofi hu-u né-wɔfa$_i$. ɔ/*ɛ$_i$-yɛ sikani.
Kofi see-PST 3SG.POSS-uncle. 3SG.SBJ-/*3-be rich.man
'Kofi saw his uncle$_i$. He$_i$ is a rich man.'

b. Kofi hu-u né-kŕataá nó$_i$. *Ɔ/Ɛ$_i$-da pónó nó só.
Kofi see-PST 3SG.POSS-book DEF. *3SG.SBJ-/3-lie table DEF on
'Kofi saw his book$_i$. It$_i$ is on the table.'

While resumptive pronouns generally agree with their antecedents in φ-features, Korsah (2016*a*, 2017) shows that Ā-movement of an animate subject allows for the unagreeing resumptive ε- in both focus constructions (80a) and relative clauses (80b). This can be understood in terms of (optional) anti-agreement, which is an established reflex of subject extraction (see Ouhalla 1993; Campos 1997; Schneider-Zioga 2007; Henderson 2013; Baier 2017, 2018). If this is correct, then it is particularly revealing that anti-agreement is not an option in the *déé*-construction (80c).

(80) *Anti-agreement in Asante Twi subject extraction* (Korsah 2017:118,121):

a. Kofi$_1$ na **ɛ/ɔ$_1$**-káń-n kŕataá nó
Kofi FOC 3-/3SG.SBJ-read-PST book DEF
'It is Kofi who read the book.'

b. [$_{DP}$ Abofrá nó$_1$ [$_{CP}$ aá **ɛ/ɔ$_1$**-káń-n kŕataá nó]] nie
child DEF REL 3-/3SG.SBJ-read-PST book DEF this
'This is the child who read the book.'

c. Kofi$_1$ déé́, ***ɛ/ɔ$_1$**-kan-n kŕataá nó
Kofi TOP *3-/3SG.SBJ-read-PST book DEF
'As for Kofi, he read the book.'

Again, this follows naturally if no movement is involved in the derivation of the *déé*-construction.

3.5 Prolepsis

A reviewer points out the following data, which they suggest may counterexemplify the generalization that verbs crossed by (Ā-)movement lead to tonal overwriting. In (81b), it looks like the subject has raised into the matrix clause leaving behind a resumptive. However, we do not see high-tone raising on the verb *pɛ*.

(81) a. Kofí nim [$_{CP}$ sɛ Ámˈmá **pɛ** Yaw]
Kofi know that Ama love Yaw
'Kofi knows that Ama loves Yaw.'

b. Kofí nim Ámˈmá$_1$ [$_{CP}$ sɛ ɔ$_1$-**pɛ** Yaw]
Kofi know Ama that 3SG.SBJ-love Yaw
'Kofi knows Ama to be someone who loves Yaw.'

speakers allow for optional ε-marking on the verb with animate subjects in some restricted contexts. These include serial verb constructions and with subjects of intransitive verbs (ia). Importantly, this option requires an overt DP subject and is not possible under pro drop (ib). We leave further investigation of these exceptions to future research.

(i) a. Kofí (é-)su-u-i
Kofi (3-)cry-PST-YE
'Kofi cried.'

b. {ɔ-/*Ɛ}-su-u-i
{3SG.SBJ-/*3-}cry-PST-YE
'S/he cried.'

We suggest that (81b) does not actually involve movement and should instead be analyzed as resumptive prolepsis, where *Ám!má* is base-generated as a 'proleptic' object of the matrix verb and binds a pronoun in the embedded subject position (see e.g. Salzmann 2017*a*,*b*):

(82) [$_{TP}$ Kofí nim [$_{VP}$ Ám!má$_i$ [$_{V'}$ t$_V$ [$_{CP}$ sɛ ɔ$_i$-pɛ Yaw]]]]

This would then be analogous to cases of prolepsis in English where the proleptic object is introduced inside a PP:

(83) a. They say [$_{PP}$ of Mary$_i$] that she$_i$ is smart.
b. We know [$_{PP}$ of John$_i$ and Mary$_j$] that they$_{i+j}$ visited Joseph.
(Branigan & MacKenzie 2002:390)

If the prolepsis analysis is correct, then this explains why there is no tonal overwriting in the embedded clause, since there is no movement. This analysis also accounts for another fact pointed out by the same reviewer, namely that this particular construction does not allow the unagreeing subject resumptive *ɛ*- (84).

(84) Kofí nim Ám!má$_i$ [$_{CP}$ sɛ {ɔ$_i$-/*ɛ$_i$-}pɛ Yaw]
Kofi know Ama that {3SG.SBJ-/*3-}love Yaw
'Kofi knows of Ama that she loves Yaw.'

Recall from (80) that the option of unagreeing *ɛ*- was interpreted as an instance of anti-agreement licensed by $\bar{A}$-movement. As such, both the lack of tonal overwriting and anti-agreement in this construction converge on the conclusion that this construction does not involve movement.

Finally, what we are analyzing as prolepsis is subject to arbitrary lexical restrictions. While some predicates allow for a proleptic object, others such as *ka* ('say') and *dwene* ('think') do not:

(85) a. *Kofi dwene Ám!má$_i$ [$_{CP}$ sɛ ɔ$_i$-pɛ Yaw]
Kofi think Ama that 3SG.SBJ-like Yaw
Int: 'Kofi thinks of Ama that she loves Yaw.'
b. *Kofi ka-a Ám!má$_i$ [$_{CP}$ sɛ ɔ$_i$-pɛ Yaw]
Kofi say-PST Ama that 3SG.SBJ-like Yaw
Int: 'Kofi said of Ama that she loves Yaw.'

Since these are bridge predicates, it is unclear why (85) should be ungrammatical if movement were involved. The prolepsis account is therefore better equipped to handle this idiosyncrasy.

3.6 Reconstruction and resumption

The evidence for reconstruction effects presented in this section strongly points to the conclusion that resumptives in Asante Twi behave like traces of movement (Zaenen et al. 1981; Koopman & Sportiche 1982, 1986; Alexopoulou 2006). Given the positive results of various reconstruction diagnostics, we can therefore conclude that, despite the general lack of island-sensitivity, resumption in Asante Twi is derived by movement. Nevertheless, there are potential alternative analyses

that have been proposed, which could also account for this pattern. These are addressed in the following sections.

3.6.1 Reconstruction into islands

Aoun et al. (2001) propose that there are actually two strategies for resumption in Lebanese Arabic. Movement-generated resumptives are the default option and give rise to reconstruction effects. Inside islands, however, no reconstruction effects are found. This leads Aoun et al. (2001) to propose that a base-generation strategy is used only when the resumptive is situated inside a strong island. For this reason, it is important to establish that the effects described above also pertain in island configurations. In Asante Twi, this is the case. As (86) shows for Complex NP islands and adjunct islands respectively, resumption inside the island still co-occurs with tonal overwriting on the verb.

(86) *Reflexes of succesive-cyclicity with extraction from island*:

a. Me-**hu**-u [$_{DP}$ onipa ko [$_{CP}$ áa ɔ-**bɔ**-ɔ Kofí nó]]
1SG-see-PST person DEF REL 3SG.SBJ-hit-PST Kofi CD
'I saw the person that hit Kofi'

b. Hwáń$_1$ na wo-**hú**-u [$_{DP}$ onípá ko [$_{CP}$ áa ɔ-**bɔ́**-ɔ nó$_1$ nó]] ?
who FOC 2SG-see-PST person DEF REL 3SG.SBJ-hit-PST 3SG.OBJ CD
'Who did you see the person that hit?' (*CNP island*)

c. Yaw **re-su** [$_{CP}$ ésánesɛ́ Kofi **dɔ** Ám$^{!}$má]
Yaw PROG-cry because Kofi love 3SG.OBJ
'Yaw is crying because Kofi loves Ama.'

d. Ám$^{!}$má$_1$ na Yaw **ré-sú** [$_{CP}$ ésánesɛ́ Kofi **dɔ́** nó$_1$ nó]
Ama FOC Yaw PROG-cry because Kofi love 3SG.OBJ CD
'It is Ama that Yaw is crying because Kofi loves her.' (*adjunct island*)

Furthermore, evidence for movement is still found with island-internal resumption. This is illustrated for Complex NP islands in (87), where we observe both reconstruction for variable binding (87a) and WCO effects (87b).

(87) a. [$_{DP}$ *Ne*$_i$-máńfóɔ́ yíe-yɔ́ hó]$_1$ na m-á-té [$_{DP}$ atetésɛ́ḿ bí [$_{CP}$ sɛ
3SG.POSS-people well-be self FOC 1SG-PERF-hear rumour INDEF that
abán *bíárá*$_i$ dwéné **no**$_1$ dáá]]
government every think 3SG.OBJ every day
'It's the well-being of its people that I have heard a rumour that every government thinks about everyday.'

b. ??Hwáń$_i$ na wo-á-té [$_{DP}$ atetésɛ́ḿ bí [$_{CP}$ sɛ né$_i$-núá tán
who FOC 2SG-PERF-hear rumour INDEF that 3SG.POSS-sibling hate
nó$_i$ nó]] ?
3SG.OBJ CD
'Who have you heard the rumour that his/her sibling hates (him/her)?'

We take this to be evidence against assuming a distinction between 'true' and 'apparent' resump-

tion (in the sense of Aoun et al. 2001) for Asante Twi.

3.6.2 Reconstruction without movement?

Nevertheless, Guilliot & Malkawi (2006, 2011) argue that, in Jordanian Arabic, certain reconstruction effects with island-internal resumptives can be derived by base-generating two identical phrases and applying NP ellipsis to derive the resumptive pronoun in the lower DP (either NP ellipsis; Postal 1966; Elbourne 2001).

(88) *Resumption as NP deletion*:
[… [$_{DP}$ D NP] … [… [$_{DP}$ D ~~NP~~]]]

While it is unclear whether such an approach can actually account for all reconstruction effects without movement (see Salzmann 2017*b*:223ff. for discussion), we can rule out such an analysis for Asante Twi resumption on independent, language-internal grounds. Recall that resumptives and definite determiners in Asante Twi are homophonous (*nó*). Initially, this may seem to legitimize an analysis such as the one in (88), as Arkoh & Matthewson (2013:27) suggest. Despite the appeal of such a unification, there are good reasons to believe that resumptive pronouns in Asante Twi are not derived by NP ellipsis. The evidence for this comes from a haplology effect reported by Saah (1994). Saah shows that a sequence of homophonous *nó* elements is tolerated when one is a resumptive pronoun and the other is the clausal determiner, as in (89a). However, if the two homophonous items both correspond to determiners, then one of them must be deleted (89b). This anti-haplology rule is therefore sensitive to syntactic category and projection type, i.e. it rules out adjacent, identical D^{o} elements (also see Kramer 2010:231f.).

(89) *Determiner haplology effect* (Saah 1994:151f.):

a. [$_{DP}$ Abrofrá$_1$ [$_{CP}$ áa Kofí hú-u **nó**$_1$ *(**nó**)]] á-ba
child REL Kofi saw-PST 3SG.OBJ CD PFV-come
'The child that Kofi saw has come.'

b. [$_{DP}$ Onípá$_1$ [$_{CP}$ áa ɔ$_1$-tó-o [$_{DP}$ ndwóḿ **nó**] (***nó**)]] yɛ-ɛ adé
person REL 3SG.SBJ-throw-PST song DEF CD do-PST something
'The person who sang the song did well.'

This is problematic for the view that resumptive pronouns are derived by NP ellipsis, since the 'resumptive pronoun' in (89a) would actually correspond to the determiner of the elided NP as in (90). Under this analysis, we would expect it to be subject to the same haplology effect as in (89b), contrary to fact.

(90) [$_{DP}$ Abrofrá$_1$ [$_{CP}$ áa Kofí hú-u [$_{DP}$ ~~abrofrá~~ **nó**$_1$] *(**nó**)]] á-ba
child REL Kofi saw-PST child 3SG.OBJ CD PFV-come

Instead, *nó* behaves like a genuine pronoun in such cases, which is presumably a phrasal projection DP and therefore immune from the haplological dissimilation rule. In fact, Section 3.1 also showed that inanimate resumptive pronouns share the same distribution as anaphoric pronouns, namely that they are obligatorily null in all but a few clearly-defined contexts. This last

observation in particular suggests that we are dealing with genuine pronouns, which is somewhat puzzling since they show properties of movement gaps.

3.6.3 Pronoun Conversion

A tentative proposal at this point would be to suggest that resumptive pronouns are indeed the Spell-Out of a lower copy in a movement chain (see e.g. Kandybowicz 2008; Baier 2014; van Urk 2018). Rather than deriving resumptives by somehow reducing the lower copy (e.g. Kandybowicz 2008:135; van Urk 2018), we suggest that there is a PF process of *Pronoun Conversion* in which a copy is transformed into a pronoun.[12] As schematized in (91), the basic idea is that the lowest copy of a movement chain is replaced by a corresponding pronoun.

(91) *Pronoun Conversion*:
$[_{CP}\ DP_1\ [_{TP} \ldots\ [\ \ldots\ DP_1\ ]]] \Rightarrow [_{CP}\ DP_1\ [_{TP} \ldots\ [\ \ldots\ pro_1\ ]]]$

This process can circumvent island violations as follows. Let us assume that there is a distinction between derivational constraints, which constraint operations within the syntactic derivation, and representational constraints, which specify an illicit linguistic representation. We adopt the widely-held view that syntactic islands are representational constraints at PF (see Merchant 2001; Lasnik 2001; Hornstein et al. 2007; Boeckx 2012; Griffiths & Lipták 2014). Thus, violations of such constraints can be circumvented by altering the offending representation. For traditional Subjacency islands, this can be achieved either by means of ellipsis (e.g. Ross 1969; Merchant 2001) or by resumption (e.g. Sells 1984; Shlonsky 1992; Pesetsky 1998). This is also what we find for other representational constraints such as COMP-trace effects repaired by ellipsis (Merchant 2001:185) and resumption (Kandybowicz 2006; Sato & Dobashi 2016), but crucially not with derivational constraints such as P-stranding. Of course, there remains the question of how to deal with those languages with island-sensitive resumption that also show reconstruction effects. Here, it is possible that another mechanism is responsible for the generation of resumptive pronouns (e.g. copy-deletion; van Urk 2018), which does not sufficiently alter the island-violating representation. As a reviewer points out, Bošković (2002:377f.) argues that lower copy Spell-Out seems to be able to obviate island violations in Romanian.

Alternatively, this could be an effect of ordering on the PF branch. If the point at which island constraints are checked at PF precedes Pronoun Conversion, then island violations will still be incurred despite resumption.[13] On this view, resumption in Asante Twi differs from intru-

[12] This can be thought of as analogous to the LF process of *Trace Conversion* (Fox 1999, 2002). It is also conceivable that Pronoun Conversion is the PF equivalent of *vehicle change* (Fiengo & May 1994), where an R-expression can be construed as a coreferent pronoun at LF. Importantly, vehicle change has also been claimed to apply to traces in movement chains (Giannakidou & Merchant 1998; Safir 1999; Hunter & Yoshida 2016). It could also viewed as the same process as with island-sensitive resumption, e.g. deletion (van Urk 2018) or m-Merger (Harizanov 2014), but with variation in the timing of when island constraints are evaluated. Crucially, Pronoun Conversion must apply before, and therefore feed satisfaction of, island constraints. In island-sensitive languages, the Pronoun Conversion process applies too late (i.e. *counter-feeding*).

[13] It seems that extrinsic ordering of Pronoun Conversion must be assumed in Asante Twi with regard to pro drop. Since island violations are still obviated by pro-dropped resumptives, we must assume that PF-islandhood is checked after Pronoun Conversion, but before pro drop applies (thanks to Ivy Sichel for pointing this out).

sive resumption in English in being a case of genuine island-obviating grammatical resumption, rather than an extra-grammatical repair strategy (e.g. Heestand et al. 2011; Beltrama & Xiang 2016; Morgan & Wagers 2018; however, see Kroch 1981; Ackerman et al. 2018).

Whatever its broader implications may be, this general approach seems to make the right cut when it comes to resumption in Asante Twi. There is a movement derivation in the syntax, which explains why we find reflexes of movement inside islands, as well as reconstruction effects at LF, and island obviation comes relatively late in the grammar at the PF interface. A direct empirical advantage is that we can explain why resumptive pronouns derived by movement share the same overt distribution as regular pronouns, as shown in Section 3.1. Furthermore, the discussion in Section 3.2 showed that it seems correct to link the obviation of island violations to resumption since island effects resurface for extraction of categories that lack proforms independently.

4 Morpho-phonological aspects of tonal overwriting

4.1 The scope of the process

While the previous sections dealt with the syntactic aspects of movement and tonal overwriting in Asante Twi, we now turn to the morpho-phonological side of the phenomenon. So far, we have said that low tones on the verb are replaced with high tones in the presence of an $\overline{\text{A}}$-dependency. While all tones on the verbal root are affected, it is not always the case that affixes undergo the alternation. For example, (92) shows that the low-toned progressive prefix *re-* surfaces as high in extraction contexts, whereas the low-toned resumptive marker ɔ- does not.

(92) a. Kusí re-somá mé
Kusi PROG-send 1SG
'Kusi is sending me.'

b. Kusí$_1$ na ɔ$_1$-ré-sómá mé
Kusi FOC 3SG.SBJ-PROG-send 1SG
'It is Kusi who is sending me.' (Marfo & Bodomo 2005:193)

While progressive aspectual prefixes are affected, the past suffix *-a* in (93b) remains low, despite the verbal root alternating to high (Marfo 2005*b*:109,fn.31; Genzel 2013:208).

(93) a. Kofí boá-a Afíá
Kofi help-PST Afia
Kofi helped Afia.'

b. Kofí na ɔ-bóá-a Afíá
Kofi FOC 3SG.SBJ-help-PST Afia
'It is Kofi who helped Afia' (Marfo 2005*b*:9)

Previous literature only mentions these facts in passing and the full scope of the tonal overwriting process has not yet been systematically investigated. As shown by Paster (2010), Asante Twi has a relatively rich inventory of verbal inflection (also see Boadi 1965:41f.; Dolphyne 1988:87ff.; Ofori 2006:7ff.; Boadi 2008:13; Stump 2016:136). Inflection for tense, aspect and negation is primarily expressed by the affixes in (94).

(94) *Verbal affixes in Asante Twi* (cf. Paster 2010:107):

-Ø	(stative)	bisá	'asks'
-V	(past)	bisá-a	'asked'
bɛ-	(future)	bɛ́-bísá	'will ask'
re-	(progressive)	re-bisá	'is asking'
a-	(perfective)	á-bísá	'has asked'
kɔ-	(egressive)	kɔ-bísá	'go and ask'
be-	(ingressive)	be-bísá	'come and ask'
N-	(negation)	ḿ-bísá	'not ask'

The examples in (92) and (93) showed that the low-toned progressive prefix *re-* is subject to high-tone raising, whereas the low-toned past suffix is not. This poses the question of how the other affixes behave. Testing this is not entirely straightforward, since some affixes (such as future *bɛ́-*) are invariably high and thus do not allow us to check whether they have been affected by tonal overwriting. However, Paster (2010) shows that the tone of other prefixes is conditioned by the preceding subject. For example, the perfective marker *á-* is typically reported as bearing a high tone (95a), however Paster (2010) shows that if the preceding subject ends in a low tone (e.g. *Yaw*), then the prefix surfaces as low (95b).

(95) a. Ésí á-ꜜkáé Kofí
Esi PERF-remember Kofi
'Esi has remembered Kofi.'

b. Yaw a-káé Kofí
Yaw PERF-remember Kofi
'Yaw has remembered Kofi.' (Paster 2010:103)

We will leave aside the question of whether this involves tonal spreading or phonologically-conditioned allomorphy. What is clear is that, in contexts such as (95b), we are now able to check whether we find the low/high-alternation in $\overline{\text{A}}$-contexts. In the extraction equivalent of (95b), the low-toned *a-* prefix is affected by tonal overwriting (96).

(96) *Perfective aspect undergoes overwriting*:
Hwáń$_1$ na Yaw **á**-káé nó$_1$
who FOC Yaw PERF-remember 3SG.OBJ
'Who has Yaw remembered?'

There are also the low-toned motion prefixes *kɔ* and *be-* expressing egressive and ingressive aspect, respectively (Osam 2008; Kusmer 2011; Paster 2010).[14] Such prefixes are also affected by the

[14] Although these affixes are cognates of the verbs for 'come' and 'go', it is not possible to analyze them (synchronically) as serial verb constructions. In serial verb constructions, both verbs typically inflect for tense/aspect/agreement (see Hellan et al. 2003). In some aspects, the second verb in a SVC bears 'infinitive' or 'consecutive' marking as with *kɔ* in (i), which makes it distinct from its grammaticalized use as an aspectual prefix.

(i) Ɔ-re-tɔ́ bí á-kɔ
3SG.SBJ-PROG-buy some INF-go
'He is buying some to take away.' (Boadi 2008:12)

tonal overwriting process (97b).

(97) *Motion aspect undergoes overwriting*:

a. Yaw kɔ-bisá-a Kofí
Yaw EGR-ask-PST Kofi
'Yaw went and asked Kofi.'

b. Yaw$_1$ na ɔ$_1$-**kɔ́**-**bísá**-a Kofí
Yaw FOC 3SG.SBJ-EGR-ask-PST Kofi
'It is Yaw who went and asked Kofi.'

Furthermore, negation, expressed as a hormorganic nasal *N-*, behaves like the aspectual prefix *a-* in that its tone is conditioned by the preceding subject. When preceded by a low-toned subject such as *Saka*, it surfaces as low (98a). As (98b) shows, it is also changes to high in $\overline{\text{A}}$-contexts.

(98) *Low-toned negation undergoes overwriting*:

a. Saka **n**-kɾ́á n-konwá.
Saka NEG-import PL-chair
'Saka hasn't imported chairs.'

b. Deɛn$_1$ na Saka **ń**-kɾ́á ___$_1$?
what FOC Saka NEG-import
'What hasn't Saka imported?'

So far, we have seen that aspectual and negation prefixes are affected by tonal overwriting, and the past tense suffix is not. While this may invite the conclusion that we are dealing with a prefix/suffix-distinction, we will argue that this is not correct. First, there is another suffix *-yɛ* that appears in combination with the past tense. While the exact nature of this marker will be discussed further in Section 4.3, Kandybowicz (2015) analyzes this as the default realization of aspect in a prosodically-vacuous domain. A prosodically-vacuous VP can be created by moving the object as in (99b). When we do so, we see that the ordinarily low-toned morpheme *yɛ* surfaces with a high tone.

(99) a. Ɔ-di-i aduá
3SG.SBJ-eat-PST beans
'He ate beans.'

b. Aduá$_1$ na ɔ-**dí**-i-**yɛ́** ___$_1$
beans FOC 3SG.SBJ-eat-PST-YE
'It is beans that he ate.'

(Schwarz & Fiedler 2007:274)

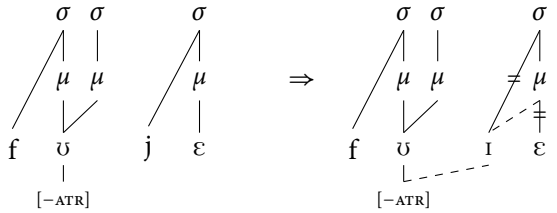
Although Kandybowicz (2015) does treat *yɛ* as an affix, there is good reason to believe it is. First, non-verbal material can never intervene between *yɛ* and the verb (e.g. Kandybowicz 2015:261). Second, it undergoes ATR-harmony with the verb, suggesting its integration in the verbal complex. As discussed by Dolphyne (1988:94) and Ofori (2006:42f.), the suffix *-yɛ* in Asante Twi surfaces either as invariant [(j)ɛ] or as [i]/[ɪ], depending on the ATR specification of the preceding vowel (100).

(100) a. Kofi fo-o-ɛ [fʊ.ʊ.ɪ]
Kofi climb-PST-YE
'Kofi climbed'

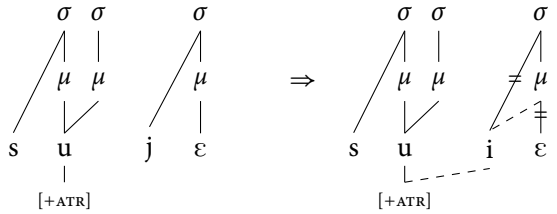
b. Kofi su-u-ɛ [su.u.i]
Kofi cry-PST-YE
'Kofi cried.'

In terms of autosegmental representation, we can assume apocope of the final -ɛ, with the glide becoming moraic and harmonizing with the verbal stem in ATR values (101). This supports the integration of *-yɛ* into the word.[15]

(101) a. /fʊ-$^{\mu}$-jɛ/ → [fʊ.ʊ.ɪ]



b. /su-$^{\mu}$-jɛ/ → [su.u.i]



A similar argument can be made for the 3rd singular subject marker ɔ-. As (102) makes clear, this prefix also participates in ATR-harmony (Saah 1994:54,fn.7; Osam 1994:150f.).

(102) a. Ɔ-bɛ́-frɛ́ no
3SG.SBJ-FUT-call 3SG.OBJ
'S/he will call him/her.'

b. [+ATR]
O-bé-hú no
3SG.SBJ-FUT-see 3SG.OBJ
'S/he will see him/her.'

As examples such as (97b) and (99b) showed that, despite being part of the verbal complex, the subject marker/resumptive is not affected by high-tone insertion.

So far, we have seen that aspectual affixes such as progressive, perfect, motion and *-yɛ*, as well as negation, are all affected by tonal overwriting, whereas the past-tense and the subject markers are not. We therefore propose the following preliminary generalization:

(103) *Affix generalization (to be revised)*:
Tense and agreement affixes are not affected by high tone insertion in $\overline{\text{A}}$-constructions.

It will ultimately be shown that this generalization follows from independently-motivated assumptions about the clause structure of Asante Twi. Before showing this, we will first briefly consider how tonal overwriting works.

[15]Note that, in (101), although past tense is a floating mora (Ofori 2006; Paster 2010), Akan does not allow heavy syllables (*CVC, *CVV). Long vowels and final nasals are associated with separate syllables (Dolphyne 1988:52f.). We assume that the additional syllable node in (101) is inserted as a repair to a constraint against bi-moraic syllables. Also, Kügler (2015) shows that there are some limited cases of ATR-harmony across words in Akan, however they only include regressive harmony between a sequence of [−ATR]-[+ATR] and only within a phonological phrase (*φ*). We therefore do not believe that such exceptions fundamentally undermine the applicability of this diagnostic.

4.2 The nature of overwriting

In Section 2.2, we proposed that tonal overwriting involves the realization of $v_{[\text{EPP}]}$ with a floating H tone that subsequently spreads overwriting the tones in the verb. In light of the preceding discussion, the challenge for an analysis of overwriting is how to limit spreading to affixes of a particular kind. Interestingly, tonal overwriting is also found elsewhere in Asante Twi. Paster (2010) shows that a floating L tone overwrites any H tones on the verb in the imperative:

(104) *L-tone overwriting in the imperative* (Paster 2010:115):

	Habitual		Imperative	
H	tɔ́	'buy'	tɔ pɛ́n	'Buy a pen!'
HL	nóm	'drink'	nom insyu	'Drink water'
LH	kaé	'remember'	kae kofí	'Remember Kofi!'
	bisá	'ask'	bisa asɛ́	'Ask something!'

Even within Twi, there is evidence for overwriting with both H and L tones. We therefore need a general theory of tonal overwriting. We will follow Trommer (2011) in proposing that tonal overwriting involves a floating tonal circumfix ($^{\text{H-}}\,_{\text{-H}}$) (for alternative approaches to tonal overwriting, see McPherson 2014; McPherson & Heath 2016; Kim 2016). Trommer (2011:126) proposes that overwriting is driven by a constraint $\textsc{Cont}_\tau$ (105) requiring that tones belonging to the same morpheme are adjacent (see Landman 2003; Zimmermann 2017 on morpheme contiguity).

(105) $\textsc{Cont}_\tau$:
Tautomorphemic tones form a contiguous melody.

Additionally, we assume the following standard markedness/faithfulness constraints for tonal processes in (106) (see Yip 2002:79ff.). Note that the constraint Float(H) refers to high tones specifically to allow for floating L tones that trigger downstep.

(106) a. *Float(H):
No floating high tones.
b. Max(T):
Do not delete tones.
c. Specify:
Every tone-bearing unit must be linked to a tone.

In Trommer's (2011) analysis, the combined effect of a discontinuous morpheme and a high-ranked contiguity constraint lead to inward spreading to achieve adjacency between the parts of the circumfix. This is illustrated in the following OT analysis of overwriting with the verb *re-somá* in (92). The faithful candidate in (107a) violates contiguity, since the H tones belonging to the circumfix are not adjacent. Furthermore, they each violate *Float(H). These tones can replace the underlyingly-linked tones as in (107b) to avoid *Float(H) violations, but contiguity is still violated by the intermediate L.[16] An alternative candidate with a floating L (realized as a

[16] We assume that the H tones belong to the circumfix cannot be deleted due to a high-ranked constraint on

downstep) equally violates contiguity (107c). Removing this intermediate L tone satisfies contiguity, but introduces a fatal SPECIFY violation (107d). Thus, the optimal candidate is (107e), where one of the H tones spreads to derive full overwriting.

(107) *Tonal overwriting in Asante Twi* (rè-sòmá ⇒ ré-sómá):

H L L H H re so ma	CONT$_\tau$	*FLOAT(H)	MAX(T)	SPECIFY
a. H L L H H re so ma	*!	**		
b. H L H re so ma	*!		**	
c. H L H re so ma	*!		**	
d. H H re so ma			***	*!
☞ e. H H re so ma			***	

The attachment of a floating circumfix therefore deterministically results in overwriting due to the importance of contiguity. Thus, morphemes that obligatorily trigger overwriting such as $^{\text{H- -H}}$ on *v* and the imperative marker $^{\text{L- -L}}$ (104) can be analyzed in this fashion. It is important to note that there are a number of advantages to assuming that overwriting is due to a tonal circumfix rather than spreading of a single tone. First, it allows us to make a distinction between floating tones which associate to single tone and those which intrinsically overwrite in a given domain. The former type can be seen in associative constructions, for example, where the floating high tone docks to the nearest syllable, but does not overwrite (Abakah 2010:62). The second advantage is that the tonal circumfix delimits the domain of spreading, since it spreads inwards. In an alternative approach in which spreading of the floating tone is driven by ALIGN (McCarthy & Prince 1993; Hyde 2012) or SHARE constraints (McCarthy 2010), something additional must be stipulated to prevent spreading to the past tense marker, for example, at later cycles. Finally, the constraint in (105) means that overwritten L tones must be deleted to ensure contiguity. A consequence is that we do not find outputs such as (107c) that would lead to downstep. This differs to cases in which L tones are left floating by spreading of a single H, which often results in downstep (e.g. Paster 2010; Abakah 2010).

morpheme realization (e.g. REALIZEMORPHEME; Kurisu 2001).

Consequently, we can refine the Vocabulary Items for *v* proposed in (36) to involve a floating tonal circumfix (108).

(108) *Vocabulary Items for v (final)*:
a. [*v*, EPP] ↔ H- -H
b. [*v*] ↔ Ø

The following section will now demonstrate how this view of tonal overwriting can explain its selective nature with regard to the affixes affected.

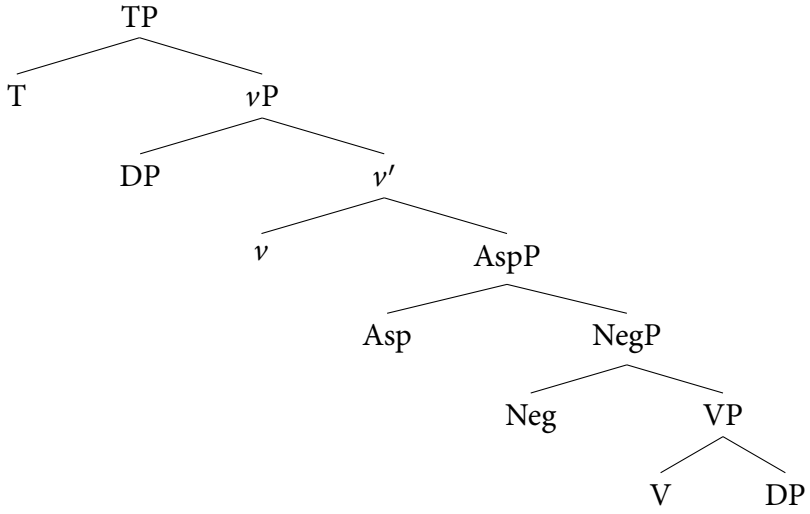
4.3 Deriving the affix generalization

Recall the preliminary version of the *affix generalization* from (103), repeated below.

(109) *Affix generalization*:
Tense and agreement affixes are not affected by high tone insertion in $\overline{\text{A}}$-constructions.

This section will demonstrate that this generalization can be rephrased in structural terms based on the independently-motivated assumption that aspect and negation are actually lower than *v* (110), as proposed by Kandybowicz (2015:257).

(110) *Clause structure of Asante Twi:*



Kandybowicz (2015) primarily motivates this structure on the basis of the distribution of the morpheme *yɛ*. He argues that *yɛ* is the realization of Asp in a prosodically vacuous Spell-Out domain, i.e. the complement of *v*. This morpheme is only found in past tense contexts with the suffix -V (111a). In other words, *yɛ* is in complementary distribution with aspect (111b).[17]

(111) a. Kofi sa-a-ɛ
Kofi dance-PST-YE
'Kofi danced'

[17] We diverge from Kandybowicz (2015) by continuing to represent the *yɛ* morpheme as -*ɛ*, following standard Akan orthography.

b. Kofi {re-/a-}sa(*-ɛ)
Kofi {PROG-/PERF-}dance(*-YE)
'Kofi is dancing/has danced' (Kandybowicz 2015:244)

This distinction is explained by assuming that the verb moves to T, where the *-V* ending is hosted, unless 'blocked by an overt/contentful head' such as aspect (Kandybowicz 2015:249).[18] With an intransitive verb (111a), V-to-T movement will render the Spell-Out domain of *v* prosodically vacuous, leading to insertion of *yɛ*. The fact that aspectual affixes obviate *yɛ*-insertion (111b) suggests that they must remain in the Spell-Out domain of *v*, i.e occupying a position lower than *v* as in (110). The assumption that *yɛ*-insertion has to do with prosodic vacuity is further supported by the fact that even in cases where the verb moves, *yɛ* is blocked if there is a direct object of a transitive verb (112a) or a low, VP-level adverb (112b).

(112) a. Kofi bɔ-ɔ(*-ɛ) Ama
Kofi kick-PST(*-YE) Ama
'Kofi kicked Ama.'

b. Kofi sa-a(*-ɛ) ntɛm
Kofi dance-PST(*-YE) quickly
'Kofi danced quickly' (Kandybowicz 2015:245f.)

We can also see that negation is lower than aspect given the affix order in (113).

(113) a. Na Kofi re-n-sa / *n-re-sa
PST Kofi PROG-NEG-dance *NEG-PROG-dance
'Kofi was not dancing.'

b. Na Kofi a-n-sa / *n-a-sa
PST Kofi PERF-NEG-dance *NEG-PERF-dance
'Kofi did not dance.' (Kandybowicz 2015:256)

Given the structure in (110), Kandybowicz (2015) argues that *na* occupies T and the verb does not move out of the *v*P domain. Since we see that the aspectual prefix *re-* must precede negation (113), mirror principle reasoning would therefore dictate that negation is located lower than aspect as in (110).[19]

Given this clause structure, then the generalization in (109) translate into a structural one – affixes that originate in a position lower than *v* (e.g. aspect and negation) are affected by tonal

[18] This presupposes that the Head Movement Constraint cannot be absolute, but rather relativized for certain heads, see Baker & Collins (2006:313) for a similar assumption. Kandybowicz (2015) provides further evidence for V-to-T movement from the periphrastic expression of past tense with *na*, which will not be discussed here.

[19] Furthermore, motion aspect seems to occur even lower than negation (and in conjunction with other aspects) (i) (also see Boadi 2008:14), suggesting it occupies another aspect head even lower than negation (e.g. Mot°; Kusmer 2011:18).

(i) a. Kofi re-m-be-didi
Kofi PROG-NEG-ING-eat
'Kofi is not coming to eat.'

b. Yaw re-n-kɔ-to bayerɛ
Yaw PROG-NEG-EGR-buy yam
'Yaw is not going to buy yam.' (cf. Kusmer 2011:25)

This aspectual marker does not block movement to T, since it is compatible with the *-V* past marker (97).

overwriting, whereas those in a higher position (e.g. tense, subject agreement/resumption) are not. This is summarized in (114).

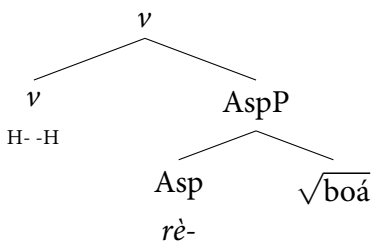
(114) *Affix generalization (final)*:
Only affixes lower than *v* are affected by high tone insertion in $\overline{\text{A}}$-constructions.

The generalization in (114) will now follow both from the previously established analysis of tonal overwriting as a floating tonal circumfix and standard assumptions about word formation in Distributed Morphology (DM). In standard DM approaches (e.g. Halle & Marantz 1993; Harley & Noyer 2003; Embick & Noyer 2007; Embick 2015), Vocabulary Insertion and concatenation of affixes applies cyclically from the root-outwards inside a complex head (Bobaljik 2000; Embick 2010). Consider (115) where both the tones of the root and the progressive prefix *re-* have been affected by tonal overwriting (re-boá ⇒ ré-bóá).

(115) Á!má$_1$ na Kofi **ré-bóá** nó$_1$
Ama FOC Kofi PROG-help 3SG.OBJ
'It is Ama who Kofi is helping.'

Assuming that aspect blocks verb movement to T (Kandybowicz 2015), then the complex head in (116) is formed either by head movement or post-syntactic Lowering (Embick & Noyer 2001) (or a combination thereof). Since AspP is structurally lower than *v*, the low-toned prefix *re-* combines with the root first (117a). Subsequently, *v* combines with the Asp constituent. Since it is realized as a floating tonal circumfix, this now attaches outside both the aspectual prefix and the root (117b). This then triggers overwriting of both the prefix and the root (117c), as shown in Section 4.2.

(116)



(117) a. Asp+$\sqrt{\text{boá}}$ ⇒ rè-bòá
b. *v*+[rè-bòà] ⇒ $^{\text{H-}}$rè-bòá$^{\text{-H}}$
c. $^{\text{H-}}$rè-bòá$^{\text{-H}}$ ⇒ ré-bóá

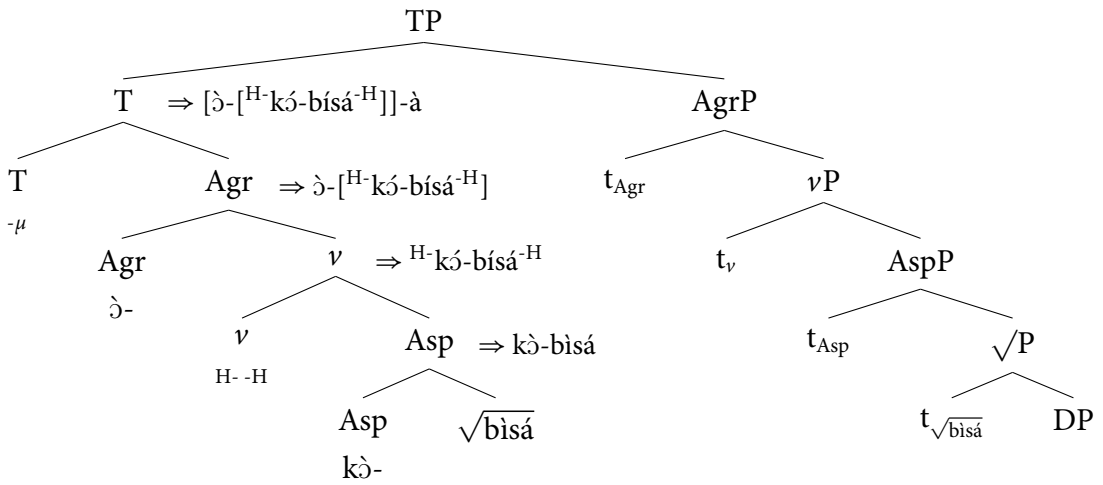
Given the Mirror Principle (e.g. Baker 1985; Harley 2011), prefixes located lower than *v*P in the clause (such as aspect and negation) will always combine with the root before *v* and therefore always intervene between the floating tonal circumfix. Affixes originating higher than *v*P, on the other hand, will be attached after *v* and therefore be immune from the effects of overwriting. To see this, let us consider the more complex example from (97), repeated as (118). Recall that this example involves both aspect and tense morphemes and we observe that, while the root and egressive prefix *kɔ-* become high, the past tense *-a* and subject prefix *ɔ-* do not.

(118) a. Yaw kɔ-bisá-a Kofí
Yaw EGR-ask-PST Kofi
'Yaw went and asked Kofi.'

b. Yaw$_1$ na ɔ$_1$-**kɔ́-bísá**-a Kofí
Yaw FOC 3SG.SBJ-EGR-ask-PST Kofi
'It is Yaw who went and asked Kofi.'

In this example, the verb moves to T and therefore receives overt past tense inflection expressed by the *-V* suffix (following Kandybowicz 2015). Subsequently, the complex head T in (119) formed by head movement is subject to Vocabulary Insertion, as above.

(119)



First, the low-toned aspectual affix *kɔ-* is attached to the root. At the next cycle, the exponent of *ν* (the floating H-tone circumfix) attaches to this complex and triggers overwriting of all low tones. Subsequently, the subject resumptive marker is attached. We assume this to be a realization of an Agr projection, since subject resumptives differ from object resumptives in being strictly bound morphemes that also show optional anti-agreement in certain contexts (see Section 3.4). Since *ɔ-* attaches after *ν*, it is not subject to tonal overwriting and remains low-toned. The same holds for the past tense exponent in T, which is realized as a floating moraic suffix that triggers lengthening of the final segment of the verb (e.g. Ofori 2006:29; Zimmermann 2017:188). Since this affix is also structurally higher than *ν*, it is immune from the effects of overwriting.

This section has shown that the selective nature of the tonal overwriting process follows from the cyclic nature of Vocabulary Insertion, the assumption of a floating H-tone circumfix and the independently-motivated assumption that both aspect and negation affixes orginate lower than *ν*. The fact that both Kandybowicz's (2015) analysis of *yɛ*-insertion and the *affix generalization* in (109) require the same assumptions about the clause structure of Asante Twi constitutes a striking convergence across empirical domains and thereby lends further support to the assumption of a low AspP and NegP projection in the language.

5 Further issues

5.1 Subject extraction

One issue we have not yet addressed regards tonal overwriting with subject extraction. Recall from Section 2.2 that we are proposing that the floating high-tone exponent that triggers over-

writing is the realization of *v* bearing an edge feature ([EPP]) inserted to facilitate successive-cyclic movement. With local extraction of a wh-object, this feature is inserted to trigger movement to the edge of the *v*P phase (120).

(120) *Local object extraction*:
$[_{CP}\ wh\ [_{C'}\ C_{[\text{EPP}]} \dots\ [_{vP}\ \_\_\ [_{v'}\ DP\ [_{v'}\ v_{[\text{EPP}]}\ [_{VP}\ V\ \_\_\ ]]]]]]$

However, wh-subjects already originate at the edge of *v*P and can therefore move to their local Spec-CP position without any intermediate step (121).

(121) *Local subject extraction*:
$[_{CP}\ wh\ [_{C'}\ C_{[\text{EPP}]} \dots\ [_{vP}\ \_\_\ [_{v'}\ v\ [_{VP}\ V\ DP\ ]]]]]$

All else being equal, we would not expect to find movement reflexes with local subject extraction since there is no trigger for edge-feature insertion in (121). This has been reported to be the case in Duala (Epée 1976), Indonesian (Saddy 1991) and Defaka (Bennett et al. 2012). However, like many other languages (Clements et al. 1983), local subject extraction in Asante Twi does show reflexes of movement, i.e. tonal overwriting on the verb (122b).

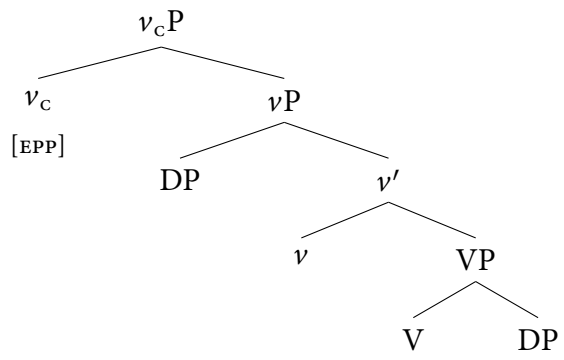
(122) a. Hwáń **dɔ** Saka?
who love Saka
'Who loves Saka?'

b. Hwáń$_1$ na ɔ$_1$-**dɔ́** Saka?
who FOC love Saka
'Who loves Saka?'

In order to reconcile this with the analysis proposed so far, we could either propose that wh-subjects must undergo string-vacuous intermediate movement for independent reasons (e.g. Müller 2007:86) or we can dissociate the phase edge and the base position of the subject.[20] We will adopt the latter view in line with others (e.g. Richards 2010; Baltin 2012; Harley 2013) and propose the existence of *v*P shells as in (123). While the outer *v*P is often given the name Voice, we label it v_CP following Richards (2010:14) and also adopt his proposal that it is this head, and not the lower one, that is the phase head.

[20] An anonymous reviewer points that this problem might speak in favour of a different mechanism of successive-cyclic movement. For example, Bošković (2014, 2016) assumes that the entire phase (including the edge) is sent to Spell-Out (also see Harwood 2015). Bošković (2016) argues that in such an approach, successive-cyclic movement targets the phrase immediately dominating the phase. This would mean that subjects would also have to move from their base-position inside the phase. A potential drawback of this kind of non-feature-driven approach to successive-cyclic movement comes in accounting for the morphological reflexes at hand. Although Bošković (2008) suggests that some of these data could be reanalyzed as intervention effects, feature-driven approaches offer the most straightforward way of accounting for them, as they can tie allomorphic alternations to the presence of a movement-related feature. Furthermore, Georgi (2014, 2017) shows that they can also handle 'opaque' patterns, which seem more problematic for featureless, 'Greed'-based analyses.

(123)



With this structure, subject extraction now requires insertion of an edge feature on v_C (124), which is realized as the familiar overwriting circumfix.

(124) *Local subject extraction is successive-cyclic*:
$[_{CP}\ wh\ [_{C'}\ C_{[\text{EPP}]}\ \ldots\ [_{v_C P}\ \_\_\ [_{v_C'}\ v_{C[\text{EPP}]}\ [_{vP}\ \_\_\ [_{v'}\ v\ [_{VP}\ V\ DP\ ]]]]]]]$

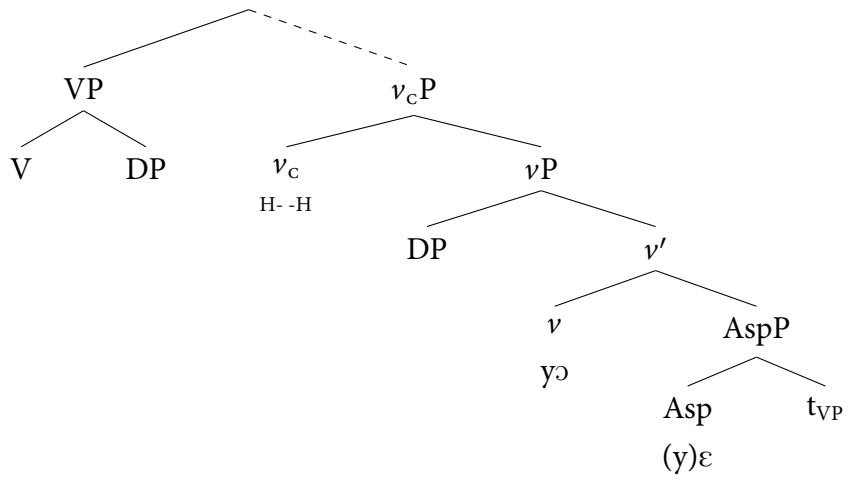
The postulation of *v*P shells in Asante Twi is not only motivated by a theory-internal quandry regarding the base position of the subjects, there is also a potential empirical advantage. Hein (2017) discusses the fact that topicalization of a VP in Asante Twi leads to a process of *yɔ*-support, analogous to *do*-support in English (125a). While it may be tempting to treat this as a variant of the morpheme *yɛ* discussed by Kandybowicz (2015), Hein (2017) points out that this is not possible since the two morphemes co-occur (125b).[21]

(125) a. [$_{VP}$ Dán sí]-é na Kofí ré-yɔ́ ——$_{VP}$
house build-NMLZ FOC Kofi PROG-do
'Kofi is BUILDING A HOUSE.'

b. [$_{VP}$ Dán sí]-é na Kofí yɔ́-ɔ-ɛ́ ——$_{VP}$
house build-NMLZ FOC Kofi do-PST-YE
'Kofi BUILT A HOUSE.' (Hein 2017:7,fn.3)

For cases such as (125b), we can place *yɔ* in *v* and *yɛ* in Asp (following Kandybowicz 2015) (126).

(126)



[21] Also, (125a) shows that this morpheme occurs with progressive aspect *re-*, unlike *yɛ* (111b).

The general idea would be that *v* is realized as zero in the context of the root (i.e. inside a complex head). If *v* is not local to the root, for example because the VP has been fronted, then it receives a default realization as *yɔ*. This is then very similar to Thoms' (2011) and Baltin's (2012:417) approach to *do*-support/British-*do* in English. Locating *yɔ* in *v* is also supported by the fact that it is subject to tonal overwriting (127b), in line with the *affix generalization* (109) stating that material structurally lower than the floating circumfix (now in v_C) is affected by overwriting.

(127) a. Kofí **á-yɔ**
Kofi PERF-do
'Kofi has done it.'

b. [$_{VP}$ dán sí]-é na Kofí **á-yɔ́** —$_{VP}$
house build-NMLZ FOC Kofi PRF-do
'Kofi has BUILT A HOUSE.'

5.2 Covert movement and wh-in-situ

Another issue pertains to wh-in-situ: wh-words can stay in-situ in Asante Twi and do not trigger tonal overwriting when they do (128a).

(128) a. Baá **re-se**ré hwáń?
Baah PROG-laugh who

b. Hwáń$_1$ na Baá **ré-sé**ré nó$_1$?
who FOC Baah PROG-laugh 3SG.OBJ
'Who is Baah laughing at?' (Marfo 2005*b*:81)

This is a cross-linguistically familiar picture where in-situ wh-phrases do not trigger putative reflexes of $\bar{A}$-movement (but cf. Reintges et al. 2006). A prevalent view of wide-scope wh-in-situ constructions would be that they involves wh-movement in the syntax, but pronunciation of the lowest copy at PF (e.g. Bobaljik 2002). Under this view, we would expect to find the same reflexes that we do with overt movement.

While not being able to resolve this issue completely, we will point to two pieces of evidence which suggest that wh-in-situ and wh-ex-situ in Asante Twi do not share the same syntactic derivation. The first argument comes from the observation by Kobele & Torrence (2006) that in-situ wh-phrases in non-echo questions are sensitive to intervention effects by negation, for example (129) (Pesetsky 2000; Beck 2006). Ex-situ wh-phrases, on the other hand, are not subject to intevention effects (129c).

(129) a. Kofi bɔ-ɔ hwan ?
Kofi hit-PST who
'Who did Kofi hit?'

b. *Kofi a-**m**-bɔ hwan ?
Kofi PST-NEG-hit who

c. Hwan$_1$ na Kofi a-**m**-bɔ no ?
who FOC Kofi PST-NEG-hit 3SG.OBJ
'Who didn't Kofi hit?' (Kobele & Torrence 2006:166)

The second asymmetry pertains to wh-in-situ in embedded contexts. As originally noticed by Kobele & Torrence (2006) (and corroborated by Kandybowicz 2017:117), an in-situ wh-phrase

cannot take wide scope out of an embedded clause (130a). By comparison, overt movement out of an embedded CP is unproblematic (130b).

(130) a. *Wo dwene [$_{CP}$ sɛ Kofi bɔ-ɔ hwan] ?
2SG think that Kofi hit-PST who

b. Hwan na wo dwene [$_{CP}$ sɛ Kofi bɔ-ɔ no$_1$] ?
who FOC 2SG think that Kofi hit-PST 3SG.OBJ
'Who do you think that Kofi hit?' (Kobele & Torrence 2006:168f.)

Both of these asymmetries serve to show that the syntax of wh-in-situ cannot simply involve the same syntactic derivation as wh-ex-situ, with differences in the pronunciation site. Instead, we can find alternative ways to compute wide-scope of wh-phrases without movement (e.g. Pesetsky 1987; Reinhart 1998; Cole & Hermon 1998) or a different kind of movement, genuine LF-movement (Huang 1982; Nissenbaum 2000; Richards 2001) or feature movement (Bošković 1998; Pesetsky 2000; Soh 2005).[22] Under these kind of approaches to wh-in-situ, we would not necessarily expect to find the same reflexes as overt phrasal movement.

6 Conclusion

This paper has argued that, contrary to previous claims, high-tone overwriting on verbs in Asante Twi is not a property of focus constructions. Instead, we have shown that it has a much wider distribution across other $\overline{\text{A}}$-constructions, which leads to the conclusion that it is best analyzed as a reflex of successive-cyclic operator movement through *v*P. The most compelling evidence for this view comes from the observation that tonal overwriting affects all verbs crossed by an $\overline{\text{A}}$-dependency, which is a hallmark of such movement reflexes (see Georgi 2014). We also addressed a challenge for the view that movement is involved in $\overline{\text{A}}$-dependencies in Asante Twi, namely the presence of obligatory, island-insensitive resumption. Nevertheless, we showed that obviation of islands is linked directly to resumption, since island effects re-emerge with extraction of categories that lack resumptives independently (i.e. PPs and VPs). Furthermore, resumptive pronouns show an array of reconstruction effects which would be unusual for genuine pronouns. What is more, it was shown that *déɛ́* topic constructions lack both movement reflexes and reconstruction effects, and are therefore genuine base-generated structures. All of this constitutes evidence against the view that resumptive constructions involve base-generation (Saah 1994).

This paper also provided the first detailed investigation of the morpho-phonological aspects of overwriting. In particular, we showed that there is an asymmetry regarding the affixes which undergo the alternation. While the verb root and aspect and negation affixes are subject to overwriting, tense and agreement affixes are not affected. We showed that this generalization corresponds to the position of the affix in the structure of the clause. Kandybowicz (2015) proposed, on independent grounds, that both AspP and NegP are lower than *v*P in Asante Twi. Furthermore, there are the affixes which undergo the alternation together with the verb. Given that the

[22] Indeed, a reviewer points out that the restrictions on wh-in-situ in Asante Twi seems to mirror those described for French (see Bošković 1998 and Cheng & Rooryck 2000 for arguments for a feature movement approach).

structure of complex heads is assumed to mirror their hierarchical order in the clause, any affix that is below *v* will be in the scope of the overwriting tonal circumfix and therefore affected. Affixes generated higher attach later and are immune from its effects.

Aside from adding to the evidence for successive-cyclic movement through *v*P, the preceding discussion also shows that even formal features such as the EPP can be realized as floating autosegmental material (cf. Akinlabi 1996). Finally, we also see the importance of the syntax/phonology interface in informing syntactic theory. Boeckx (2008:23) points out that 'Kikuyu is the only language I am aware of that offers phonological reflexes of successive-cyclic movement. But this may be due to the fact that the relation between tone and syntactic movement hasn't been studied as much as it ought to be'. We concur with Boeckx and hope to have demonstrated on the basis of Asante Twi that tone can potentially tell us a lot about movement if we start looking in the right places.

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