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The Rich Agreement Hypothesis from a typological perspective

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Seid Tvica

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The Rich Agreement Hypothesis from a Typological Perspective

This thesis investigates the so-called Rich Agreement Hypothesis (RAH), the hypothesis that correlates the syntactic position of the verb with properties of subject-verb agreement morphology. While the RAH has been found to make correct predictions in many Indo-European languages, little remains known about the extent to which it holds beyond Indo-European.

In an approach that combines linguistic theory and typological methodology, *Formal Generative Typology*, the author evaluates the RAH in twenty-four genetically distant non-Indo-European languages. The analyses show that there is strong evidence in support of the hypothesis in most languages, whereas in a small subset of investigated languages, the RAH cannot be evaluated. While the study affirms the validity of a growing trend of conducting typological research in the context of a theoretical framework, the outcome of these analyses places the RAH in a position of a potential (abstract) universal.

This thesis is relevant to scholars working on the general theory of verb movement and its relation to the morphological properties of the verb. More broadly, the study contributes to the understanding of the interaction between syntax and morphology and is of interest to a general syntactic and typological readership.

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door

Seid Tvica

geboren te Priboj, SFR Joegoslavië

To my parents

Contents

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Glossary

1/2	first and second person		EX	exclusive
1	first person		FIN	finite
2	second person		FM	future mood
3	third person		FOC	focus marker
ABL	ablative		FUT	future tense
ABS	absolutive		F	feminine
ACC	accusative		GEN	genitive
ANA	anaphoric		HAB	habitual
ASSOC	associative		HON	honorific
AUX	auxiliary		IMPER	imperative
BEN	benefactive		IMP	imperfective
CL10	class 10 noun		INDEF	indefinite
CLG	class g noun		INFL	inflection
CLS	classifier		INF	infinitive
CL	clitic		INTNS	intensive
COLL	collective		INVS	inverse
COMPL	completive aspect		INV	inverse (on nouns)
COMP	complementizer		IN	inclusive
COND	conditional		IO	indirect object
CONT	continuity marker		IRR	irrealis mood
DECL	declarative marker		LA	locative applicative
DEF	definite		LIG	ligature
DEM	demonstrative		LOC	locative marker
DIR	directional		MG	mixed gender
DL	dual		MORE	intensifying verbal suffix
DUR	durative		M	masculine
EMPH	emphatic		NDE	nominal derivational enclitic
ERG	ergative		NEG	negation
EVID	evidential		NF	non-feminine

NOMZ	nominalizer	RCP	recent past tense
NOM	nominative	RECP	reciprocal marker
N	neuter	REDUP	reduplication
OBJ	object	REL	relative marker
OPT	optative	REP	repetition
PART	particle	RES	reifying marker
PAR	partitive	RMP	remote past tense
PERF	perfect	RMP	remote past tense
PFX	prefix	RP/P	realis past/present
PF	perfective	RTC	root clause
PL	plural	R	realis mood
PM	potential mood	SER	serial suffix
POSS	possessive	SG	singular
POT	potential	SID	specific indefinite determiner
PP	past punctual	SIT	situation-change marker
PRES	present tense	SM	subject marker
PRIOR	prior	SOC	sociative marker
PROG	progressive	SP	strong pronoun
PROS	prospective marker	SUBJ	subject
PROX	proximal	TOP	topic marker
PT	past tense	UM	unreal mood
PUR	purposive	VN	verbal noun
RV	factative	WP	weak pronoun

Introduction

A frequently studied problem in the field of theoretical linguistics revolves around the questions of why natural languages exhibit the word order variation that they do, and what the intrinsic reasons for such variation are. Compare the minimal pairs in (1) and (2), where adverbs in English must precede verbs, while the opposite is true in French.

(1)   *English*
    a.   John **often** *kisses* Mary.
    b.   * John *kisses* **often** Mary

(2)   *French* (Pollock 1989:367, adapted)
    a.   Jean *embrasse* **souvent** Marie
        Jean kisses   often   Marie
    b.   * Jean **souvent** *embrasse* Marie.
        Jean often   kisses   Marie

This difference is often attributed to the morphological properties of the verb, since the presence of 'rich' agreement inflection on the verb appears to correlate with its placement to the left of adverbs. This often recognized though not uncontroversial correlation led to the formulation of the so-called Rich Agreement Hypothesis (RAH), a hypothesis that accounts for these word order facts by postulating that the verb in (2) has undergone movement to the left of the adverb, whereas in (1), the verb remains in its base position. While this correlation has been extensively studied in a number of languages, the investigation has been limited to the languages of only a few branches of the Indo-European family. This dissertation constitutes the first attempt to investigate the RAH in

a sample of languages outside of the Indo-European family. It provides the results of a study that combines linguistic theory and typology. This introduction is structured as follows. In §1.1, I introduce the RAH and the generalization that led to its formulation. §1.2 briefly motivates the integration of typology and grammatical theory for the investigation of the RAH. §1.3 lays out the structure of the dissertation.

1.1   The Rich agreement hypothesis (RAH)

Since the 1980s, a number of studies have investigated a potential correlation between the syntactic position of the verb and the properties of subject-verb agreement morphology (cf. Roberts 1985; Kosmeijer 1986; Platzack and Holmberg 1989; Pollock 1989; Holmberg and Platzack 1991; Roberts 1993; Rohrbacher 1994; Holmberg and Platzack 1995; Vikner 1995; Bobaljik and Thráinsson 1998; Koeneman 2000; Koeneman and Zeijlstra 2014 among others). In general, these studies concluded that the 'richness' of the distinctions in the paradigm of verbal inflections correlated with a specific position of the verb in the clause. More concretely, it was observed that if the verb in a particular language has a rich paradigm of inflectional forms for subject agreement, the verb must always appear to the left of adverbs, as a consequence of 'v-to-I' movement, v-to-I movement being the operation that accounts for the correlation between verb movement and agreement morphology.[1]

In addition to agreement morphology, there could be a variety of reasons why the verb moves out of the verb phrase. Consequently, we must control for any such phenomena that prevent us from detecting whether or not verb movement is triggered by agreement, such as so-called verb second (V2). V2 is the result of an independent trigger of verb movement, the outcome of which is the obligatory placement of the verb in the second position of the clause, irrespective of the position of other clausal constituents, as illustrated in (3).

(3)   *Swedish* (Holmberg 2010)
a.   Jag *har* ärligt   talat   aldrig sett huggormar i den här
     I   have honestly speaking never seen adders   in this here
     skogen.
     forest
     'To be honest I've never seen adders in this forest.'
b.   Huggormar *har* jag ärligt   talat   aldrig sett i den här
     adders   have I   honestly speaking never seen in this here
     skogen.
     forest

---

1. Note that I use the so-called "little v" instead of the more traditional "big V", as is standardly done in the minimalist framework. For the readers that are not familiar with this, it suffices to say that by vP, I mean the highest projection in the verbal domain. In those theories that do not have this distinction, vP is in fact VP.

    c.   I   den här   skogen *har* jag ärligt   talat   aldrig sett
       in   this here forest   have I   honestly speaking never seen
       huggormar.
       adders

    d.   Ärligt   talat   *har* jag aldrig sett huggormar i   den här
       honestly speaking have I   never seen adders   in this here
       skogen.
       forest

As has been observed that a verb with a rich agreement morpheme tends to appear further to the left in the clause, the verb in V2 constructions also appears further to the left. Consequently, if a language has both rich agreement morphology and V2, we cannot deduce whether the verb appearing further to the left is 'caused' by agreement morphology or V2 (or both). Hence the need to control for V2 when evaluating the correlation between verb movement and agreement morphology.

    Interestingly, in some V2 languages in which the verb is inflected with rich agreement morphology, like Icelandic, Yiddish, and Älvdalen Swedish, V2 effects are restricted to the matrix clauses. Consequently, as has been standardly shown with much research (cf. Rohrbacher 1994; Vikner 1997; Bobaljik and Thráinsson 1998; Rohrbacher 1999; Koeneman 2000), we can control for V2 by testing the position of the verb in embedded clauses.

    This is shown in the examples in (4), in which the richly inflected verbs appear to the left of adverbial negation, despite the absence of V2 effects, since the verbs in these embedded clauses appear in the third position.

(4)   a.   *Icelandic*
       Ég supurði hvort Jón   *hefði* **ekki** séð   myndina.
       I   asked   if   John had   not   seen the.movie
       'I asked if John had not seen the movie.'

    b.   *Yiddish*
       Ikh veys nit   ven   di ku   *iz* **nit** geshtanen in   tsimer.
       I   know not when the cow is not stood   in.the room
       'I do not know when the cow did not stand in the room.'

    c.   *Älvdalen Swedish*
       Ed ir biln so   an *will*   **int** åvå.
       It   is car that he wants not have
       'It is the car that he does not want to have.'

Crucially, the position of adverbs between the verb and the direct object suggests that the verb has undergone *v*-to-I movement, crossing the adverb in the process. The movement correlates with the paradigms of verbal (subject) agreement morphology in the three languages, as illustrated in Table 1.1.

Icelandic *seg-ja* 'to say'		*Yiddish* *loyf-n* 'to run'		*Älvdalen Swedish* *kast-e* 'to throw'	
Singular	Plural	Singular	Plural	Singular	Plural
1 seg-**i**	seg-**jum**	loyf-**ø**	loyf-**n**	kast-**ar**	kast-**um**
2 seg-**ir**	seg-**ið**	loyf-**st**	loyf-**t**	kast-**ar**	kast-**ir**
3 seg-**ir**	seg-**ja**	loyf-**t**	loyf-**n**	kast-**ar**	kast-**a**

Table 1.1 Rich agreement paradigms (adapted from Rohrbacher 1994; Koeneman and Zeijlstra 2014:575, 577)

Conversely, the verb follows adverbs in languages with poor paradigms of verbal inflections for subject agreement, such as English, Danish and Standard Swedish (5). Note that English does not have V2 in matrix clauses, unlike Danish and Standard Swedish.

(5) a. *English*
         John **often** *eats* apples.

     b. *Danish*
         Dette er brevet,   som Tove **ikke** *har* læst.
         that is the.letter that Tove not   has read
         'That is the letter that Tove has not read.'

     c. *Standard Swedish*
         Min granne   frågade om jag **inte** *ville* komma över.
         My neighbour asked   if   I   not   would come over
         'My neighbour asked if I wouldn't come over.'

This effectively shows the absence of the *v*-to-I movement that we observed in the rich agreement languages above. The corresponding paradigms are given in Table 1.2, showing that the three languages indeed make few (if any) morphological distinctions in the paradigm of verbal agreement inflections, in contrast to the paradigms in Table 1.1.

English *to eat*		*Danish* *kast-e* 'to throw'		*Standard Swedish* *bit-a* 'to bite'	
Singular	Plural	Singular	Plural	Singular	Plural
1 eat-**ø**	eat-**ø**	kast-**er**	kast-**er**	bit-**er**	bit-**er**
2 eat-**ø**	eat-**ø**	kast-**er**	kast-**er**	bit-**er**	bit-**er**
3 eat-**s**	eat-**ø**	kast-**er**	kast-**er**	bit-**er**	bit-**er**

Table 1.2 Poor agreement paradigms (adapted from Rohrbacher 1994; Koeneman and Zeijlstra 2014:575, 577)

This correlation between the verb position in the clause and the richness of agreement morphology gave rise to the so-called 'Rich Agreement Hypothesis'

(RAH), according to which the verb raises in languages with rich agreement inflections, whereas in languages with poor agreement morphology, the verb remains *in situ*. In particular, two distinct versions of the RAH have been proposed. According to the 'strong' version, the verb obligatorily precedes adverbs if the agreement morphology is rich and obligatorily follows adverbs if the agreement morphology is poor. Comparable to the strong RAH, the 'weak' RAH predicts that the verb obligatorily precedes adverbs if the agreement morphology is rich. However, unlike the strong RAH, it predicts that the verb may either precede or follow adverbs if the agreement morphology is poor.

Importantly, the two versions of RAH make different typological predictions. Specifically, the strong RAH predicts a bidirectional correlation between word order and the richness of agreement morphology. This implies that languages with both rich agreement morphology and subject-adverb-verb order on the one hand, and languages with poor (or no) agreement morphology and subject-verb-adverb word order on the other hand, cannot exist. In contrast, the weak RAH only predicts a unidirectional correlation between the word order and the richness of agreement morphology, suggesting the non-existence of languages with rich agreement and subject–adverb–verb word order. However, the weak RAH does not exclude poor agreement languages with either of the two orders. Table 1.3 illustrates the predictions for both versions of the RAH, as well as the predictions of the 'no-RAH' hypothesis, an account that proposes that the correlation between verb movement and agreement morphology is merely an epiphenomenon arising from other movement operations (cf. Bentzen, Hrafnbjargarson, Hróarsdóttir, and Wiklund 2007).

	Agr.	no v-to-I	v-to-I
Strong RAH	rich	✗	✓
(Rohrbacher 1994; Vikner 1997, 1995; Koeneman 2000; Koeneman and Zeijlstra 2014)	poor	✓	✗
Weak RAH	rich	✗	✓
(Thráinsson 1996; Bobaljik and Thráinsson 1998; Bobaljik 2002; Thráinsson 2003)	poor	✓	✓
No–RAH hypothesis	rich	✓	✓
(Bentzen, Hrafnbjargarson, Hróarsdóttir, and Wiklund 2007)	poor	✓	✓

Table 1.3 Predicted typology: Bidirectional, unidirectional, and no-RAH

The investigation has been limited as it focused primarily on the Germanic languages, with a few brief excursions into Romance and Slavic. The vast data beyond the Indo-European family has remained unexamined.

1.2   Beyond Indo-European

Over the past few decades the validity of the strong RAH has been challenged by some scholars (cf. Bobaljik 2002), while others have dismissed all versions of the RAH (cf. Bentzen et al. 2007). Recently, however, these objections have been disputed by Koeneman and Zeijlstra (2014), who upon the reexamination of the alleged counterexamples argue that the strong RAH holds across all investigated languages within the Indo-European (IE) family (cf. §2 for a detailed discussion on the differing views). In light of this and given that the investigations into the RAH have been constrained to IE languages, this dissertation expands the crosslinguistic data by including non-IE languages for the purposes of assessing the extent to which the hypothesis holds. Specifically, I conduct a typological study using a method of language sampling based on Rijkhoff, Bakker, Hengeveld, and Kahrel (1993) that ensures maximal genetic distance between individual languages and takes into account genetic diversity across all language families, as classified by Ruhlen (1987).

   Although many typological studies focus primarily on descriptive typology and thus abstain from any version of grammatical theory, this study, along with its descriptive typology, involves a great deal of theorizing within the framework of generative grammar. This is much in line with Baker's (2010) approach, Formal Generative Typology, which focuses on investigating abstract universals in a large sample of diverse languages. In-depth theoretical analyses are crucial for the RAH testing because merely relating verb placement to the type of agreement morphology alone is unrevealing, as other phenomena can affect verb placement in such a way that they mask any potential effects of agreement morphology, as already illustrated above with V2 effects in the Germanic languages. We thus have to be able to control for such phenomena, and for that the theoretical underpinnings that this study relies on are unavoidable. The goal of this dissertation is therefore to evaluate the strong RAH in a diverse sample of languages by determining the syntactic position of finite verbs in the most minimal (controlled) contexts, utilizing state-of-the-art theoretical machinery.

1.3   Overview

Chapter 2: Theoretical approaches to the RAH   discusses the differences between the two main versions of the RAH, i) the weak unidirectional version of the RAH, in which the (vP-external) agreement hosting projections can be generated even if the morphology on the verb is poor (or absent), allowing for optional verb raising (cf. Bobaljik and Thráinsson 1998), and ii) the strong bidirectional version, according to which verb raising (for reasons of agreement) can take place if and only if there is rich agreement morphology on the verb (cf. Koeneman and Zeijlstra 2014). In addition, arguments that the generalization that lead to the RAH is a byproduct of other movement effects will be reviewed (cf. Bentzen et al. 2007). The chapter concludes by establish-

ing that on the basis of presented arguments, the bidirectional version of RAH survives the objections and holds across the investigated IE languages. As a result, the bidirectional version ought to be investigated first, beyond IE, since it is the most rigid version of RAH and is therefore theoretically and empirically the easiest one to falsify.

Chapter 3: On the universality of person and number addresses the question of what it takes for agreement to count as 'rich'. Following Koeneman and Zeijlstra (2014), I assume that richness entails a set of person and number features that are found in arguments in all natural languages. In order to determine what the properties of those features are, a typological study that looked into the person and number properties of arguments was conducted. The main focus of the study was on a survey on free pronouns, as they are naturally the richest in terms of their person and number properties. The results of the study suggest that arguments in any given language reflect (at least) a three-way distinction in person and a two way distinction in number. I refer to this as the Person-Number universal (PNU). The discussion revolves around languages which appear to falsify this universal. Although the PNU distinctions have recently been claimed not to be universal if attention is restricted to pronominal systems (cf. Harbour 2015), the distinctions obtain once we consider arguments in general, involving both pronominal and nominal systems.

Chapter 4: Diagnostic Criteria addresses the basic ingredients of the RAH, agreement morphology and diagnostics for verb movement. It begins with the discussion of the morphological properties of agreement and in particular the properties of agreement morphemes needed to trigger verb movement. Furthermore, I discuss specific contexts as well as the typological requirements of languages in which the RAH can be tested. Specifically, I show that in order to adequately test the RAH, we have to control for other phenomena that trigger verb movement, and that verb movement cannot be detected in OV languages, which restricts this study to the investigation of VO languages.

Chapter 5: Methodology discusses the details of the procedure for language sampling, following Rijkhoff et al. (1993). The chapter concludes with a list of the languages studied.

Chapter 6: Poor agreement languages discusses languages in which the RAH does not predict verb movement. The discussion begins with languages in which verb movement or absence thereof can be readily detected, and then moves onto cases that require a more detailed analysis. The analyses show that in most languages studied in the sample, the RAH makes correct predictions w.r.t. their word orders. In the remaining few languages the RAH is inconclusive, due to the absence of diagnostics that allow us to reliably detect verb movement.

Chapter 7: Rich agreement languages   presents the analysis of rich agree-
ment languages from the sample, following the same pattern as Chapter 6 by
beginning with the most straightforward cases and then moving on to more
complicated ones. Importantly, comparably to the findings in poor agreement
languages, the majority of rich agreement languages fall in line with the RAH
predictions, with a few languages in which there are no ways to control for
independently triggered verb movement.

Chapter 8: Conclusion   concludes with a brief summary of the findings of
the analyses in Chapters 6 and 7 and a discussion on the merits of combining
typology and theory.

Theoretical approaches to the RAH

In this chapter I explore several theoretical approaches that have different consequences for the correlation that verbs appear in front of vP-adjuncts iff the verbs are inflected with rich agreement morphology. This correlation, which gave rise to the Rich Agreement Hypothesis (RAH), was first observed in the diachrony of English by Roberts (1985), who noticed that after the loss of the Middle English verbal agreement inflections, the English verb remained lower in the clause, following vP-adjuncts. The correlation between the verb position and its morphology was also synchronically attested across Germanic languages (cf. Kosmeijer 1986; Platzack and Holmberg 1989). These observations had a profound impact on the development of several different theories of verb movement that relied on the assumption that there may be a causal relation between the verb position and the 'richness' of person and number features that occur on the verb (together referred to as φ-features). As introduced in Chapter 1, this is standardly referred to as v-to-I movement, the result of which is the surface position of the verb at the head of the IP projection that hosts inflectional morphology that attaches to the verb (e.g. agreement and tense features).

Some researchers have adopted a bidirectional generalization, according to which v-to-I movement will take place if and only if agreement morphology is rich (cf. Rohrbacher 1994; Vikner 1997). However, others have suggested that the bidirectional generalization cannot be sustained and that, in addition to the properties of agreement morphology, the verb can also move to this specific vP-external position in the absence of rich agreement (Bobaljik and Thráinsson 1998; Bobaljik 2002). This effectively leads towards a theory that accounts for a unidirectional generalization between verb movement and agreement morphology, as the verbs can presumably raise even if morphology is poor

under the relevant definition (Bobaljik and Thráinsson 1998; Bobaljik 2002:5). I return to this in more detail in §2.2. While these two distinct theoretical approaches employ different machinery to account for the correlation, they both propose analyses that in principle also allow for verb raising if the agreement morphology is poor, since the syntax invariably generates (additional) higher projections with phonologically empty heads, although Rohrbacher changes his position in Rohrbacher (1999), where he dispenses with the higher position to which the verb moves.

The two types of analyses that predict either a bidirectional or a unidirectional correlation between agreement morphology and verb movement are fundamentally different in terms of how the two modules of grammar, Syntax and Morphology, interact. While Rohrbacher (1994) and Koeneman (2000) argue for a morphology-driven syntax, Bobaljik and Thráinsson (1998) claim that syntactic operations precede morphology and therefore morphology *cannot* drive syntax. Instead, morphology is simply a (sometimes imperfect) "reflection" of the syntactic operations that precede it (Bobaljik 2002:5). For the purposes of this study, it is important to note that both accounts predict (or at least allow for) the unidirectional correlation between the v-to-I movement and the richness of agreement morphology, which enriches the syntactic theory to the extent that it can predict unattested word orders.

The unidirectional correlation that these analyses predict has been contested by Koeneman and Zeijlstra (2014), who claim that the mechanics of v-to-I movement should reflect the bidirectional generalization of the RAH. Like Bobaljik and Thráinsson (contra Rohrbacher 1994, 1999; Koeneman 2000), Koeneman and Zeijlstra (2014) argue for a conception of grammar in which morphology cannot *directly* drive syntax. Unlike Bobaljik and Thráinsson, they claim that an indirect interaction between the two components takes place during language acquisition, and although syntax precedes morphology, morphology "shapes" syntax via the input during language acquisition. According to their analysis, the bidirectionality of the correlation between v-to-I movement and agreement is reflected in syntax, as the absence of verb movement is also bidirectionally correlated with the absence of a functional projection triggering it. In this respect, Koeneman and Zeijlstra's (2014) analysis appears to be simpler, as it dispenses with the phonologically empty structure that both Rohrbacher (1994) and Bobaljik and Thráinsson (1998) utilize in their analyses. I return to the details of this analysis in §2.4.1.

Contra the analyses that predict either a unidirectional or a bidirectional correlation between verb raising and agreement morphology, the hypothesis has been argued not to hold in any form on the basis of data from Regional Northern Norwegian (ReNN) and Icelandic (Bentzen, Hrafnbjargarson, Hróarsdóttir, and Wiklund 2007). Bentzen et al. propose that the observed correlation between verb movement and agreement morphology in ReNN and Icelandic arise from a set of syntactic operations independent of the feature properties of agreement morphology. Consequently, they claim that the RAH cannot be sustained.

In this chapter I review more intricate details of each of the three types of

analyses. I begin by discussing earlier theories that aimed to account for the rigid (i.e. bidirectional) RAH by Rohrbacher (1999) and Vikner (1997) (cf. §2.1), and then move on to potential problems for the analysis that accounts for the unidirectional RAH by Bobaljik and Thráinsson (1998) (cf. §2.2). §2.3 discusses the analysis by Bentzen et al. (2007), who reject the RAH. §2.4 returns to the bidirectional RAH as proposed by Koeneman and Zeijlstra (2014) and presents counterarguments to the earlier objections. In the discussion that concludes this chapter I maintain that — in light of the recent reevaluation of empirical facts in the Germanic languages by Koeneman and Zeijlstra (2014) — the bidirectional RAH is the easiest to falsify and on this ground alone should be considered first in this study (cf. §2.5).

2.1   Bidirectional RAH

2.1.1   Vikner 1995 and Rohrbacher 1994,1999

In the earlier stages following the initial observation that verb movement and the richness of agreement morphology correlate, several theoretical approaches aimed to account for a bidirectional correlation between the verb and its agreement morphology. For example, Kosmeijer (1986) suggests that v-to-I movement correlates with the properties of the inflection on the verb, while Platzack and Holmberg (1989) propose that person agreement is correlated with v-to-I movement. In the subsequent work, Rohrbacher (1994, 1999) relates v-to-I movement to the specific φ-feature properties of the agreement morphology attached to the verb, stating that

(1)   a language has V-to-I raising if and only if in at least one number of
       one tense of the regular verb paradigm(s), the person features [1ST] and
       [2ND] are both distinctively marked.   (Rohrbacher 1999:116)

Importantly, if the distinction is present in at least one tense, then the accompanying v-to-I movement would systematically occur in all other tenses, irrespective of whether or not these other tenses mark the relevant person distinctions.

   In answering the question why person features are required and not other φ-features, Rohrbacher explains

> that the person features play a special role in syntax because they
> have the special ability to refer to entities in the discourse: If distinctively marked by overt subject-verb agreement, the person features
> by themselves establish whether the subject refers to the speaker(s),
> the addressee(s), or other(s). Other features often expressed by
> subject-verb agreement [e.g. number and gender] do not have this
> ability.   (Rohrbacher 1999:128)

Rohrbacher (1999) goes on to say that due to these referential abilities, person "tell[s] us more about subjects than number or gender marking". As such, person

features presumably have an effect on v-to-I movement, while the other two do not.

In contrast to Rohrbacher (1994, 1999), who views the number of person distinctions as a key property that correlates with v-to-I movement, Vikner (1995, 1997) regards the presence of person distinction (rather than the number of distinctions) as the key property, stating that

(2)   an SVO-language has V^0-to-I^0 movement if and only if person morphology is found in all tenses.   (Vikner 1997:201)

Importantly, according to this generalization this notion of richness hinges on the occurrence of agreement also in the past tense, which indicates that, in Vikner's (1997) view, tense and agreement morphology are not mutually exclusive. The co-occurrence of tense and agreement is also at the basis for the definition of richness used by Bobaljik and Thráinsson (1998), to be discussed in §2.2.

In his analysis, Vikner assumes that agreement inflections in poorly inflected languages (e.g. English, Faroese) are base-generated at I^0. Following the works of Chomsky (1957), Emonds (1978), Marantz (1988), Bobaljik (1994), Rizzi (1990), and others, Vikner assumes that the morphologically poor affixes move downward, where they attach to the verb at v^0.

In line with the general move over the last three decades towards a theory in which morphology is a *post*-syntactic component (cf. Marantz 1984; Noyer 1992; Halle and Marantz 1993; Bobaljik 1995), these kinds of morphologically-driven analyses of syntactic structures (e.g. Rohrbacher 1999; Vikner 1997) have been rejected, most notably by Bobaljik and Thráinsson (1998) and Bobaljik (2002). According to Bobaljik and Thráinsson, as noted in §2.2, the external conditions of the morphological variation across languages is the outcome of the underlying syntactic variation. Consequently, morphology *cannot* drive syntax.

Another theoretical issue with such analyses is that, although both Rohrbacher (1994) and Vikner (1995) assume a bidirectional generalization of the correlation between the verb position and its agreement morphology, the analyses they propose retain the I^0 position in syntax (cf. 3a) even if there is no overt agreement morphology, as illustrated here:

(3) **Poor vs rich: analysis**

a.

b.
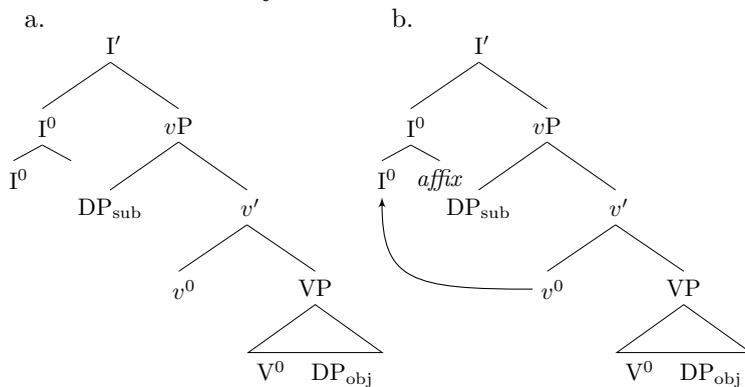
(Rohrbacher 1999)

Although this is "patched" by formalizations given in (1) and (2), the fact that I^0 is always present in syntax suggests that in principle there is nothing forbidding an independent trigger for v-to-I movement. Note that Rohrbacher reevaluates his position later on in Rohrbacher (1999:133–136), arguing for the absence of the IP projection altogether if the agreement morphology is poor, a claim previously made in Weerman (1989) and Koeneman (1997). Therefore, unlike the analysis in Rohrbacher (1994), the one in Rohrbacher (1999) fully reflects the bidirectionality of the RAH generalization. This idea that there are no empty agreement heads is also applied in Koeneman and Zeijlstra (2014). However, in contrast to Rohrbacher (1999), they motivate this position by arguing that the features that I^0 projects cannot be learned, an idea which in principle is not incompatible with Rohrbacher's (1999) proposal that person (agreement) features are more discourse-salient than others, as they can both be true (cf. §2.4.1 for more details).

2.1.2   Predictions

If correct, the analysis by Rohrbacher (1999) predicts that only two types of languages can exist given the two variables: i) a type in which agreement is rich and in which vP-adjuncts must intervene between the verb and its direct object, and, ii) a type in which agreement is poor and in which vP-adjuncts cannot intervene between the verb and its direct object. The other two logically possible types are predicted not to exist. The predictions are summarized in Table 2.1.

	no *v*-to-I	*v*-to-I
Rich agr.	✗	✓
Poor agr.	✓	✗

Table 2.1 Predicted typology of languages according to the bidirectional RAH

For more details on earlier analyses of *v*-to-I movement see for example Vikner (1995, 1997), Rohrbacher (1994, 1999), and Koeneman (2000), and other works referenced therein.

2.2 Unidirectional RAH

2.2.1 Bobaljik and Thráinsson 1998

In line with the general move towards a theory in which morphology is a *post-*syntactic component, analyses that assume morphologically-driven syntax (e.g. Rohrbacher 1999; Koeneman 2000) have been rejected most notably by Bobaljik and Thráinsson (1998) and Bobaljik (2002). Adopting a post-syntactic morphological component (cf. Marantz 1984; Bonet 1991; Noyer 1992; Bobaljik 1995), Bobaljik and Thráinsson assume that the external conditions of the morphological variation across languages is the outcome of underlying syntactic variation. Given that Bobaljik and Thráinsson's (1998) analysis is generally considered to be the state-of-the-art analysis predicting unidirectional *v*-to-I movement, I will elaborate on this analysis in the remainder of this section.

The analysis by Bobaljik and Thráinsson (1998) (henceforth B&T) is based on the idea that the crosslinguistic variation with regard to verb movement is the outcome of the parametric variation of the amount of functional structure above *v*P that introduces inflectional morphology. The parameter in question is termed 'the split-IP parameter', which Thráinsson (1996) defines as follows:

(4)   *Split-IP Parameter* (SIP) (Thráinsson 1996:262)
      Languages that have a positive value for the SIP have Agr$_S$P and TP
      as separate functional projections. Languages with a negative value of
      the SIP are characterized by an unsplit IP.

Thus, languages exhibit differences in the number of functional projections dominating VP. B&T represent this typological divide with the following two trees:

(5) a.   b.

```
        IP                      Agr_SP
       /  \                    /    \
          I'                       Agr_S'
         /  \                     /    \
       I⁰    VP              Agr_S⁰     TP
             /\                        /  \
           V⁰                             T'
                                         /  \
                                       T⁰    Agr_OP
                                            /    \
                                              Agr_O'
                                             /    \
                                        Agr_O⁰    VP
                                                  /\
                                                V⁰
```
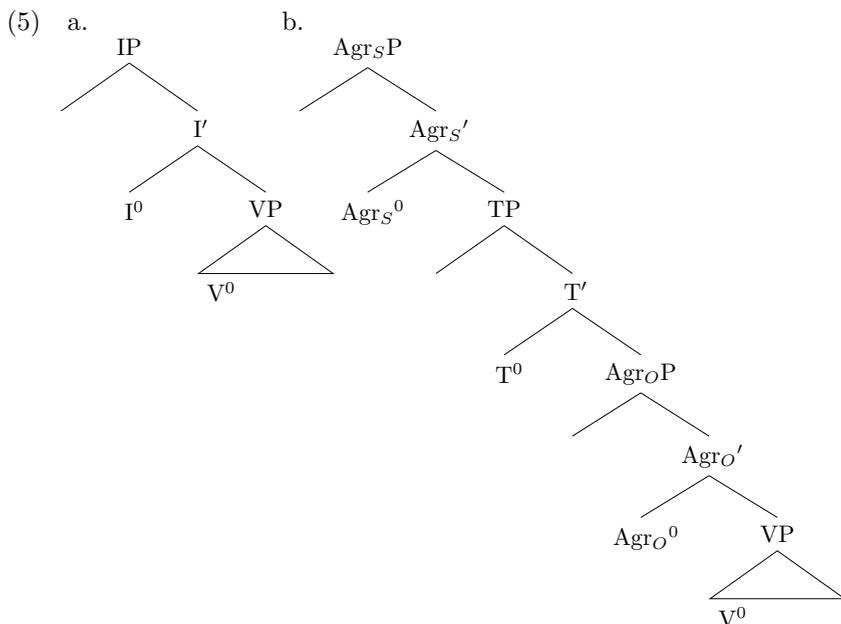
(Bobaljik and Thráinsson 1998:37)

In (5a) there is a single functional phrase (i.e. IP) dominating VP. In contrast, in the structure in (5b) the inflectional phrase is split up, containing more structure projected by separate functional heads. The basis for this distinction is the fact that, depending on a particular language, the verb can be inflected with one or more distinct morphemes that mark different types of features (e.g. [tense], φ etc.). According to B&T each distinctive morpheme occupies one functional head. Consequently, if a verb has more than one additional functional morpheme attached to it, the language must have a split-IP domain (5a). If only one (or no) distinct morphemes surface, no predictions are made allowing the possibility for either (5a) and (5b), because, according to B&T, the split-IP parameter can be triggered by other phenomena, unrelated to agreement.

B&T differ from the general approach (as in the view of Chomsky 1995), which assumes that only spec-head and head-head relations are feature checking relations. In contrast, B&T add the last of the local relations to the list of feature checking relations: head-complement relations (Bobaljik and Thráinsson 1998:39). As will become clear later on, this assumption is vital for the split-IP parameter analysis, since it allows for the agreement features on the verb to be checked with V *in situ* in the unsplit-IP structure in (5a).

2.2.2 Morphology

Another aspect in which B&T crucially differ from other approaches (e.g Vikner 1995; Rohrbacher 1999; Koeneman and Zeijlstra 2014 among others) is that

the (φ-feature) richness of agreement morphology — where 'richness' entails a set of inflectional morphemes in the verbal paradigm that semantically shows distinctions between 1st, 2nd and 3rd persons — is not taken to be a determining factor when it comes to verb movement. Rather, they propose that, among other reasons, the verb movement to the functional domain reflects the verb's ability to have distinct multiple morphemes attached to it. That is, if a verb can be inflected with only one morpheme (e.g. [tense] or φ etc.) then the language in question does not have to have a split-IP, containing only one head in its IP domain. In contrast, if the verb can have two or more distinct morphemes together with the verb, then that language contains multiple heads in its IP domain. To further corroborate this account, B&T provide empirical facts from several Germanic languages that show distinctions in this regard. For example, while in Icelandic the finite verb in the past tense can be inflected with two morphologically unique morphemes, tense *-ð* with a number of different φ-feature morphemes (e.g. *-r, -m, -ð*), the English verb cannot combine the tense morpheme *-ed* with the third person singular morpheme *-s.*

(6) Split-IP paradigm in Icelandic vs. Unsplit-IP paradigm in English
     (Bobaljik and Thráinsson 1998:59)

	Icelandic: *kasta* 'to throw'		English: *tremble*	
Person	Present	Past	Present	Past
1sg	kasta	kasta **-ði**	tremble	tremble **-d**
2sg	kasta **-r**	kasta **-ði -r**	tremble	tremble **-d**
3sg	kasta **-r**	kasta **-ði**	tremble **-s**	tremble **-d**
				*tremble-d-s
1pl	köst **-um**	köstu **-ðu -m**	tremble	tremble **-d**
2pl	kast **-ið**	köstu **-ðu -ð**	tremble	tremble **-d**
3pl	kast **-a**	köstu **-ðu**	tremble	tremble **-d**

For B&T this is evidence that Icelandic differs from English in that its IP domain contains multiple functional heads introducing different affixal morphemes, suggesting that Icelandic projects a split-IP. In contrast, comparable combination of affixal morphemes is impossible in English, indicating that English projects an IP with one functional head, though languages that have a maximum of one morpheme can still project a split IP for reasons unrelated to verb morphology (e.g. object shifts and transitive expletive constructions can trigger split IP, cf. Bobaljik and Thráinsson 1998 for more details).

2.2.3 Analysis

Given the expanded locality of feature checking along with the morphological evidence, Bobaljik and Thráinsson (1998) argue that languages like English project an IP with only one functional head introducing a single morpheme. In particular, it is assumed that any kind of feature checking on I^0 by the

verb takes place *in situ*, since I^0 is the sister of VP_{max}, which bears the same checking features as V^0:

(7)

```
              IP
             /  \
                 I'
                / \
              I⁰   VPmax
                   /\
                  V⁰
```
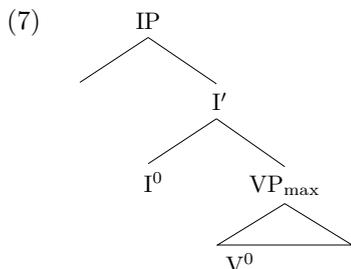
This follows straightforwardly from the assumption above that features are checked in all local relations including head-complement relations. Consequently, since feature checking on V^0 takes place *in situ*, verb movement is not required, accounting for the fact that elements that typically surface on the left edge of *v*P, such as adverbs, surface to the left of the verb:

(8)   John ⟨-s⟩ often eat**-s** apples.

<p style="text-align:center">

underbrace structure: vP over "often eat-s apples", IP over the whole "⟨-s⟩ often eat-s apples"

</p>
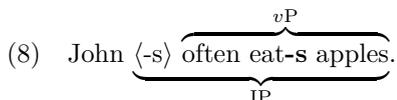
The natural question arising at this point is how does the inflectional affix *-s* to the left of *v*P end up on the verb? Although they do not take a specific stand, B&T point to two potential accounts: one is that the verb enters the derivation inflected with the affix from the lexicon, as proposed in Chomsky (1991, 1993). In this sense, the verb is base-generated with the affix and all that is required is feature checking, which occurs *in situ*, as argued above. The other approach is to stipulate that the verb and the affix are introduced separately in syntax and — being adjacent heads — are post-syntactically joined at the morphological component (Chomsky 1955; Halle and Marantz 1993; Bobaljik 1995). B&T claim that either the lexicalist or the post-syntactic approach will suffice for their purposes (Bobaljik and Thráinsson 1998:41).

Importantly, for B&T, morphology simply reflects the output of syntactic structures and therefore does not in some sense affect the syntactic operations that are the output of the previous (narrow-syntactic) component. This is a crucial difference from the proponents of morphologically driven syntax (cf. Rohrbacher 1999). However, as will be discussed in §2.4.1, the two components can be related indirectly.

2.2.4   Predictions

B&T's analysis displays a bit more flexibility than what we have seen in Rohrbacher's (1999) analysis, as it allows for the possibility of verb raising in languages with poor agreement morphology, since there is no guarantee that morphology exhaustively interprets syntactic structures. In other words, a split

IP is not prohibited by the absence of agreement morphology. Therefore, in addition to the two types of languages — that reflect a bidirectional correlation between verb raising and agreement (cf. Table 2.1), as Rohrbacher (1999) predicts — the analysis by Bobaljik and Thráinsson (1998), in which the 'richness' of agreement morphology is defined by the presence of two or more (distinct) morphemes on the verb, also predicts that languages with poor agreement morphology and verb raising are possible. Thus, three types of languages are predicted to exist out of four logical possibilities, as summarized in Table 2.2.

morphemes	no v-to-I	v-to-I
≥ 2	✗	✓
$1 \leq$	✓	✓

Table 2.2 Predicted typology of v-to-I in relation to the number of distinct inflectional morphemes cf. Bobaljik and Thráinsson 1998

One potential issue with respect to these predictions comes from French, which was thought to have the status of a poor agreement language and in which there is strong evidence of verb movement (cf. 9):

(9)   *French* (Pollock 1989:367, adapted)

  a.   Jean *embrasse* **souvent** Marie.
       Jean kisses   often   Marie.
       'Jean often kisses Marie.'

  b.   * Jean **souvent** *embrasse* Marie.
         Jean often   kisses   Marie.

The poor agreement status, however, has been contested, as the subject doubling clitics in French have been argued to be the agreement morphology in French, a topic which I discuss in detail in §4.1.3. If correct, this means that there is (as of yet) no empirical support for the predictions in Table 2.2, since French would then not be a language with verb movement and poor agreement morphology. This effectively reduces the number of attested language types from three to two, as French now belongs to the same type as Icelandic, both with rich agreement morphology and verb movement; the other attested types are languages with poor agreement morphology and no verb movement (e.g. English, Danish). Crucially, we have not yet encountered any poor agreement language with v-to-I movement under controlled conditions.

Thus far I have reviewed the (initial) bidirectional and unidirectional approaches to accounting for the correlation between v-to-I movement and the richness of agreement morphology. The two approaches predict different linguistic typologies and have different consequences for the RAH. In the next section I discuss an approach that accounts for verb raising by relating to phenomena that are not related to agreement, thus predicting that all four options in Table 2.2 are possible.

2.3   No-RAH hypothesis

2.3.1   Bentzen et al. 2007

In contrast to the hitherto discussed analyses that (aim to) account for the correlation between verb movement and agreement morphology, there has been a proposal that rejects the RAH (cf. Bentzen et al. 2007). Based on some empirical data from Scandinavian languages, Bentzen et al. (2007) propose an analysis of some verb movement that is independent of the type of agreement morphology present in the verbal paradigm. Instead, the particular variation of word orders in different constructions in Regional Northern Norwegian (ReNN) and Icelandic is argued to be the result of independent operations that drive verb movement, such as remnant movement along with the option of having different ways of checking the EPP feature. The alternative in which multiple merging sites for adverbs/negation can yield correct word orders is contested, due to the absence of interpretative distinctions between different positions of adverbs.

2.3.2   Analysis

Bentzen et al. (2007) observe that adverbs in all non-V2 contexts in Regional Northern Norwegian (a poor agreement language) can appear in multiple positions before or after the verb:

(10)   *Regional Northeren Norwegian* (ReNN) (Bentzen et al. 2007:204)
    Æ   vet   koffer ho Hedda ⟨*kjøpe*⟩ **ifte**   ⟨*kjøpe*⟩ sko.
    I   know   why   she Hedda   buys   often   buys   shoes
    'I know why Hedda often buys shoes.'

In this example the verb *kjøpe* 'buy' can precede or follow the adverb *ifte* 'often'.
    In contrast, adverbs/negation in Icelandic (rich agreement language) follow the verb in all contexts that include the CP-domain (cf. 11):

(11)   *Icelandic* (Bentzen et al. 2007:204)
    Ég veit   af hverju Hedda ⟨*kaupir*⟩ **oft**   ⟨**kaupir*⟩ skó.
    I   know why   Hedda buys   often   buys   shoes
    'I know why Hedda often buys shoes.'

In this example, the presence of the CP-domain is supported by the presence of the *wh*-word, traditionally claimed to surface at the spec,CP.
    Contrastively, the verb always follows adverbs/negation if the CP-domain is absent, as in the case in infinitives with Exceptional Case Marking (ECM) in which the embedded subjects are assigned case by the matrix verb (cf. 12):

(12)   *Icelandic* (Bentzen et al. 2007)   **ECM infinitive**
    a.   Ég taldi   hann ⟨**hafa*⟩ **ekki** ⟨*hafa*⟩ sungið í   sturtunni.
        I   believed him   have   not   have   sung   in shower.DEF
        'I believed him not to have sung in the shower.' (p. 212)

b.   Hann taldi   hana ⟨*syngja⟩ **alltaf** ⟨*syngja*⟩ í sturtunni.
       he   believed her   sing   always sing   in shower.DEF
       'He believed her to always sing in the shower.' (p. 213)

In the embedded ECM clauses in (12) adverbs cannot precede the verb. This is presumably the result of the absence of CP, so there is no position that adverbs can adjoin to, unlike in (11). For Bentzen et al. (2007) the observations in (10-12) warrant two different kinds of analyses for ReNN and Icelandic.

Given the optionality in the ordering of adverbs and verbs in ReNN, Bentzen et al. (2007) propose a 'remnant movement' analysis. This entails that it is not the head X^0 that moves but the entire XP, after certain elements are extracted from it. In ReNN, vP can move to satisfy EPP after other elements (e.g. subject and objects DPs) have moved to a projection above vP. In this analysis, the optional adverb-verb ordering in ReNN is accounted for as an epiphenomenon of different ways of EPP checking, which can either be checked by the subject moving to spec,TP in (13a) with the verb remaining *in situ*, yielding <S,Adv,V> orders, or by the entire vP moving to spec,TP after the subject has escaped from the vP, as in (13b), yielding <S,V,Adv> orders:[1]

(13)   a.   b.
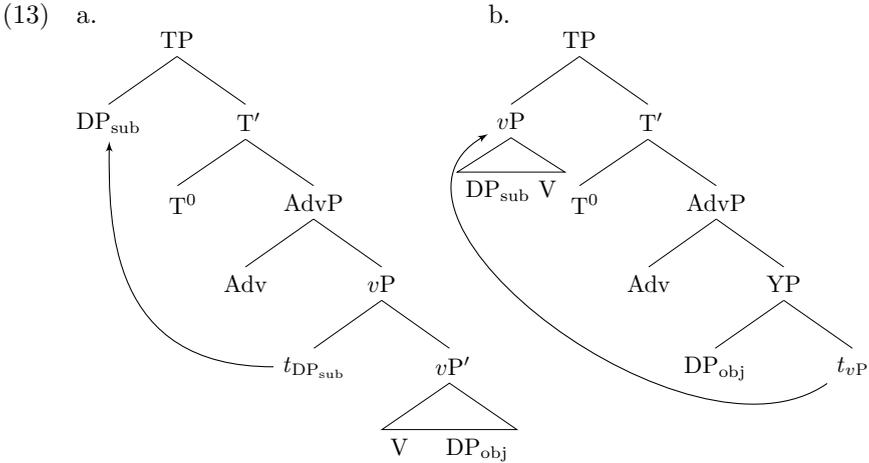
(Bentzen et al. 2007, adapted)

The advantage of this analysis is that the head-movement constraint (HMC) — according to which the movement across intervening heads is forbidden (cf. Travis 1984) — is not violated in contexts with multiple verbs preceding the adverb, as in (14) different verbal heads would inevitably have to cross over each other's copies (or traces), violating HMC:

---

1. Note that Bentzen et al. (2007) use a cartographic approach that involves additional higher projections such as ForceP, FinP, TopP. The trees presented here are simplified illustrations of the two constructions that yield variation in word orders.

(14) *Regional Northeren Norwegian* (ReNN) (Bentzen et al. 2007:217)
 . . . ettersom han *har spilt* **ofte** piano.
   as   he has played often piano
'. . . as he has often played the piano.'

The fronting of the entire constituent (i.e. vP) containing both verbs obviates the HMC problem.[2]

For languages like Icelandic, in which the verb in certain non-V2 contexts must precede adverbs and negation, whereas in others the verb must follow them (cf. 11-12), Bentzen et al. (2007) argue that this is correlated with the presence and absence of CP domains. That is, the XP remnant movement (containing the subject and verb) will always take place to spec,CP if present, giving rise to the analysis in (15). If CP is not present, as is typically argued for non-finite clauses, the verb will remain *in situ*, as in the ECM infinitives in (12).

(15)


```
                    CP
                   /  \
                 /      \
               XP        C′
              /  \      /  \
            /     \   /      \
       DP_sub  V   C⁰        t_XP
```
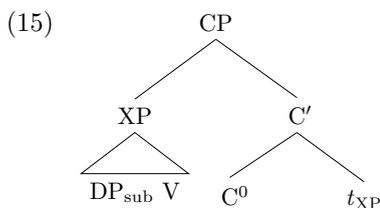
(Bentzen et al. 2007:219, adapted)

Thus, according to Bentzen et al. (2007) Icelandic does not have independent v-to-I movement. Any displacement of the phrase containing the verb is to the CP domain.

Importantly, this analysis is based on data from some varieties of Icelandic in which 'V3' orders are possible, as exemplified here:

(16) *Icelandic var.*
 Ég veit af hverju Hedda ⟨*kaupir*⟩ oft ⟨*kaupir*⟩ skó.
 I know why   Hedda buys often buys shoes
'I know why Hedda often buys shoes.'

However, as reported in Koeneman and Zeijlstra (2014), Angantýsson (2007) observes that i) the word order in the example above (where the verb follows the adverb) is heavily marked, suggesting that the adverb is displaced, and, as Koeneman and Zeijlstra (2014) point out, ii) Icelandic allows object shifts in these kinds of constructions:

---

2. Bentzen et al. (2007) rule out the alternative in which adverbs would be base-generated in different phrases, as proposed by Cinque (2004), since, according to their investigation, different positions of adverbs in ReNN do not have any semantic consequences.

(17)   *Icelandic*

$$\overbrace{}^{\text{object}} \quad \overbrace{}^{\text{left } v\text{P edge}}$$

Mér fannst skrýtið *θ*egar hann **oft**   *lék*   hróknum   ekki.
I   found strange when he   often moved rook.DEF   not
'I thought it was strange when he often didn't move the rook.'

The negation *ekki* at the end suggests that the object DP has moved out of *v*P.
Consequently, since the verb precedes the object, it means that the verb has
also moved out of the *v*P. Importantly, according to Bentzen et al. (2007), the
fact that the verb in (17) follows the adverb shows that it cannot have moved.
This creates a problem for their analysis, since they predict that the verb in
V3 orders is *in situ*.

    Turning attention to the data from ReNN, Koeneman and Zeijlstra (2014)
reject Bentzen et al.'s analysis, given that although they seem to cross adverbs
(cf. 10), finite verbs in ReNN can never cross negation, as Bentzen et al. (2007)
observe:

(18)   *Regional Northeren Norwegian* (ReNN)
       . . . ettersom nån   studenta ⟨**ikke**⟩ *leverte*   ⟨***ikke**⟩ oppgaven.
       . . . as   some students not   handed.in   not   assignment.DEF
       '. . . as some students {not handed in / didn't hand in} the assignment.'

According to Koeneman and Zeijlstra (2014), Bentzen et al.'s proposal that
negation is located above the high adverbs such as *probably* is untenable, as
negation always follows such adverbs and can even follow low adverbs such as
often.

(19)   *Regional Northern Norwegian* (ReNN)
       Jeg vet   hvorfor John **ofte ikke** *vet*   svaret.
       I   know why   John often not know answer.the
       'I know why John often does not know the answer.'

This suggests that negation cannot be a separate higher projection in ReNN,
but in line with what is generally found across Germanic languages, negation
is a *v*P adjunct. We can therefore surmise that the finite verb remains *in situ*
at v^0, while adverbs in ReNN in (10) can be optionally adjoined to *v*P or VP,
sandwiching the verb, as represented in the following structure:

(20)
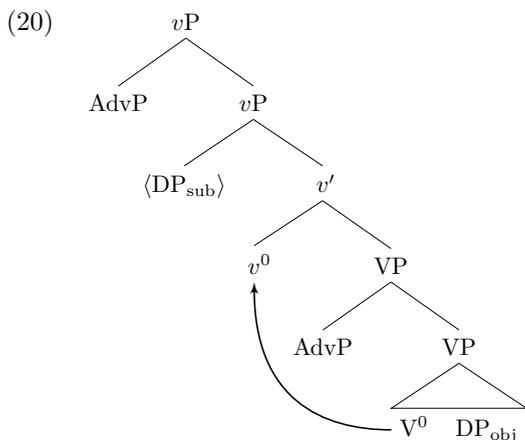
What follows is that there are no reasons to reject the (strong) bidirectional RAH generalization on the basis of arguments presented in Bentzen et al. (2007). As we have seen above, while the data from Icelandic allegedly challenged the RAH, the data from ReNN was not contrary to the RAH. However, as Koeneman and Zeijlstra (2014) demonstrate, the data from these languages show that there are substantive reasons to maintain the bidirectional RAH generalization as a foundational observation for the theory of verb movement (cf. §2.4.1).

The analysis by Bentzen et al. (2007) crucially entails that verb movement is not correlated with the richness of the verbal paradigm. The morphological agreement markers are inconsequential for the word ordering, while verb movement is a result of operations unrelated to morphological markers.

2.4 Bidirectional RAH (revived)

2.4.1 Koeneman and Zeijlstra 2014

Unlike the analysis proposed by Bobaljik and Thráinsson (1998), the analysis for the bidirectional RAH as proposed in Koeneman and Zeijlstra (2014) (henceforth K&Z) entails that the typological distinction with respect to the position of the verb between languages with rich and poor agreement morphology arises from the presence (or absence) of feature distinctions in the paradigm of agreement inflections that occur during L1 acquisition. That is, if there are no sufficient subject-verb agreement features in the input, a child *cannot* postulate additional functional (agreement) projections above the verb phrase, giving rise to an analysis as in (21a), in which there are no positions for the verb to move to. Consequently, unless there are additional operations that drive the verb to other functional projections above vP (e.g. V2, aspectual morphology), the verb remains inside vP.

If on the other hand sufficient features *are* present in the input, the child will postulate an additional functional projection that hosts such features, giving

rise to the analysis in (21b), where Arg^0 hosts agreement features:

(21)   a.   b.

vP tree:
- vP
  - DP_{sub}
  - v'
    - v^0
    - VP
      - V^0 DP_{obj}

$ArgP$ tree:
- ArgP
  - DP_{sub}
  - Arg'
    - Arg^0
    - vP
      - v^0
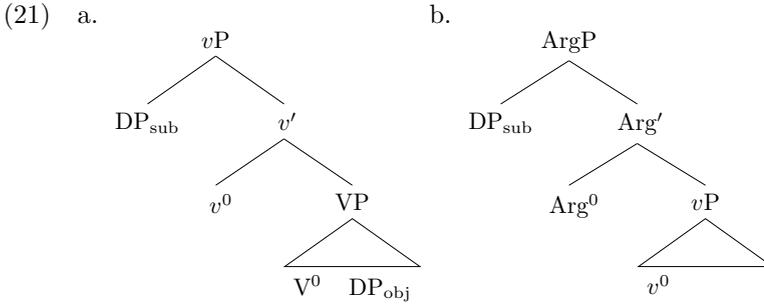
K&Z propose that Arg^0 (not Agr) is a grammaticalization of the semantic no-tion of argumenthood, following from the fact that the verb and its complement must merge with an external argument (i.e. subject) for semantic reasons. Given this, the agreement morphology, base-generated at Arg^0, probes for the struc-turally closest (goal) DP at spec,ArgP to match its φ-features, or alternatively the probe Arg^0 triggers DP movement from spec,vP to spec,ArgP.

In contrast to Bobaljik and Thráinsson (1998), postulating 'parametric vari-ation' in syntax is not required for K&Z. Instead, such variation is a natural outcome of paradigmatic feature richness in the input during acquisition, which motivates the projection of additional functional structure.

Importantly, K&Z side with B&T in the sense that morphology does not drive syntax directly. However, K&Z claim that the relation between the two components takes place *indirectly* via acquisition of formal features, as schema-tized in Figure 2.1, where the morphology in the input, containing paradigmatic distinctions, paves the way for the acquisition of formal features that drive the projection of additional structure in Syntax that hosts the Formal features:

Features

acquisition

drive/project

Morphology

spell-out
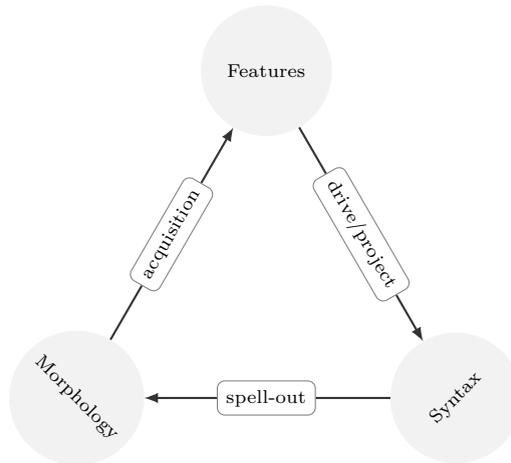
Syntax

Figure 2.1 Morphology shapes Syntax via acquisition of features

A child acquiring a language will, on the basis of features in the L1 input, postulate ArgP hosting rich morphology (cf. 21b). What this suggests is that in K&Z's conception of grammar, syntax is shaped by morphology in the context of *v*-to-I movement.

Comparable to Rohrbacher (1999) and in contrast with other approaches to analyzing *v*-to-I movement, an advantage of K&Z's analysis is that the bidirectionality of the RAH generalization is mirrored in syntactic structures. That is, there are no redundant Arg^0 positions in the syntax and the syntax projects ArgP if and only if the relevant features required to generate Arg^0 are present in the input.

For K&Z, a crucial assumption that differs from the ones by Bobaljik and Thráinsson (1998) are the types of feature checking relations. That is, feature checking is expected to take place only in head-specifier and head-head relations, whereas the head-complement relation is not a feature checking relation. This is important because if features can be checked in head-complement relations, it would pose a problem for the analysis in (21b), as this would (incorrectly) predict that Arg^0 can check its features with the verb *in situ*, thereby not requiring the attested movement of the verb out of *v*P.

2.4.2 Morphology

As observed across IE languages, verb movement does not take place if a language does not exhibit a rich set of subject-verb agreement markers reflecting a particular set of semantic (φ-) features. To make this more precise, K&Z argue that the ArgP projection is only expected in languages that exhibit a rich agreement paradigm showing enough morphology that reflects semantic person and number distinctions: [±speaker], [±participant], and [±plural]. These features are based on the most minimal pronominal system attested in natural languages, for which Koeneman and Zeijlstra (2014) provide the paradigm of the free pronouns in Kuman (cf. 22), which shows a three-way distinction in person and a two-way distinction in number:

(22) Pronouns in Kuman

Person	Singular	Plural
1	na	no
2	ene	
3	ye	

K&Z propose that only when the most minimal features are reflected in the paradigm of agreement morphology do languages have an ArgP-projection that the verb obligatorily moves to in order to phonologically support the (rich)

agreement morphology.[3]

From a language acquisition perspective, if the agreement features reflecting the distinctions in (22) are present in the input, according to K&Z, a child postulates the ArgP projection, which hosts the agreement morphology. Consequently, if agreement morphology is phonologically dependent on the verb, e.g. appearing as an affix on the verb as in Icelandic and Yiddish (cf. 23), then the child postulates the presence of formal features on the agreement morpheme that need to be checked by the verb.

(23)   Rich agreement paradigms

	Icelandic *seg-ja* 'to say'		Yiddish *loyf-n* 'to run'	
	Singular	Plural	Singular	Plural
1	seg **-i**	seg **-jum**	loyf **-ø**	loyf **-n**
2	seg **-ir**	seg **-ið**	loyf **-st**	loyf **-t**
3	seg **-ir**	seg **-ja**	loyf **-t**	loyf **-n**

In rich agreement languages such as Icelandic and Yiddish, the verb moves to the head of ArgP.

However, if the agreement morphology reflects fewer distinctions than those in (22) or none at all, a child cannot postulate ArgP and therefore her grammar *cannot* project it. For example, neither Danish, which does not have any distinctions in its paradigm, nor English, which only has one distinct form for the third person singular, are predicted to have the ArgP projection:

(24)   Poor agreement paradigms

	English *to eat*		Danish *kast-e* 'to throw'	
	Singular	Plural	Singular	Plural
1	eat	eat	kast **-er**	kast **-er**
2	eat	eat	kast **-er**	kast **-er**
3	eat **-s**	eat	kast **-er**	kast **-er**

---

3. The minimality of the paradigm in (22) however has been challenged by Harbour (2015), who has shown that there are a number of languages in which free pronouns have even fewer distinctions than those in (22). Nonetheless, all counterexamples that Harbour (2015) reports compensate for the absence of distinctions through the use of either agreement morphology or the nominals, thereby exhibiting a richer set of distinctions, all of which incorporate at least a three-way person distinction and a two-way number distinction.

I return to this question in §3, where I report on a typological study on person and number features that shows that arguments in all the hitherto-documented languages always minimally exhibit a three-way person distinction and a two-way number distinction. I refer to this as the "Person Number Universal" (PNU). Although K&Z adopted typological information from sources that were incorrect, §3 demonstrates that the claim that arguments conform with PNU ultimately proves to be correct. Importantly, according to K&Z, iff the PNU distinctions are minimally reflected in the agreement morphology in a particular language, then the language has rich agreement.

Therefore, the structure of the child's grammar cannot have 'v-to-Arg^0' movement, simply because paradigms such as the ones in English and Danish do not morphologically reflect the presence of [±speaker], [±participant], [±plural] features to allow for the postulation of Arg^0 during acquisition. ArgP is therefore not part of the child's grammar. Consequently, if no other operations drive the verb outside of vP, then the verb is expected to remain *in situ.*

2.4.3   Analysis

To account for the surface word orders predicted by the RAH and to formalize the distinctions between rich and poor agreement languages, Koeneman and Zeijlstra (2014) argue that in poor agreement languages the verb remains inside vP, whereas in rich agreement languages the verb moves to a position above vP, to the head of ArgP. The existence of the ArgP projection where the verb surfaces is evidenced by the fact that adverbs and negation, which are traditionally argued to be located at the left edge of vP, follow the verb. This is illustrated in the following structure:

(25)

```
            Arg′
          ╱      ╲
      Arg⁰        vP
      ╱╲        ╱    ╲
   V affix   AdvP     vP
                    ╱    ╲
             ⟨DPsub⟩      v′
                        ╱    ╲
                      v⁰      VP
                             ╱  ╲
                           V⁰   DPobj
```
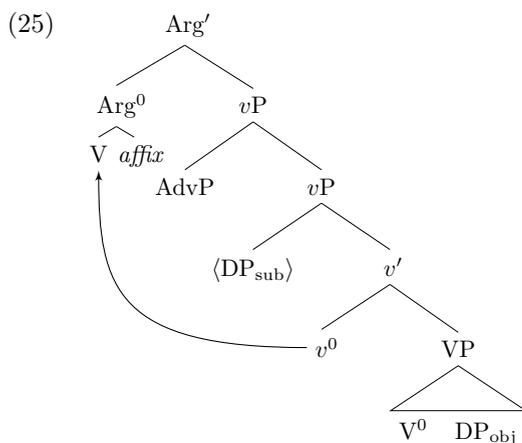
Since languages can systematically exhibit rich subject and object agreement morphology, the theory by K&Z would then posit that both subject and object are grammaticalized, each requiring an Arg projection to host the agreement morphology. In order for the agreement morpheme at Arg^0 to agree with the subject DP, it must be structurally closer to the subject DP than to any other DP (e.g. object DP). It is standardly assumed that the arguments of the verb (i.e. subject and object DPs) merge first with the verb, with the subject being base-generated at the higher specifier position, spec,vP. This means that the ArgP projection that hosts the subject agreement morphology must be vP-external, which gives us the following hierarchy of projections: ArgP > vP > VP, where ArgP immediately dominates the position where the subject DP at spec,vP.

One important aspect of K&Z's theory is that the motivation for Arg^0 provides an answer to the question *why* there is an agreement projection. This stands in contrast with the analogous Agr^0 head in Chomsky (1995), which is simply postulated because it reflects the fact that the subject agreement morphology surfaces above vP. Thus, unlike the standard AgrP, ArgP is naturally unified with other functional projections (e.g. TP, AspP) that host elements that semantically apply to the verb phrase.

With respect to the movement of the verb to Arg^0, it is standardly assumed that agreement morphology, surfacing either as affixes or clitics, requires phonological support. For Koeneman and Zeijlstra's (2014) analysis of verb movement, any implementation of earlier proposals can be applied (e.g. Stray Affix Filter cf. Lasnik 1981, 1995; Baker 1988; Rohrbacher 1994, 1999). In line with this, Arg^0 requires an adjacency relation for phonological support, thus driving the verb to the front in order to satisfy this requirement. Given that ArgP is projected above vP and given the generally adopted ban on downward movement (though see Richards (2004)), the agreement morpheme merged at Arg^0 cannot move downwards. Instead, it is the verb that must move upwards. The upshot of this account is that if the agreement morpheme is a phonologically dependent element, the verb will move upwards. In contrast, if the agreement morpheme is independent then verb movement is not required.[4]

One issue for the K&Z analysis that I already touched on in §2.3 pertains to the placement of adverbs in Regional Northern Norwegian. The relevant example is repeated in (26), where the verb can optionally precede or follow the adverb:

(26)   *Regional Northeren Norwegian* (ReNN) (Bentzen et al. 2007:204)
        Æ   vet   koffer ho Hedda ⟨*kjøpe*⟩ **ifte** ⟨*kjøpe*⟩ sko.
        I   know   why   she Hedda buys   often buys   shoes
        'I know why Hedda often buys shoes.'

K&Z reject the verb movement analysis in (26), based on the position of adverbial negation, which must precede the verb:

(27)   *Regional Northeren Norwegian* (ReNN)
        . . . ettersom nån   studenta ⟨**ikke**⟩ *leverte*   ⟨***ikke**⟩ oppgaven.
        . . . as   some students not   handed.in   not   assignment.DEF
        '. . . as some students {not handed in / didn't hand in} the assignment.'

Their argument is that since negation is a vP-adjunct, it must be a valid diagnostic for verb movement to a vP-external position. It then follows that the only solution for the adverb *ifte* 'often' must be that it can optionally be adjoined to either vP or VP. Although this solves the problem for ReNN, there

---

4. Although in many Indo-European languages the role of providing support for the agreement morphemes is, to my knowledge, always taken up by the verb, in many non-Indo-European languages other elements take up this role, as we will see in Chapter 6 and Chapter 7.

appear to be no coherent answers to the question why this optionality is absent in all the other hitherto-investigated poor agreement languages.

In sum, the K&Z analysis is rigidly bidirectional. Languages with the agreement paradigm containing the features reflecting at least the distinctions in (22), are always expected to have ArgP projection and therefore verb movement, iff the agreement morphology is phonologically dependent on the verb. With fewer distinctions than in (22), ArgP is not projected, and verb movement cannot take place. In such cases the verb is expected to remain *in situ* in controlled conditions.

2.4.4 Predictions

Just as Rohrbacher (1999), K&Z predict that only two types of languages can exist given the two variables: i) a type in which agreement is rich and in which vP-adjuncts must intervene between the verb and its direct object, and, ii) a type in which agreement is poor and in which vP-adjuncts cannot intervene between the verb and its direct object. The predictions are summarized in Table 2.3.

	no v-to-I	v-to-I
Rich agr.	✗	✓
Poor agr.	✓	✗

Table 2.3 Predicted typology of languages according to the bidirectional RAH

2.5 Discussion

For the typological investigation in this dissertation I evaluate the bidirectional RAH with the new data from non-IE families. Crucially, as it will become clear from the empirical observations in Chapter 6 and Chapter 7, none of the investigated languages falsifies the bidirectional correlation between the richness of agreement morphology and verb movement. Consequently, the analyses are developed in the framework that yields the most rigid (bidirectional) RAH (cf. Koeneman and Zeijlstra 2014). This approach was implemented for two additional reasons.

First, the K&Z approach (and the approach by Rohrbacher (1999)) is *prima facie* easier to falsify in the context of the RAH than the B&T approach. This is because the K&Z approach predicts that only two language types are possible when it comes to the alleged correlation between the richness of agreement morphology and verb movement, as ArgP is bidirectionally correlated with the presence of rich agreement. In contrast, the B&T approach predicts three language types, since split and unsplit IP structures are both expected to be possible in poor agreement languages.

Second, in K&Z's approach the postulation of (*v*P-external) functional structure hosting verbal morphology (i.e. ArgP) entertains a semantic relation with *v*P (Like for example TP or AspP). This is directly tied to the presence and the richness of features in the input during language acquisition, and only on the basis of sufficiently rich agreement features in the input can the syntax of an L1-learning child project additional functional structure. In contrast, the two AgrP projections of the split-IP structure in B&T's approach are rather anomalous in this regard.

Although K&Z on the one hand and B&T on the other follow the same approach in treating morphology as completely post-syntactic, meaning morphology cannot drive syntax to generate a particular structure, they crucially differ in the sense that for K&Z morphological complexity (or a lack thereof) in the L1 input indirectly shapes the generation of syntactic structures, whereas B&T do not (explicitly) relate the two components; morphology follows syntax and the two are always independent of each other. In essence, the K&Z approach does not move away from a mainstream approach in generative grammar (i.e. morphology is post-syntactic), with the advantages of being empirically grounded in the input and, more easily falsifiable, while minimizing theoretical machinery.

2.6   Summary

This chapter reviewed several theoretical accounts with different predictions w.r.t. the alleged correlation between verb movement and the richness of agreement morphology that gave rise to the unidirectional and bidirectional versions of the RAH. The discussion outlined recent disagreements as to which of the two versions is valid, and, given the re-evaluation of the arguments, concluded that the strong bidirectional RAH along the lines of Rohrbacher (1999) and Koeneman and Zeijlstra (2014) accounts for the hitherto investigated Indo-European languages. This conclusively warrants further evaluation of the RAH by expanding the available data to non-Indo-European languages, the main goal of this dissertation.

In the next chapter I address the question when agreement counts as rich, by conducting a typological survey into the properties of person and number features that occur in arguments and in particular in pronouns, since pronouns are the richest type of DPs in terms of person and number properties. This will provide us with a definitive way of determining the properties of agreement in any given language, and ultimately allow us to assess whether or not the 'grammaticalized argumenthood' account by Koeneman and Zeijlstra (2014) can be sustained.

On the universality of person and number

The goal of this chapter is to determine the number and type of features needed for agreement morphology to be rich, as this is a key variable for the Rich Agreement Hypothesis (RAH). As already touched upon in Chapter 2, for the purposes of this study I adopt the idea that a 'rich' set of agreement features reflects the minimal set of person and number features that arguments in all natural languages must exhibit, in line with Koeneman and Zeijlstra (2014), who have theorized that the agreement features have to be sufficiently rich for the syntax to merge them as a separate, vP-external head. According to Koeneman and Zeijlstra (2014), rich agreement morphology reflects at least those person and number features that are found in the arguments of all natural languages, whereas poor agreement morphology reflects fewer person and/or number features. This naturally leads to the main objective of this chapter, which is to determine the most minimal set of featural distinctions yielded by the semantic properties of different types of argument DPs that all natural languages seem to exhibit. In particular, the focus in this chapter is largely on the properties of pronouns, since pronouns exhibit the most featural distinctions in person and number. Crucially, I demonstrate that person and number features as they occur in pronouns and nouns, as well as agreement morphology, are coupled together, realizing in concert a three-way person distinction and a two-way number distinction minimally.

These distinctions have already been proposed as universal for pronouns alone with Greenberg's Universal 42, which states that "all languages have pronominal categories involving at least three persons and two numbers" (Greenberg 1963:96). However, while Universal 42 is constrained to pronominal categories, it is important to realize that pronominal categories fundamentally are

a subset of nominal categories. And while, as this chapter shows, Universal 42 does not hold in some languages, the universality of a three-way person and a two-way number distinction readily holds once we include (along with pronouns) two other domains that also productively mark person and number features: nominals and agreement morphology. Consequently, given that domains of pronominals, nominals, and agreement morphology function in concert, as they all mark person and number of arguments, this chapter demonstrates that all languages have categories that yield arguments with at least three persons and two numbers. I refer to this as the "Person-Number Universal" (PNU). In the context of RAH, a language is "rich" if and only if it minimally reflects the PNU features in its agreement paradigm.

In order to show that PNU holds across all languages, I discuss the languages that have been hitherto argued to challenge Greenberg's Universal 42 (most recently Harbour 2015) and show that the objections to Universal 42 do not hold water for PNU. Furthermore, I expand the available data by providing the results of a cross-linguistic survey that seeks to determine the most minimal set of features that all languages exhibit in their pronouns. The data are mostly drawn from the "Free Personal Pronoun System database" (Smith 2013), an online database documenting free pronouns in 456 languages. In addition to what has been collected from Smith (2013), other instances of minimal pronominal systems have been selected from a number of studies, including Noyer (1992), Harley and Ritter (2002), Cysouw (2009), and Harbour (2015). In particular, those languages that appear to challenge Greenberg's Universal 42 (and thus possibly challenging PNU) have been selected for analysis on the basis of the hitherto attested morphological distinctions.

The survey reveals two important observations. First, nearly all languages that lack certain person or number features in their paradigms of free pronouns systematically compensate for this by realizing the missing features in the agreement morphology, suggesting that the grammar does encode the features that appear absent at first sight. Second, languages that have been reported to lack morphological number features in both free pronouns and agreement paradigms, such as Classical Chinese (cf. Norman 1988:120) and Pirahã (cf. Harbour 2015), implicitly specify the number feature by constraining particular pronouns to referents that have specified number. The same holds for person, as the "lack" of featural distinctions in free pronouns, as it has been reported to be the case in Sanapaná (cf. Harbour 2015), is compensated for by the features in the nominal domain, where the second and third person syncretism is distinguished with the use of nominal DPs (cf. §3.2.4). Importantly, the two observations come unexpectedly only for those theories that do not take both person and number to be a part of the minimal set of pronominal featural distinctions (e.g. Harley and Ritter 2002).

This chapter is structured as follows: §3.1 proposes a theory for person and number as universal features of arguments. It is argued that the three-way distinction in person and the two-way distinction in number follow directly from the notion of semantic markedness. In §3.2 I conduct a typological in-

vestigation describing a number of impoverished pronominal paradigms across typologically different languages and argue that, while certain paradigms might exhibit fewer person and number features then stipulated with PNU, such poor sets are supplemented with morphology that occurs elsewhere in the clause, and thus the overall set of features conforms to PNU. I provide a descriptive typology of person and number in argument DPs. In §3.3, I suggest two potential ways of analyzing the facts from §3.2. Additionally, I show that the variation that we find with respect to pronominal systems can be accounted for through grammatical operations. §3.4 motivates the attested set of minimal person and number features, and links all features of pronominal systems to domain-general cognitive capacities.

3.1 Theoretical Background

As already introduced above, the Person-Number Universal (PNU) predicts that all languages must at least incorporate a three-way person distinction and a two-way number distinction in their argument DPs. To achieve these distinctions, natural languages can vary in two different respects. First, some languages mark particular featural distinctions by employing complementary features, where the first person pronoun has [speaker, participant] features, while the second person, [participant, addressee]. Thus, the first and the second person share the [participant] feature, and each has a distinct feature: first person has [speaker] and second [addressee]. In contrast, other languages show asymmetries, where the first person has both a specific (e.g. [speaker]) and a sharing feature (e.g. [participant]) while the second person has no distinct second person feature and contains only the sharing [participant] feature.

Second, languages can vary in terms of the semantic complexity in the types of argument DPs that they have, as, for example, some languages can potentially have a more complex set of features marking a second person pronominal argument, while others can have a featurally more complex first person. These are the loci of variation for any natural language, and, consequently, the exact semantic properties of person and number features may vary from one language to another. However, what I argue in this chapter and support empirically is that, irrespective of the exact underlying set of features, all languages conform with PNU. Let's spell out some of the assumptions and have a look at what a theory of person and number should look like that predicts PNU to be true in any given language.

3.1.1 Assumptions

For the purposes of the discussion here I adopt a privative feature system as proposed in Harley and Ritter (2002), in which the distinctions between two elements arise due to one of them containing a specific feature, say [F], while the other lacks [F]. Furthermore, based on the idea of semantic marked-

ness from Sauerland (2008), I assume that a two-way distinction between two (pro)nominal arguments can arise in two different ways. In one alternative, they can be equally specific in terms of the semantic features, where one of the arguments contains a feature [F] of a super-feature [S], whereas the other argument contains a feature [G] of the super-feature [S]. In this sense, the argument with the feature set [S,F] can under no circumstances refer to an entity that contains the features [S,G], or vice versa. These feature relations are represented in (1), where [F] does not entail [G], and [G] does not entail [F], and where [S] entails both [F] and [G]:

(1)   [S]
            /   \
         [F]   [G]
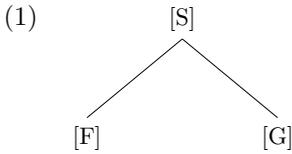
Essentially, an argument containing the features [S,F] and an argument containing the features [S,G] have a symmetric relationship, as characterized by Zeijlstra (2015).

The other alternative is that the relationship between the arguments is asymmetric, as one argument expresses a sub-feature [F] of a super-feature [S], whereas the other argument only expresses [S] but does not carry any specific sub-features. This yields the following representation:

(2)   [S]
        |
        |
       [F]
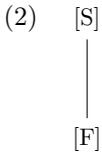
What follows from this is that an argument that contains [S,F], call it A, entails the argument B that contains only [S]. This means that B is "semantically less marked" than A and that under certain conditions, as demonstrated in Sauerland (2008), B can be used to refer to A as they share the same feature, namely [S]. Let's have a look at how the distinctions in (1) and (2) are reflected in concrete cases and how this is tied in with Sauerland's (2008) notion of semantic markedness.

Take for example the realization of gender features in English, where we find two elements, the pronouns *his* and *her*, which are equally marked with respect to the gender category, as the following example suggests:

(3)   *English* (Zeijlstra 2015, adapted)
      a.   Everybody who lost *his* credit card must block it.
      b.   Everybody who lost *her* credit card must block it.

In (3a) all the individuals referred to by *everybody* must be masculine as marked by the masculine pronoun *his*, whereas in (3b) all individuals must be feminine

as marked by the pronoun *her*. This observation suggests a symmetric gender structure. The two genders, masculine and feminine, are thus equally marked with a [masculine] and a [feminine] feature, respectively, and as such cannot refer to the entities with opposite features.

In contrast to this case from English, Zeijlstra (2015) reports that Dutch gender is structured differently as one gender appears to be more semantically marked than the other. Specifically, what is standardly considered to be a masculine pronoun *zijn* 'his' can in fact refer to individuals of different semantic gender. In (4a) the individuals marked by *iedereen* 'everybody' can be either masculine or feminine, whereas in (4b) *iedereen* marks a group of individuals with the feminine gender only.

(4)   *Dutch*

    a.   Iedereen   die zijn kredietkaart verloren heeft. . .
        Everybody who his credit-card   lost   has. . .

    b.   Iedereen   die haar kredietkaart verloren heeft. . .
        Everybody who her   credit-card   lost   has. . .

As such, the Dutch pronoun *zijn* in (4) does not contain a specific gender feature and can refer to individuals of both genders. In contrast, the pronoun *haar* is more specific and it therefore contains the feature [feminine] and can never refer to entities with masculine gender. Consequently, unlike in the English example, where the features marking the pronouns *his* and *her* are equally specific having a sisterhood-like relation as shown in (5a), the Dutch pronouns *zijn* and *haar* have an entailment (mother-daughter) relation that follows from the super-feature [gender] that marks the pronoun *zijn* that entails the [feminine] feature marked by the pronoun *haar*, illustrated in (5b).

(5)   Feature representations for gender in English and Dutch

    a.   b.

                 [gender]   [gender] ⇒ *zijn*

   [masculine]   [feminine]   [feminine] ⇒ *haar*
      ⇓   ⇓
     his   *her*
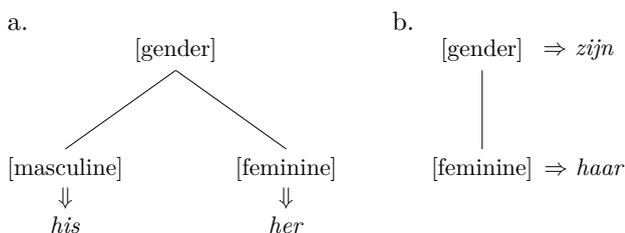
The representation in (5a) and (5b) concretely instantiate the structures in (1) and (2), respectively. Let's now consider person features and derive possible structures that map the relations yielding a three-way distinction that the person-number universal predicts.

3.1.2   Person

For person, PNU predicts a three-way distinction, for which the structure mapping the relation must include at least three features, one of which is the super-

feature of the other two. This gives us two possibilities, as given in (6), where I represent the actual semantic features (e.g. [speaker], [participant], and [addressee]), because PNU is a statement about the distinctions, and it does not say anything about the semantic properties of individual features.

(6)   Feature representation for person

a.   b.

            [person]   [person]
               | |
         [participant]   [participant]
            /   \ |
    [speaker]   [addressee]   [speaker] / [addressee]
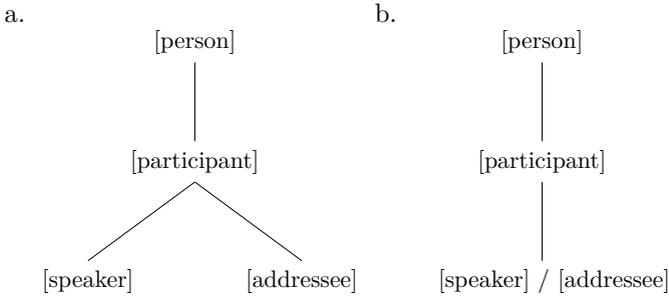
There are two important assumptions underlying these structures. First, comparable to the gender example above, semantic features marking the arguments of different person can be featurally asymmetric, yielding a unary structure as in (6b), where the feature [speaker] entails the feature [participant]. In contrast, the features [speaker] and [addressee] in (6a) do not entail each other. The structure in (6b) is attested in Dutch where the second person pronoun bears the feature [participant] and can be used, in certain contexts, to refer to the more specific first person pronoun. For example, Zeijlstra (2015) illustrates a case from Dutch football jargon were the players tend to use the pronoun *je* 'you' to describe how they played the game, thus referring to the first person. This naturally follows from the fact that *je*, which only has a [participant] feature, is not prohibited from referring to a first person, as the [speaker] is included in the set of participants.

(7)   Feature representation for person in Dutch

        [participant] ⇒ *je*
               |

        [speaker]   ⇒ *ik*
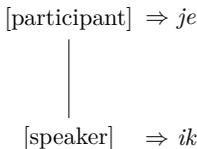
In contrast, this kind of entailment is absent in other languages where the second person does not entail the first, and where the first and the second person have a sisterhood relation as in (6a). In such cases the second person must contain a feature that is semantically unrelated to the [speaker] feature. For example, the features of the Serbo-Croatian personal pronouns, *ja* 'I' and *ti* 'you', do not have an entailment relationship and are equally marked, *ja* bearing a [speaker] feature and *ti* [addressee].

(8)   Feature representation for person in Serbo-Croatian

```
                    [participant]
                   /            \
                  /              \
           [speaker]          [addressee]
              ⇓                    ⇓
             ja                    ti
```
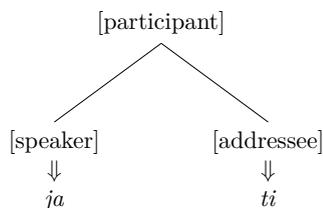
The second assumption underlying (6) follows from the nature of privative features. That is, if the first and the second person are marked by distinguishing semantic features like [speaker] for the first and [addressee] for the second, then the third person can be semantically unmarked for person. Consequently, the semantics of the third person would then contain the root [person] features in (6a-b). Importantly, (6a-b) predicts that a third person argument can be semantically entailed by both the second and the third. This is straightforwardly confirmed in sentences like *Humans are peculiar creatures*, where the argument *humans* can also refer to the referents containing features of the first and the second persons.

Although, as I have illustrated above, the first person can be more complex than the second and the third, and the second person can be more complex than the third, the structures in (6) fundamentally do not exclude a paradigm with a different featural content. In other words, languages in which a second person is more complex than the first, or a language in which a third person is more complex than the second are logically possible. For example, the feature [honorific] can be present in the second person pronoun along with the feature [addressee] making it more complex than the first which only has [speaker].

3.1.3   Number

Before discussing the features needed for the minimal two-way distinction for number, it is important to note that languages employ two kinds of number systems: minimal-augmented and singular-plural. Minimal-augmented systems are characterized by n-many distinctions — where n includes singulars, duals, trials. . . n (also paucal[1]) — as distinct from plurals, which include a larger set of individuals.[2] This stands in contrast with the singular-plural system characterized by a one vs more-than-one distinction. I treat this distinction as trivial, fundamentally, since the singular-plural system is essentially a subtype

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1. Paucal is characterized as a small number usually two or more of (typically equivalent) individuals without being specified with the exact (natural) number.
2. See Thomas (1955) and more recently Krifka (2006) for a discussion on minimal-augmented systems. In a nutshell, the existence of minimal-augmented systems is motivated by the fact that some languages use the same morphemes to mark singulars and duals together as opposed to plural. For example, this is found in the verbal agreement paradigm of Winnebago and Svan.

system of minimal-augmented with only one minimal set with the value of 1, while any other set with a value greater than 1 is augmented, as the partitioning in the following Figure suggests:
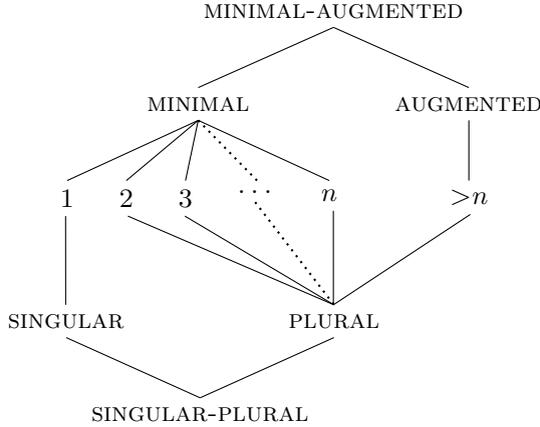
Figure 3.1 Morphological partitioning of number systems

In this sense, all languages uniformly employ minimal-augmented systems. I will therefore use the term minimal-augmented as the cover term for both types.

As for the number features needed to yield at least a two-way distinction, I claim that any of the following two representations that might be attested in any given language are sufficient:

(9)   a.   b.
               [number]   [number]

         [minimal]   [augmented]   [minimal] / [augmented]

The representation in (9a) accounts for the languages that mark both minimal and augmented, while (9b) accounts for the languages that morphologically mark only one argument that can have a specific value. This could be any number (e.g. either singular, or dual, or trial, or plural, etc.). It is clear that (9a) must make at least a two-way distinction, as minimal and augmented are realized with distinct (specific) arguments. But (9b) is less obvious, as it represents the cases in which only forms with one specific value are attested. Crucially, even a language that morphologically realizes only minimal (or only augmented) arguments must make them distinct from those arguments that do not specify for number. These "numberless" arguments can equally refer to an individual or a group of individuals. It follows then that the distinction in (9b) is a two-way distinction, not between minimal and augmented, as is the case

in (9a), but between an argument specified for number on the one hand and an argument not specified for number on the other.

A straightforward illustration of this are numberless pronouns, such as the English pronoun *you*, which can be assigned to referents consisting of any number of individuals. In contrast, the English pronoun *I* can only refer to a singular referent, while *they* can only be assigned to plural referents. This gives us the following set of features for the three pronouns, with the pronoun *you* being unspecified for number:

(10) Distinct number features in English pronouns

    a.   you = [number]

    b.   I = [minimal]

    c.   they = [augmented]

While the number distinction for English is a three-way number distinction, a two-way number distinction would involve only a minimal or only an augmented argument, on the one hand, and a general (i.e. numberless) argument, on the other. Crucially for our purposes, any such language does not falsify PNU, because the presence of both numbered and numberless arguments yields a two-way distinction.

Note that the structures for number in (9) fundamentally pattern together with both person and gender, albeit number allowing for fewer distinctions than person. For example, recall that the Dutch pronoun *zijn* can refer to a more specific (feminine) gender feature. Similarly, the Dutch second person pronoun can entail the first person pronoun. Both of these realizations of person and gender features are comparable to a numberless argument in its relation to a "numbered" argument as in (9b), as the feature set of a numbered argument entails those of the numberless argument.

In the same fashion, the absence of a gender entailment between the English pronouns *his* and *her* is comparable to the non-entailment of singular and plural in (9a). Note that while (9a) predicts a language with a three-way number distinction, singular, plural, and numberless, it can potentially underlie a language in which we find a two-way distinction with only singular and plural, as, for example, a language in which all countable nominals (mass nouns aside) are specifically singular or specifically plural.

In light of the discussion thus far, the relevant question arising is why it is the case that only a two-way number distinction is sufficient, and why not three distinctions or more. To answer this question we must first ask if there are properties of semantic number that are perhaps more abstract and present in all types of number systems. The answer to this lies in the fact that all number systems, singular-plural and minimal-augmented, isolate/identify individuals or groups of individuals within a larger undefined set of individuals or a set of groups of individuals. I call this property 'individuation' — a term adopted from Harley and Ritter (2002) — and propose that in order for the individuation to express itself, a minimum of a two-way number distinction in any

language is essentially sufficient, though additional number distinctions need not be excluded. Consequently, the individuation property could in principle be a universal property of language, and thus a universal property found in argument DPs.

However, individuation can also be a property belonging to other semantic features. For example, the gender feature [masculine] selects (i.e. individuates) a male in a set where all other members are females. Arguably, the same can be said for the person feature [speaker], which selects just one individual, but not multiple individuals, since, as Harley and Ritter (2002:503) point out, "we never speak in choruses." The question we might ask at this point is, since person can individuate with a feature like [speaker] and person features are universal, why does language require number? Since a feature like [speaker] must select for a single individual, as Harley and Ritter suggest, the answer in my view is that the number feature [singular] must underlie the [speaker] feature. In the same vein, the presence of number also gives rise to 'clusivity', a term used to cover such distinctions as, for example, the distinction between the first person inclusive and exclusive pronouns. Although clusivity is sometimes considered a separate property from number (cf. Harbour 2015), I propose that at a fundamental level number is a primitive feature that underlies such complexities of person features.

3.1.4 Further considerations

The claims as to what constitutes the most minimal pronominal systems are based primarily on the pronominal features occurring as the properties of free pronouns, whereas features occurring elsewhere in the structure of the clause (e.g. agreement morphology) have been excluded. In light of this, I rely on two insights in the survey of pronominal systems below. First, the presence of features that are not morphologically realized on the controlling (free) pronoun, but on agreement morphology, is assumed to indicate that the pronominal system is richer than what we find in free pronouns only.

Second, as alluded to in the previous section, any number of specific features for either person or number, say n, yields $n + 1$ distinctions. Concretely, the presence of just one specific number feature in a particular language, for example [singular], is sufficient for a two-way distinction. This follows naturally from the fact that the [singular] morphological form cannot be linked to referents of non-singular number values. Similarly, the presence of two specific person features, for example [speaker, participant] is sufficient for a three-way distinction, as morphological forms that bear either [speaker] or [participant] cannot be linked to referents that are not speakers or participants, respectively.

In light of these two insights, the question arises whether the pronominal features needed for a three-way person distinction and a two-way number distinction constitute the most minimal set of pronominal features possible, as has been hitherto claimed to be the case in the paradigm of free pronouns in Kuman (cf. Cysouw 2009; Koeneman and Zeijlstra 2014):

(11) Pronouns in Kuman

	Singular	Plural
1	na	no
2	ene	
3	ye	

In order to answer this question, a small typological survey of languages with impoverished pronominal systems was conducted. The results of the survey are presented in the remainder of this chapter.

Before I present the data, the discussion that follows comes with one caveat. That is, although I will somewhat informally use the labels [speaker] and [participant] to refer to the two distinguishing person features that are present in all languages, the claim that I make is that there are always at least two person features, while remaining agnostic as to their exact semantic properties, since it is plausible that in language A the person features are fundamentally different from those found in language B. Specifically, the distinguishing features for three persons could for example be [speaker] and [addressee], with the entire set of features in (12), or the distinguishing features could be [addressee] and [participant], as in (13):

(12) Three-way distinction with the [addressee] and [speaker] features

	Features
1	[speaker]
2	[addressee]
3	[person]

(13) Three-way distinction with the [addressee] and [participant] features

	Features
1	[participant]
2	[addressee, paricipant]
3	[person]

Note that there is no strict requirement for any given feature as the semantic properties of features can vary from language to language. The same caveat applies to the number feature, for which I use different labels depending on the language. That is, particular languages could use a variety of different features, e.g. [singular], [dual], [plural], [augmented] etc..

What is then important to note is that each pronoun in any given language requires an in-depth investigation for its exact semantic properties, an effort well beyond the scope of this dissertation. The only claim that I make here is that there are always at least two distinguishing person features and one distinguishing number feature, but that there can be a variation between the languages in terms of the exact semantic properties of the features. This claim

then correctly predicts that languages can have an option of selecting the feature inventories in (12) or (13), or any different inventory that involves at least two semantic features distinguishing at least three persons.

In the next section, I review 'impoverished' pronominal systems as being representative of the properties of argument DPs, and demonstrate that all (attested) languages indeed utilize at least a three-way person and a two-way number distinction.

3.2   Survey of pronominal systems

The languages investigated here have been selected from "Free Personal Pronoun System database" (FPPS), an online database that contains data from 456 languages (Smith 2013). A number of additional languages were drawn from the available literature on pronominal systems (e.g. Noyer 1992; Harley and Ritter 2002; Cysouw 2009; Harbour 2015). All languages in the FPPS database have distinct first and second person pronouns. Those languages that appear to challenge the notion that at least two person features and at least one number features are the most minimal features possible were selected for further inquiry. Subsequently, additional data for these languages was collected from other sources (available literature and informants) and was then double-checked. A number of languages turned out to have a richer set of pronouns than what the database indicated and have accordingly been excluded from further considerations. The final list of languages exhibiting impoverished pronominal systems to be reviewed in this section is given in the following table:

Language
Classical Chinese
Japanese
Thai
Kawi
Jarawa
Pirahã
Wāmbule
Oneida
Tiwa (Northern)
Jaqaru
Winnebago (Hocąk)
Kiowa
Mangarayi
Jemez
Zuni
Sanapaná

Table 3.1 List of languages exhibiting impoverished pronominal paradigms

In the remainder of this section I discuss all languages included in Table 3.1. I begin by discussing languages that appear to lack certain number distinctions

in §3.2.1 and §3.2.2, and then move on to the languages that appear to lack certain person distinctions, discussed in §3.2.3 and §3.2.1.

3.2.1 Number in disguise

In this section I review Classical Chinese, Japanese, Thai, Kawi, Jarawa, and Pirahã, all of which *prima facie* appear to challenge PNU, in particular with respect to the complete absence of number features. However, upon closer scrutiny the discussion below reveals that in fact all of the languages, even if minimally, make at least two featural number distinctions.

Classical Chinese

The pronominal system in Classical Chinese does not morphologically mark plurality. This observation has been generally assumed to be correct for Classical Chinese (cf. Norman 1988; Corbett 2000), giving the impression that Classical Chinese only exhibited pronouns that had a three-way person distinction, whereas the number feature was assumed to be absent altogether, hence the syncretic singular/plural paradigm as illustrated in (14):[3]

(14)   Morphological distinctions in the pronominal system of Classical Chinese (to be revised)

	Singular	Plural
1	wú, wǒ, áng	
2	ěr, ruò	

This paradigm straightforwardly suggests that the number feature cannot be considered to be part of the most minimal set of pronominal features. However, diachronically, the plural pronouns for the first and second person in fact did exist before the period in which Classical Chinese was spoken, namely in Pre-Classical Chinese (Meisterernst 2012), as the paradigm here indicates:

(15)   Pronouns in Pre-Classical Chinese
       (Meisterernst 2012:145, adapted)

	Singular	Plural
1	yú, yǔ, yí, zhèn	wú, wǒ, áng
2	rǔ	ěr, ruò

By the time Classical Chinese was spoken, the plural pronouns in (15) lost the number feature and became general pronouns that could be linked to singular

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3. Meisterernst (2012) does not discuss any third person pronouns and I therefore do not have the data that I can include in the paradigm here. However, for our purposes the data from the first and second person pronouns, as I explain here, is sufficient to show that the language utilizes number.

and plural referents. Nevertheless, the remaining pronouns continued to be specific for singular, yielding the following pronominal system:

(16)   Pronouns in Classical Chinese
       (Meisterernst 2012:145, adapted)

	Singular	Plural
1	yú, yǔ, yí, zhèn	
1	wú, wǒ, áng	wú, wǒ, áng
2	rǔ	
2	ěr, ruò	ěr, ruò

As the paradigm in (16) shows, the first and second person singular pronouns from Pre-Classical Chinese retained the number feature and the semantic specification for singular. This is crucial because it shows that the gray slots, indicating morphological absence for the first and second person plural in (16), must be present in the paradigm of Classical Chinese for the purpose of constraining the set of potential referents that the singular pronouns could be linked to. Consequently, Classical Chinese pronouns must make a two-way number distinction.

From a language acquisition perspective, a child learning Classical Chinese would have to be aware of the distinction between singular and plural if she is to learn that the first and second person singular pronouns can only be used for singular subjects. This leads to the conclusion that while plural was not morphologically marked on either singular or general pronouns, the system must have incorporated the [singular] feature on the first and second person singular. Consequently, although Classical Chinese does have fewer specific pronominal features than Kuman, both languages contain features distinguishing (at least) three persons and two numbers, with the following features in Classical Chinese:

(17)   Pronominal feature specifications in Classical Chinese

	Pronoun	Features
1	yú, yǔ, yí, zhèn	[speaker, participant, **singular**]
1	wú, wǒ, áng	[speaker, participant]
2	rǔ	[participant, **singular**]
2	ěr, ruò	[participant]

(17) shows that Classical Chinese has a two-way number distinction in its pronominal system, and thus conforms with the PNU predictions, yielding the following number representation, based on the assumptions outlined in §3.1:

(18)   Number distinctions in Classical Chinese

[number]   ⇒   *wǒ, áng, ěr, ruò*

[singular]   ⇒   *yú, yǔ, yí, zhèn, wú, rǔ*

Japanese

A similar analysis can apply to the Japanese (pro)nominal system, which also appears to lack plurality in its pronominal paradigm. Japanese does not have specific plural pronouns comparable to the meanings of 'we', 'you.pl' etc. Instead, the plurality in the pronominal system is expressed by inflecting singular pronouns with the associative suffix *-tati* that, according to some studies (cf. Chao 1968; Iljic 1994; Martin 2004), is not a true marker of plurality as it yields the following interpretations:

(19)   *wata[ku]si*   +   *-tati*   =   *watakusí-táti*
       I   √me and others; **we
       anáta   +   *-tati*   =   *anáta-tati*
       you   √you and others; **you.PL
       anó-hito   +   *-tati*   =   *anó-hito-tati*
       he   √he and others; **they

The marker *-tati* is typically defined as an associative that when attached to a nominal element, e.g. Yoko, yielding Yoko-*tati*, means 'Yoko and associates', but not 'multiple Yokos'. In a sense the associative *-tati* is semantically more complex than a minimal plural marker as the *-tati* plurality consists of individual elements that can have different properties. This, however, does not exclude the presence of plurality in a more abstract form. Consequently, the notion that *-tati* is not a 'true' plural marker has been contested (cf. Li 1999; Ueda and Haraguchi 2008).[4] Notwithstanding, even if one were to assume that the personal pronouns *watakusí-táti*, *anáta-tati* and *anó-hito-tati* are not 'true' plural pronouns — a plausible scenario perhaps — the system still incorporates first, second, and third person singular pronouns *wata[ku]si*, *anáta*, *anó-hito*, and *anó-ko* that can only mean 'I', 'you.sg', 'he', and 'she', respectively, but cannot be linked to plural referents. Consequently, the paradigm must contain empty plural slots, as indicated in (20):

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4. Note that we observe the same situation in Modern-day Chinese and Pirahã. In Modern-day Chinese, the associative marker -*men* attaches to singular pronouns *wǒ, nǐ, tā*. Similarly, in Pirahã, as Nevins, Pesetsky, and Rodrigues (2009:391) show (contra Everett 2005), the pronouns *ti, gí*, and *hi*, have pluralized forms *tixaítiso, gíxaítiso*, and *hixaítiso*. See §3.2.1 below for an analysis.

(20) Pronouns in Japanese
      (Martin 2004:144, adapted)

	Singular	Plural
1	wata[ku]si	
2	anáta	
3	anó-hito[M], anó-ko[F]	

Comparable to the first and second person singular pronouns in Classical Chinese, the Japanese first, second, and third person singular pronouns also bear a [singular] feature. Thus, the Japanese pronominal system also incorporates at least one number feature yielding a two-way number distinction, and is no more impoverished than Kuman. In light of this, it follows that the person and number system in Japanese must incorporate at least the following set of features:

(21) Pronominal feature specifications in Japanese

	Pronoun	Features
1	wata[ku]si	[speaker, participant, **singular**]
2	anáta	[participant, **singular**]
3	anó-hito[M], anó-ko[F]	[**singular**]

The more complex associative marker *-tati* arguably bears a more complex set of semantic features, one of which could be assumed to be [plural]. However, even if we exclude *-tati*, Japanese still has at least a two-way distinction number distinction, with the same kind of representation that we have seen for Classical Chinese, and thus squarely conforms to the PNU.

Thai

According to the information in the FPPS database (cf. Smith 2013), Thai pronominal paradigm contains a large array of well over 20 pronouns, many of which express a complex system of honorifics. The database does not indicate that any of these pronouns are specified for number. However, according to Iwasaki and Ingkaphirom (2005), Thai has first person singular pronouns, and one specifically plural first person pronoun, as the paradigm in (22) shows:

(22) Pronouns in Thai
      (Iwasaki and Ingkaphirom 2005, adapted, Muansuwan Nuttanart, p.c.)

	Singular	Plural
1	phŏm/chán/dichán/khâaphacâw	
1		raw
2		khun/raw
3		kháw
3	man	

Pronouns *phŏm* 'I.m', *chán* 'I.m/f', *dichán* 'I.f', and *khâaphacâw* 'I' (formal) refer exclusively to singular referents (Muansuwan Nuttanart, p.c.). According to Iwasaki and Ingkaphirom (2005:50), the pronoun *raw* can be either first or second person in either singular or plural. *raw* can also vary depending on the speaker's age and social status. For example, Thai children use *raw* to mean 'I' whereas adults use it to mean 'we'. Also, *raw* is used as 'I' by individuals of superior rank/status when speaking to their subordinates. The pronominal paradigm in Thai is thus dynamic in the sense that it changes depending on who the speaker is.

These facts indicate that there is a conceptual application of number at work that is minimally reflected in the morphology of free pronouns. Essentially, while Thai marks number only in its first person pronoun, yielding a number distinction only in first person (unlike what we find in Classical Chinese and Japanese), all three languages minimally incorporate a two-way number distinction.

Kawi

Harbour (2015) points out that Kawi is a numberless system, having even more primitive distinctions than singular-plural. In particular, the claim is that Kawi has only a 'singular-neutral' distinction in first person pronouns, as shown here:

(23) Pronouns in Kawi
      (Harbour 2015:133, adapted)

	Singular	Plural
1	aku	
1		kami
2		ko, kita
3		ia, sira

While it is perfectly understandable that a singular-neutral distinction in Kawi is more primitive than singular-plural (as in Kuman), the notion that Kawi is therefore numberless is fundamentally flawed, as a singular-neutral distinction

(like the one in Kawi and other comparable languages) must be related to number. Even the claim 'singular-neutral is numberless' is a contradiction in terms as 'singular' in fact must mark number, and since singular pronouns cannot be linked to plural referents, the singular-plural system (i.e. number) must underlie the singular-neutral morphological forms. Fundamentally, like Classical Chinese, Kawi pronouns are built on at least a two-way distinction, despite the absence of plural pronouns.

Jarawa

According to Harbour (2015), the pronominal system of Jarawa does not exhibit number features either in its agreement paradigm or in its pronouns, as it only appears to have a set of general pronouns for three persons, as shown here:

(24) Pronouns in Jarawa
      (Kumar 2012:77, adapted)

	Singular	Plural
1	mi	
2	ŋi∼ni∼ən	
3	hi∼əhi	

While this obviously raises skepticism with regard to the universality of number, Kumar (2012) — the only source to my knowledge documenting any data from Jarawa — shows that Jarawa exhibits a productive singular-plural system in the nominal domain, as nouns are marked with plural marking suffixes:

(25) Number on nouns in Jarawa (Kumar 2012:95)

Noun	**+**	**suffix**	**=**	**Plural Noun**
pat^ho	+	-le	=	pat^hole
'arrow'		PL		'arrows'
doːjə	+	-le	=	doːjəle
'girl'		PL		'girls'

Furthermore, Kumar (2012) notes that the free pronouns in (24) also appear as prefixes on other elements, like nouns; and, although Kumar (2012) asserts that the pronominal system lacks number, he goes on to say that the person features inflect as prefixes on nouns, while the number feature inflects as a suffix (cf. 25). Once the reference is established, both the nominal and the number-marking suffix are left out and only the person marking element is used as a (general) free pronoun.

   This shows that the pronominal system of Jarawa — while not marking the number feature in its free pronouns — is parasitic on the nominal system for its number features, and while the morphological representation of number is not present in the paradigm of free pronouns in (24) or in the agreement morphology, the system borrows the morphology from the nominal system.

This is simply another way of externalizing number and it does not challenge the notion that the two-way number distinction is present. Jarawa number representation for (pro)nominal arguments then follows as given here:

(26)   Number distinctions in Jarawa

      [number]   ⇒ *mi, ŋi∼ni∼ən, hi∼əhi*

      [plural]   ⇒ *-le*

Pirahã

Harbour (2015), in addition to Jarawa, also points out that Pirahã lacks number in its set of free pronouns given here:

(27)   Pronouns in Pirahã
      (Harbour 2015:130, adapted)

	Singular	Plural
1	ti	tiaítiso
2	gíxai	gíxaítiso
3	hi	hiaítiso

Initially, Sheldon (1988) reported that the Pirahã pronouns mark number, as illustrated in (27). The same has also been assumed by Nevins, Pesetsky, and Rodrigues (2009), who challenge the Pirahã exceptionality by showing that the pronouns pattern with those found in Mandarin Chinese, and that neither language poses a challenge to PNU. However, Harbour (2015) reports that Sheldon has retracted his initial claim and that he now believes that the non-inflected pronouns are in fact general pronouns that can refer to either individuals or groups of individuals.

Assuming Sheldon's (1988) new position is correct, another question remaining is whether these inflected forms are plural pronouns. According to Harbour (2015), the suffix *xaítiso* is not a plural marker, but simply means something "along the lines of 'also, in conjunction, too'" (p. 130) and that only in some cases does it approach the meaning of plurality. Furthermore, Harbour points out that plurality can be expressed by a range of elements with commitative, associative and grouplike markers, as shown here:

(28)   *Pirahã* (Harbour 2015:130)
     a.   ti gíxai pío ahá p- i-   i
          1 2   also go IMP PROX EVID
          'I and you / We are going.'

b. ti gíxai xig- o xopaohoa- i- baí
    1 2 ASSOC LOC work PROX INTNS
    'I work a lot with you / We work a lot together.'

c. tíi   xogi- xáaga- ó kahápií
    1.EMPH big be DIR left
    'The lot of us left.'

If indeed these elements refer to pluralities, as Harbour suggests, then it follows that the languages at some level of representation must utilize the number system. It is not clear whether these plural forms can indeed refer to singularities, but if they cannot, their restriction to plural referents indicates that number must be present in the grammar of Pirahã. Consequently, based on this data, Pirahã must have a number system that minimally involves a two-way distinction, as illustrated here:

(29) Number distinctions in Pirahã

[number]   ⇒ *ti, gíxai, hi*

[augmented] ⇒ *ti-gíxai-pio, ti-gíxai-xig-o*
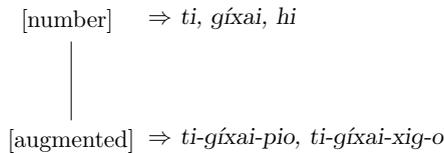
3.2.2 Number in agreement

Before continuing the examination of the data of several languages with impoverished sets of free pronouns, it is important to stress that there is a distinction between "morphological realizations of pronominal features", such as free pronouns, on the one hand, and "pronominal systems" on the other. The distinction is relevant because morphological paradigms often exhibit a great deal of inconsistencies, in the sense that particular realizations of morphological features are absent, whereas the pronominal systems underlying such paradigmatic gaps are "fixed" and provide more insight into the properties of linguistic knowledge.

Furthermore, pronominal systems need not be confined to morphological properties of free pronouns but can also be realized in other domains, such as verbal agreement, or they can potentially function in concert with the featural distinctions of other grammatical systems, such as nominal system, as we have seen in Jarawa (cf. §3.2.1). This suggests that we cannot confine ourselves to the investigation of free pronouns alone, but we also need to look elsewhere in the grammar of any given language.

In this section, I show that languages that show a lack of number in free pronouns, tend to externalize additional features in agreement morphology and thereby fall in line with PNU. Importantly, I assume that the morpho-syntactic agreement features that are marked on the verbs reflect and therefore must derive from the semantic properties of argument DPs.

Wāmbule

One such language is Wāmbule, a Sino-Tibetan language spoken in Nepal, which does not have morphological plural in its inventory of free pronouns. The paradigm in (30) contains only a set of general pronouns in first, second, and third person:

(30) Pronouns in Wāmbule
      (Opgenort 2002:197, adapted)

	Singular	Plural
1	uṅgu~uṅ	
2	unu~un	
3	āṅgu~āṅ	

Despite these syncretisms, the plural-singular distinctions are systematically realized in the verbal agreement paradigm. That is, the ambiguous first and second person pronouns *uṅgu* 'I/we' and *un* 'you.sg/pl' are systematically disambiguated in the Wāmbule clause structure where they function in concert with the number-marking agreement morphology:

(31) *Wāmbule* (Opgenort 2002:169)

a. uṅgu hep   i   bi -l jā: -ø   -me
    I/we cooked.grain your SOC -LOC eat -1.SG -RES
    'I eat rice at your place.'

b. un   im   bī -l   cāmdo pā -sī cāb -du -m
    you.SG/you.PL that SOC -LOC game do -INF can -2.SG -RES
    'You.sg can play with that [boy].'
    (Lib. You can play with him)

The agreement markers *-ø* and *-du* attached to the verbs *jā:* 'eat' and *cāb* 'can' provide the [singular] feature that is absent in the free pronouns. Thus, the properties of the pronominal system in Wāmbule are realized in both free pronouns and agreement morphology, yielding the following distribution of features:

(32) Pronominal feature specifications in Wāmbule

	Pronoun	Pronoun Features	Agreement Features
1	uṅgu~uṅ	[speaker, participant]	[speaker, participant, **singular**]
2	unu~un	[participant]	[participant, **singular**]
3	āṅgu~āṅ	[person]	[person]

The facts from (32) yield the following featural distinctions for number that shows at least a two-way distinction in number, that the (pro)nominal system of Wāmbule (at least) must have:

(33) Number distinctions in Wābmule

  [number] ⇒ *uṅgu, un*

  |
  |
  |

  [singular] ⇒ *-ø, -du*

Oneida

The same kind of impoverished partitioning of free pronouns is also found in the North American language Oneida, which also exhibits horizontal syncretisms in all three persons:

(34) Pronouns in Oneida
      (Abbott 2000:55, adapted)

	Singular	Plural
1	ni/niʔí/i	
2	nisé/niʔisé/isé	
3	ne	

However, just like Wāmbule, the free pronouns of Oneida lack number features altogether, and Oneida agreement prefixes (again) supply number features as they distinguish singulars, duals and plurals:

(35) *Oneida* (Abbott 2000:42)
      a. k-   hyatu -heʔ
          1.SG- writes SER
          'I write.'
      b. (h)s- hyatu -heʔ
          2.SG- writes SER
          'You write.'
      c. la-   hyatu -heʔ
          3.SG- writes SER
          'He writes.'
      d. twa- hyatu -heʔ
          1.PL- writes SER
          'We write.'
      e. yaky- hyatu -heʔ
          1.DL- writes SER
          'We two write.'

The example in (35c) is taken from Abbott (2000), while the other examples in (35) are compiled on the basis of description and morphology that Abbott provides. The mechanism that fills up the number feature in Oneida is even

stronger than it is in Wāmbule, since in addition to singular and plural realizations, it also yields dual.

Tiwa (Northern)

Another sampled language with only a set of general (free) pronouns in its pronominal paradigm is a Kiowa-Tanoan language, Northern Tiwa, with the following set of pronouns:

(36) Pronouns in Tiwa (Northern)
      (Smith 2013)

	Singular	Plural
1	nã̃	
2	ʔẽ	
3	ʔãwãn(ã̃)	

Like Wāmbule and Oneida, Northern Tiwa realizes the number features in its verbal morphology. The following examples are taken from Trager (1946):

(37) Northern Tiwa agreement morphology
      (Trager 1946:209, adapted)

	Singular	Dual	Plural
1	**ʔo**c'ę́mamą̨	**ʔąn**c'ę́mamą̨	**ʔi**c'ę́mamą̨
	'I am young.'	'We two are young.'	'We are young.'
2	**ʔą**c'ę́mamą̨	**mąn**c'ę́mamą̨	**mą**c'ę́mamą̨
	'You are young.'	'You two are young.'	'You.PL are young.'
3	c'ę́mamą̨	**ʔąn**c'ę́mamą̨	**ʔi**c'ę́mamą̨
	'He is young.'	'They two are young.'	'They are young.'

Although Trager (1946) does not provide glosses for these examples, the examples are only minimally different, as the translations indicate, and the distinct morphological markers in bold [my marking] suggest that Oneida exhibits rich number features in its agreement paradigm.

Jaqaru

The language Jaqaru has a set of three (general) pronouns in three persons that do not bear any number features, and one dual pronoun:

(38) Pronouns in Jaqaru
      (Hardman 2000:27, adapted)

	Singular	Plural	Dual
1		na	
1			jiwsa
2		juma	
3		upa	

The pronoun *jiwsa* is the first person inclusive pronoun (i.e. me + you). As such *jiwsa* cannot be linked to singular or plural (i.e. 3+) referents. This shows that the system partitions the set of all individuals into a smaller group, indicating that the empty slots in (38) are required. What is quite striking about the Jaqaru pronominal paradigm is that the number feature is realized in the morphology of the language in order to individuate a group of two, but not to individuate a singular speaker.

   Regarding its agreement morphology, Jaqaru reflects all the features (and only those) of its pronouns. There are no 'supplementing' number features on the agreement morpheme, like those we find in Wāmbule, Winnebago, Oneida, and Northern Tiwa. The Jaqaru agreement morphology consists of ten types of suffixes that reflect exactly those features of subjects and objects that we find in Jaqaru free pronouns. The list of these suffixes, taken from Hardman (2000), is given in (39). Note that numbers 1 through 3 in (39) indicate the features of the three persons of subjects and objects, while number 4 refers to dual subjects and dual objects:

(39) Jaqaru person markers (Hardman 2000:57)

      1>2 ill.k.**ima**   'I see you'
      2>1 ill.k.**uta**   'you see me'
      2>4 ill.k.**ushta** 'you see us'
      3>1 ill.k.**utu**   'she sees me'
      3>4 ill.k.**ushtu** 'she sees us'
      3>2 ill.k.**tma**   'she sees you'
      2>3 ill.k.**ta**   'you see him'
      1>3 ill.k.**t"a**   'I see him'
      4>3 ill.k.**tna**   'we see him'
      3>3 ill.k.**i**   'she sees him'

Although Hardman (2000) uses the English pronoun 'us' in her translation of the examples in (39), which I adopt here, she unambiguously describes its meaning as that of a dual pronoun (i.e. 'us two').

   Thus, while there are no specifically plural or specifically singular pronouns, and while there are no specifically plural or singular morphemes in the Jaqaru paradigm of agreement morphology, the dual pronoun *jiwsa* and the dual agree-

ment morphemes suggest that there is a number feature in the system, since the feature [dual] entails that the pronoun and the agreement marker cannot be linked to singular or plural referents.[5] In any case, whatever the account of the properties of duals in Jaqaru, the observation that the Jaqaru pronominal system includes a two-way number distinction cannot be denied, as the following representation shows:

(40)   Number distinctions in Jaqaru

   [number]   ⇒ *na, juma, upa*

   [dual]   ⇒ *jiwsa*
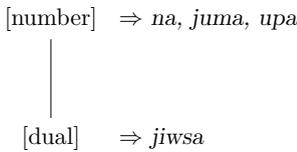
3.2.3   Person in agreement

Like number, person features are often reflected only in the verbal agreement morphology, from where they support the free pronouns with additional featural distinctions. This section discusses several languages that exhibit this.

Winnebago (Hocąk)

For example, the Winnebago free pronouns paradigm, while exhibiting horizontal syncretisms as already discussed in the previous sections, also has a vertical syncretism for the first and second person:

(41)   Pronouns in Winnebago
       (Noyer 1992:151, adapted)

	Singular	Plural
1	nee	
2	nee	
3	ʔee	

Thus the entire set of Winnebago free pronouns marks only the [participant] feature. However just as we have seen in Wāmbule, the features of the free pronouns in Winnebago are again systematically supplemented by verbal morphology, as shown in (42). Here we see that ambiguities arising from the syncretic forms in (41) are resolved via agreement prefixes:

---

5. For example, see Harbour (2011:228–229) for an analysis in which a dual interpretation of a particular element in a bivalent feature system is engendered by the negative values on both [singular] and [augmented]

(42)   *Winnebago* (Helmbrecht and Lehmann 2010:11, adapted;
       Johannes Helmbrecht, p.c.)

    a.   nee ha- šgác
          1/2 1.SG- play
          'I play.'

    b.   nee ra- šgác
          1/2 2.SG- play
          'You play.'

    c.   ʔee ø-   šgaac
          3   3.SG- play
          'He plays.'

    d.   nee hį- šgaj-wí
          1/2 1.PL play
          'We play.'

While the free pronoun *nee* is indiscriminately used for both first and second person, the distinction between the two persons is certainly provided in the morphological forms of the verbal inflections *ha-* in (42a) and *ra-* in (42b). Furthermore, the verbal inflections *ha-* and *hį-* in (42a) and (42d) also disambiguate the homophonous singular and plural pronominal forms. The person feature representation for Winnebago based on the facts discussed here is given in (43)

(43)   Feature representation for person in Winnebago

$$[\text{person}] \quad \Rightarrow ʔee+ø$$

$$[\text{speaker}] \qquad\qquad [\text{addressee}]$$
$$\Downarrow \qquad\qquad\qquad \Downarrow$$
$$nee+ha\text{-}/h\mathit{į}\text{-} \qquad\qquad nee+ra\text{-}$$
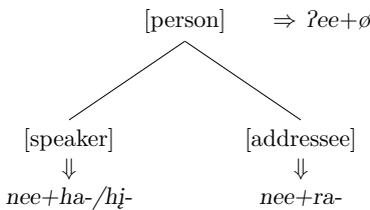
The representation in (43) shows that the grammar of Winnebago certainly manipulates the pronominal person feature, even though it is absent in the set of free pronouns, and thus conforms with PNU. Importantly, the same mechanism that fills up the number features that we already saw in Wāmbule above, also fills up both the [speaker] and [plural] features in Winnebago.

Kiowa

Next to Northern Tiwa, other Kiowa-Tanoan languages exhibit impoverished sets of free pronouns, while productively utilizing rich agreement morphology on the verb. For example, Kiowa only has a set of general pronouns in first and second person (cf. 44), whereas the third person can be expressed with deictic pronouns *éįde∼éįgɔ* 'this∼this.INV' and *óíde∼óígɔ* 'that∼that.INV'.

(44) Pronouns in Kiowa
(Harbour 2007:17, adapted)

	Singular	Plural
1	nɔ́ɔ́	
2	ám	
3		

Furthermore, according to Harbour (2007:18), Kiowa has 100-to-160 agreement prefixes surfacing on the Kiowa verbs. And thus the impoverished set of free pronouns is compensated for by the rich agreement morphology on the verb. The following examples show that the Kiowa verb morphology compensates for the absence of person-number features in (44):

(45) *Kiowa* (Harbour 2007)

    a.   K!ɔ̂n **nen-** ót
         tomato 1.SG:3.DL- drop.SG.DL
         'I dropped two tomatoe.' (p. 8)

    b.   K!ɔâl **men-** ót
         dish 2.SG:3.DL- drop.SG.DL
         'You dropped two plates.' (p. 30)

    c.   K!ɔâl **ę-** ót
         dish 3.SG:3.DL- drop.SG.DL
         'He dropped two plates.'

    d.   K!ɔâl **bet-** ót
         dish 1.DL:3.DL- drop.SG.DL
         'We two dropped two plates.'

Thus, like Winnebago, Kiowa too has a set of features yielding person and number distinctions that conform with PNU.

Mangarayi

According to the Free Personal Pronoun database (Smith 2013), Mangarayi has no third person pronouns:

(46) Pronouns in Mangarayi
(Merlan 1982:102, adapted)

	Singular	Plural	Dual	Trial
1	ŋaya			ŋa-r
1ᴵᴺ		ŋa-l̠a	ŋi	
1ᴱˣ		ŋi-l̠a	ŋi-r	
2	ŋ̃aŋgi	ŋu-l̠a	ŋu-r	
3				

Merlan (1982) claims that there are demonstrative pronouns, most of which
"refer to third persons." These demonstratives "participate in a semantically
selective system of distance contrasts [and] because none of the first and second
person forms [in (46)] do so, the two categories are distinguished as 'personal'
versus 'demonstrative' pronouns" (Merlan 1982:99).

This indicates that the most minimal elements expressing the third person
features are bundled with additional semantic features, comparable to the as-
sociative marker *-tati* in Japanese (cf. §3.2.1). In addition, however, Mangarayi
productively marks the third person in its verbal agreement morphology, as in
the following examples:

(47) *Mangarayi* (Merlan 1982)

   a.   Wuḍanji -wana ø-   ṇiŋa -ñ
        place   -ABL 3.SG- come -PP
        'He arrived from Wunadjni.' (p. 108)

   b.   ṇa-   baṇam -ŋanjuŋ-gan ja-wuḷa-ṇi
        N.LOC- camp   -mine   3-3.PL-sit.PRES
        'They are sitting at my camp.' (p. 107)

Consequently, even if the third person demonstratives cannot be thought of as
third person personal pronouns, Mangarayi productively compensates for the
third person via agreement morphology, yielding a three-way person distinction
as outlined by PNU.

Jemez

Comparable to Mangarayi and Kiowa, there are no independent third person
personal pronouns in Jemez:

(48) Pronouns in Jemez
      (Yumitani 1998:123, adapted)

	Singular	Plural/Dual
1[IN]		ˀɨ́(-š)
1[EX]	nɨ́ˑ	nɨ́ˑ(-š)
2	ˀɨ́wą́	ˀɨ́mį̇-(š)
3		

However, Jemez demonstrative pronouns, such as *hɨ́ˑ/nɨ́ˑ* 'this' (near the spea-
ker), *nî̇ˑ/nậˑ* 'that' (away from the speaker, visible), and *dô* 'that' (not visible),
can be used as independent third person pronouns (Yumitani 1998:118). Fur-
thermore, in general the third person is expressed in the morphology of the
verbal paradigm, as shown in (49c), making Jemez yet another language with
an impoverished set of free pronouns, which conforms to the PNU generaliza-
tion that the most minimal pronominal system includes at least a three-way
person distinction and a two-way number distinction.

(49) *Jemez* (Yumitani 1998)

    a.   nị́· té·hete **tɑ-** pǽnị́ʔị́
        I   shirt   1SG- sew.PF
        'I sewed a shirt.' (p. 180)

    b.   ʔị́wą́ ɸóʳlá **ɑ-** tʸílé
        you hair 2.SG- comb.PF
        'You combed your hair.' (p. 128)

    c.   kʔʸâ· **ịl-** mị́
        rocks 3.SG- see.PF
        'He saw rocks.' (p. 181)

Zuni

According to Corbett (2000) the native American language Zuni does not have personal pronouns in third person:

(50) Pronouns in Zuni
     (Nichols 1997:35, adapted)

	Singular	Plural/Dual
1	hoː'o∼ho'	ho'no'∼hon
2	toː'o∼to'	to'no'∼ton
3		

Furthermore Zuni does not mark person features in its agreement morphology. However, to express the third person, the subject in Zuni must be empty, whereas for the first and second persons one must obligatorily use respective pronouns. There are no overt morphological markings for the third person singular in (51c) and the third person plural (51f):

(51) *Zuni* (Nichols 1997)

    a.   *ho'*   pimc'ana k'ošo -kya
        1.SG.NOM piglet   wash -PT
        'I washed the piglet.' (p. 196)

    b.   *to'*   Pilpo -ya' 'antowowo -kya
        2.SG.NOM Filbert -ACC shoot   -PT
        'You shot Filbert.' (p. 125)

    c.   kʷato -kya
        enter -PT
        'He went in.' (p. 17)

    d.   *hon*   pimc'ana k'ošo **-nap**   -kya
        1.PL.NOM piglet   wash -PL.SUBJ -PT
        'We washed the piglet.' (p. 196)

    e.   hoˈnaːwan   *ton*   tešu **-nap**   -tu -nˈon akkya
          1.PL.IO.PL.OBJ 2.PL.NOM seek -PL.SUBJ -OPT -NOM in.order
          'So that you.hon may be the one to look for her for us. . . ' (p. 42)

    f.   ˈ**ukʷ-**   kʷato -kya
          PL.SUBJ- enter -PT
          'They went in.' (p. 17)

These examples show that despite the fact that there are no overt free pronouns or agreement morphemes for third person, the third person is a null morpheme marked by the absence of morphemes for the first and the second person. In addition third person is expressed through the use of nominal DPs.

    Importantly, what I have shown to be the case for pronouns in the acquisition of Classical Chinese also applies to Zuni agreement morphemes. The absence of the overt third person form for agreement is sufficient for a child acquiring Zuni to postulate a three-way agreement distinction on the basis of the presence of the distinct first and second person morphemes. More specifically, just as the morphological presence of the [singular] feature in the number system of the Classical Chinese pronouns requires that the underlying system makes a two-way distinction, the presence of a [participant] feature in the Zuni agreement morphology requires that the system makes a participant-nonparticipant distinction, despite the absence of the overt morphological form bearing a [nonparticipant] feature. In sum, what is true for the acquisition of a pronominal paradigm, as we have seen in Classical Chinese, must be true for the acquisition of an agreement paradigm, as we see it in Zuni.[6]

3.2.4   Person in disguise

Sanapanà

One language, however, that does not appear to have any distinct pronouns for either the second or the third person is Sanapaná. Gomes (2013) reports that there are syncretic forms for the second and the third person, as the following paradigm shows:

---

6. In addition to Zuni, there are five other languages that, according to the FPPS database, exhibit pronouns for two persons only. These are Karbi, Sinhala, Sauria Paharia, and Tunebo (Central). However, after a closer look at these languages it turns out that the third person is typically expressed either through the use of i) demonstratives and deictic expressions, or ii) with the absence of any marking for the other two persons. No matter which of these options a particular language exhibits, the constrained reference of the first and second person pronouns to the first and second person referents, respectively, suggests that the third person is present in the system. The only plausible exception would be a language in which any reference to a specifically third person is completely absent, which remains unattested.

(52) Pronouns in Sanapaná (Gomes 2013)

	Singular	Plural
1	ko'o	enenko'o
2	hlejap$^{\text{M}}$, hleja$^{\text{F}}$	hlengap$^{\text{M}}$, hlenga$^{\text{F}}$
3	hlejap$^{\text{M}}$, hleja$^{\text{F}}$	hlengap$^{\text{M}}$, hlenga$^{\text{F}}$

However, comparable to the way in which number in Jarawa comes from the singular-plural distinction in the nominal systems (cf. §3.2.1), the Sanapaná three-way person distinction arises from inclusion of the nominal system, as the speakers of Sanapaná can express a distinguishing feature for the third person with a full nominal. Since a full nominal cannot be linked to the second person, the person system of Sanapaná must be rich enough to include the second person. Consequently, what the system must incorporate is a feature that marks the first person, say a [speaker] feature, and a feature for the second/third person pronouns that uniquely distinguishes second/third from the first, a feature that I label as [nonspeaker]. In addition, we must be able to mark nominal DPs with a feature that distinguishes them from the first and second/third pronouns. I will assume that nominal DPs simply do not bear either [speaker] or [nonspeaker], which gives us the following set of person features in the nominal system of Sanapaná, with the pronominal system being a subset of the nominal system:

(53) Person-number features in Sanapaná

	(Pro)nouns	Features
1sg	ko'o	[speaker, singular]
2/3sg	hlejap$^{\text{M}}$, hleja$^{\text{F}}$	[nonspeaker, singular]
3sg	<nominals>	[person]
1pl	enenko'o	[speaker, plural]
2/3pl	hlengap$^{\text{M}}$, hlenga$^{\text{F}}$	[nonspeaker, plural]
3pl	<nominals>	[person]

Although the system of free pronouns alone shows a two-way person distinction, the nominal system provides a feature that yields a three-way distinction, suggesting that the Sanapaná person system must contain at least two specific person features. This can be represented as in (54), where I use the feature [nonspeaker] as a specific feature that the second and third person pronouns share, while remaining agnostic as to what the exact semantics of the feature is:

(54)   Feature representations for person in Sanapaná

[person]   ⇒ nominal DP

[speaker]   [nonspeaker]
⇓   ⇓
ko'o, enenko'o   *hlejap, hlengap*
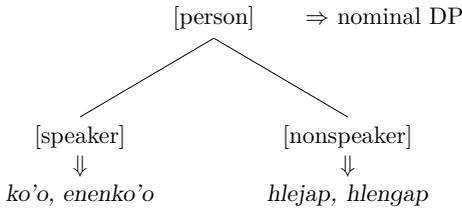
Although the person system of argument DPs makes a three-way distinction, there appears to be a lexical gap in Sanapaná, as the morphological form specifically marking the second person is absent.

3.2.5   Summary

The discussion thus far has shown that number and person features in these languages vary considerably in terms of their distribution in (pro)nominal systems and verbal paradigms. While in some languages person and number features are expressed in both (pro)nominals and the agreement morphology, in others they are expressed only in (pro)nominals, or only in the agreement morphology. The absence of a person feature in free pronouns has been attested in Winnebago, which lacks the distinction between the first and the second person, and in free pronouns of Sanapaná, which lacks the distinction between the second and the third person. While in Winnebago, the first and second person syncretic forms are distinguished in the verbal agreement paradigm, the second and third person syncretic forms in Sanapaná are distinguished through the use of nominal DPs.

The following table illustrates the distribution of person and number features in the languages discussed:

Language	Number		Person 1/2/3	
	Argument	Agreement	Argument	Agreement
Kuman	+	+	+	+
Classical Chinese	+	−	+	−
Japanese	+	−	+	−
Thai	+	−	+	−
Kawi	+	−	+	−
Jarawa	+	−	+	−
Pirahã	+	−	+	−
Wāmbule	−	+	+	+
Oneida	−	+	+	+
Tiwa (Northern)	−	+	+	+
Jaqaru	+	+	+	+
Winnebago	−	+	−	+
Kiowa	−	+	+	+
Mangarayi	+	+	+	+
Jemez	+	+	+	+
Zuni	+	+	+	+
Sanapaná	+	+	+	−

Table 3.2 Presence of number and person features

The most striking observation that can be made in Table 3.2 is that there are no languages that exhibit complete absence for either person or number. There are three types of languages, in terms of how features yielding a two-way number distinction are distributed: languages in which number features appear

(55)   i. only in argument DPs (pronouns + nouns)
       ii. only in the agreement morphology,
       iii. in both argument DPs and agreement morphology

In contrast to number, there are no languages in which all person features appear only in the agreement morphology, which gives us the following two types of languages, based on the distribution of person features that yield a three-way distinction: languages in which person features appear

(56)   i. only in argument DPs (pronouns + nouns)
       ii. in both argument DPs and agreement morphology

The essential outcome of this survey is that the intuition condensed in Greenberg's Universal 42, rephrased here as a Person-number universal, which applies not just to pronominal categories, but also to nominal categories, is essentially correct, since every language exhibits a feature system that underlies a three-way person distinction and a two-way number distinction.

Typology based on the loci of person and number features

While perfectly falling in line with PNU, Table 3.2 reveals an interesting typological distinction between languages like Winnebago and Wāmbule on the one hand, and languages like Classical Chinese and English on the other. While in

the English-type languages all the features of a pronominal argument are bundled in one syntactic node — I refer to this type as *unsplit pronominal systems*, in the Winnebago-type the features of a pronominal argument are spread out over two (or perhaps more) syntactic nodes — *split pronominal systems*.

Purely based on what can be observed in the languages studied here, the descriptive typology of person and number systems can be represented as in Table 3.3:

Pronominal System	Language
Unsplit	Classical Chinese
	Japanese
	Thai
	Mangarayi
	Jemez
	Zuni
	Jaqaru
	Kawi
	Jarawa
	Pirahã
	Sanapaná
Split	Wāmbule
	Oneida
	Tiwa (Northern)
	Winnebago
	Kiowa

Table 3.3 Descriptive typology of pronominal systems

In languages with unsplit systems all the person and number features of Argument DPs are overtly present on the argument. In contrast, in split systems not all of the features of a pronominal argument surface on the argument, as some features also surface on the verbal agreement morphology. Descriptively, this distinction adequately covers the hitherto attested data.

In §3.3, I present detailed analyses that account for the typological division in Table 3.3. Subsequently, in §3.4, I propose an account of why all pronominal systems minimally include number and person features.

3.3   Split-systems analyses

The rich semantics of agreement morphology provides us with two ways of accounting for the impoverished pronominal systems in languages that do not have distinctions for person or number in their sets of free pronouns. One is that the system spreads out pronominal semantic features over multiple nodes, some of which occur on the verb and some as a separate pronoun. And the other approach states that the part that occurs on the verb is not a syntactic agreement feature(s), but a pronominal semantic feature(s). I will refer to this analysis as the split-pronoun analysis. Note that although I analyze the data

within the generative framework, the split-pronouns analysis can be straight-forwardly extended to non-generative frameworks.

The other option is to implement the idea that agreement signals person and number features that are not overtly realized on pronouns, just as is the case in languages in which subjects can be left out — the so-called pro-drop languages — in which the subject features are marked on the agreement morphology. We can therefore assume that the distinguishing semantic features in free pronouns are unrealized after being checked on the verb as a result of Agree. This analysis — which I will call pronominal feature-drop analysis — is a special instance of the pro-drop analysis, except that it is not the entire pronoun that becomes unrealized at PF. Unlike the split-pronoun analysis, the pronominal feature-drop analysis utilizes framework-specific (generative) operations that are not readily applicable in other frameworks. In the remainder of this section I discuss the details of each analysis.

3.3.1 Split-pronouns analysis

One way to analyze the typological divide in Table 3.3 is to reflect it in the analysis of the clause structure. Specifically, we can assume that the interpretable (semantic) features of the pronominal argument [speaker], [participant], and [plural] occur on different syntactic nodes, as represented in the following tree, where the letters i and u stand for the interpretable (semantic) features and the uninterpretable (syntactic features), respectively:

(57)
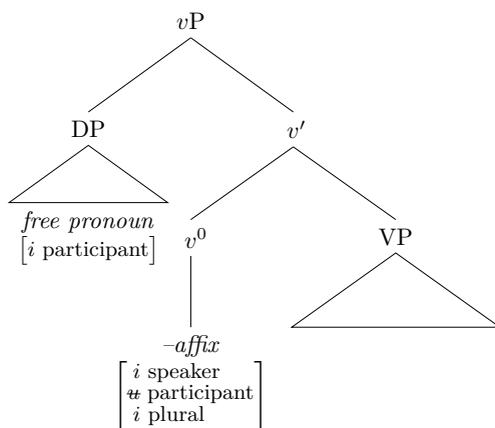
In (57) the [participant] feature occurs both within DP but also on the verb, whereas the features [speaker] and [plural] occur only on the verb. Since the free pronoun does not morphologically mark [speaker] and [plural], we can state that those features that are absent on the free pronouns are supplied on the verbal affix at v^0. This suggests that all features on the affix — with the exception of the [participant] feature — and on the free pronoun are semantic features.

Importantly, the semantic nature of these features has consequences for the properties of agreement morphology of a split-pronominal language illustrated in (57). That is, if the features [speaker] and [plural] are indeed semantic, then they cannot be considered to be an instantiation of agreement, since agreement features are typically seen as instantiations of semantically uninterpretable (formal) syntactic features. Consequently, the analysis in (57) suggests that the language in question lacks rich agreement morphology, or at the very least only exhibits the [participant] feature (at v^0) as a realization of agreement. This has consequences for theories that propose some kind of interaction between syntax and (agreement) morphology. For such theories, the option of whether or not all features on the affix at v^0 in (57) are agreement features affects theoretical predictions.

3.3.2   Pronominal feature-drop analysis

Another way to analyze the typological division in Table 3.3 is to attempt to unify the two types of languages by reducing the division to a variation in the application of grammatical operations. Specifically, split-pronominal languages can be analyzed with the same set of operations that are standardly used to account for *pro*-drop languages in which the phonologically empty subject features are assumed to enter into an Agree relation, which results in verbal agreement morphology. The difference is that in split-pronominal languages not all features on the free pronoun are phonologically realized.

The assumption required for the pronominal feature-drop analysis is that the minimal person and number features within a paradigm of free pronouns are present in all natural languages. Furthermore, all features surfacing on the free pronouns are interpretable semantic features, whereas the features surfacing on the verbal morphology are uninterpretable (formal) syntactic features, as illustrated here:

(58)   free pronoun   verb affix
       [$i$participant, $i$plural]   [$u$speaker, $u$participant, $u$plural]
       $\underbrace{}$ $\underbrace{}$
       INTERPRETABLE FEATURES   SYNTACTIC (FORMAL) FEATURES

Since [speaker] is not realized in the free pronoun we must postulate a phonologically unrealized semantic [speaker] feature in the pronoun, indicated with a strike-through in (55):

(59)   free pronoun   verb affix
       [~~$i$speaker~~, $i$participant, $i$plural]   [$u$speaker, $u$participant, $u$plural]
       $\underbrace{}$ $\underbrace{}$
       INTERPRETABLE FEATURES   SYNTACTIC (FORMAL) FEATURES

If correct, this means that the [$u$speaker] feature on the verbal affix is a morphological reflex of the phonologically unrealized semantic version of the [$i$speaker] feature on the free pronoun. The advantage of this is that we can straightforwardly analyze semantic features of pronominal arguments as being realized as

one lexical element. This seems intuitively correct, as the [speaker] feature on the verb does not contribute semantically to the verb itself; it is interpreted elsewhere, namely, in an external position. We can implement this by having the [speaker] feature on the verb as an agreement feature checked by the c-commanding free pronoun (subject), yielding the following representation:

(60)

$$
\begin{array}{c}
\text{IP} \\
\diagup\;\diagdown \\
\text{DP}\qquad\qquad \text{I}' \\
\end{array}
$$

free pronoun (DP):
$$\begin{bmatrix} \textit{i}\ \cancel{\text{speaker}} \\ i\ \text{participant} \\ i\ \text{plural} \end{bmatrix}$$

I^0 − affix:
$$\begin{bmatrix} \cancel{u}\ \text{speaker} \\ \cancel{u}\ \text{participant} \\ \cancel{u}\ \text{plural} \end{bmatrix}$$
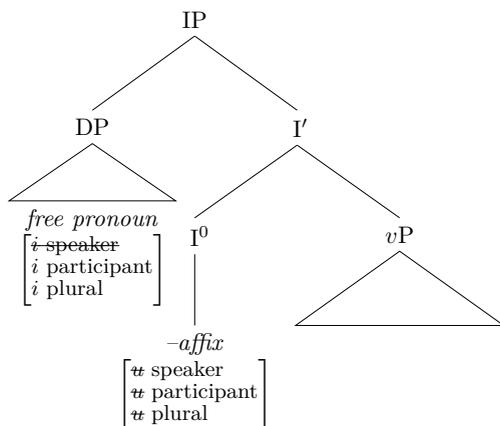
The semantic features in (60) are introduced by the free pronoun that enters into an Agree relation with the I^0 head, where the uninterpretable features are checked. Subsequently, the [±speaker] in spec,IP is not realized phonologically. This explains the first and second person syncretisms in the paradigm of free pronouns, while at the same time allowing the learner to retrieve those semantic features that are not overtly realized.

An important advantage of the pronominal feature-drop analysis over the split- pronoun analysis, is that we have an explanatory theory of the typological division in Table 3. That is, the pronominal feature-drop analysis accounts for the variation through the use of standard (generative) grammatical operations that we independently need to describe null subject languages. In contrast, the split-pronoun analysis requires additional stipulations to account for the counter-intuitive nature of the semantic features of one pronominal argument realized on multiple syntactic nodes. Specifically, we are forced to deal with the question as to why is it the case that the interpretable features of one argument are spread out over multiple syntactic nodes.

Whether we assume split-pronoun or pronominal feature-drop to explain impoverished pronominal systems, inevitably the conclusion must be that the grammar in one way or another incorporates more person and number features than what is expressed in the "bare" pronominal paradigm, as attested in split-pronominal languages. Consequently, if there are agreement features on the verb that are absent on the pronominal argument in the subject position, but interpreted as semantic features of the pronominal argument, then the pronominal systems are richer than what meets the eye in languages with

only an impoverished set of general free pronouns. The externalization of such impoverished personal pronouns can be a result of either syntactic or post-syntactic operations, exact details of which I leave open here.

3.4   Core knowledge

Given the uniformity of (pro)nominal systems, all of which involve person and number distinctions, the question arises as to why these features are always present? Furthermore, why are there languages in which even gender features are completely absent? Perhaps the most straightforward account is that (pro)nominal systems and their morphological realizations can be thought of as linguistic constructs that are related to the domain-general cognitive capacities, known as the core knowledge systems of representation for objects, actions, space, and number (Spelke and Kinzler 2007). Psychologists have argued that these core cognitive capacities are found in humans (cf. Valenza, Leo, Gava, and Simion 2006) but also extend to non-human animals (see for example Regolin and Vallortigara 1995; Lea, Slater, and Ryan 1996 for evidence of core capacities in new born chicks), which suggests that they are not language-specific, since language is uniquely human. Consequently, I would like to propose that the universal properties of (pro)nominal systems in human language are a manifestation of these general cognitive capacities. In the case of number we find that all languages that have thus far been investigated exhibit morphological realization of at least one semantic number feature. And even in those languages that only have one number feature, an underlying system that includes contrastive number features must be present, despite the absence of morphological forms. This system supporting the morphological forms can in principle be the core knowledge number system itself, or an adaptation thereof.

In the case of person, all languages exhibit morphological forms that make distinctions between three persons. The capacity to distinguish oneself from others and to distinguish discourse participants from non-participants, as marked by (pro)nominal person features, can also be related to the core knowledge systems for representing objects/agents, actions, and space. Specifically, the first person properties have their basis in agentivity within the discourse space, since the first person is the speaker and hence an agent in the discourse. In contrast, the second person is a non-speaker and hence reflects non-agentivity within the discourse space. Finally the third person reflects the absence of an individual or object in the discourse space. Comparable to the number feature, the person features can also be thought of as having the core knowledge representations as an underlying system that supports them. At the very least, both person and number features are parasitic on the systems of core knowledge. Core knowledge suggests that all languages tend to reflect these distinctions, but it does not impose restrictions on how a language might execute the distinctions. This explains the variation that leads to analyses that (incorrectly) do not exhibit these distinctions.

3.5   Summary

In this chapter I have shown on the basis of empirical findings that all hith-
erto investigated languages conform with the Person Number Universal, as
they exhibit at least a three-way person distinction and a two-way number
distinction in their arguments. With this we have a baseline for determining
the richness of agreement morphology in any given language. Any language
that reflects at least the features of PNU in its agreement morphology is a rich
agreement language. If the PNU distinctions are not reflected, the agreement
morphology is poor. As this narrows down the types of languages in which RAH
can be successfully studied, the chapter concludes by describing the sampling
methodology and presenting a list of languages to be analyzed in Chapter 6
and Chapter 7.

CHAPTER 4

Diagnostic criteria

In Chapter 2, I have outlined several different theoretical accounts of the generalization that correlates agreement morphology and verb movement that lead to the formulation of the Rich Agreement Hypothesis (RAH). The focus of this chapter is on the discussion of the more basic ingredients of the RAH that have thus far not been addressed in this dissertation. Specifically, we need to outline i) the properties of different types of agreement morphemes and the effects of agreement on verb movement that the RAH predicts, ii) the required conditions in which we can detect verb movement, and iii) the properties of adverbs (or other potential diagnostics) required for them to be used as viable diagnostics for the v-to-Arg movement.[1]

This chapter is structured as follows: In §4.1 I provide agreement definitions and terminology and discuss morphological forms of agreement and the effects that their individual properties can have on verb movement. Furthermore, I provide syntactic, morpho-syntactic, and morpho-phonological tests for identifying and distinguishing different types of agreement morphemes. In §4.2 I discuss the RAH diagnostics and the conditions required for their applicability. In addition, I show that the diagnostics themselves must meet specific prerequisites before the RAH can be tested.

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1. Note that, since I adopt the framework by Koeneman and Zeijlstra (2014), I will strictly use the label 'Arg' instead of the standard 'I' in this and subsequent chapters.

4.1   Agreement

Since the RAH is based on a particular kind of operationalization of agreement, we must first define agreement. To that end, this section discusses agreement definitions and terminology, as well as the types of features relevant to the RAH that surface in the agreement relations (cf. §4.1.1). Furthermore, the RAH is tied to the kind of agreement markers (e.g. affixes and clitics) that phonologically depend on the verb. Consequently, the verb is expected to move outside of the vP, in order to provide phonological support for affixes and clitics that exhibit a rich set of person and number features, as outlined in Chapter 3. If there are such agreement markers, which do not require phonological support (perhaps (strong) pronouns and free words/clitics), verb movement to a position outside vP is not expected (Koeneman and Zeijlstra 2014). Therefore, before testing the RAH in any given language, it is essential that we have a clear picture of the full range of agreement morphemes and that we know how to distinguish them from non-agreement morphemes (cf. §4.1.2). In addition, not all agreement morphemes trigger verb movement, so we have to be able to identify them and asses the RAH predictions accordingly (cf. §4.1.3).

4.1.1   Definitions, observations and terminology

The term *agreement* typically

> refers to some systematic covariance between a semantic or formal property of one element and a formal property of another   (Steele 1978)

In principle, there is some property (semantic or morpho-syntactic) of an element, say α, which manifests itself as a formal property on an element β. The resulting relation between the elements α and β is informally understood to be *agreement.*

As an illustration of agreement, consider the following noun phrases from Serbo-Croatian:

(1)   *Serbo-Croatian*

    a.   visok-a   devojk-a.
             tall-SG.F girl-SG.F
             'tall girl'

    b.   visok-o   det-e
             tall-SG.N child-SG.N
             'tall child'

    c.   visok-i   dečac-i
             tall-PL.M boy-PL.M
             'tall boys'

The adjective *visok* 'tall' agrees with the nouns in both number and gender in all of the examples in (1). Thus, the intrinsic (i.e. lexical) properties (i.e. features) of the nouns systematically determine the affixal morphology of the modifying (attributive) adjective. Since the noun essentially controls the morphology of the modifying adjective, it is appropriately termed the 'controller' in the literature, whereas the adjective exhibiting person and number features that match those of the noun is termed the 'target' (Corbett 2006).

In general, agreement includes a variety of relations between linguistic categories (nouns, verbs, adjectives etc.) which in turn can overtly externalize a variety of grammatical features that are reflected on the target, depending on the type of construction they form (e.g. phrases, clauses etc.). For the purposes of this dissertation, the relevant agreement features are *person* and *number* (collectively termed φ-**features**). Since the RAH accounts for subject-verb φ-agreement, I leave the discussion of other types of agreement (e.g. Case, gender) aside and focus primarily on φ-features.

Similar to the examples in (1), agreement takes place between elements forming different types of syntactic relations, such as subject-verb agreement, object-verb agreement, and so on. For example the noun phrase from (1a) agrees in person and number with the verb *voleti* 'love' in the following sentence:

(2) *Serbo-Croatian*
Visok-a devojk-a vol-i Maris-a
tall-SG.F girl-1.SG.F love-PRES.1.SG Maris-M.ACC
'The tall girl loves Maris.'

While agreement in (1) is established between a noun and an adjective forming a noun phrase, the agreement in (2) is established between a noun phrase and a verb forming a clause.

All agreement markers in the examples so far appear as affixes. However, this is not always the case, as agreement morphology can also be realized as phonologically less dependent on the target. For example, it can be realized in the form of clitics:

(3) *Skou* (Corbett 2006:75, adapted)
Ke móe ke=fue.
he.3.SG.M fish CL.3.SG.M=see.3.SG.M
'He saw a fish.'

In this example from Skou — a language from the villages Skou-Yambe, Skou-Mabu and Skou-Sai, on the central north coast of New Guinea — subject-verb agreement is realized with the clitic *ke*, which bears the subject φ-features.

Agreement markers can be completely independent of their hosts. For example, the system of the Daly language of Ngan'gityemerri (Northern Australia) utilizes 'free words' as agreement markers:

(4) *Ngan'gityemerri*

(syiri)   magulfu   (syiri)   marrgu
STRIKE cylindrical.fighting.stick STRIKE new
'a new cylindrical fighting stick'

The word *syiri* "is a generic [word] for weapon-like objects which have a striking
type of contact" (Corbett 2006:14). In the first instance in (4) it behaves like
a classifier, while in the second it acts as an agreement marker.

Given that agreement relations are realized with a variety of different mor-
phemes, such as affixes (2), clitics (3), and free words (4), as classified in Corbett
(2006), and since the presence of such morphemes and their feature-properties
are variables in the context of the RAH, two relevant questions must be ad-
dressed before the RAH can be tested, namely: i) how can we establish if a
language has agreement morphology? and ii) how can we assess if the attested
agreement morphemes are movement triggering morphemes? I discuss these
two questions in §4.1.2 and §4.1.3

4.1.2   Agreement vs. pronominal argument incorporation

Depending on the analysis and specific theoretical framework, not all φ-feature
bearing morphemes in the verbal agreement paradigm are considered to be
agreement markers. Therefore, a proper testing of the RAH must establish
whether the verbal morphology includes φ-feature doubling that has the sta-
tus of agreement, since the doubled φ-features could in fact be incorporated
pronominal arguments, where the φ-features on verbs function as the argu-
ments of the verb. Consequently, disentangling agreement from pronominal
argumenthood is imperative, because the RAH predicts that only agreement
triggers *v*-to-Arg, whereas the pronominal argumenthood under controlled con-
ditions does not. Let's review some analyses on pronominal argumenthood and
see how it can be distinguished from agreement.

Pronominal argumenthood was proposed by Jelinek (1984, 2006), who ar-
gues that the inflectional morphemes that match subject φ-features in many
polysynthetic languages are in fact semantic arguments of the verbs, whereas
the referential DPs are simply adjuncts, providing additional relevant infor-
mation about the referents. For example in the sentence in (5a) from Navajo,
both arguments of the verb are realized as morphemes merged with the verb,
whereas the overt noun phrases *diné* 'man' and *'ashkii* 'boy' are optional:

(5)   *Navajo* (Jelinek 2006:262)

   a.   Yiyiiłtsá
        3.SG.OBJ:3.SG.SUBJ.saw
        'He saw him.'

   b.   (Dinè) ('ashkii) yiyiiłtsá
         man   boy   3.SG.OBJ:3.SG.SUBJ.saw
        '(The man,) (the boy,) he saw him.'

In Jelinek's (2006) analysis the subject and the object in (5b) are only required to provide reference and are grammatically non-obligatory. As such, *diné* 'man' and *'ashkii* 'boy' should be treated as adjuncts to the 'agreement' morphemes on the verb. Given the θ-criterion — according to which every 'argument slot' (i.e. θ-role) that a verb assigns can be occupied by only one argument (Chomsky 1981) — it is the agreement morphemes that are the θ-absorbing pronominal arguments.

If Jelinek's (2006) analysis is correct, polysynthetic languages like Navajo by definition do not have subject-verb agreement morphology and naturally fall into the class of 'no-agreement' languages, for which, as discussed in Chapter 2, the RAH does not predict verb raising. While this analysis is plausible given that the referential arguments in polysynthetic languages (e.g. *diné* 'man' and *'ashkii* 'boy' in (5b)) are readily left out in rich pragmatic contexts, the question remains how we account for the doubling of φ-features in discourse neutral contexts.

The opposing analysis, proposed by Baker (1996), postulates that the syntactic argument positions (A-positions) in examples such as (5a) are occupied by empty categories which, at some point in the syntactic derivation, enter into a particular structural relation with the φ-agreeing morphemes on the verb. Baker (1996) relates these empty categories in (5a) to the ones typically assumed in *pro*-drop constructions — in which subjects are covert.[2] Given this, it is the A-positioned empty categories that absorb θ-roles, whereas the 'agreeing' morphemes on the verb are simply agreement morphology. Therefore, polysynthetic languages (e.g. Navajo) have rich agreement morphology and in a sense can be unified with *pro*-drop languages (e.g. Italian), given that they allow argument drop. An important advantage of Baker's (1996) analysis is that the doubling of φ-features is treated as a syntactic operation, suggesting that the set of agreement features on verbal morphemes are formal. This falls naturally in line with the account of doubling phenomena as spelled out in Zeijlstra's (2008) *Flexible Formal Feature Hypothesis* (FFFH), according to which the doubled semantic features can be grammatical categories. In line with this, the φ-features in the verbal morphology in (5b) are grammatical categories.[3]

According to the FFFH a language in which φ-features are present in the verbal morphology, but which does not allow co-occurrence of referential noun phrases (unlike Navajo), by definition does not have grammatical agreement. This indicates that a construction in which verbal morphology (marking φ-features of the subject) and the overt subject are in complementary distribution in fact lacks agreement morphology altogether; and the agreement morphemes

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2. *pro*-drop languages are also sometimes referred to as 'null-subject' languages, or 'subject-drop' languages. Typically, analyses in the literature assume that the omission of subjects is directly related to the φ-agreement marking on the verb. See for example Rizzi (1982) for an analysis of subject-drop in Italian.

3. In this sense Zeijlstra's (2008) FFFH can be used as an indication of the presence of agreement morphology, though we will see that doubling alone is not sufficient for ascertaining whether or not a φ-bearing morpheme is agreement morphology, since some languages can have doubled φ-features of subjects, and yet the morphemes are not agreement morphology.

are perhaps better analyzed as pronominal subject arguments that are incorporated into the verb. This phenomenon has been attested in Irish (cf. Ackema and Neeleman 2003; Dowd 2008):

(6) *Irish* (Dowd 2008:4)

    a. Dhéanfadh na néalta seo radaíocht a fhrithchaitheamh.
        do.COND   the clouds this radiation to reflect
        'These clouds could reflect radiation.'

    b. * Dhéanfaidís na néalta seo radaíocht a fhrithchaitheamh.
        do.COND.3.PL the clouds this radiation to reflect
        'These clouds could reflect radiation.'

While the verb *dhéanfadh*, which does not mark φ-agreement morphology, readily occurs with the subject *na néalta*, the form *dhéanfaidís* does mark φ-agreement morphology, but does not permit overt subjects. Therefore the doubling of features is banned, suggesting that the 3.PL marker *-ís* is purely semantic. Note how this contrasts to a *pro*-drop language like Serbo-Croatian where the φ-agreement morphology co-occurs with the subject.

(7) *Serbo-Croatian*
     Oblaci reflektu-ju zračenje
     clouds reflect-3.PL radiation
     'The clouds reflect radiation.'

Like the subject doubling in Irish, in Canela-Krahô the doubling of φ-features is ungrammatical:

(8) *Canela-Krahô* (Hengeveld 2012:471)

    a. Hũmre te po   curan.
        man   PT deer kill
        'The man killed the deer.'

    b. (*Hũmre) cu-te (*po) ih-curan.
          man   3-PT   deer 3-kill
        '(The man) he killed (the deer) it.'

As shown in (8) the language prohibits the doubling of the features of the subject *hũmre* 'the man' and the object *po* 'deer'. Accordingly, this leads to the conclusion that Navajo on the one hand and Irish and Canela-Krahô on the other belong to two different types of languages with respect to the agreement morphology. Navajo, having φ-agreement, allows doubling of the semantic features of the subject and reflects them on the verb, whereas Irish and Canela-Krahô verbs incorporate pronominal arguments, since they have no φ-agreement.

    However, a complementary distribution between subject DPs and the subject marking morpheme on the verb in Irish and Canela-Krahô is not a universal test for pronominal argumenthood, since subject DPs and subject markers can co-occur in some pronominal argument languages. Thus, establishing whether

a particular language is a pronominal argument language or an agreement-marking languages is not a straightforward matter, and we may need a variety of tests (often language-specific) to determine whether the subject marking morpheme that appears on the verb is an agreement morpheme or a pronominal argument.

A simple approach perhaps is to first determine if the nominal subject DPs are arguments of the verb. If the answer is yes, then the subject morpheme on the verb cannot be the argument of the verb, making it a likely suspect for agreement morphology. In the studies of the languages in Chapter 6 and Chapter 7, I first attempt to determine the status of nominal subject DPs. Specifically, the presence of case morphology on nominal DPs, as illustrated in the example from Serbo-Croatian in (9), indicates that nominal DPs are licensed by verbs, which *ipso facto* makes them arguments of the verb.

(9) *Serbo-Croatian*
Anesa   i Zlatko   jed-u   sendvič-e
Anesa.NOM and Zlatko.NOM eat-3.PL.M sandwich-3.PL.M.ACC
'Anesa and Zlatko are eating sandwiches.'

Consequently, in (9), we can conclude that the subject marker on the verb cannot be the argument of the verb, and since the marker is systematic and obligatory, we can surmise that it is an instantiation of agreement morphology, and not a subject doubling phenomenon.

In contrast to how the presence of case morphology can indicate that nominal subject DPs are arguments, the presence of topic and focus markers that license subject DPs suggests that they cannot be arguments, leaving the subject marker on the verb as the only candidate for argumenthood. For instance, as Jelinek (2006) points out in the case of Navajo, the pronominal part in (10) cannot be focused, whereas free pronouns in (11) must be focused.

(10) *Navajo* (Jelinek 2006:262)
Niiłtsá
1.SG.OBJ:3.SG.SUBJ.saw
'I saw you.'

(11) *Navajo* (Jelinek 2006:262)
  a. Shí niiłtsá
     '*I*, I saw you.'
  b. Ni niiłtsá
     '*You*, I saw you.'

This suggests that Navajo free pronouns are licensed by a focus projection and not as an argument of the verb. Consequently, the subject and object markers on the verb must be the arguments of the verb. As such they are not agreement morphemes. In contrast to Navajo, in a non-pronominal argument language, say English (12), free pronouns can be optionally focused, indicating that pronouns themselves are arguments of the verb.

(12)   *English*
      a. *I* saw you
      b. I saw *you*

Importantly, we can still imagine a language in which we cannot apply any of the three tests: complementary distribution, case morphology on DPs, and the systematic DP topic/focus. In such cases, we are forced to make judgments based on the properties of the subject marker itself. For example, we can test for evidence of movement; if the subject marker can optionally attach to different elements, then we can surmise that it moves and is likely phrasal, suggesting that it is an argument and not a functional (affixal) head. Unlike phrasal elements, the phonologically-dependent functional heads, unless pied-piped, tend to be in fixed positions, particularly when they are realized as affixes (cf. §4.1.3).[4]

As already alluded to, not all the discussed tests can be used to determine whether a subject-doubling morpheme is a pronominal argument (PA) or an agreement marker (AM). This obviously depends on the language-specific properties, as some languages lack case marking morphology on DPs, while others lack obligatory topic/focus markers. Consequently, when determining the category of the subject-doubling morphemes in the analyses in Chapter 6 and Chapter 7, I follow the procedure in Figure 4.1.

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4. Note that there are some cases of what are called 'mobile affixes', as reported in Kim (2015). However, the reported case in Huave involves the optionality of the affix appearing as a prefix or a suffix of the same host, but importantly not on different hosts. Thus, a morpheme appearing as either a prefix or a suffix on the same host does not result from a syntactic movement, but rather from post-syntactic operations.
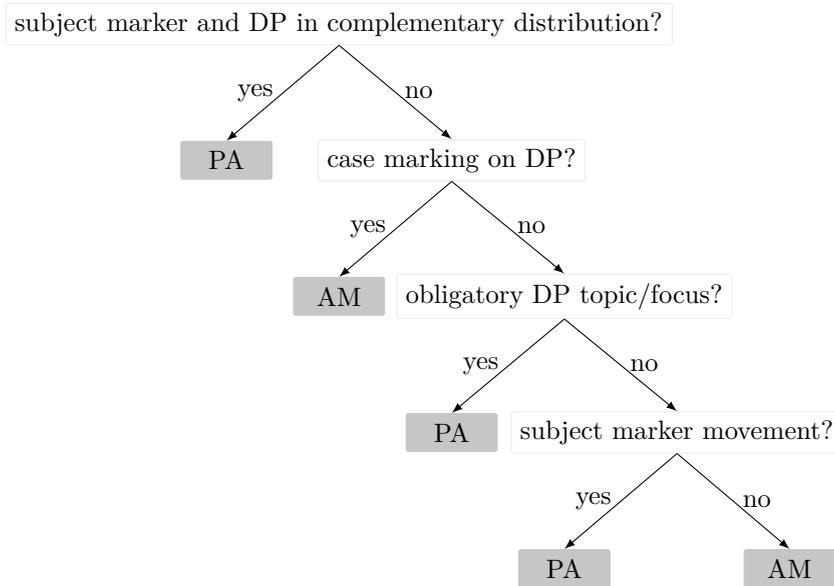
Figure 4.1 Procedure for determining if the doubled subject marker is a pronominal argument (PA) or an agreement marker (AM)

4.1.3 Morpho-syntactic types of agreement markings

As already discussed, identifying agreement morphemes, a relevant part for the adequate testing of the RAH, is not always a simple matter. The questions that this section seeks to address pertain to the types of morphological realization of agreement. This is important because whether or not *v*-to-Arg movement is triggered by the (rich) agreement morphology depends on the extent to which the agreement phonologically depends on the verb. Therefore, in order to test the RAH, we must first establish if the (rich) agreement morphology, which varies considerably in this respect across languages, phonologically depends on the verb (and/or other elements in the clause). Only then can we determine what the RAH specifically predicts w.r.t. *v*-to-Arg movement.

I begin by first defining and illustrating the attested types of agreement morphemes: *affixes* and *clitics*.[5] Subsequently, following Zwicky and Pullum (1983), I discuss the similarities and differences between these types of agreement morphemes and offer morpho-syntactic and morpho-phonological tests that are typically used to distinguish them.

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5. So far we have only encountered one language (*Ngan'gityemerri* in Corbett (2006)) which productively uses free words in the context of agreement within a noun phrase. However, we have not yet encountered a language that utilizes free words as agreement markers in verbal domains (i.e. subject-verb agreement). Given that we do not have usable data, I leave the free words aside.

Affixes

Affixes are morphemes that mark a variety of grammatical features (φ, Case, tense, aspect); they are morpho-syntactically and morpho-phonologically fully integrated with the host morpheme. As such, affixes interact with their hosts at the word level, exhibiting complete dependence on their hosts. Consider for example the affixes in the present tense verbal paradigm of Serbo-Croatian:

(13)   Serbo-Croatian: *pliva-ti* 'to swim'

Person	Singular	Plural
1	pliva **-m**	pliva **-mo**
2	pliva **-š**	pliva **-te**
3	pliva **-ø**	pliva **-ju**

Neither of these affixes (*-m, -š, -mo, -te, -ju*) can occur independently of the verbal root *pliva-*. They reflect the person and number features of subjects and are considered to be the most prototypical type of subject-verb agreement markers.

Clitics

Unlike affixes, clitics are morphemes that are morphologically separate from their hosts and yet phonologically integrated with them. Furthermore, whereas affixes interact with their host on the word level, clitics appear to interact with their hosts at the level of a phrase, showing less phonological dependence (on hosts) than affixes. With regard to their syntactic positions, clitics can be divided into **clausal clitics**, occupying a specific position in the clause (e.g. in clitic second constructions), and **phrasal clitics** attaching to specific hosts regardless of the position in the clause (e.g. auxiliary clitics in English).

Agreement marking clitics are (at least in the Indo-European family, and potentially more widely) less prevalent than affixes. In general, clitics can belong to a variety of categories (pronouns, auxiliaries, determiners, adpositions). However, as agreement markers, clitics are typically pronominal, or shortened versions of independent pronouns that have become phonologically dependent on their hosts. As an example of a clitic agreement marker, I illustrate the case of the subject clitics in Colloquial French. The French subject clitics were initially argued to be subject doubling clitics (Rizzi and Roberts 1989; De Cat 2005). However, it has been pointed out that *il* (as in the following example) is in fact the realization of verbal agreement morphology (Hopper and Traugott 2003; Culbertson 2010, and references therein):

(14)   *Colloquial French* (Culbertson 2010:86)
        Jean   il   parle.
        John.1.SG CL.3.SG speak
        'John speaks.'

Particularly Culbertson (2010) persuasively demonstrates that *il* is an instantiation of subject-verb agreement. The arguments for this status of the French pronominal (subject) clitics are based on a number of observations in Colloquial French. Among others, main observations include the fact that the repetition of one of the clitics in coordinated VPs as in (15) is preferred, and even required by most speakers of Colloquial French:

(15)   *Colloquial French* (Culbertson 2010:103)
       Il   va ouvrir la porte et   ??(il)   va rentrer.
       CL.3.SG.M   open the door and   CL.3.SG.M   enter
       'He's gonna open the door and he's gonna go in.'

Importantly, the (superficial) long-standing view of these French agreement clitics as subject clitics shows that agreement, as a pervasive crosslinguistic category, is not always straightforwardly identified and that agreement morphology must be defined and understood before the RAH can be tested. Furthermore, we must establish the differences between affix-marked and clitic-marked agreement, and have ways of distinguishing one from another. In particular, their morpho-syntactic and morpho-phonological properties have been typically thought to have consequences on the position of verbs, and potentially other elements in the clause, which has direct consequences for the RAH.

    Similarly, the distinction between clitics and (weak) pronouns is sometimes blurred and difficult to establish.[6] An important question, then, is what tests can be used to show whether these two types of morphemes (although related) can be distinguished from one another? Moreover, given the (categorial) relation between pronominal clitics and pronouns, do pronouns (either weak or strong) occur as agreement markers, or are they constrained to the role of arguments?

    In the following subsections I illustrate a number of morpho-syntactic and morpho-phonological tests that are typically used to establish the differences between the four types of morphemes, all of which can serve as the realizations of agreement. The tests are an important diagnostic for determining the extent to which agreement morphology is phonologically dependent on the verb (or other elements in the clause). Based on this we can assess whether or not a particular agreement morpheme can (or does) trigger verb movement. This allows us to correctly determine the RAH predictions and subsequently test them.

Clitic–affix distinctions

Regarding the distinctions between clitics and affixes, these are most prominent in the domains of morpho-syntax and morpho-phonology. For example,

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6. See Déchaine and Wiltschko (2002) for a pronoun classification that does not distinguish weak pronouns from clitics, but rather treats them as basically the same category. In their analysis Déchaine and Wiltschko (2002) acknowledge this lack of distinction while basing their classification on a series of semantic tests.

(clausal) clitics can attach to different types of hosts:

(16) *Serbo-Croatian*

    a.   Mama mu   je   dala kolač.
           mother him.CL AUX.CL given cake
           'The mother gave him a cake.'

    b.   Dala mu   je   mama kolač.
           given him.CL AUX.CL mother cake

    c.   Kolač mu   je   mama dala.
           cake   him.CL AUX.CL mother given

    d.   Je-li mu   mama dala kolač?
           is-CL him.CL mother given cake
           'Did the mother give him a cake?'

The Serbo-Croatian pronominal clitic *mu* 'him' can encliticize onto any of the sentence constituents as well as onto another clitic (cf. 16d), which in turn acts as its host. The only condition is that the clitic must occupy the second position in the sentence — the so called clitic second phenomenon.

In contrast to clitics, affixes must be attached to specific hosts regardless of their position in the clause:

(17) *English*

    a.   John run-*s* daily.

    b.   * John-*s* run daily.

Although both clitics and affixes prosodically depend on their hosts, affixes exhibit a closer relation with their hosts than clitics. Consider for example certain plural forms of nouns in English:

(18)   **noun**   **plural**
        leaf   *leav-es*
        hoof   *hoov-es*

The addition of an affix alters the root of the verb. In contrast, clitics do not affect the root morphology of their hosts, while clitics themselves often undergo allomorphy depending on the phonological properties of the host they attach to (Zwicky and Pullum 1983).

Affixal paradigms often have gaps as particular forms do not occur. According to Zwicky and Pullum (1983), English verbs such as *stride* are anomalous in this regard, as they lack a past participle form. In contrast, clitics do not exhibit such paradigmatic gaps, as they can combine with any host regardless of the host's internal morpho-phonological properties (as long as the host has the required categorial status). For example, the English third person singular auxiliary affix *'s* will combine with any third person singular noun, regardless of its internal morpho-phonological properties.

With respect to syntactic operations, affixed hosts tend to be recognized as syntactic atoms, whereas clitics and their hosts are treated by the system as

two distinct atoms. For example, plural forms of nouns can be treated as single atoms in syntax, whereas the auxiliary clitic *'s* in *John's coming* is treated as a separate atom (Zwicky and Pullum 1983). This can be confirmed with constituency tests such as substitution. The affixed categories can be substituted by another (non-affixed) form whereas the cliticized forms cannot:

(19) **Substitution**
    a. *affix*
        i.   I saw the kid*s*
        ii.   I saw a kid
    b. *clitic*
        i.   John*'s* coming.
        ii.   * John coming.

Similarly, an affixed element can be moved, whereas the cliticized typically cannot:

(20) **Topicalization**
    a. *affix*
        i.   I think kid*s* are leaving.
        ii.   Kids, I think are leaving.
    b. *clitic*
        i.   I think John*'s* coming.
        ii.   * John*'s*, I think coming.

The plural morpheme *-s* in *kids* must be fronted along with the nominal stem, whereas the auxiliary clitic *'s* cannot be moved together with the host (20bi). These tests suggest that affixed hosts behave like a constituent (i.e. a single word), whereas cliticized hosts do not.

    Based on the observations from this and the preceding subsection, the differences between clitics and affixes can be summarized with the following table:

Morpho-syntactic properties	Affixes	Clitics
can morphologically alter hosts	+	−
cannot have different hosts	+	−
can have arbitrary paradigmatic gaps	+	−
form constituents with their hosts	+	−

Table 4.1 Summary of differences: clitics vs affixes

    What follows from some of the distinctions in Table 4.1 is that agreement clitics and affixes can have quite different effects with regard to verb movement. That is, since clitics can attach to a variety of hosts, an agreement clitic in principle need not be specifically dependent on the verb as its host, but can

attach to a variety of other elements. In contrast, an agreement affix on the verb invariably depends on the verb, since affixes cannot have different hosts. This makes clitics a more complex type of agreement morphology, and it follows that while an agreement clitic in one language may always trigger verb movement, an agreement clitic in another language can in principle attach to anything that happens to be adjacent to it. This is a crucial point, as some languages can have rich agreement morphology realized as clitics and yet syntactically behave as poor agreement languages (i.e. with verbs realized vP-internally), since the agreement clitics attach to any morpheme that is adjacent to them. It follows then that clitics do not necessarily predict that v-to-Arg movement is required.

We also need to understand how clitics differ from categories that are phonologically less dependent on adjacent elements, such as weak pronouns. Let us now review how clitics and weak pronouns differ.

Weak pronouns and clitics: similarities and distinctions

With respect to their syntactic positions, weak pronouns and clitics often behave similarly. For example, neither weak pronouns nor clitics (unlike strong pronouns) can be coordinated, topicalized, or clefted:

(21) **Coordination**

    a.   *Dutch*
        Het gaat niet over jou/*je   en mij/*me.
        it   goes not about you/you.wp and me/me.wp
        'It's not about you and me.'

    b.   *Serbo-Croatian*
        Znam   da   [njemu/*mu i   njoj/*joj]$_{Co}$ to   nedostaje .
        know.1.sg comp him/him.cl and her/her.cl   that misses.
        'I know that he and she are missing that.'

(22) **Topicalization**

    a.   *Dutch*
        Zij/*ze,   wist ik dat   dat deed.
        She/she.wp knew I comp that did
        'She, I knew did that.'

    b.   *Dutch*
        Hij/*ie, wist ik dat   dat deed.
        He/he.cl knew I comp that did
        'He, I knew did that.'

(23) **Clefting**

    a.   *Dutch*
        Zij/*ze   is het die dit doet.
        she/she.wp is it   who this does
        'It is she who does this.'

b. *Dutch*
Hij/*ie   is het die dit doet.
he/he.CL is it   who this does
'It is he who does this.'

The Dutch weak pronouns *je* in (21), *ze* in (22-23) as well as the Dutch clitic *ie* in (22) and the Serbo-Croatian clitics *mu* 'him' and *joj* 'to-her' in (21b), cannot be coordinated, topicalized, or clefted; whereas their counterpart (strong) pronouns in both Dutch the Serbo-Croatian can.

Similarly, neither weak pronouns or clitics can occur in constructions with contrastive stress:

(24) **Contrastive stress**

a. *Dutch*
Ik wist   dat wij/*we   moesten komen maar niet dat zij/
I   knew that we/we.WP must   come   but   not that they/
*ze   ook moesten komen.
they.WP too must   come
'I knew that WE had to come but not that THEY had to come too.'

b. *Serbo-Croatian*
Video   je *ga/njega   u ogledalu a   ne *ju/nju.
saw.3.SG AUX him.CL/him in mirror   but not her.CL/her
'He saw HIM in the mirror but not HER.'

As shown in (24) neither Dutch weak pronouns or Serbo-Croatian clitics can be stressed. As in the syntactic test (21-23), the system allows contrastive stress only with strong pronouns.

Regarding the tests that distinguish weak pronouns and clitics, Van Craenenbroeck and van Koppen (2008) illustrate adjacency tests which show that weak pronouns can occupy different positions in the linear order, whereas clitics are inflexible, since they must immediately precede or immediately follow a particular category. The following example illustrates that the Dutch pronominal clitic *ie* cannot be separated from the complementizer with a parenthetical, whereas the weak pronoun *ze* can:

(25) *Dutch* (Van Craenenbroeck and van Koppen 2008:215)

a. *Ik denk dat, naar alle waarschijnlijkheid, ie   vandaag niet
I   think that to   all probability   he.CL today   not
komt.
comes

b. Ik denk dat, naar alle waarschijnlijkheid, ze   vandaag niet
I   think that to   all probability   she.WP today   not
komt
comes
'I think that it is unlikely that she will come today.'

The clitic *ie* must prosodically join its host (i.e. cliticize), whereas *ze* can occur in different positions with respect to a (possible) host. In addition, *ze* can be sentence initial whereas *ie* cannot:

(26) *Dutch*

    a.   Zij/ze   wist dat niet.
         she/she.wp knew that not
         'She did not know that.'

    b.   Hij/*ie wist dat niet.
         he/he.cl knew that not
         'He didn't know that.'

Consequently, the RAH would not predict that a clitic that behaves like *ze*, functioning as an agreement morpheme, can trigger verb movement, unlike a clitic like *ie*, which must prosodically join the verb.

Pronouns (weak and strong)

Next to affixes and clitics, one might expect that other (related) categories could occur as agreement markers, for example pronouns. Although strong pronouns are to my knowledge unattested as agreement markers, there is at least one case of weak pronouns which deserves closer inspection. The following example from the Dutch dialect of Lapscheure illustrates a kind of subject doubling which could be considered as an epiphenomenon of an agreement operation:

(27) *Lapscheure* (Haegeman 2004; Van Craenenbroeck and van Koppen 2007)

    a.   . . . dat *ze*   zij   gisteren gewerkt heeft.
         . . . that she.cl she.sp yesterday worked has
         '. . . that she worked yesterday.'

    b.   *Ze*   heeft zij   gisteren gewerkt.
         she.cl has   she.sp yesterday worked
         'She worked yesterday.'

The word *ze* 'she', which in the previous section has been argued to be a weak pronoun in certain contexts, could be considered as a case of an agreement marker cliticizing onto the preceding complementizer in (27a).[7] Haegeman (2004) argues that in both examples in (27) the word *ze* should be analyzed as essentially the same category. If that is correct, then, given the outcome of adjacency tests presented in the previous section, *ze* is a weak pronoun and thus constitutes a case of an agreement marker surfacing as a weak pronoun.

    Contra Haegeman (2004), a competing analysis by Van Craenenbroeck and van Koppen (2007) treats the two cases differently on the basis that *ze* in (27b), but not in (27a) (in the Dutch dialect of Wambeek), can be easily substituted

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7. This type of agreement is prevalent in many dialects of Dutch and is typically referred to as 'complementizer agreement' (cf. Van Craenenbroeck and van Koppen 2003, and references therein)

by a strong pronoun or a full DP. For Van Craenenbroeck & Van Koppen, this means that *ze* in (27b) is a weak pronoun, wheres in (27a) *ze* is a clitic. If Van Craenenbroeck & Van Koppen are correct, *ze* cannot be an instance of a weak pronoun as an agreement marker. Rather, *ze* is an argument, since it can be substituted with a strong pronoun or a full DP.

Whether we assume either Haegeman (2004) or Van Craenenbroeck and van Koppen (2007) to be correct, the example above illustrates that there is a rather fine line between the categorial distinctions of some of these morphemes; and in order to determine their status — in the context of any investigation (including the RAH testing) — an in-depth analysis is needed to establish whether or not a particular clitic, weak pronoun, or strong pronoun is an agreement marker.

Agreement marker-target hierarchy

Based on the discussion thus far, the differences between the three (four, depending on the inclusion or exclusion of free words) types of agreement markers in relation to their respective agreement targets are perhaps the most straightforward in terms of adjacency. Affixes are invariably adjoined to their targets (or hosts). The clitic–target order can be separated by other clitics, while the weak-pronoun–target can be separated by entire phrases. Given this, I offer the following definition where an element to the left of '→' is (or tends to be) more adjacent to the target then the element to the right of '→':[8]

(28)   **Agreement marker–target hierarchy**
       affix → clitic → weak pronoun → strong pronoun/free word

Since the RAH predicts that the verb moves to host the agreement morphology for phonological support, we can infer from (28) that, in the case of affixes that yield a rich set of agreement features, verb movement is always predicted, since affixes must attach to verbs specifically. In the case of clitics, verb movement can be triggered to host the clitic, but not necessarily so, since clausal clitics can in principle be supported by a variety of hosts without triggering verb movement; we can expect a similar behavior from weak pronouns. Finally, the RAH does not predict verb movement in languages in which free words (or strong pronouns) are agreement markers, since the two are phonologically independent from other elements in the clause.

4.1.4   Typology

Given the observations on agreement morphology discussed in this section, we can generate a typology based on the phonological dependency of different types of morphemes, which will allow us determine the RAH predictions. In particular we can postulate four possible types of languages. I classify them into the following types:

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8. The term 'adjacency' is loosely used here, encompassing both morpho-syntactic and syntactic adjacency.

- type A, where agreement is expressed by bound morphemes hosted by a verbal element (i.e. V^0/VP/vP),
- type B, where agreement is expressed by bound morphemes that are attached to any morpheme that happens to be adjacent to it, one of which can be V^0/VP/vP,
- type C, where agreement is expressed by unbound morphemes, and
- type D, where agreement morphology is poor/absent.

Given these four types of languages, the RAH predicts that

- for type A, agreement is always expected to trigger verb movement,
- for B, agreement can trigger verb movement, but it need not, since it can also attach to other adjacent elements,
- for C, agreement is phonologically independent of V^0/VP/vP and it does not trigger verb movement, and
- for D, there is no verb movement in controlled conditions.

All poor agreement languages belong to type D, for which the RAH predicts no v-to-Arg movement. Naturally, A, B, and C types can also have poor agreement iff the distinctions do not conform to the Person Number Universal (PNU) (cf. Chapter 3), so it is not the mere presence or absence of agreement that determines whether a language is rich or poor. However, no languages were encountered in this study that have agreement morphology that did not conform to the PNU. I refer to this typology when discussing individual languages in Chapter 6 and Chapter 7.

So far in this chapter, I have discussed the two most prevailing types of morphological realization of subject-verb agreement, clitics and affixes, and two potential (but as of yet unattested) types of agreement marking morphemes, weak pronouns and free words. Furthermore, I have demonstrated a few well-known syntactic, morpho-syntactic, and morpho-phonological tests that shed light on the most important differences between affixes, clitics, and weak pronouns. The tests allow us to identify the type of agreement morpheme and, subsequently on the basis thereof, to assess whether or not the RAH predicts verb movement to a vP-external position. Finally, on the basis of the properties of different types of agreement morphemes, I have spelled out the typology of plausible languages that the RAH predicts. Crucially, in every language that doubles the φ-features of the nominal subject DP, we must assess the phonological dependency of the doubled subject marker on other elements, and, in particular, the extent to which the subject marker depends on the verb.

4.2   Verb movement

In this section I demonstrate that the diagnostic for determining the syntactic position of the verb depends on the set of circumstances that are unique to the language under investigation, and therefore may not be (equally) applicable to other languages. Specifically, I discuss the position of adverbs and negation,

which is standardly used for determining the syntactic position of the verb in Germanic languages. I specify the conditions under which the diagnostic can be applied. Importantly, the small range of conditions in which we can test the RAH considerably narrows down the list of potential languages to be studied, as the diagnostic cannot be applied in particular clauses (e.g. with V2 effects), but also in particular types of languages (with object-verb orders). In addition, I argue that adverbs and negation must have specific syntactic positions and properties, which are prerequisites for RAH testing. While, on the one hand, this shows the difficulties of probing for the exact position of the verb in particular languages, it, on the other hand, necessitates the search for alternative diagnostics.

4.2.1 Standard diagnostics

As already discussed in §2, the main diagnostic for verb movement is its position in relation to the position of adverbs and negation. Consider this in the following two groups of languages with poor (cf. 29) and rich (cf. 30) agreement paradigms:[9]

(29) **Phrasal adverbs precede the finite verb**

    a.   *English*
        John **often** *eats* apples.

    b.   *Standard Swedish*
        Min granne   frågade om jag **inte** *ville* komma över.
        My neighbour asked if I   not   would come over
        'My neighbour asked if I wouldn't come over.'

    c.   *Danish*
        Dette er brevet,   som Tove **ikke** *har* læst.
        that   is the.letter that Tove not   has read
        'That is the letter that Tove has not read.'

(30) **Phrasal adverbs follow the finite verb**

    a.   *Icelandic*
        Ég supurði hvort Jón   *hefði* **ekki** séð myndina.
        I   asked   if   John had   not   seen the.movie
        'I asked if John had not seen the movie.'

    b.   *Älvdalen Swedish*
        Ed ir biln so   an *will*   **int** åvå.
        It   is car that he wants not have
        'It is the car that he does not want to have.'

    c.   *Yiddish*
        Ikh veys nit ven   di ku *iz* **nit** geshtanen in   tsimer.
        I   know not when the cow is not stood   in.the room

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9. The examples in (29b-c) and (30a-c) illustrate verb movement in embedded clauses, for the purposes of neutralizing any V2 effects (cf. §4.2.3, and Chapter 1).

'I do not know when the cow did not stand in the room.'

The finite verbs in English, Standard Swedish, and Danish contain little to no variation in their agreement morphology. Since the RAH predicts that the finite verb (in italics) must follow adverbs (in bold), the sentences in (29) are correctly accounted for. However, in Icelandic, Älvdalen Swedish and Yiddish the verbal paradigm is rich and, as predicted by the RAH, the finite verb precedes adverbs and negation in (30). The position of adverbs and negation in relation to the finite verb is the main RAH diagnostic, which accounts for a large portion of data in Indo-European languages.

In the remainder of this section I lay out the necessary conditions for the applicability of the adverb tests, which (as will become clear later on) leads to a necessary disqualification of particular types of languages, since the RAH cannot be evaluated. Furthermore, I illustrate data from several languages that were argued to prove the RAH incorrect. Following Koeneman and Zeijlstra (2014), I demonstrate that adverbs as diagnostics are inadequate in these cases, and that the data do not refute the RAH. Importantly, while accounting for the empirical facts, the overall analyses of languages proposed in this section (and subsequent chapters) are as simple as possible.

4.2.2   OV languages

As already alluded to, v-to-Arg movement cannot be detected in languages that have OV discourse neutral word orders. Specifically, the key trait of the adverb test for v-to-Arg movement is that it essentially looks at the position of the subject and the verb and assesses if the vP-adjoining adverbs surface in the linear order between the subject and the verb, or if they follow the verb. While this is applicable for languages that have VO orders, in which crucially vPs are head initial, the diagnostic cannot be readily applied in head-final (i.e. OV) languages. For example, consider OV languages in which adverbs and negation are located between the subject and the verb, like Dutch and Turkish:

(31)   a.   *Dutch*[10]
            . . . dat ie **vaak** de appels **niet** *at.*
            . . . that he often the apples not   ate
            '. . . that he often did not eat the apples.'

       b.   *Turkish*
            Ahmet **şimdi akıllıca** teslim   *ol-du.*
            Ahmet now   wisely   surrender be-PT.3.SG
            'Ahmet has now wisely surrendered.'

Since the verb in OV languages is obligatorily placed at the linear end of the clause (with DP objects), the position of adverbs and negation cannot be used to pinpoint the verb's syntactic position. For a concrete illustration, compare

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10. Embedded clauses are used to eliminate any V2 effects (cf. §4.2.3).

the structure that accounts for VO languages in (32a) to the OV structure in (32b):

(32) a.   b.

Arg′   Arg′
├─ Arg^0 ├─ vP
└─ vP   └─ Arg^0
   ├─ AdvP/NegP   ├─ AdvP/NegP
   └─ vP   └─ vP
      └─ v′   └─ v′
         ├─ v^0 ├─ VP
         └─ VP   └─ v^0
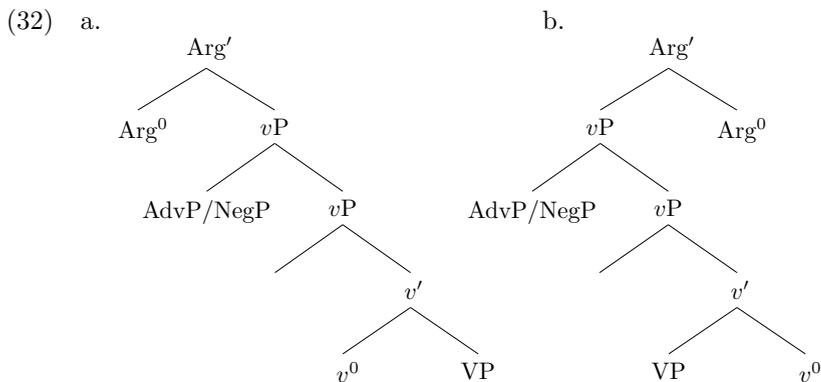
While in the VO example AdvPs are located between the two positions of the verb (i.e. v^0 and Arg^0), where we can rely on them as a diagnostic for verb placement, in OV, AdvPs do not intervene between v^0 and Arg^0. This is so because AdvPs always appear to the left of the obligatorily clause-final head verb. Even if AdvPs are adjoined to the right of vP, they still invariably surface to the left of the verb, and we thus have no way of knowing whether AdvPs are left- or right-adjoined. Consequently, we cannot tell whether or not the verb moves to the final position crossing any right-adjoined adverbs or whether AdvPs are always left-adjoined.

Under the assumption that ArgP, like vP, is head-final in OV languages, Arg^0 must be located to the right of vP (cf. 32b), making v^0 and Arg^0 positions string-adjacent. What follows from this is that it cannot be determined whether there is movement of the verb using the adverb test. If it is correct that rich agreement morphology has its own syntactic position at Arg^0 to which the verb moves in order to provide phonological support, the discussion here shows that whatever operation determines the head-final (OV) orders, the conditions that we get do not allow us to detect verb movement using vP-adjoined adverbs as diagnostics. OV languages are well known to be lacking in reliable diagnostics for verb movement (cf. Vikner 1997; Bobaljik and Thráinsson 1998; Koeneman and Zeijlstra 2014, among others). Consequently, they are not proper candidates in which verb movement to a vP-external position can be detected with certainty, and have therefore been excluded from the consideration before the sample in Table 5.4 was put together.

4.2.3   Controlling for agreement-independent movement

One fairly important issue regarding the adverb test in the context of RAH testing pertains to the fact that other operations can trigger verb movement to a vP-external position, such as verb raising, where aspect, negation, or other functional morphology is hosted by the verb. Similarly, we need to makes sure

that the argument DPs are *in situ* as well. Indeed, there could be a variety of agreement-independent movements of both verbs and their arguments, such as verb movement to AspP or NegP and object shifts. Proper testing of the RAH in any given language must ensure that these kinds of displacements are controlled for.

To illustrate this point, one familiar operation which is prevalent in many languages (in Germanic) is verb second (V2). V2 refers to the placement of the finite verb in the second position in the linear order of the clause, regardless of the (type of) element placed in the first position. In the Dutch example in (33a-b), the finite verb *at* 'ate' must be placed in the second position in the linear order of the matrix clause. Matrix clause with the verb in the third position (or any other position than the second) are ungrammatical (33c):

(33)   *Dutch*

    a.   Ik at   vaak appels.
                 I   ate often appels
                 'I often ate apples.'

    b.   Gisteren at ik appels.
                 yesterday ate I apples
                 'Yesterday I ate apples.'

    c.   * Gisteren ik at appels.
                 yesterday I   ate apples
                 'Yesterday I ate apples.'

Analyses of V2 as in (33) typically suggest that the verb uniformly surfaces at C^0 (cf. Den Besten 1983; Weerman 1989; Vikner 1990).[11] This leaves two potential options for verb movement: direct movement of *v*-to-C, where the verb does not land at Arg^0 (34a), or *v*-to-C via Arg^0 (34b):

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11. Note however that others have argued that when subject is in the initial position in main clauses, the verb raises to Arg^0 but not to C^0, the subject surfacing at the spec,ArgP but not raising to spec,CP (cf. Travis 1984; Zwart 1993).

(34)   a.   b.

[tree diagram (34a): C′ → C⁰, vP; vP → ⟨DP_sub⟩, v′; v′ → VP, v⁰; VP → DP_obj, V⁰]

[tree diagram (34b): C′ → C⁰, ArgP; ArgP → ⟨DP_sub⟩, I′; I′ → Arg⁰, vP; vP → ⟨DP_sub⟩, v′; v′ → VP, v⁰; VP → DP_obj, V⁰]
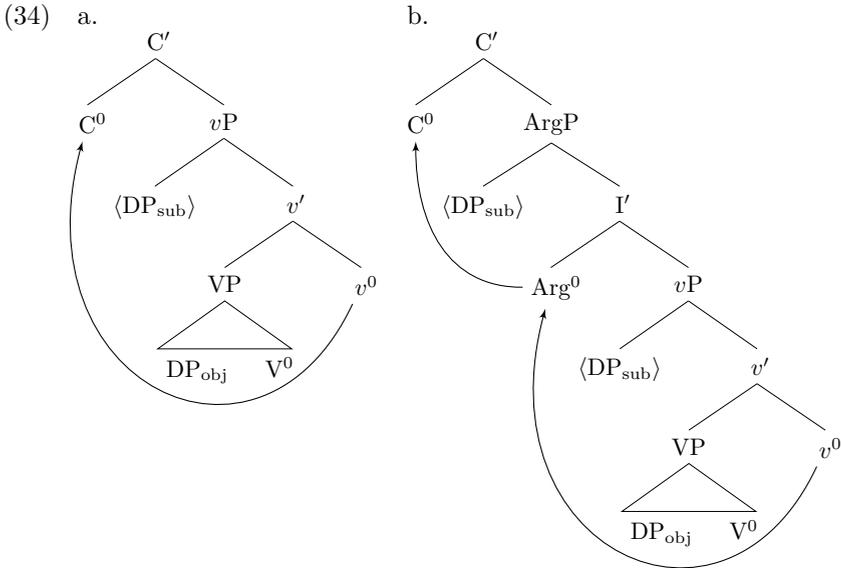
Assuming (34a) is correct in accounting for V2, it cannot be shown whether or not the rich agreement morphology has anything to do with movement. C^0 standardly does not bear subject-verb morphology. Therefore, the trigger for movement is unrelated to agreement, and we cannot assess by the position of vP-adjuncts whether the verb landed at any intermediate positions before surfacing in C^0. Comparably, assuming (34b) is correct, it cannot be determined whether the verb moves to the intervening Arg^0 in order to host the agreement morphology, or if Arg^0 is simply an intermediate step in a V2 operation. This leads to the conclusion that V2 effects must be controlled for when testing for v-to-Arg movement.

Note however that V2 in Dutch occurs only in main clauses and not in embedded clauses, as the following example illustrates:

(35)   *Dutch*
       Hij wist   dat   ⟨*at⟩ ik appels vaak   *at.*
       he knew that   ate I apples often ate
       'He knew that I often ate apples.'

The finite verb *at* 'ate' in (35) cannot be placed in the second position of the embedded clause and must be placed at the end of the clause — the so-called 'head-final' position. Since V2 is not present in Dutch embedded clauses, they might be used to diagnose the correlation between the verb and the agreement morphology. However, comparable to V2 in matrix clauses, the resulting OV order in the embedded clauses also alters the conditions and renders the diagnostic inapplicable, as already discussed in §4.2.2. This way of controlling for V2 by investigating embedded clauses has proved to be useful for Scandinavian languages.

Notably, not all types of embedded clauses lack V2. For instance, Faroese and Icelandic have V2 in declarative embedded clauses (cf. 36), whereas in embedded questions V2 is (for some reason) absent (cf. 37).

(36)   **Embedded declarative clauses**

    a.   *Faroese* (Heycock, Sorace, and Hansen 2010:78)
       Hanus segði, at   viðhvørt *er* tað ringt   at sleppa av við
       Hanus said   that sometimes is it difficult to do   off with
       alt kjøtið
       all meat.DEF
       'Hanus said that sometimes it is difficult to sell all the meat.'

    b.   *Icelandic*
       Hans sagði að   stundum *væri* erfitt   að selja allt kjötið.
       Hans said that sometimes was difficult to sell all meat.DEF
       'Hans said that sometimes it is difficult to sell all the meat.

(37)   **Embedded questions**

    a.   *Faroese* (Barnes 1992:27)
       Hann spyr, hví tað ikki eru fleiri tílíkar samkomur.
       he   asks why there not are more such   gatherings
       'He asks why there aren't more such gatherings.'

    b.   *Icelandic* (Wiklund, Bentzen, Hrafnbjargarson, and Hróarsdóttir 2009:1916)
       Ég veit af hverju Hedda *les*   **ekki** bækur
       I   know why   Hedda reads not   books
       'I know why Hedda doesn't read books.'

In fact, subject-verb inversions are ungrammatical in embedded questions, as (38) illustrates, indicating that there are no V2 effects, as verbs cannot raise up to C (cf. 34).

(38)   *Icelandic* (Heimir Viðarsson, p.c.)
    *Ég veit   af hverju *les*   Hedda **ekki** bækur
     I   know why   reads Hedda not books

Note that the verbs in (36) precede the embedded subjects, whereas the verbs in (37) follow the subjects. This shows that the RAH cannot be tested in embedded declarative clauses in Faroese and Icelandic but it *can* in embedded questions. Therefore, given that V2 triggers verb movement, whether or not agreement triggers verb movement is masked and there is no way to demonstrate if *v*-to-Arg takes place. Consequently, constructions like the ones in (36), which obligatorily position the finite verb in the second position, are not proper environments in which we can test the RAH.

Information-structural effects

Similarly, there are other non-canonical environments that can result from information-structural effects. Take for example the reported case from Icelandic in which the verb remains inside the *v*P (the so-called V3 order), even though Icelandic has a rich paradigm (Bentzen, Hrafnbjargarson, Hróarsdóttir, and Wiklund 2007):

(39) *Icelandic* (Angantýsson 2011:75)
    Það er leiðinlegt θegar formaðurinn **ekki** *mætir.*
    it   is bad   when director.DEF not   shows up

According to Bentzen et al. (2007), this refutes the strong RAH, as it demonstrates optionality of the verb position in Icelandic. However, in line with Angantýsson (2007), Koeneman and Zeijlstra (2014) argue that (39) is not a proper example for testing the RAH, since these types of word orders in Icelandic require that the subject is an unstressed pronoun and the adverb is stressed. This indicates that adverbs are not located in their usual surface (base-generated) position, but are fronted instead. Consequently, the application of the adverb test on this linear order in Icelandic does not allow us to determine the position of the verb, which crucially does not exclude that the verb is placed outside of the *v*P. This illustration suggests that for proper testing of the RAH, we must control for the contexts in which adverbs are not in their discourse neutral position.

I have thus far discussed certain types of contexts in which the RAH cannot be tested, serving as an illustration of the kind of issues that we have to take heed of when assessing *v*-to-Arg movement. Furthermore, verb movement to a *v*P-external position can be triggered by a variety of higher functional projections (e.g. aspect, negation) that are unrelated to agreement morphology and that therefore mask *v*-to-Arg movement, as is the case in the following example from Quiegolani Zapotec where the verb in the initial (displaced) position correlates with the presence of additional morphemes on the verb that mark completive and habitual aspect.

(40) *Quiegolani Zapotec* (Black 2000:45–46)

    a.   w-eey   Benit mël
         COMPL-take Benito fish
         'Benito took a fish.'

    b.   r-u   mëëz ngyed
         HAB-eat fox   chicken
         'The fox is eating the chicken.'

All contexts in which verb movement is independently triggered, as in (40), are unrevealing in the context of testing the RAH and must be controlled for.

4.2.4 Diagnostic prerequisites

In this subsection I spell out some of the prerequisites for the applicability of the adverb tests. The crucial point to be made is that diagnostics for verb movement can be language-specific. In other words, we do not have a universal diagnostic that can be applied to all languages, and are thus forced to assess the syntax of clauses in each language and to look for ways to assess the verb position that are specific to the language in question, and that may not apply in other languages. Although the adverb tests allow us to detect the position of the verb in a considerable amount of data in VO languages in the Indo-European family (cf. §4.2.1), a number of studies have provided data from several (IE) VO languages which suggests that neither version of the RAH (weak or strong) appears to hold (cf. Bobaljik and Thráinsson (1998) for arguments against the strong RAH, and Bentzen et al. (2007) for arguments against both versions of the RAH). For example, these data include the examples from Russian and Icelandic in (41).

(41) a. *Russian* (Bailyn 1995)
          Professora **často** *razdajut* knigi studentam.
          Professors often hand out books students
          'Professors often hand out books to their students.'

     b. *Icelandic* (Angantýsson 2011:75)
          Það er leiðinlegt *θ*egar formaðurinn **ekki** *mætir*.
          it   is bad   when director.the not   shows up
          'It is bad when the director does not show up.'

While both having rich verbal morphology, Russian (in general) and Icelandic (in some instances) position the verb after the adverb, contrary to the RAH predictions. On the surface these claims seem correct. However, a recent investigation by Koeneman and Zeijlstra (2014) shows that in Russian, adverbs are never in a position in which they can function as proper diagnostics, while in Icelandic they are not always in such positions (cf. Angantýsson 2007, 2011).

I elaborate on these examples in the rest of this subsection, arguing (in line with Koeneman and Zeijlstra (2014)) that specific prerequisites, such as the required position of adverbs and negation, must be met before the adverb/negation test can be applied. Furthermore, we must control for the information-structural (i.e. syntax-external) effects that alter the linear order.

Negative *v*P-adjuncts first

So far I have regarded adverbs and negation on a par, in the sense that a language shows the same effect of agreement morphology on the verb movement whether one uses the position of adverbs or the position of negation as a diagnostic. This, however, is not always the case and the two have been reported to behave differently with respect to their syntactic position. For example, as discussed in §2.3, Bentzen et al. (2007) report that Regional Northern Norwegian

(ReNN) exhibits optionality with respect to the position of adverbs:

(42) *Regional Northern Norwegian* (ReNN) (Bentzen et al. 2007:208)
  . . . ettersom nån   studenta ⟨**sannsynligvis**⟩ *leverte*   ⟨**sannsynligvis**⟩
  . . . as   some students probably   handed.in probably
  oppgaven.
  assignment.DEF
  '. . . as some students probably handed in assignment.'

In this example the adverb *sannsynligvis* 'probably' can occur on both sides of the verb. For Bentzen et al. (2007) this is evidence against the strong RAH.

    However, they also note that optionality with respect to negation in ReNN is absent:

(43) *Regional Northern Norwegian* (ReNN) (Bentzen et al. 2007:209)
  . . . ettersom nån   studenta ⟨**ikke**⟩ *leverte*   ⟨***ikke**⟩ oppgaven.
  . . . as   some students not   handed.in not   assignment.DEF
  '. . . as some students did not hand in assignment.'

Unlike the adverb in (42), which can occur after the verb, the occurrence of negation *ikke* in the same position in (43) is not possible, suggesting that negation is syntactically more rigid than adverbs. In order to account for this, Bentzen et al. (2007) argue that negation in ReNN is vP-external. An important implication of this claim is that negation is rendered invalid as a diagnostic for verb movement.

    Contra Bentzen et al. (2007), Koeneman and Zeijlstra (2014) argue that the data in (42) and (43) cannot lead to an analysis that negation is vP-external. As evidence in favor of this they provide the following example:

(44) *Regional Northern Norwegian* (ReNN)
  (Koeneman and Zeijlstra 2014:585)
  Jeg vet   hvorfor John **ofte ikke** *vet*   svaret.
  I   know why   John often not   know answer.the
  'I know why John often does not know the answer.'

Since the adverb *ofte* 'often' in (44) can precede the negation *ikke* it would suggest that *ikke* is always as high as the highest adjunct of vP. Thus, Koeneman and Zeijlstra (2014) assume that negation in ReNN must be a vP-adjunct.

    As an explanation for the adverb optionality in ReNN, they argue that adverbs like *probably* can be interpreted in different positions from the ones they occur in, since they are quantificational in nature. An adverb like *probably* in ReNN can therefore be adjoined to VP rather than vP (cf. Koeneman and Zeijlstra 2014). In contrast, negation is not quantificational and it must always be interpreted in its 'base position' as an adjunct of vP. An important conclusion that follows from this is that negation, when it is a phrasal vP-adjunct, is a more reliable diagnostic than (non-negative) adverbs; and when there is a conflict between the two with respect to their indication of the verb position, (phrasal) negation is the diagnostic of choice. Consequently, both negative and

non-negative adverbs should be checked when assessing the verb placement, and when they give conflicting information, the negative adverbs win.[12]

Negation: vP-adjunct vs. clausal NegP

Although adverbial negation is the most reliable diagnostic for v-to-Arg movement, the syntax of negation can be realized differently across languages. This has consequences for its validity as an RAH diagnostic, since negation can be realized as (at least) two different types of syntactic elements. In one type negation is phrasal, behaving like an adjunct to vP. In the other, negation surfaces as a 'head' of a phrase taking the vP as its complement. The analyses of the two can be illustrated as follows:

(45)   a.   b.
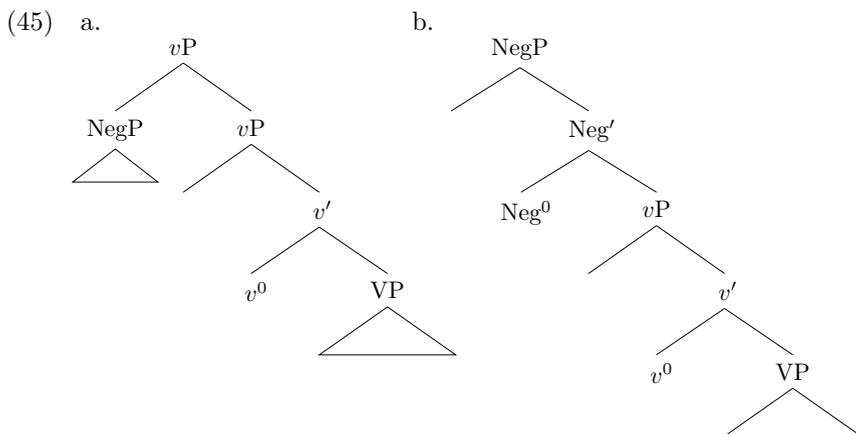
What is important from this distinction is that only the phrasal (adverbial) negation in (45a) is a proper diagnostic for the verb movement out of vP (cf. §4.2.1) since it is adjoined to the vP, and it can tell us if the verb is vP-internal or vP-external. In contrast, the Neg^0 head in (45b) is obviously located outside of the vP, and, as such, can only be a diagnostic in <V, Neg> word orders in which the verb moves to Arg^0 over the Neg^0. However, it is not a usable diagnostic in <Neg, V> word orders, as in such cases the verb could be raising to a possible projection that intervenes between NegP and vP, which would not affect the linear order.[13]

   However, Neg^0 as in (45b) often triggers verb raising itself and this can hinder our endeavor to determine whether v-to-Arg is independently triggered. This happens to be the case in many Slavic languages, like Russian, in which the negation is always procliticized on the verb:

---

12. Note that phrasal (adverbial) negation, though frequent in the Germanic languages, is rarely (if) ever found across non-Indo-European languages.

13. It might be inferred here that I implicitly assume that NegP is flexibly generated, taking either vP as a complement, or a higher projection, say XP; this however need not be the case since we could imagine a fixed, uniform hierarchy NegP>XP>vP in which X^0 bears no morphology.

(46)   *Russian*
       Ty [*pročytal-a ne] / [ne-*pročytal-a*] pravila.
       you read-SG   NEG / NEG-read-SG.F rules
       'You did not read the rules.'

As shown in (45b), NegP has its own syntactic position (above *v*P) and the procliticization in Russian requires *v*-to-Neg movement. This indicates that in negated sentences, the verb moves out of *v*P in order to host the negation clitic.[14] Crucially, this does not tell us if the verb has moved independently for reasons of rich agreement morphology, nor does it show whether or not the verb has landed at Arg[0] at some point. The consequence of this analysis is that Russian(-like) negation neither refutes or confirms the RAH.

Notably, the properties of projections like the NegP in Russian provides us with a context in which we can determine the position of adverbs in the clause and thereby evaluate if the adverbs are a proper RAH diagnostic. For example, it has been noted that adverbs in Russian can be positioned in front of the verb. Consider the following example:

(47)   *Russian*
       Ty **často** *pročytal-a* pravila.
       you often read-SG.F rules
       'You often read rules.'

Even though Russian has a rich verbal paradigm, the adverb *často* 'often' precedes the finite verb, which seems to contradict the RAH predictions.

However, as Koeneman and Zeijlstra (2014) have argued on the basis of the properties of the Russian NegP, Russian adverbs of manner and frequency are in a position higher than where they can be used to detect *v*-to-Arg movement. As discussed above, in (48) the negation is not phrasal, but rather a head of the NegP projection, which is *v*P-external.

(48)   *Russian*
       Ty (**často**) ne-*pročytal-a* (??***často**) pravila.
       you often NEG-read-SG.F   often rules
       'You often did not read rules.'

---

14. Note that while the Russian negative *ne* is typically referred to as a clitic, a term which I also use in this discussion, *ne* in fact shows the properties of an affix, as per the definition in §4.1.3, as it attaches to one specific host, namely the finite verb, and it can form a constituent with it by moving together with it. The same properties are found in negative markers in other Slavic languages, like Serbo-Croatian, where negation moves with the verb, for instance in questions:

(i)   *Serbo-Croatian*
       a.   Iris ne-zna   da smo   stig-li
            Iris NEG-know that be.PL.M.PT arrive-PL.M.PT
            'Iris does not know that we have arrived.'
       b.   Ne-zna   li   Iris da smo   stig-li?
            NEG-know PART Iris that be.PL.M.PT arrive-PL.M.PT
            'Doesn't Iris know that we have arrived?'

Since negation attaches to the verb, we can surmise that the verb moves out of vP to host the negative *ne*. It follows, then, that the ungrammaticality of the adverb *často* 'often' in the post-verbal position suggests that it cannot be adjoined to vP, and it must be adjoined to a projection above the NegP, since *často* must precede the negation. This shows that these adverbs in Russian are not proper diagnostics for verb movement, because vP is not a possible adjunction site.

These data from Russian demonstrate that for the proper assessment of the RAH in any given language, the standard diagnostics must be generated as vP-adjuncts, or alternatively interfere between the initial (vP-internal) position of the finite verb and the position where the finite verb is expected to host the rich agreement morphology. Given these observations, it is clear that the adverb test cannot be applied in all VO languages. While in most languages discussed here both adverb and negation are an adequate diagnostic, in Regional Northern Norwegian adverbs are not, while in Russian neither adverbs nor negation are a proper diagnostic for independently triggered v-to-Arg movement. The resulting cross-linguistic variation from the analysis warrants an investigation of the type of negation as well as its syntactic position (whether vP-adjoined or clausal NegP) in individual languages, before we can consider using it as a diagnostic for v-to-Arg movement.

Determining the position of adverbs

Before we can determine if a particular adverb can be used as a diagnostic for verb movement, we need to understand what determines the syntactic position of different types of adverbs and we need to have a way of showing whether or not a particular type of adverb is a vP-adjunct. This is crucial because, if an adverb is a vP-adjunct, then we can reliably use it to detect verb movement; if the adverb is adjoined to any projection above vP, then it is not usable as a diagnostic, since we cannot show with certainty if the verb moves to a vP-external position in languages in which adverbs precede verbs.

Here I spell out a set of assumptions and tools on how to assess the adverbial adjunction, based largely on ideas by Ernst (2001) and Svenonius (2002), focusing on types of usual suspects for vP-adjuncthood, such as manner, frequency, and temporal adverbs. These types often appear lower in the clausal structure and are standardly assumed to be adjoined to the vP projection, where they naturally indicate the boundary between the vP- and IP-domains. For this reason they are standardly used as a diagnostic for the purposes of determining the position of verbs and its arguments. However, their syntactic properties vary considerably across languages and some adverbs can appear higher in the clause, which has obvious consequences for their validity as verb movement diagnostics. One kind of variation that I intend to discuss here pertains to the differences between the types of adverbs that we find within a single language. I address the question of what determines that particular types of adverbs show more restrictions, as they can only appear at a particular position in the clause,

whereas other types are more flexible, appearing in a number of different positions. To illustrate this I draw data from Egyptian Arabic, in which a temporal adverb can appear before or after the finite verb, or clause-finally, as illustrated in (49), whereas manner adverbs cannot appear preverbally, as given in (50):

(49) *Egyptian Arabic*

    a.   Layla *bi-ti-ktib*   gawab-āt **dayman**
            Layla PRES-IMP.3.SG.F-write letters   always

    b.   Layla *bi-ti-ktib*   **dayman** gawab-āt
            Layla PRES-IMP.3.SG.F-write always   letters

    c.   Layla **dayman** *bi-ti-ktib*   gawab-āt
            Layla always   PRES-IMP.3.SG.F-write letters

(50) *Egyptian Arabic*

    a.   Layla *katab-it*   gawāb **bi-sur'a**
            Layla wrote-3.SG.F letter   quickly
            'Layla quickly wrote a letter.'

    b.   Layla *katab-it*   **bi-sur'a** gawāb
            Layla wrote-3.SG.F quickly   letter
            'Layla quickly wrote a letter.'

    c.   * Layla **bi-sur'a** *katab-it*   gawāb
            Layla quickly   wrote-3.SG.F letter

    Another kind of variation that I address pertains to the difference between the realizations of specific types of adverbs between different languages. For example, temporal adverbs in English can never intervene between the verb and its object (cf. 51c), whereas in Wolof such orders involving temporal adverbs are indeed possible (cf. 52c):

(51) *English*

    a.   **Now** I eat the fish.

    b.   I **now** eat the fish.

    c.   * I eat **now** the fish.

    d.   I eat the fish **now**.

(52) *Wolof* (Cheikh Bamba Dione, p.c.)

    a.   **léegi** Awa *lekk -naa* jën wa
            Now Awa eat -3.SG fish the
            'Now Awa ate the fish.'

    b.   ? Awa **léegi** *lekk -naa* jën wa
            Awa now   eat -3.SG fish the

    c.   Awa *lekk -naa* **léegi** jën wa
            Awa eat -3.SG now   fish the

    d.   Awa *lekk -naa* jën wa **léegi**
            Awa eat -3.SG fish the now

Furthermore, if we take a look at manner adverbs in English and Wolof, we observe that they are syntactically more restricted than temporal adverbs in both languages. Specifically, as (53) and (54) illustrate, manner adverbs appear either close to the verb or clause-finally:

(53)   *English*
   a.   * **Quickly** I eat the fish
   b.   I **quickly** eat the fish.
   c.   * I eat **quickly** the fish
   d.   I eat the fish **quickly**.

(54)   *Wolof* (Cheikh Bamba Dione, p.c.)
   a.   * **ndànk** *lekk* *-naa* jën wa
        slowly   eat   -1.SG fish the
   b.   *lekk* *-naa* **ndànk** jën wa
        eat   -1.SG slowly   fish the
        'I ate the fish slowly.'
   c.   *lekk* *-naa* jën wa **ndànk**
        eat   -1.SG fish the slowly
        'I slowly ate the fish.'

Given the data-set above, two relevant observations can be made w.r.t manner and temporal adverbs: i) Manner adverbs tend to be fairly low in the structure, always appearing close to the base position of the verb, typically adjoining to the left or the right side of vP. ii) Temporal adverbs tend to appear in the same positions in the linear order as manner adverbs, but can also appear further to the left of the base position of the verb.

   Given these two observations, the following questions arise: i) Why can particular types of adverbs readily adjoin to different projections? ii) Why must particular types of adverbs always adjoin to a specific projection, or within a specific domain? iii) To what extent are the restrictions on adverbial adjunction syntactic, and to what extent are they semantic?

   In this section I argue that the hitherto described variation in adverbial adjunction arises through an interplay between syntax and semantics. A crucial aspect of the analysis is that adverbs at some point in the derivation must scope over their semantically compatible phrase. This obligatory scopal relation must be achieved either in the narrow syntax or at LF. More specifically, I argue that the base-generation of adverbs in the narrow syntax is rather flexible, as long as the position at which the adverbs are interpreted is the same as the position at which they are base-generated, or higher. Thus, the position of base-generation cannot be higher than the position of interpretation. It then follows that the narrow scope adverbs (e.g. vP-modifying manner or frequency adverbs) are in principle more restricted syntactically, as they cannot move downwards at LF. In contrast, the wide scope adverbs (e.g. TP-modifying temporal adverbs) are

in principle more flexible, as they can move upwards at LF to a position at which they are interpreted.

Assumptions from Svenonius (2002)

I adopt the following two assumptions from Svenonius (2002) on adverbial adjunction:

i. a particular adverb may not always be able to attach to a node of a specific category. e.g. vP-node could be an event-denoting category or a category denoting a state of affairs. A particular adverb could be attaching to either type of vP-node, but potentially not to both (Svenonius 2002:210).

ii. a node which does not contribute a semantic interpretation that is relevant to an adjoining adverb is invisible to that adverb.

Assumption ii.) is particularly relevant, as it is one aspect of the analysis which is going to allow for 'flexible adjunction', as illustrated with temporal adverbs in Egyptian Arabic and Wolof. More specifically, if a particular adverbial adjunct must scope over its semantically compatible projection XP, then that adverbial adjunct can be adjoined to a projection YP dominating XP, iff YP is invisible to that adverb. Thus the adverb can scope over XP as an adjunct of any projection dominating XP, iff the dominating projection and potentially intervening projections are all semantically invisible. Consequently, the syntactic flexibility of adjuncts to an extent depends on the presence of semantically invisible syntactic projections.

Another relevant aspect of assumption ii) is that indeed there are particular projections, call them XP, which allow adjunction only from semantically compatible adjuncts, i.e. a manner adverb cannot be adjoined to or scope over an XP that only permits temporal adverbs. Crucially, such XP projections block the scope of incompatible adverbs, which may be required to scope over a ZP projection, dominated by XP. This restricts the flexibility of adverbs and thus requires that an adverb is adjoined to ZP or indeed any invisible projection intervening between XP and ZP, from which it can scope over ZP. Let's now apply this machinery to the facts outlined above.

Manner adverbs

As already described, EA and Wolof manner adverbs are syntactically restricted to a post-verbal position. Both languages have rich agreement morphology and verb movement. I argue in §7.2.6 and §7.2.9 that for this reason both EA and Wolof employ verb movement to a higher position, crossing manner adverbs, which are adjoined to vP. Furthermore, following Koeneman and Zeijlstra (2014), I have argued that both languages, next to TP, also project an ArgP, as they exhibit a rich set of agreement affixes. The question that then arises is why it is the case that manner adverbs in these two languages are restricted to vP and cannot seem to adjoin anywhere else?

Let's first examine the properties of ArgP and TP. For all intents and purposes the ArgP projection itself cannot be modified by any type of adverb. The features it reflects, that is the φ-features of the subjects, cannot be modified by either of three types of adverbs that I investigate here, as adverbs modify events and states but not necessarily the properties of the subject reflected in the agreement morphology. What follows then is that ArgP is semantically invisible to adverbs and in principle allows for adverbial adjunction, which can scope over a projection dominated by ArgP. Consequently, the presence or absence of ArgP is a predictor of flexibility of adverbial adjunction.

Unlike ArgP, the TP projection is sensitive to the adjunction of particular adverbs. Specifically, a sentence denoting an event or a state of affairs in the past cannot be adjoined by an adverb referring to the future or vice versa:

(55)   a.   I ate a cookie tomorrow.
       b.   I will know that yesterday.

This suggests that TP requires specific adverbs and that it blocks incompatible adverbs. It follows, then, that tense is semantically visible to the category Adverb and that it imposes requirements on the semantic properties of adverbs that can adjoin to it. Consequently, the adjunction of incompatible adverbs, among which manner or frequency adverbs, is ruled out, as the semantic requirements of TP cannot be met.

Given these two varying properties of ArgP and TP w.r.t. adverbial adjunction, it follows that manner adverbs must be adjoined to a projection below TP, and can also be adjoined to ArgP iff TP dominates ArgP. If manner adverbs cannot appear further to the left (i.e. outside of vP) it follows that the category (immediately) dominating vP must be sensitive to adverbial adjunction, and thus blocks manner adverbs. Consequently, the adjunction of manner adverbs to either TP or ArgP in the following tree, where ArgP dominates TP, is impossible, leaving the only possible option at vP:

(56)

```
                    ArgP
                   /    \
            *AvdP        ArgP
            {MANN}      /    \
                  ⟨DP_sub⟩    Arg′
                            /     \
                        Arg⁰       TP
                                  /   \
                             *AvdP     TP
                             {MANN}   /   \
                              ⟨DP_sub⟩     T′
                                         /    \
                                       T⁰      vP
                                              /   \
                                           AdvP    vP
                                           {MANN}  /\
                                                  V⁰
```
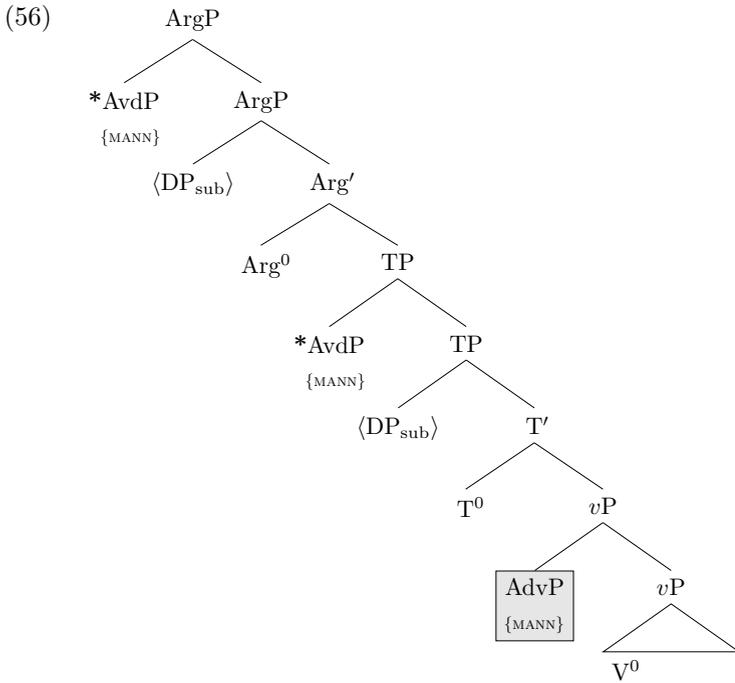
More concretely, neither base-generation or movement of AdvP to TP or ArgP are possible, as TP does not permit manner adverbs, whereas ArgP, although semantically invisible to adverbs, is separated from vP by the TP projection. For completeness, note that in the scenario with the TP > ArgP > vP hierarchy of projections, manner adverbs can adjoin to either ArgP or vP, since they can take scope over vP from both positions.

Temporal adverbs

Unlike manner adverbs, temporal adverbs are far more syntactically flexible. Since temporal adverbs are associated with the TP projection, it follows that temporal adverbs in languages like EA and Wolof can appear as either adjuncts of ArgP or adjuncts of TP, as illustrated in the following tree:

(57)
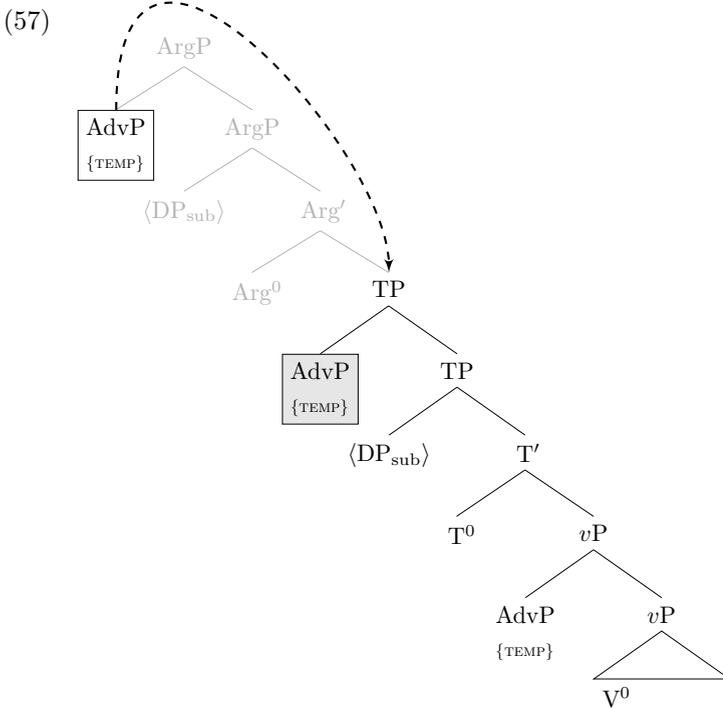
Since ArgP is semantically insensitive to adverbs, the temporal adverb at ArgP can scope over TP, as indicated with the dashed arrow. Consequently, even when adjoined to ArgP, temporal adverbs can receive interpretations as adjuncts of TPs. In principle, it is plausible that temporal adverbs can be base-generated even lower, for instance as vP-adjuncts, where manner adverbs are typically interpreted. However, the 'expected' incompatibility between a temporal adverb and the vP-projection can be resolved, as the adverb can still undergo covert movement to TP at LF, where it receives interpretation, as shown here:

(58)
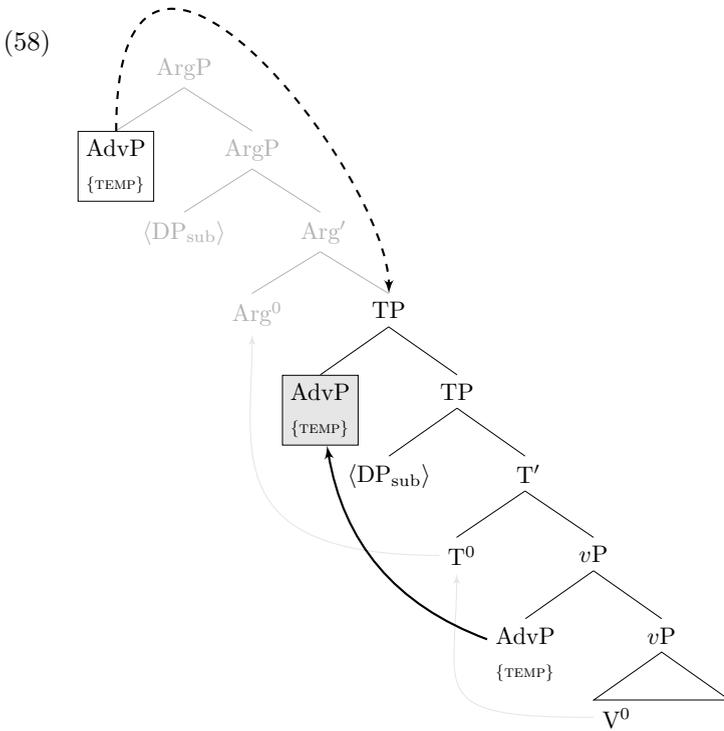
This is a crucial difference between temporal (i.e. high) and manner (i.e. low) adverbs, as manner adverbs in (56) cannot move to the position where they are interpreted, because the position is lower than the position of base-generation, as illustrated here:

(59)

```
                    ArgP
                   /    \
               AdvP      ArgP
              {MANN}    /    \
                   ⟨DP_sub⟩   Arg′
                           /     \
                       Arg⁰       TP
                               /     \
                           AdvP       TP
                          {MANN}    /    \
                              ⟨DP_sub⟩   T′
                                       /   \
                                     T⁰    vP
                                         /    \
                                     AdvP      vP
                                    {MANN}    /  \
                                             V⁰
```
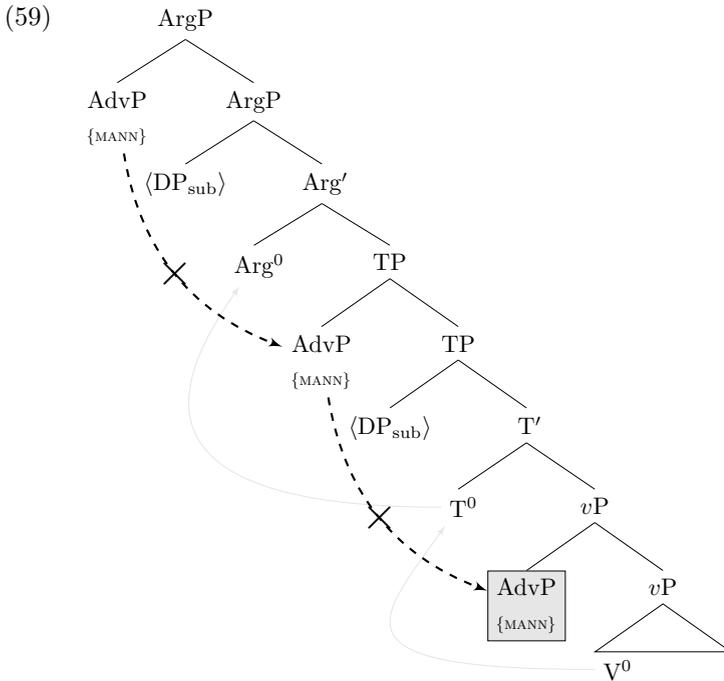
In sum, event-modifying adverbs (i.e. vP-adjuncts) such as manner adverbs cannot be adjoined to the TP projection, since TP is sensitive to adjunction and allows only temporal adverbs. Thus, TP closes off the event which blocks the scope of manner adverbs adjoined to TP or higher. Given this analysis, we can formulate the following generalization encompassing the observations made here:

(60) **Generalization on adverbial adjunction**
     Higher adverbs can be base-generated in a lower position, as they can move to the position where they are interpreted after the spell-out, whereas lower adverbs cannot be base-generated in a higher position, as downward movement after the spell-out is not possible.

In line with Ernst (2001), syntax is blind to the semantics of adverbs. In principle, a phrase can allow adjunction of any adverb, as long as it recognizes the category Adverb. This allows low base-generation of higher adverbs, which then move to the higher position at LF, where they are interpreted. In contrast, the high base-generation of low adverbs is blocked because downward movement at LF to the position where they are interpreted is not possible. Importantly, this straightforwardly explains why high adverbs like temporal adverbs are more flexible and therefore unreliable as verb movement diagnostics, whereas low adverbs like manner adverbs are more rigid syntactically and are therefore

a reliable diagnostic for verb movement. As a result, we have to be selective when it comes to adverbs, because not all adverbs can serve as verb movement diagnostics.

4.2.5 Discussion

Before concluding this chapter and proceeding with the analyses in Chapter 6 and Chapter 7, several points need to be discussed that pertain to the theoretical framework and assumptions used in the analyses.

First, while standardly adverbs are taken to be the main diagnostic that allows us to detect verb movement, not all semantically equivalent adverbs behave in the same way in the syntax of different languages. Crucially, for each language in which we intend to assess the position of finite verbs, we have to be certain that the adverb that allows us to detect this is in fact a vP-adjunct and not an adjunct to a higher (i.e. vP-external) position. Note that if we can show that adverbs are vP-adjuncts in two languages with different word orders, specifically, <V,AdvP,O> vs. <AdvP,V,O>, then it follows that either the verb or the object is displaced. If, however, we can show that an adverb is adjoined higher up in the structure, it could be the case that verb movement *does* take place to an intermediate position and cannot be detected based on the position of the adverb.[15]

Second, in my analyses I follow Koeneman and Zeijlstra (2014) in assuming that rich agreement morphemes head their own projections in the clausal spine, referred to here as ArgP (Arg = argumenthood), which, in the absence of rich agreement morphology, is not projected in the syntax. As discussed in §2.4.1, ArgP is viewed here as a vP-external projection, comparable to the $\underline{\mathrm{Agr}}_S$P projection (cf. Chomsky 1995). Whether or not any given language projects ArgP depends on the richness of agreement morphology. What constitutes the rich agreement morphology depends on whether or not the agreement paradigm makes person and number distinctions that most minimally reflect those distinctions that are found in the argument DPs of all natural languages (cf. Chapter 3).

Third, whether or not Arg^0 triggers verb movement strictly follows from the phonological dependency of the morpho-phonological form used to spell out the features in Arg^0. More specifically, if Arg^0 is phonologically-dependent on the verb, then Arg^0 obligatorily triggers verb movement, unless Arg^0 and the verb are linearly adjacent, in which case the phonological dependency is (or can be) realized without a syntactic displacement.

---

15. Note that in addition to adverbs, there may be other ways of showing that verbs raise out of vP, for example the presence of elements that are generated in vP-external positions and that follow the verb.

4.3   Summary

This chapter serves as a toolkit for the evaluation of the RAH, as it lays down the conditions under which the *v*-to-Arg movement takes place and the conditions under which it can be detected. It began with a description of the morpho-syntactic and morpho-phonological properties of the two established types of agreement markers. I maintained that in order to trigger *v*-to-Arg, rich agreement morphology must also phonologically depend on the verb specifically. Furthermore, it is not always the case that the subject marking morphemes are agreement morphemes, as there are languages in which they function as arguments. This has obvious consequences for certain theoretical accounts of the RAH, as the absence of agreement morphemes would reflect the absence of the ArgP projection. Consequently, a proper evaluation of the RAH must take this into account.

The chapter also provided illustrations of why contexts like V2, as well as information-structural effects, prevent us from detecting *v*-to-Arg movement, suggesting that that we must control for the phenomena that independently trigger verb raising when we test the RAH. In addition to contexts, we must also have ways of determining whether adverbs in any given languages can serve as diagnostics for *v*-to-Arg movement. To that end, I gave an account of why particular types of adverbs exhibit syntactic flexibility and need not be *v*P-adjuncts in certain contexts (as is typically assumed), but can adjoin to a higher projection where we cannot use them to detect *v*-to-Arg movement. In particular, contexts and the suitability of adverbs as *v*-to-Arg diagnostics is something that we must pay close attention to when we evaluate the RAH in Chapter 6 and Chapter 7.

As alluded to in Chapter 2, the Rich Agreement Hypothesis (RAH) has been extensively studied only in the Germanic languages, with a few excursions into the Romance and Slavic languages. However, the extent to which the RAH holds beyond these three Indo-European phyla has not been investigated systematically. Accordingly, since the goal of this study is to evaluate the RAH further, which requires the expansion of available data, the selection of non-Indo-European languages is carried out in a way that allows us with some certainty to generalize over all language families. In this chapter I lay out specifics of the method of selection of the languages analyzed in Chapter 6 and Chapter 7. Based on the sampling methodology, I provide a list of selected VO languages with the preliminary indication of the type of agreement morphology that they have.

5.1 Sampling methodology

The selection of languages for this study was made in accordance with the methodology of sampling as detailed in Rijkhoff, Bakker, Hengeveld, and Kahrel (1993). Rijkhoff et al. (1993) present a method that relies on the classification of languages as provided by Ruhlen (1987)[1], which classifies all the world's languages into the following twenty-seven families:

---

1. Note that Ruhlen's (1987) classification is not uncontroversial.

Afro-Asiatic Altaic Amerind Australian Austric Caucasian Chukchi-Kamchatkan Elamo-Dravidian Eskimo-Aleut Indo-Hittite Indo-Pacific Khoisan Sumerian Ket Nahali Hurrian Burushaski Meroitic Basque Etruscan Gilyak Na-Dene Niger-Kordofanian Nilo-Saharan Pidgins and Creoles Sino-Tibetan Uralic-Yukaghir

Table 5.1 Twenty-seven families of all world's languages (Ruhlen 1987)

The sampling method ensures maximal genetic distance between individual languages and takes into account genetic diversity (cf. Rijkhoff et al. 1993). We thus select a language from each phylum, provided that languages that we find within the phyla allow for controlled testing of the RAH. I have also taken measures to select equal numbers of poor and rich agreement languages to the extent possible. However, there was no way to maintain a perfect balance across all phyla, as the vast majority of documented languages have rich agreement morphology.

For the RAH investigation in this study a forty-language sample has been selected, following the method of sampling proposed by Rijkhoff et al. (1993); the sample size provides the number of languages for each family as given in Table 5.2. The number of languages chosen depends on the genetic diversity within each family:

Afro-Asiatic Altaic Amerind Australian Austric Caucasian Chukchi-Kamchatkan Elamo-Dravidian Eskimo-Aleut Indo-Hittite Indo-Pacific Khoisan Sumerian† Ket Nahali Hurrian† Burushaski† Meroitic† Basque Etruscan† Gilyak Na-Dene Niger-Kordofanian Nilo-Saharan Pidgins and Creoles Sino-Tibetan Uralic-Yukaghir

Afro-Asiatic	Altaic	Amerind	Australian	Austric	Caucasian	Chukchi-Kamchatkan	Elamo-Dravidian	Eskimo-Aleut	Indo-Hittite	Indo-Pacific	Khoisan	Sumerian†	Ket	Nahali	Hurrian†	Burushaski†	Meroitic†	Basque	Etruscan†	Gilyak	Na-Dene	Niger-Kordofanian	Nilo-Saharan	Pidgins and Creoles	Sino-Tibetan	Uralic-Yukaghir
2	1	5	2	4	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1

Table 5.2 Number of languages per family in a forty-language sample (Rijkhoff, Bakker, Hengeveld, and Kahrel 1993)

Languages from fifteen families in Table 5.2 could not be included in this study. All languages from four of these fifteen families are extinct and the data could not be obtained. The families in question are Sumerian, Hurrian, Meroitic, and Etruscan. The other eleven families include exclusively languages that exhibit discourse neutral OV orders, in which we cannot determine the exact position of finite verbs based on the position of adverbs (I have discussed why this is the case in §4.2.2). These are Altaic, Caucasian, Chukchi-Kamchatkan, Elamo-

Dravidian, Eskimo-Aleut, Ket, Nahali, Burushaski, Basque, Gilyak and Na-Dene.

This leaves us with a total of twelve families, including Indo-European (i.e. Indo-Hittite), that contain documented languages with VO orders in which we can control for independent triggers of verb movement. Since the RAH has been extensively studied in the Indo-European branch and shown to hold across a considerable number of languages (cf. Koeneman and Zeijlstra 2014, and references therein) I leave them aside in this study and focus primarily on the languages from the remaining eleven families. This gives us the following list of families in which the RAH is assessed in this study:

Afro-Asiatic	Altaic	Amerind	Australian	Austric	Caucasian	Chukchi-Kamchatkan	Elamo-Dravidian	Eskimo-Aleut	Indo-Hittite	Indo-Pacific	Khoisan	Sumerian	Ket	Nahali	Hurrian	Burushaski	Meroitic	Basque	Etruscan	Gilyak	Na-Dene	Niger-Kordofanian	Nilo-Saharan	Pidgins and Creoles	Sino-Tibetan	Uralic-Yukaghir
2	1	5	2	4	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1

Table 5.3 Language families with RAH candidates

From the families in Table 5.3, languages have to be selected from different subfamilies. This is possible for these families with the exception of two subfamilies of the Amerind family, Andean and Chibchan-Paezan, none of which hitherto seem to have (sufficiently) documented languages with VO orders. Consequently, an additional language has been selected from the Equatorial-Tucanoan subfamily. Comparably, the Niger-Kordofanian family has only two subfamilies, from which we are required to select three languages. Consequently, two languages have been selected from different subphyla of the larger Niger-Congo family, namely Central and West-Atlantic. The full list of twenty-four languages with VO orders is given in Table 5.4, each of which is analyzed in Chapter 6 and Chapter 7. Figure 5.1 indicates the geographical locations of the selected languages.

Family	Subfamily	#	Language	Agr.
Afro-Asiatic	Semitic	1	Egyptian Arabic	rich
	Chadic	2	Hausa	rich
Amerind	Northern Amerind	3	Kaqchikel	rich
	Central Amerind	4	Quiegolani Zapotec	poor
	Equatorial-Tucanoan	5	Wariʼ	rich
	Equatorial-Tucanoan	6	Ayoreo	rich
	Ge-Pano-Carib	7	Kadiwéu	poor
Australian	*Unclassified*	8	Tiwi	rich
	South-West	9	Martuthunira	poor
Austric	Austro-Tai	10	Thai	poor
	Austronesian	11	Hawaiian	poor
	Austroasiatic	12	Vietnamese	poor
	Miao-Yao	13	Hmong Njua	poor
Indo-Pacific	Toricelli	14	Bukiyip	rich
	West Papuan	15	Hatam	poor
	East Papuan	16	Bilua	poor
Khoisan	Southern Africa	17	N|uuki	poor
Niger-Kordofanian	Niger-Congo > Central	18	Ìgbo	poor
	Niger-Congo > West-Atlantic	19	Wolof	rich
	Kordofanian	20	Moro	rich
Nilo-Saharan	East Sudanic	21	Lango	rich
Pidgins & Creoles	Creole	22	Haitian	poor
Sino-Tibetan	Tibeto-Karen	23	Pwo Karen	poor
Uralic-Yukaghir	Uralic	24	Finnish	rich

Table 5.4 Selected languages

Although agreement morphology in many languages in Table 5.4 can be readily identified as either rich or poor, there are a few languages that require a more extensive analysis. For this reason, the properties of agreement morphology will be discussed for each language (when needed) and a more detailed account of the properties of agreement and its potential effects on verb movement is given in Table 6.4 and Table 7.4. Languages in which agreement morphology is absent are indicated as 'poor'.

5.2   Summary

This chapter outlined the typological method of sampling used in the study and provided the list of languages that have been specifically selected (in accordance with the typological guidelines) on the basis of the properties of the agreement morphology and the presence of the conditions in which the RAH can be tested.

In the next chapter I disentangle different types of morpho-phonological properties of agreement and show that the rich agreement morphology alone, although a prerequisite, is not sufficient to trigger verb movement, as this also depends on whether or not agreement is phonologically dependent specifically on the verb itself. Furthermore, the chapter discusses the conditions under which the RAH can be tested and the types of diagnostics that can be used to detect verb raising (or the absence thereof).
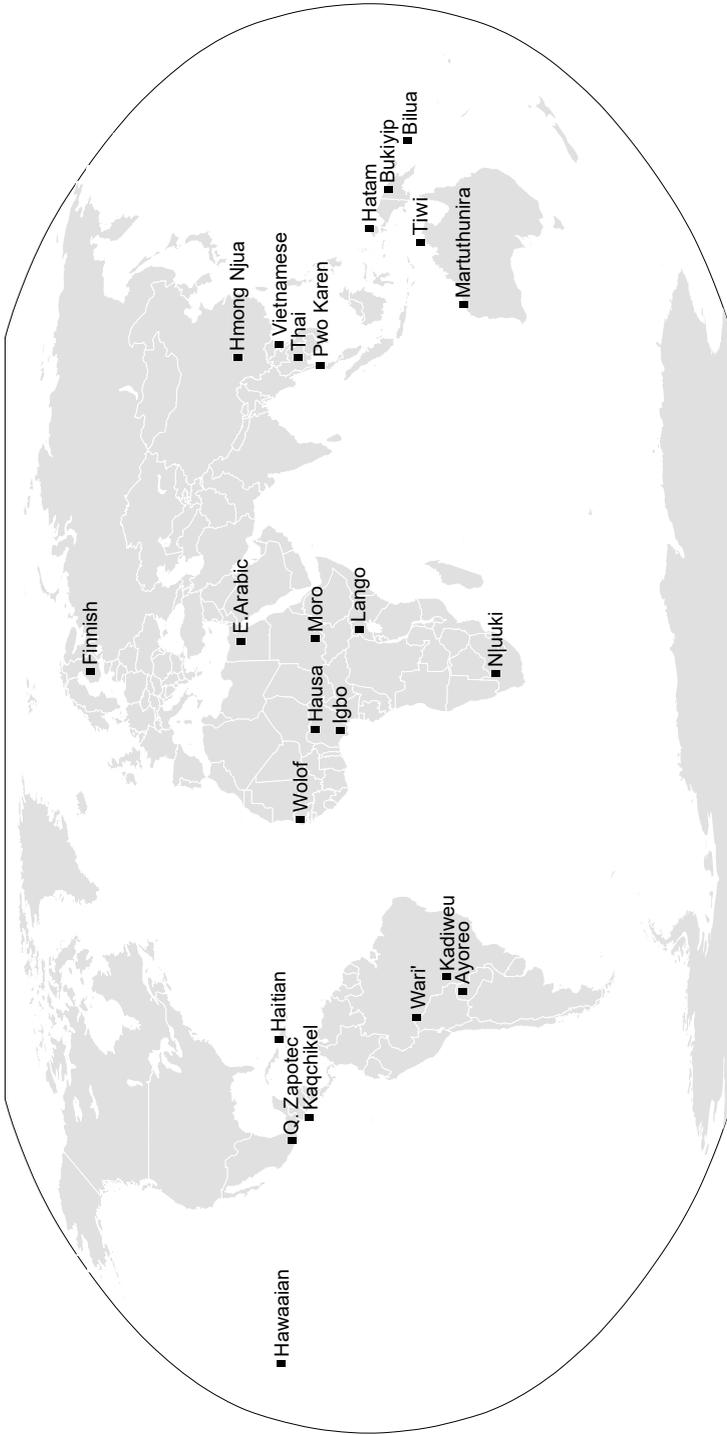
Figure 5.1 Geographical locations of selected languages

Poor agreement languages

This chapter presents detailed analyses of basic clause structures in the sampled languages with poor agreement morphology. While the investigated languages vary greatly across different phyla with respect to the syntax of finite verbs as well as the morpho-syntactic and morpho-phonological properties of agreement, careful scrutiny of the interaction (or the absence thereof) between the two variables leads to the conclusion that once we control for other displacement phenomena, the Rich Agreement Hypothesis (RAH) makes correct predictions in most languages, and cannot be falsified in others. In particular, not only does the strong (bidirectional) version of the RAH hold across the investigated languages, but the analyses presented, as the argumentation will demonstrate, are in fact the most parsimonious, requiring relatively little machinery given the language-specific properties and the standard set of state-of-the-art theoretical assumptions.

As already discussed in Chapter 2, the strong RAH predicts restrictions on the kinds of word orders that natural languages (in principle) can exhibit. Specifically, if we can control for independent phenomena that trigger displacement of finite verbs or direct objects, then a language with poor agreement morphology that has v-to-Arg movement is predicted not to exist. Similarly, a rich agreement language without v-to-Arg movement is predicted not to exist either. These predictions are summarized in Table 6.1.

Agreement	no v-to-Arg	v-to-Arg
poor	✓	✗
rich	✗	✓

Table 6.1 Predicted typology of languages according to the strong RAH

In order to test the predictions in Table 6.1, the analyses in this dissertation, as is standardly done, focus on the placement of vP-adjoined adverbs as diagnostics for v-to-Arg movement in discourse neutral word orders, in which we control for independent triggers of verb movement. More concretely, it is predicted that vP-adjoined adverbs cannot intervene between verbs and direct objects in a language with poor agreement morphology. Inversely, it is predicted that vP-adjoined adverbs must intervene between verbs and direct objects in a rich agreement language, provided that the agreement morphology is phonologically dependent on the verb.

 Thus, the goal of this chapter is to delve into the analyses of sampled poor agreement languages (cf. Chapter 5) and to assess the extent to which the predictions in Table 6.1 are borne out. All languages discussed in this chapter are of the type D, as defined in §4.1.4, in which agreement morphology is poor/absent and for which the RAH predicts the absence of V^0/VP/vP-movement in controlled conditions. Importantly, as already mentioned, the data from the investigated type D languages does not falsify the highlighted predictions in Table 6.1, though some remain inconclusive due to the absence of contexts in which the RAH can be tested.

 In the remainder of this chapter I provide in-depth analyses of the investigated type D languages. However, before that, I first give a brief overview of all type D languages studied, providing the reader with the gists of the analyses for each language.

6.1   Chapter overview

This study investigated thirteen type D languages (cf. §4.1.4), five of which (N|uuki, Haitian, Martuthunira, Hatam, and Bilua) do not allow any adverbs to intervene between finite verbs and objects, while they can precede finite verbs, indicating the absence of v-to-Arg movement, and thus supporting the RAH (cf. §6.2).

 In three languages, Thai, Pwo Karen, and Hmong Njua, all adverbs appear exclusively in the clause-final position (i.e. following objects), and while there is no evidence that v-to-Arg movement takes place, since no adverbs intervene between finite verbs and objects, there is no evidence that it cannot either, since adverbs cannot appear (immediately) in front of finite verbs. Consequently, the RAH is inconclusive in Thai, Pwo Karen, and Hmong Njua.

 The RAH is also inconclusive in Quiegolani Zapotec, which appears to have

verb raising simply by virtue of having discourse neutral VSO orders. However, there is no way to correlate this to the absence of agreement morphology, since the language productively utilizes aspectual morphology on the verb, for which we cannot control (cf. §6.2.9).

The remaining three languages, Ígbo, Vietnamese, and Hawaiian, unlike other type D languages, require a more in-depth analysis and, although some environments *prima facie* appear to refute the RAH, a closer scrutiny reveals that these environments are not suitable for RAH testing, whereas in a number of other environments the RAH is supported.

In Ìgbo, in specific environments with aspectual morphemes that are bound to verbs, adverbs are restricted to clause-final positions. However, when we control for these (bound) aspectual morphemes, adverbs can also precede the verb. While this alone suggests the absence of verb raising, the environments with bound aspectual morphemes raise suspicions with respect to the validity of adverbs as diagnostics for verb movement. Specifically, why is it the case that <V, Adv, O> orders are ruled out in these environments? And why can't the verb move across the adverb? The analysis in §6.2.5 employs object shifts that take place iff verb raising takes place, which indicates that adverbs are uniformly generated as vP-adjuncts, making them proper diagnostics for the v-to-Arg movement. This analysis warrants the conclusion that these adverbs are indeed vP-adjuncts and therefore reliable diagnostics for verb movement that show that Ìgbo lacks v-to-Arg movement, as predicted by the RAH.

In Vietnamese, there is evidence of adverbs intervening between the finite verbs and objects. However, object definiteness plays the key role as <V, Adv, O> orders are only attested when objects are definite, whereas the order is ungrammatical with indefinite objects. The more parsimonious analysis that does not involve any verb raising that I propose in §6.2.6 utilizes object shifts to account for the <V, Adv, O$_{\text{def}}$> orders.

Comparable to Vietnamese, Hawaiian also exhibits a variation in word orders due to the definiteness of objects. That is, the clauses with definite objects have VSO orders, whereas VOS orders come with indefinite objects. While there is evidence suggesting that VP fronts in Hawaiian (cf. Medeiros 2013), the locus of variation between the two word orders arises due to object shifts taking place when objects are definite prior to VP fronting, yielding VSO orders, whereas the indefinite objects are pied-piped with the entire VP, yielding VOS orders (cf. §6.2.7). Crucially, when we control for object shifts in both Vietnamese and Hawaiian, adverbs cannot intervene between verbs and direct objects, suggesting the absence of v-to-Arg movement, as predicted by the RAH.

6.2   Studies of the languages

6.2.1   N|uuki, Haitian, Martuthunira

The absence of subject agreement morphology in many languages invariably correlates with (immediate) linear adjacency between finite verbs and their objects. This correlation is attested in the selected languages from the Khoisan, Australian, and Creole families: N|uuki, Martuthunira, and Haitian, respectively. All four languages have canonical SVO orders and none of them mark the finite verb for the person and number of the subject, as shown in (1), (2), and (3), where the morphology of the verb remains constant, regardless of the properties of the subject.

(1)   *N|uuki* (Collins and Namaseb 2005:27)
      ŋ   / a   / ku / si   ke si ‖ʔae
      1.SG / 2.SG / 3.SG / 1.PL DECL IRR go
      'I/you/he/we will go.'

(2)   *Haitian* (Valdman 1988:29, adapted)
      mwen / ou / li / nou pale ak Gabi
      1.SG / 2.SG / 3.SG / 1.PL spoke with Gabi
      'I/you/he/she/it/we spoke with Gabi.'

(3)   *Martuthunira* (Dench 1995, adapted)
      Ngayu / kartu / ngali / ngaliwa puni-nguru-rru
      1.SG   / 2.SG / 1.DL / 1.PL   go-PRES-NOW
      'I'm going now.'

Correspondingly, no class of adverbs in N|uuki and Haitian can appear between verbs and objects, though there is some variation in the distribution of different classes of adverbs. Specifically, in Haitian certain classes of adverbs can only precede the verb, or follow the direct object, or appear in either position, while in N|uuki adverbs immediately precede the verbs (Collins and Namaseb 2005), the common thread being that Haitian and N|uuki allow adverbs in preverbal position, where they can be relied on as diagnostics for verb movement:

(4)   *N|uuki* (Chris Collins, p.c.)

      a.   n   -a   xa **gereki** ‖x'am |oba
           1.SG DECL PT slowly wash   child
           'I washed the child slowly.'

      b.   *n   -a   xa ‖x'am **gereki** |oba
           1.SG DECL PT wash   slowly   child

(5)   *Haitian* (Glaude and Zribi-Hertz 2014:250)

      a.   Boukinèt **preèske** *kite* Bouki
           Boukinèt almost   leave Bouki
           'Boukinèt almost left Bouki. '

b. * Boukinèt *kite* **preèske** Bouki
    Boukinèt leave almost   Bouki

Note that these adverbs could be adjoined to a higher (i.e. vP-external) position, in which case they could not be reliable diagnostics for v-to-Arg movement, though there are no reasons why this would be the case, as nothing else in these languages suggests it.

As for Martuthunira, which is now an extinct language, while the <Adv, V, O> orders are possible (cf. 6a), the <V, Adv, O> orders (cf. 6b) would not occur, according to the best intuition of the principal researcher of Martuthunira, Alan Dench:

(6)   *Martuthunira* (Alan Dench, p.c.)

a.   Nganaju yaan **minthal** *kampa-lalha* murla-a   pawulu-ngara-a
     1.SG.GEN wife alone   cook-PT   meat-ACC child-PL-ACC
     'My wife cooked meat for the kids on her own.'

b. ?* Nganaju yaan *kampa-lalha* **minthal** murla-a   pawulu-ngara-a
       1.SG.GEN wife cook-PT   alone   meat-ACC child-PL-ACC

Furthermore, Alan Dench (p.c.) did not find any <V, Adv, O> orders in a Martuthunira corpus. While we have to take these observations from Martuthunira with some reservation, given the lack of documentation, in so far as we can tell there appears to be no evidence of verb displacement in the language.

Since these adverbs, which are standardly analyzed as vP-adjuncts, precede finite verbs, the verbs must be vP-internal, raising (vacuously) only as high as v^0. Furthermore, since objects are the semantically closest arguments of the verb, the obligatory linear adjacency between the two in (4), (5), and (6) does not lead us to suspect the presence of verb movement to a vP-external position.

Given the facts presented thus far, the word order facts in N|uuki, Haitian, and Martuthunira are straightforwardly accounted for with the standard analysis in (7), in which I am applying the so-called Predicate Internal Subject Hypothesis (PISH), where the subject DP is base-generated at the spec,vP and subsequently moves to a higher position above the vP-adjoined adverb (cf. Zagona 1982; Kitagawa 1994; Speas 1986; Koopman and Sportiche 1991; McCloskey 1997, among others):[1]

---

1. Note that adverbs can vary cross-linguistically in terms of how they are linearized, as some can be left-adjoined, where they precede the verbs, while others right-adjoined, where they follow both the verb and its arguments. Whether left- or right-adjoined, I assume that they have the same structural position.

(7)
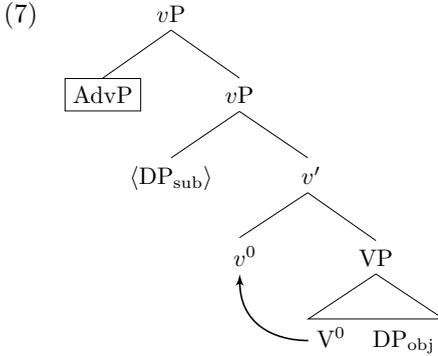
Suppose we entertain an analysis in which the verb moves to a vP-external position. Such an analysis would predict the $<$V,AdvP,DP$_{obj}>$ orders, which are not attested in any of these three languages and, indeed are not possible, as b. examples in (4), (5), and (5) indicate. This effectively leaves the analysis in (7) as the simplest viable analysis.

Consequences for the RAH

Regarding the RAH predictions, none of the three languages bear any subject agreement morphology and are therefore expected not to raise verbs to a vP-external position. Thus the analysis in (7) straightforwardly confirms the RAH.

6.2.2   Bilua

According to Obata (2003), Bilua employs a set of pronominal proclitics that agree with the subjects, as shown in (8), where the person and number features of the freestanding pronoun *enge* and *anga* are duplicated with the prefix *nge* and *a*, respectively:

(8)   *Bilua* (Obata 2003)

    a.   enge   ta   **nge**-rove-a   tu   k-ov-o   ko
          1.PL.EX TOP 1.PL.EX-can-PRES IRR 3.SG.F.OBJ-get-NDE 3.SG.F
          olaqua-vo
          suffering=NDE
          'We can be subjected to suffering...' (p. 68)

    b.   anga inio   **a**-qati-b-ala   ko   lebu   a-megora
          1.SG FOC.NF 1.SG-give-3.SG.M.OBJ-RCP 3.SG.F mango 1.SG-child
          'I gave mangos to my son.' (p. 151)

These proclitics obligatorily appear in the clause, whereas the subject DPs can be left out. At first sight, this suggests that these clitics might be agreement markers.

However, as for subject DPs in Bilua, they appear to be productively followed by topic markers (Obata 2003).

(9) *Bilua* (Obata 2003)

    a.   bazu **ta** ko-baro-a   vo   kasi
         story TOP 3.SG.F-arrive-PRES 3.SG.M at
         'The story arrived at him.' (p. 26)

    b.   . . . meqora-ka-la   **ta**   o   ol-a   veutu   tona. . .
            child-LIG-3.SG.M TOP 3.SG.M go.PRES entrance beside
         '. . . the son, he went to beside the entrance. . . ' (p. 38)

    c.   . . . kake   **ta** lasive-a-mu ni mata   kake ta parani
            INDEF.PL TOP male-LIG-PL and other INDEF.PL TOP warrior
         poso
         PL.M
         '. . . some were men, and some others were warriors.' (p. 50)

    d.   Sito **ta** kala   maba, vo **ta** o-pazo-kini-e   matu
         Sito TOP INDEF.SG.M person 3.SG.M TOP 3.SG.M-hit-RECP-RMP very
         kubo-a   koi
         many-LIG place
         'Sito is a man, he fought at lots of places.' (p. 63)

    e.   . . . kiada-mu **ta** ke-pado-padoi-va
            all-3.PL   TOP 3.PL-REDUP-gather-PRES
         '. . . everyone [without exception, without leaving anyone] they
         gathered. . . ' (p. 73)

    f.   kurou ni kobaka **ta** uri-a-ma   baere-baere
         pigeon and snail   TOP good-LIG-3.SG.F REDUP-friend COLL.DL
         'Pigeon and Snail were good friends.' (p. 75)

    g.   ko-ta   kora-korai-va   ko-a   niania vo-a   meqora
         3.SG.SIT REDUP-be.angry-PRES 3.SG-LIG mother 3.SG.M-LIG child
         melai pui o-zolei-va
         too   NEG 3.SG.M-be.happy-PRES
         '. . . she became angry, the mother, and the child too, he was not
         happy.' (p. 78)

Furthermore, there are no cases with nominal subject DPs (of which there are not many in Obata 2003, since nominal DPs are typically omitted) in the absence of topic markers in discourse neutral orders. Note that subject nominal DPs are not followed by topic markers in non-discourse neutral orders, as in (9f), where the subject nominal DP *niania* 'mother' in the second position is not followed by the topic marker.[2]

    The productive use of the topics marker suggests that subjects DPs (which lack any case morphology) are in fact licensed by the topic markers themselves. This is similar to what Jelinek (2006) argues for Navajo, where the

---

2. Note that in the second conjunct the subject DP *meqora* 'child' is followed by *melai*, which Obata glosses as 'too'. However, in a different part of the book she points out that *melai* is also a topic marker (Obata 2003:59).

(non-argument) free pronouns must be focused, while the inflections on the verb cannot receive any stress (cf. §4.1.2). It follows then that the Bilua subject marking prefixes on the verb cannot be agreement morphology, but rather arguments licensed by verbs.

With respect to their phonological dependency, these proclitics (Obata's (2003) term) are not restricted to appearing on verbs, as they can also appear on other elements, such as modifiers of the verb (cf. 10a) or aspectual markers (cf. 10b-c):

(10)   *Bilua* (Obata 2003)

    a.   **o**-ˈsasa   ˈmamaz-a
            3.SG.M-a bit rest-PRES
            '. . . he rested a bit.' (p. 14)

    b.   ˈ**ko**-beta   ˈkoɪt
            3.SG.F-CONT climb-PRES
            '. . . she is climbing. . . ' (p. 15)

    c.   **ni**-a   kana madu   ta ke-ta   *baro*-a
            3.SG.M-LIG war   COLL.PL TOP 3.PL-SIT arive-PRES
            'Those warriors arrived.' (p. 92)

Furthermore, they can have a different function, as they productively appear as possessives that procliticize on nouns, as shown here:

(11)   *Bilua* (Obata 2003)

    a.   **a**-ˈɲaɲa
            1.SG-mother
            'my mother' (p. 14)

    b.   **o**-ˈsisu
            3.SG.M-sweet.potato
            'his sweet potato' (p. 17)

Another important fact is that the clitics in (12) are clearly related to free pronouns, given their phonological shape, as shown here:

(12)   Free pronouns and proclitics (Obata 2003:49, adapted)

Person	Free pronoun	Proclitic
1sg[EX]	an**a**	a
1sg[IN]	—	—
2sg	**ngo**	ngo
3sg[M]	v**o**	o
3sg[F]	**ko**	ko
1dl[EX]	e**qe**	qe
1dl[IN]	ani**qe**	qe
2dl	anime	qe
3dl[M]	ni**oq**a	qo
3dl[F]	ni**oq**a	qo
1pl[EX]	ani**nge**	nge
1pl[IN]	ani**me**	me
2pl	**me**	me
3pl[M]	se	ke
3pl[F]	se	ke

As for the morpho-phonology of the proclitics, cliticization is prohibited if the clitic were to form a diphthong with its host, as in (13a), or when the clitic ends with the same vowel with which the host begins (cf. 13b). According to Obata (2003:16), in these cases the clitics become "phonologically independent":

(13)   *Bilua* (Obata 2003:15)

    a.   ˈ**ke** ˈuri-a   ˈbori-k-a
         3.PL good-LIG carry-3.SG.F.OBJ-PRES
         'They carried it well (carefully)...'

    b.   ˈ**o**   ˈodiɛ-k-a
         3.SG.M call-3.SG.F.OBJ-PRES
         '...he called her...'

The facts outlined thus far indicate that these proclitics are not agreement morphology, but in fact arguments; in particular, the presence of topic markers suggests that they license nominal subject DPs, while the verbs license the subject proclitics. In addition, they are not phonologically dependent on the verb per se, but can attach to a variety of hosts in the clause, as well as become phonologically independent in contexts where they end with a vowel while the host begins with a vowel. Consequently, they do not trigger verb movement, but rather attach to any host that happens to be adjacent to them. Thus, given the absence of phonological dependence between the verb and these clitics, Bilua is expected to behave like a poor agreement language, for which the RAH thus predicts that the verb must remain *in situ*, once we control for other potential

triggers of verb movement.

Word order

Bilua is basically an SVO language, as the examples in (14) indicate, though other orders are freely found (Obata 2003:6):

(14)   *Bilua* (Obata 2003)

a.
    S   V   O

anga inio a-qati-b-ala   ko lebu   a-megora
1.SG FOC.NF 1.SG-give-3.SG.M.OBJ-RCP 3.SG.F mango 1.SG-child
'I gave mangos to my son.' (p. 151)

b.
        S   V   O

…ke-ngavi nio   ke ere-k-a   ko sailao
3.PL-self FOC.NF 3.PL make-3.SG.F.OBJ-PRES 3.SG.F food
'…they made food themselves…' (p. 108)

Adverbs

According to Obata (2003) adverbs either precede the verb or follow the direct object (cf. 15-16):

(15)   *Bilua* (Obata 2003)

a.   koe visi-a-mu   ta, pui **kapiavole** ke-*rorot*-a-ni
    EX younger-LIG-3.PL TOP NEG quickly   3.PL-marry-PRES-REL
    nio kaka-ka-mu   inio kuleto ke-rorot-a-ni,
    FOC older-LIG-3.PL FOC first   3.PL-marry-PRES-REL
    'Younger ones, they do not quickly marry and it's older ones who
    marry first.' (p. 268)

b.   Anglican ta **lula**   ko-ta   *baro*-i   Guadalcanal
    Anglican TOP already 3.SG.F-SIT arrive-RMP Guadalcanal
    'Anglican church had already arrived at Guadalcanal.' (p. 116)

(16)   *Bilua* (Obata 2003:191)

a.   **taukavole** ko-ta   *aer*-a
    quickly   3.SG.F-SIT separate-PRES
    '…it would separate.'

b.   o-*nokae*-v-a   **matuvole**
    3.SG.M-call-3.M.OBJ-PRES loudly
    'He called him loudly.'

Although there are no attested examples of adverbs intervening between verbs and direct objects in Obata (2003), she provides many examples of adverbs preceding verbs:

(17) *Bilua* (Obata 2003)

    a.   . . . ko   **uri-a**   v-*e*-a
        . . . 3.SG.F good-LIG 3.SG.M-see-PRES
        '. . . she saw him well.'

    b.   . . . o-be   **maba** *vouvae*-v-a   inio
        . . . 3.SG.M-CONT truly   kill-3.SG.M.OBJ-PRES FOC
        '. . . he truly killed him.'

    c.   . . . o-ta   **matu** kora-*korai*-va
        . . . 3.SG.M-SIT very   REDUP-be.angry-PRES
        '. . . he became very angry.'

    d.   . . . pui a-ba   **tova**   *kail*-ou
        . . . NEG 1.SG.M-PROS behind go.up-FUT
        '. . . I am not going to go up behind [you].' (p. 143)

    e.   erisanga ta   enge   ta   nge   **ukaka** *irurupput*-a
        today   TOP 1.PL.EX TOP 1.PL.EX careless work-PRES
        'Today, we work carelessly.' (p. 254)

    f.   . . . pui   **kapiavole**   ko-*kati*-v-a   ko-a
        . . . NEG   quickly   3.SG.F-give-3.SG.M.OBJ-PRES   3.SG.F-LIG
          bakisa
          custom.money
        '. . . she didn't give the custom money to him quickly.' (p. 31)

Analysis

The facts presented here suggest that the doubled subject markers on the verb are not agreement morphology, but rather pronominal arguments that procliticize on the verb (à la Jelinek 2006, cf. §4.1.2). The crucial support for this comes from the fact that nominal subject DPs (in the rare cases that they occur) cannot be arguments of the verb, since they are licensed by *v*P-external topic markers. Furthermore, the language does not allow adverbs to intervene between the subject and the verb. Consequently, the only option for the subject marking clitics is that they are base-generated in the argument position at spec-*v*P immediately preceding the verb, as illustrated in (18), where the nominal subjects are base-generated at the specifier position of the projection headed by the topic marker, which I label here as TopP.

(18)

```
              TopP
           ／      ＼
        DP          Top′
                 ／      ＼
              Top⁰         vP
                        ／   ⋮
                    AdvP    AdvP
                        vP
                     ／    ＼
                   DP       v′
                   |      ／    ＼
               clitic−  v⁰      VP
                              △
                           V⁰   DP_obj
```

$$(18)$$
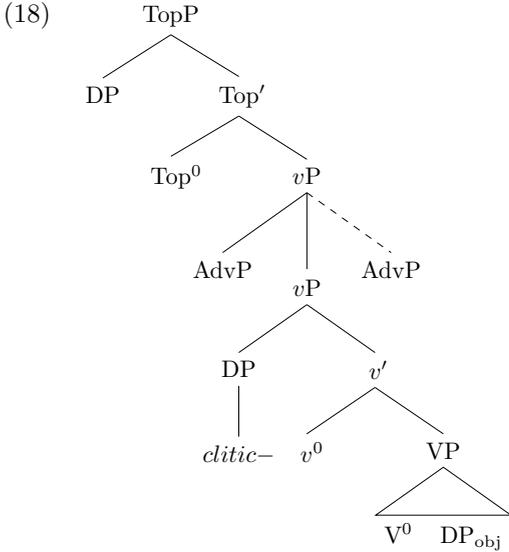
Since the subject clitics can appear on vP-external functional morphology, they can undergo A-movement from spec,vP to a vP-external projection that introduces other elements on which they they can appear (cf. 10), as (19) illustrates:

(19)

```
                XP
             ／     ＼
        clitic−       X′
                   ／    ＼
                 X⁰       vP
                       ／    ＼
                    AdvP      vP
                           ／    ＼
                         DP       v′
                         |     ／    ＼
                     clitic−  v⁰      VP
                                    △
                                 V⁰   DP_obj
```
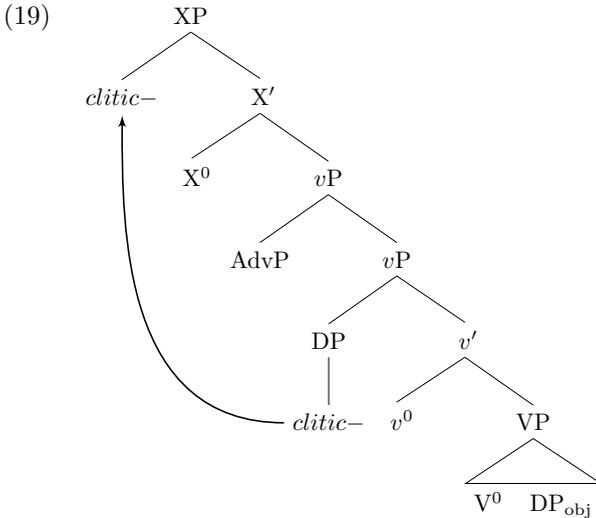
(18) and (19) correctly predict the absence of <V, Adv, O> orders in the language, which is a direct result of the absence of verb raising.

Consequences for the RAH

The discussion above suggests that Bilua is a poor agreement language, since the highly productive subject-doubling morphemes are not agreement morphol-

ogy, but rather pronominal arguments that procliticize on the verb, as they happen to be adjacent to it. Consequently, since the RAH does not predict *v*-to-Arg movement in Bilua, the analysis of the basic clause structure proposed here supports the RAH.

6.2.3 Hatam (Hattam)

Hatam verbs are obligatorily marked for person and number of the subject, which allows optionality of the full nominal DPs if the subject is known, as shown here:

(20) *Hatam* (Reesink 1999)

    a.   (Da-ni) **di**-kiek   da bi-di-put
          I   1.SG-turn me PUR-1.SG-look
          'I turn around and I look. (=I turn around to look)' (p. 104)

    b.   (Nani) **a**-miap   di-sut-bat-nya   i-mbrab   e?
          you   2.SG-hear 1.SG-friend-COLL-PL 3.PL-speak Q
          'Did you hear my friends talking?' (p. 105)

    c.   (Noni) **ø**-jem   da kwei big
          He   3.SG-call me come not
          'He didn't call me to come.' (p. 111)

    d.   (Nyeni) **ni**-hyet   pi-ma igbit big
          we   1.EX-sleep good not
          'We didn't sleep well.' (p. 95)

Interestingly, these prefixes are more versatile than the run-of-the-mill agreement markers, since they can also appear on predicative adjectives (cf. 21a)[3].

(21) *Hatam* (Reesink 1999:56)

    a.   Da-ni   **di**-cun
          1.SG-this 1.SG-short
          'I am short.'

    b.   Da-ni   **di**-pim
          1.SG-this 1.SG-cry
          'I am crying.'

Furthermore, nearly the same set of prefixes is also found on possessive pronouns. One exception is the prefix for the third person, which on the verb *krau* 'grab' in (22) is null, whereas the possessive pronoun is marked with a prefix *ni*- (cf. Reesink 1999:51):

(22) *Hatam* (Reesink 1999:81)

    Noni **ø**-krau   **ni**-de   minsien(-nya) ba com
    he   3.SG-grab 3.SG-POSS dog-PL   and throw
    'He grabbed his dogs and threw (them).'

---

   3. Reesink (1999:56) provides a sizable list of all adjectives that receive the prefix just as the verbs do.

The full paradigm of personal pronouns, prefixes, and possessives is given in the following table, where the elements in the column *Prefix* refer to the morphology that appears on the finite verbs:

(23)   Hatam personal pronouns, verbal prefixes, and possessive pronouns
        (Reesink 1999:40, adapted)

	Pronoun	Prefix	Possessive
1.SG	da	di-	dit-de
2.SG	na	a-	a-de
3.SG	no(k)	ø; ni-	ni-de
1.EX	nye	ni-	nyen-de/ni-de
1.IN	nye	i(g)-	i-de
1.DL	sa	si-	si-de
2.PL	je	ji-	ji-de
3.PL	yo(k)	i(g)-	i-de

There are two options as to the categorial status of the prefixes on the verb: i) the prefixes are typical agreement morphology, or ii) the prefixes are instances of pronominal arguments. There are two arguments why option ii) is a likely candidate. First, as the paradigm in (23) already suggests, the prefixes on the verb are clearly phonologically related to personal and possessive pronouns. This suggests that the prefixes could in fact be a weak forms of pronouns, as has been observed in languages that have subject doubling and as has been argued for certain dialects of Dutch by Van Craenenbroeck and van Koppen (2007) (cf. §4.1.3).

Second, the prefixes in fact behave like clitics in the sense that there are instances in the language in which they can attach to elements other than verbs. For example, Reesink (1999) shows that they can also appear on the modal *dem mem* 'enough' when the modal follows the subject, as in (24a). Note that the verb *wim* 'fell' appears without the prefix marking the first person singular of the subject pronoun *dani*. However, when *dem mem* is in the first position in the clause, the prefix appears on the verb (cf. 24b):[4]

(24)   *Hatam* (Reesink 1999)

        a.   Dani **di**-dem   mem *wim* biei ni-ndig di-mo
                I   1.SG-enough for   fell   tree 3.SG-big REL-there
                'I can cut that big tree.' (p. 86)

        b.   Dem   mem **ni**-*plei*   hab can kan   big
                enough for   1.EX-shoot bird two know not

---

4. Since there are arguments for either status of the prefixes on the verb, Hatam could be a language in which these subject doubling morphemes are in the process of becoming agreement. This of course is merely a conjecture at this point, and I leave it at that here. Importantly, for our purposes, (24) shows a kind of flexibility that is not expected of agreement markers.

'We were not at all able to shoot two birds.' (p. 87)
(lit. enough/adequate we shoot two bird know not)'

In addition to these two arguments, it is worth pointing out that the status of these prefixes is similar to what we encountered in Bilua (cf. §6.2.2), where I argued that the proclitics are in fact arguments, as the same kind of subject clitics also function as possessives and are related to free pronouns. These similarities between the proclitics of the two languages are not all that surprising, given that Hatam and Bilua are related languages, belonging to the West and East Papuan branches (respectively) of the Indo-Pacific family. In addition, like Bilua, Hatam has topic markers (though not obligatory) that introduce subject DPs:[5]

(25) *Hattam* (Reesink 1999)
Dani ne di-kwei   leu Branda
I   TOP 1.SG-come from Holland
'As for me, I come from Holland.' (p. 68)

Given these arguments I propose that these subject prefixes in Hatam are in fact arguments of the verb. What this means is that Hatam, like Bilua, in fact has a status of a poor agreement language, in which *v*-to-Arg movement is not expected. Consequently, if the same analysis that we proposed for Bilua is to be applied in Hatam, we expect that the *v*P-adjoining adverbs can precede verbs and cannot intervene between the verb and the direct object, suggesting that verbs remain in a *v*P-internal position. Let us review the word order facts and the position of adverbs.

Word order

Hatam has rigid SVO orders, as illustrated in (26), though some displacements are possible, like object topicalizations, for example.

(26) *Hatam* (Reesink 1999)

a.
$$\overbrace{\text{Sop}\quad\text{pi-ma}}^{\text{S}}\quad\overbrace{\text{ngges}}^{\text{V}}\;\overbrace{\text{kob}}^{\text{O}}\text{ei}\;\;\text{dihyei-si}$$
woman ANA-that drop sago LOC ground-NOMZ
'The woman dropped the sago onto the ground.' (p. 91)

b.
$$\overbrace{\text{di-cig}}^{\text{S}}\quad\overbrace{\text{heu}}^{\text{V}}\quad\overbrace{\text{ampriap}\;\text{bak dani}}^{\text{O}}$$
1.SG-father polish bow   for me
'My father carved/polished a bow for me.' (p. 93)

---

5. When free pronouns are subjects, there is a strong preference for them to be inflected with the suffix *-ni*, which, according to Reesink (1999:41), is possibly derived from the near deixis marker *ni*. This suggest that the free pronouns must be stressed and therefore in a focused position, comparable to what Jelinek (2006) argues to be the case in Navajo (cf. §4.1.2).

Adverbs

As for the optional elements in the clause, such as adverbs, they cannot intervene between the verb and the direct object (cf. Reesink 1999:79,94); in fact the immediate adjacency between subjects and direct objects is uniform in Hatam, as the following examples highlight:

(27)　*Hatam* (Reesink 1999:95)

    a.　Noni **haniyai** *ø-ku*　　mun di-no　　ø-nggimang
        he　 quickly　3.SG-hide thing REL-3.SG 3.SG-steal
        'He quickly hid what he had stolen.'

    b.　**Haniyai** noni *ø-ku*　　mun di-no　　ø-nggimang
        quickly　 he　3.SG-hide thing REL-3.SG 3.SG-steal

    c.　Noni *ø-ku*　　mun di-no　　ø-nggimang **haniyai**
        he　 3.SG-hide thing REL-3.SG 3.SG-steal　quickly

    d.　* Noni *ø-ku*　　**haniyai** mun di-no　　ø-nggimang
         he　 3.SG-hide quickly　 thing REL-3.SG 3.SG-steal

(28)　*Hatam* (Reesink 1999:94–95)

    a.　**sindi** noni *kwei* ei　Minyambou
        just　 he　come LOC Minyambou
        'Recently he came to Minyambou.'

    b.　noni **sindi** *kwei* ei　Minyambou
        he　 just　come LOC Minyambou

    c.　* noni *kwei* **sindi** ei　Minyambou
        he　 come just　 LOC Minyambou

    d.　* noni *kwei* ei　Minyambou **sindi**
   he　 come LOC Minyambou just

Table 6.2 provides the distribution of a number of adverbs (collected from Reesink 1999); it shows two different classes, based on the positions in which they can appear in the clause. In one class, which I label AdvP$_1$, adverbs can only appear before the verb, whereas the other (AdvP$_2$) can, in addition to the preverbal position, also appear after direct objects:

Class	Adverb		⟨Adv, S, V, O⟩	⟨S, Adv, V, O⟩	⟨S, V, Adv, O⟩	⟨S, V, O, Adv⟩
AdvP$_1$	*mmo*	'perhaps'	+	+	−	−
	bitbon	'able'	+	+	−	−
	suar	'necessary, perhaps'	+	+	−	−
	sindi	'just now'	+	+	−	−
AdvP$_2$	*kikau*	'continually'	+	+	−	+
	haniyai	'quickly'	+	+	−	+

Table 6.2 Summary of the distribution of adverbs in Hatam

Analysis

Given the facts laid out here, there are no reasons to think that the verb moves to a vP-external position based on the distribution of adverbs, since neither of the two classes of adverbs can intervene between the finite verb and the direct object. In light of this, the clause structure analysis follows the same pattern as has been observed in many poor agreement languages in this study, where the verb remains inside vP, as illustrated here:

(29)

vP
AdvP$_{1/2}$ vP AdvP$_2$
V^0 DP$_{obj}$
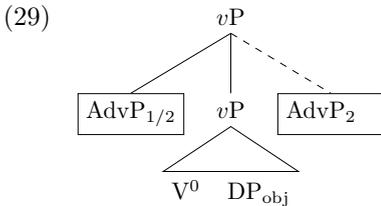
One question that we are left with is what mechanism allows the prefixes bearing subject features to attach to the verb?

Let us assume that these prefixes are in fact XPs, for which there is substantial evidence. First, as already demonstrated, they are phonologically quite similar to free pronouns, which suggests that they are a species of pronominals and therefore an XP, rather than functional agreement morphology generated as an X^0. Second, they are likely to be clitics, since they are not restricted to appearing on the finite verb (i.e. head), but, as we have seen, they can appear on other elements, such as predicative adjectives, and as possessives markers on nouns. In Chapter 7, I show that in languages in which we find agreement clitics, like Wariʼ (cf. §7.2.7) and Hausa (cf. §7.2.4), agreement clitic heads exclusively attach to other heads. In contrast, the subject clitics in Hatam attach to both heads and phrases.

Given these differences, these Hatam 'clitics' would then be arguments (à la Jelinek 2006, cf. §4.1.2), restricted to spec positions. And not any spec position, but in fact, they would have to be generated in the subject position at spec,vP, while full nominal DPs are adjoined to clauses. Crucially, the clitics are immediately adjacent to v^0, trivially ruling out any adverbs from intervening between the two positions, since the adjunct position is above the spec position, as illustrated here:

(30)
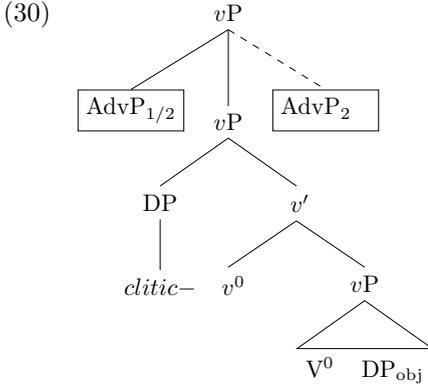
This analysis naturally extends to cases with predicative adjectives, allowing clitics to attach to predicative adverbs in vP complement positions, without requiring any movement operations. And, crucially, no verb movement to a vP-external position takes place simply because the clitics (or other elements) do not trigger it, as the morphological merger between the two is strictly achieved by virtue of them being in two adjacent syntactic positions: a spec and a head of vP. An important corollary of this analysis is that the clitics themselves are then arguments of the verb, as proposed by Jelinek (1984, 2006) while the full nominal DPs would have to be optional (which they are) and adjunct-like.

As for the case where the clitics attach to a modal, as in (24), repeated below, this could follow from the optional A-movement to the spec position of the projection introducing the modal *dem mem* (cf. 24a):

(24)   *Hatam* (Reesink 1999)

    a.   Dani **di**-dem   mem *wim* biei ni-ndig di-mo
           I   3.SG-enough for   fell tree 3.SG-big REL-there
           'I can cut that big tree.' (p. 86)

    b.   Dem   mem **ni**-*plei*   hab can kan big
           enough for   1.EX-shoot bird two know not
           'We were not at all able to shoot two birds.' (p. 87)
   (lit. enough/adequate we shoot two bird know not)'

If indeed this is the case, then an adverb in the position after the modal hosting the clitic in (24a) should be allowed. As it turns out, the facts from the language exactly pattern as the analysis predicts. Manner adverb *haniyai* 'quickly'

follows the modal that bears the subject prefix (cf. 31a), while in the position in front of the prefixed modal *dem mem* in (31b) *haniyai* is odd (Ger Reesink, p.c.), though Reesink could not provide a definitive answer.

(31)   *Hatam* (Ger Reesink, p.c.)

    a.   Dani <u>di</u>-dem mem   **haniyai** *wim* biei ni-ndig di-mo
          I   3.SG-enough for quickly   fell tree 3.SG-big REL-there
          'I can quickly cut that big tree.'

    b. ? Dani **haniyai** <u>di</u>-dem mem   *wim* biei ni-ndig di-mo
           I   quickly 3.SG-enough for fell tree 3.SG-big REL-there

The data here indicates that under the assumption that the adverb *haniyai* is a *v*P-adjunct, the clitic can optionally move to a higher spec position while crossing *v*P-adjuncts. Consequently, the subject clitics are in fact arguments.

    It follows then that for (31a), the derivation proceeds as given in (32), where the subject clitic raises to the spec,Mod position, where it attaches as a prefix to Mod^0. In all other contexts, the clitic remains at spec,*v*P, as already illustrated in (29).

(32)
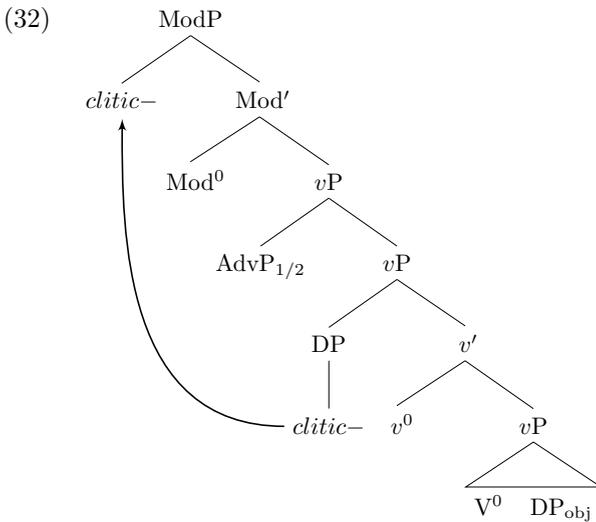
Consequences for the RAH

The analysis here shows that the Hatam subject clitics, which resemble agreement morphology, are in fact arguments. Consequently, the RAH predicts that Hatam verbs must remain inside *v*P, as there is no *v*P-external phonologically-dependent morphology that would trigger verb movement to a *v*P-external position. This prediction is borne out, as no optional elements can intervene between verbs and direct objects.

6.2.4   Kadiwéu

Comparable to Hatam and Bilua, Kadiwéu exhibits morphemes on the verb
that mark the φ-features of the subjects:

(33)   *Kadiwéu* (Sandalo 2010)

    a.   **j**-emaːn
        1-want/love
        'I love him/her.'

    b.   **a**-emaːn-**i**
        2-want/love-PL
        'You love him/her.'

    c.   **y**-emaːn
        3-want/love
        'He/she love him/her.'

    d.   Goti   y-emaːn Ekode
        Goti   1-love   Ekode
        'Goti loves Ekode.'

As (33c-d) shows, these affixes can co-occur with full nominal DPs, which *prima
facie* makes them a suspect for agreement morphology. However, Sandalo (1997)
persuasively argues that these morphemes are in fact pronominal arguments.
Particularly strong evidence comes from the fact that the subject affixes receive
morphological markers for theta roles and case that in other languages typi-
cally surface on nouns. According to Sandalo (1997:78), Kadiwéu in total has
six semantic role markers 'theme', 'goal', 'dative', 'benefactive', 'allative', and
'adessive', all of which attach to the subject affixes on the verb, as exemplified
in (34), where the morphemes *-dː, -gi, -wa*, attach to the subject affixes on the
verb:

(34)   *Kadiwéu* (Sandalo 1997:78)

    a.   j-**dː**-aːbːid
        1.SG-THEME-sit.down-PL
        'I sit down.'

    b.   Ga-**dː**-emaːnː-i
        2.PL-THEME-want-PL
        'He loves you.'

    c.   j-aqape-t-e-**gi**
        1.SG-meet-REL-3.SG.cl-GOAL
        'I meet him.'

    d.   j-ajigo-t-Ga-**wa**
        1.SG-give-REL-2.SG.cl-DATIVE
        'I give the meat to you.'

In addition to the semantic roles being applied to the subject affix on the verb,
Sandalo (1997) points out that in passivized constructions the subject affix also

receives the marker, whereas the full nominal DPs remains unaltered, as the following minimal pair shows:

(35) *Kadiwéu* (Sandalo 1997:83)

    a.   y-omːo-qen   nGida epwagi
            3.sg-open-valency dem door
            'He closed the door.'

    b.   y-**d:**omːo-qen   nGida epwagi
            3.sg-theme-open-valency dem door
            'The door was closed.'

These facts show that the doubled subject affixes on the verb cannot be instances of agreement morphology. Consequently, the RAH predicts that the verb remains *v*P-internal in Kadiwéu.[6]

Word order

Although Sandalo (1997:64) reports that Kadiwéu has flexible word order, allowing all orders of verbs and its arguments, in Sandalo (2010), she reports that there are two discourse neutral word orders that depend on the person properties of the direct objects. Specifically, when the direct object is in third person, the language exhibits VO orders (36a), whereas OV orders are obligatory when the direct object is in first and second person (36b).

(36) *Kadiwéu* (Sandalo 2010:32)

            S   V   O
    a.   Goti y-emaːn Ekode
           Goti 1-love   Ekode
           'Goti loves Ekode.'
            S   O   V
    b.   Goti agaːm-i Ga-dː-emaːn-i
           Goti 2-pl   2.obj-invs-want/love-pl
           'Goti loves you.'

Note that the OV orders are morphologically more complex, as the verb is marked with the obligatory 'inverse' morpheme.

Adverbs

As for the distribution of optional elements in the clause structure, Kadiwéu has a number of adverbs, none of which can intervene between the verb and the direct object in SVO orders (37):

---

6. Sandalo (1997:78–92) provides several additional tests that provide further support for the notion that Kadiiwéu is a pronominal-argument language. The tests include **coreference**, which rules out the possibility that empty pro's function as arguments, and **recursivity**, showing that the full nominal DPs behave like adjuncts. See Sandalo (1997) for more details.

(37) *Kadiwéu* (adapted from Sandalo 2010:33)

    a. Ecabigo **ejime** / **ja**G   / **eG** *y-emaːn* Ekode
        Ecabigo perhaps / already / still 3.sɢ-love Ekode
        'Ecabigo perhaps/already/still loves Ekode.'

    b. * Ecabigo *y-emaːn* **ejime** / **ja**G   / **eG** Ekode
        Ecabigo 3.sɢ-love perhaps / already / still Ekode

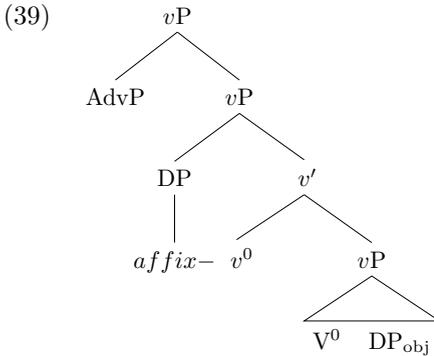In SOV orders adverbs appear before and after the direct object:

(38) *Kadiwéu* (adapted from Sandalo 2010:33)

    a. Goti **ejime** / **ja**G   / **eG** agaːm-i *Ga-dː-emaːn-i*
        Goti perhaps / already / still 2-ᴘʟ   2.ᴏʙᴊ-ɪɴᴠs-want/love-ᴘʟ
        'Goti perhaps/already/still loves you.'

    b. Goti agaːm-i **ejime** / **ja**G   / **eG** *Ga-dː-emaːn-i*
        Goti 2-ᴘʟ   perhaps / already / still 2.ᴏʙᴊ-ɪɴᴠs-want/love-ᴘʟ

Analysis

Given the two basic word orders, there are two options for the analysis of the basic clause structure. One option is that the two discourse neutral word orders, SVO and SOV, are unrelated in the sense that in SVO the direct object adjoins to the right of the verb and in SOV the direct object adjoins to the left of the verb, with this directionality parameter hinging on the person properties of the direct object. If this is correct then only SVO orders are of interest here, since we cannot detect v-to-Arg movement in SOV orders (cf. §4.2.2).

The other option is that one of the orders is derived from the other. If correct, it follows that either SOV is derived from SVO, or vice versa. The facts described above suggest that SOV is the derived order, since it is more complex, with the obligatory 'inverse' morpheme. In addition, under an analysis in which SOV is derived, the fact that adverbs can appear between the object and the verb is entirely expected, as objects would scramble out of the vP, crossing the vP-adjoined adverbs. This leaves us with SVO as the basic (underlying) order in the language in which we can test for v-to-Arg movement. Consequently, regardless of which of the options are correct, it bears no consequence on the derivation of the SVO order and we can thus focus the attention on SVO, leaving SOV aside.

Like Bilua and Hatam, Kadiwéu does not have agreement morphology, despite the presence of morphemes on the verb that reflect the features of the subject. As discussed above, these morphemes do not function as agreement morphology but are in fact arguments, as Sandalo (1997) convincingly argues. As such, the subject doubling morphemes do not head their own projection (like ArgP), but are base-generated in the subject position at spec,vP where they are adjacent to the verb, as shown in (39).

(39)

```
                        vP
                   ╱         ╲
               AdvP           vP
                          ╱       ╲
                        DP         v′
                         │      ╱      ╲
                 affix−  v⁰             vP
                                      ╱    ╲
                                    V⁰   DP_obj
```

In this analysis the verb remains within vP, which correctly predicts that any vP-adjoined adverbs cannot intervene between the verb and the direct object, as the data in (37) suggests.

Consequences for the RAH

Similar to what we have seen in Bilua and Hatam, Kadiwéu subject markers on the verb function as pronominal arguments that are base-generated at the spec,vP. As argued here and in line with Sandalo (1997), this indicates that Kadiwéu is a poor agreement language and that the RAH does not predict v-to-Arg movement. This turns out to be the case in SVO orders, as adverbs cannot intervene between the verb and the direct object.

6.2.5   Ìgbo

Ìgbo exhibits a variety of aspectual morphemes that independently trigger verb movement. This restricts reliable RAH tests to those clauses in which any functional projection dominating vP exhibits morpho-phonological independence from the verb. The data presented here suggest that in such (controlled) environments, adverbs either precede verbs or follow direct objects, but crucially do not intervene between the two, as predicted by the RAH.

Verbal morphology

In general and across many different types of constructions, Ìgbo (including many of its dialects) does not exhibit any agreement morphology on the verb (Déchaine 1993):

(40)   *Ìgbo*
ḿ / í   / ɔ́   / ányị̀ ma   -ra yá
I / you / he/she/it / we   know -RV 3.SG
'I know it.'

The verb *ma-ra*, inflected with the suffix -rV, a factative morpheme similar (in meaning) to the perfective, remains unaltered by the presence of different pronominal subjects. Ìgbo is clearly a poor agreement language, since it lacks any φ-marking in the verbal morphology.

Although completely lacking subject agreement on the verb, Ìgbo in many types of constructions exhibits other kinds of morphological marking on the verb. As exemplified in (40), Ìgbo productively inflects the verb with factative morphology, which is considered to be the default morphology, as it carries barely any semantics: (Manfredi 1991; Déchaine 1993).

In addition, Ìgbo has a variety of other types of functional morphology that is standardly assumed to be base-generated vP-externally. A substantial portion of these functional projections host affixes that require phonological support from the verb, while others surface as free morphemes. In the following table I provide the typology of Ìgbo aspectual morphology in three different dialects: 'Owerè, Ǹnééwi, and Ìgboụ́zọ̀. Following Déchaine (1993), I assume that each morpheme heads its own projection above vP. The morphemes in gray cells are suffixes attached to verbs, whilst others are free morphemes:

	Òweré	Ǹnééwi	Ìgboụ́zọ̀
anticipated	gà	yà	gà
habitual	jì	nà	nà
progressive	–ga	nà	nà
prior	–na–a–na	–bu	té
perfective	–é–la	–ná	–gé–a
negative	–hụn	–họ	–shọ

Table 6.3 Ìgbo verbal suffixes and auxiliaries (adapted from Déchaine 1993:457)

While the suffixal morphemes arguably require verb movement, the free morphemes do not. This is the standard view of verb movement in general that Déchaine (1993) assumes to be the case in Ìgbo and that I follow in my analysis here. This raises the question whether or not verb movement takes place in cases in which aspectual morphology does not phonologically depend on the verb, and if are there any other (morphological) reasons for verb movement.

Since verb movement to these suffixal projections would no doubt obscure the v-to-Arg movement in Ìgbo, such contexts are unreliable for our tests. Specifically, if the verb already has to raise to adjoin to any of the suffixes in Table 6.3, we cannot tell whether any additional verb movements take place. If possible, these (independent) verb movements must be controlled for in the context of v-to-Arg movement. Let's take a look if we can successfully control for independent triggers of verb movement.

Minimal verbal morphology and verb *in-situ* environments

In cases where aspectual morphemes are phonologically independent and according to Déchaine (1993) do not trigger verb movement, the verb in Ìgbo is (at the very least) always inflected with harmonizing vowels *è-/à-* surfacing as prefixes on the verb. (41) shows this to be the case in the aforementioned three dialects:

(41) a. *Òweré* (Déchaine 1993:471)
      ọ́   gà   á-zà   úyọ́   à
      3.SG FUT e-sweep house.GEN this
      'S/he will sweep this house.'

   b. *Ǹnééwi*
      Ụ̀kà ya   e-lí   n-ní   afụ̀
      FUT e-eat food.GEN that
      'Ụ́kà will eat that food.'

   c. *Ìgboúzọ̀*
      ọ́   gà   e-lí   n-ní   wọ̀ọ̀
      3.SG FUT e-eat food-GEN that
      'S/he will eat that food.'

The prefix *è-/à-* does not reflect any semantic features at all; it only appears in complementary distribution with the factative suffixes in (40), as a 'placeholder' that fills a morphological slot on the verb, when none of the other semantically marked affixes are realized.

There is a phonological process in Ìgbo and in other West-African languages in which the prefix vowel must harmonize with the vowel of the root that it attaches to. That is, the [+ATR] (Advanced Tongue Root) feature of the root vowel of the verbal stem requires the prefix *è-*, whereas the [-ATR] feature requires *à-* (Déchaine (1993), Chukwuma Okeke, p.c.). For example, the prefixes in (42a-b) harmonize with the root of the corresponding verbs, yielding:

(42) a. *prefix* + z**à**   =   **á**-z**à**
          sweep[–ATR]   *à*-sweep

   b. *prefix* + l**í**   =   **è**-l**í**
          eat[+ATR]   *è*-eat

In the literature these harmonizing prefixes have been claimed to be remnant T heads and are referred to as 'default agreement' (Déchaine 1993:455). However, *è-/à-* does not have any semantic properties and it is rather unlikely that this prefix is a syntactic head, and is certainly not agreement-related morphology, since it does not share any features with any of the arguments of the verb. For this reason, I argue that syntax does not introduce harmonizing prefixes, rendering them inconsequential for the syntactic analysis. Instead, *è-/à-* is the result of post-syntactic processes.

Importantly, if *è-/à-* is a post-syntactic 'place-holder' insertion on the verb, then there are no reasons to think that the verb prefixed with *è-/à-* has undergone a syntactic movement, since *è-/à-* is not generated as a syntactic head. It is worth pointing out that *è-/à-* can co-occur with other types of suffixes on the verb, for example negatives and perfectives. However, negative and perfective suffixes, like the factative suffix, are also *v*P-external, and they independently trigger verb movement.

It follows that the only type of construction in which the verb is expected to remain *in situ* must contain verb stems inflected with harmonizing vowels *only*. As demonstrated in (41), harmonizing prefixes appear productively in all constructions in which all aspectual morphology is phonologically independent of other elements (cf. Table 6.3 above for phonologically independent aspectual morphology in three different dialects of Ìgbo).

Now that I have laid out the key prediction based on the verbal morphology in Ìgbo with the standard theoretical assumptions on verb movement, the question arises as to whether the verb position can be successfully diagnosed with the standard *v*P-adjoined adverbs. Let's take a look at the placement of adverbs in Ìgbo and what it can tell us about the position of the verb. I begin by discussing the position of adverbs in environments in which the verb is only inflected with harmonizing vowels.

Distribution of adverbs and the basic clause structure analysis

The surface position of the verb is typically determined based on the position of the *v*P-adjoined adverbs, which are the standard diagnostic for whether or not the verb moves to a *v*P-external position. In controlled environments, a verb preceding adverbs in VO languages is then in a dislocated position, while the <AdvP,V> orders suggest the verb is *v*P-internal.

In Ìgbo, however, not all adverbs can be used as diagnostics for verb movement. While some occur either as free words (43a), others are suffixes (43b) that attach to the verb:

(43)   *Ìgbo* (Chukwuma Okeke, p.c.)

    a.   Ike *ri* -ri ji   **ọsị̄ị̄sọ**
           Ike eat -RV yam quickly
           'Ike quickly ate yam.'

    b.   Ike na- e- ri **-kari**   ji
           Ike AUX- *e*- eat -always/often/frequently/every time yam
           'Ike always/often/frequently/every time ate yam.'

Since these 'adverbial suffixes' in (43b) are phonologically dependent on the verb and as such cannot be used as diagnostics for verb movement, I leave them aside here and focus on the ones that occur as free morphemes (cf. 43a).

As already discussed above, the environments with harmonizing prefixes only are the ones in which we expect that verb movement cannot be triggered

by aspectual morphology. Indeed, as in the case of habituals, as in Ḿbàisén Ìgbo in (44), we find that adverbs can either precede the verb (44b) or follow the direct object (44a), but cannot intervene between the verb and the direct object (44c) or precede free aspectual morphemes such as habituals (44d):[7]

(44)   *Ḿbàisén Ìgbo* (Chukwuma Okeke, p.c.)

    a.   ahàn ji   a- *ṇ́ṇ́*   mmị̄ị̄ nkwṹ   **ọsị̄ị̄sọ**
        3.PL HAB *a-* drink wine palm.GEN quickly
        'They customarily quickly drink palmwine.'

    b.   ahàn ji   **ọsị̄ị̄sọ** a- *ṇ́ṇ́*   mmị̄ị̄ nkwṹ
        3.PL HAB quickly *a-* drink wine palm.GEN

    c. * ahàn ji   a- *ṇ́ṇ́*   **ọsị̄ị̄sọ** mmị̄ị̄ nkwṹ
        3.PL HAB *a-* drink quickly wine palm.GEN

    d. * ahàn **ọsị̄ị̄sọ** ji   a- *ṇ́ṇ́*   mmị̄ị̄ nkwṹ
        3.PL quickly HAB *a-* drink wine palm.GEN

In this sentence the verb is only inflected with the harmonizing prefix *a-*, while the habitual morpheme *ji* is phonologically independent. Given my assumption that harmonizing prefixes are not syntactic heads but merely post-syntactic insertions, the data set in (44b-c) clearly shows that the verb is not displaced in this condition, since the adverb must precede the verb.

Adverbs are also preverbal when verbs are non-suffixed, and can also appear clause-finally, as shown in (45), suggesting that the VP-internal material must remain as a string in immediate adjacency, leaving the option of adverbial adjuncts to appear either before or after the VP-string.

(45)   *Ḿbàisén Ìgbo* (Chukwuma Okeke, p.c.)

    a.   Òbí ji **ọsị̄ị̄sọ** e-nyè Chíké egó
        Obi HAB quickly *e-*give Chike money
        'Obi customarily quickly gives Chike some money.'

    b. ? Òbí ji   e-nyè Chíké egó   **ọsị̄ị̄sọ**
        Obi HAB *e-*give Chike money quickly

    c. * Òbí **ọsị̄ị̄sọ** ji   e-nyè Chíké egó
        Obi quickly HAB *e-*give Chike money

    d. * Òbí ji   e-nyè **ọsị̄ị̄sọ** Chíké egó
        Obi HAB *e-*give quickly Chike money

    e. * Òbí ji   e-nyè Chíké **ọsị̄ị̄sọ** egó
   Obi HAB *e-*give Chike quickly money

The distribution of adverbs in Ìgbo is given in (46):

---

7. I exclusively use the adverb *ọsị̄ị̄sọ* 'quickly' in the examples in this paper. The same patterns are found for other comparable phonologically free adverbs such as *ozugbo* 'immediately', *ngwa* 'fast', and *nwayo* 'slowly' (Chukwuma Okeke, p.c.).

(46)   Ìgbo mono- and ditransitives with verbs non-affixed for aspect

	V		DO	AdvP		
AdvP	V		DO			
*	V	AdvP	DO			
?	V		IO		DO	AdvP
AdvP	V		IO		DO	
*	V	AdvP	IO		DO	
*	V		IO	AdvP	DO	

(46) indicates that the verb and its arguments must remain in immediate adjacency. Furthermore, since there appears to be no morphology that triggers movement in (44) and (45), the analysis of transitives (both mono- and di-) then naturally follows as given in (47), where the freestanding habitual morpheme heads its own projection (HabP) outside of vP:

(47)
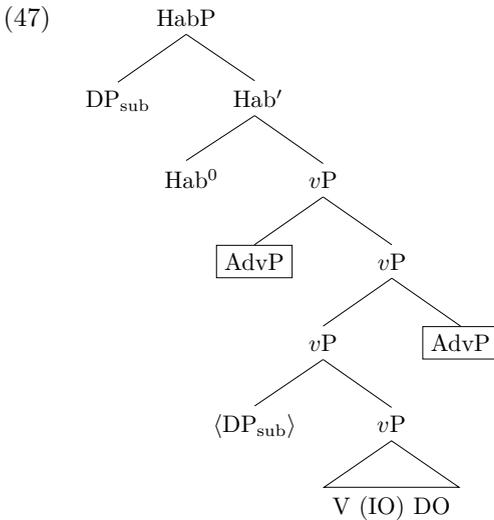
The verb remains vP-internal with the option of left- (44b) and right-adjunction (44a) of adverbs. This analysis shows that once we control for independent triggers of verb movement in Ìgbo, such as aspectual suffixes on the verb, the verb remains vP-internal.

Let us consider the position of adverbs in those environments in which verb raising is triggered by aspectual morphology that inflects on the verb, as in (48). The adverb *ọsịịsọ* 'quickly' can follow the direct object (48a) and cannot intervene between the verb and the direct object (48b), patterning together with (44) and (45). However, unlike (44) and (45), adverbs can no longer precede the verb (cf. 48c):

(48) *Ìgbo* (Chukwuma Okeke, p.c.)

    a.   Ike *ri* -ri ji **ọsị̄ịsọ**
        Ike eat -RV yam quickly
        'Ike quickly ate yam.'

    b. * Ike *ri* -ri **ọsị̄ịsọ** ji
        Ike eat -RV quickly yam

    c. * Ike **ọsị̄ịsọ** *ri* -ri ji
        Ike quickly eat -RV yam

We find the same pattern in ditransitives where the adverb must follow the verb and both of its internal arguments (cf. 49a) and cannot appear elsewhere (cf. 49b-d):

(49) *Ìgbo* (Greg Obiamalu, p.c.)

    a.   Òbí nyè -re Chíké egó **ọsị̄ịsọ**
        Obi give -RV Chike money quickly
        'Obi quickly gave Chike some money.'

    b. * Òbí **ọsị̄ịsọ** nyè -re Chíké egó
        Obi quickly give -RV Chike money

    c. * Òbí nyè -re **ọsị̄ịsọ** Chíké egó
        Obi give -RV quickly Chike money

    d. * Òbí nyè -re Chíké **ọsị̄ịsọ** egó
        Obi give -RV Chike quickly money

Furthermore, the same kind of ordering and grammaticality judgments apply to other (affixal) functional projections, such as negation, priors, and perfectives in (50), (51), and (52) respectively:

(50) *Standard Ìgbo* (Chukwuma Okeke, p.c.)

    a.   Ike e- *ri* -ghi ji **ọsị̄ịsọ**
        Ike *e-* eat -NEG yam quickly
        'Ike did not quickly eat yam.'

    b. * Ike e- *ri* -ghi **ọsị̄ịsọ** ji
        Ike *e-* eat -NEG quickly yam

    c. * Ike **ọsị̄ịsọ** e- *ri* -ghi ji
        Ike quickly *e-* eat -NEG yam

(51) *Òweré Ìgbo* (Chukwuma Okeke, p.c.)

    a.   Àdhâ *za* -naana úyò̩ **ọsị̄ịsọ**
        Àdhâ sweep -PRIOR house quickly
        'Àdhâ had quickly swept the house.'

    b. * Àdhâ *za* -naana **ọsị̄ịsọ** úyò̩
        Àdhâ sweep -PRIOR quickly house

    c.   * Àdhâ **ọsịı̄sọ** *za*   -naana úyò
             Àdhâ quickly sweep -PRIOR house

(52)   *Standard Ìgbo* (Chukwuma Okeke, p.c.)

    a.   Ike e- *ri* -e-na ji   **ọsịı̄sọ**
        Ike *e-* eat -PF   yam quickly
        'Ike has quickly eaten yam.'

    b.   * Ike e- *ri* -e-na **ọsịı̄sọ** ji
         Ike *e-* eat -PF   quickly yam

    c.   * Ike **ọsịı̄sọ** e- *ri* -e-na ji
         Ike quickly *e-* eat -PF   yam

These data provide us with the following distribution of adverbs in contexts in which the verb receives an aspectual suffix:

(53)   Ìgbo mono- and ditransitives with verbs affixed for aspect

	V		DO	AdvP		
*AdvP	V		DO			
*		V	AdvP	DO		
	V		IO		DO	AdvP
*AdvP	V		IO		DO	
*		V	AdvP	IO		DO
*		V		IO	AdvP	DO

Recall that adverbs are grammatical in preverbal position when aspectual suffixes are absent, as given in (46). In contrast, as (53) suggests, preverbal adverbs are ruled out when verbs are inflected with aspectual suffixes.

    We are now left with a puzzle, as it is not clear why the b.-examples in (48) through (52) are ungrammatical, and why the verb can't move across the adverb. This is critical to the RAH investigation, because adverbs (i.e. the *v*-to-Arg diagnostic) exhibit different syntactic behavior in different constructions, which suggests that they might be flexible and not per se *v*P-adjuncts (as assumed in 47), which potentially may render adverbs improper diagnostics for verb movement. Let's take a closer look at why adverb placement varies.

    If Déchaine (1993) is correct and assuming that the adverb *ọsịı̄sọ* 'quickly' is always adjoined to *v*P, the ungrammaticality of (48c), (50c), (51c), and (52c) is expected, as *ọsịı̄sọ* cannot be a *v*P-adjunct in that position; that is, *ọsịı̄sọ* would have to be adjoined to a higher (i.e. *v*P-external) projection, since the verb too is *v*P-external. In contrast, the ungrammaticality of (48b), (50b), (51b), and (52b) is *prima facie* not expected, since, as already alluded to, verbs can conceivably cross adjuncts in a head-to-head movement.

    Two important questions come out of the observations that I just made. i) why must *ọsịı̄sọ* 'quickly' always be clause-final when verbs are inflected with aspectual morphology? and ii) why can't the verb move over the adverb in the b. examples in (48) through (52)?

Maintaining the assumption that the adverbs in (48), repeated below, are
vP-adjuncts, it follows that both the verb and its object individually move
across vP-adjuncts, stranding the adjuncts at the end.

(48) *Ìgbo* (Chukwuma Okeke, p.c.)

    a.   Ike *ri* -ri ji **os̄īīso̩**
          Ike eat -RV yam quickly
          'Ike quickly ate yam.'

    b. * Ike *ri* -ri **os̄īīso̩** ji
           Ike eat -RV quickly yam

    c. * Ike **os̄īīso̩** *ri* -ri ji
           Ike quickly eat -RV yam

This means that if we are to derive the correct word order, the objects, following
the verb movement, would have to move to a vP-external position. The analysis
for clauses with factative-inflected verbs in (48) follows as given in (54):

(54)
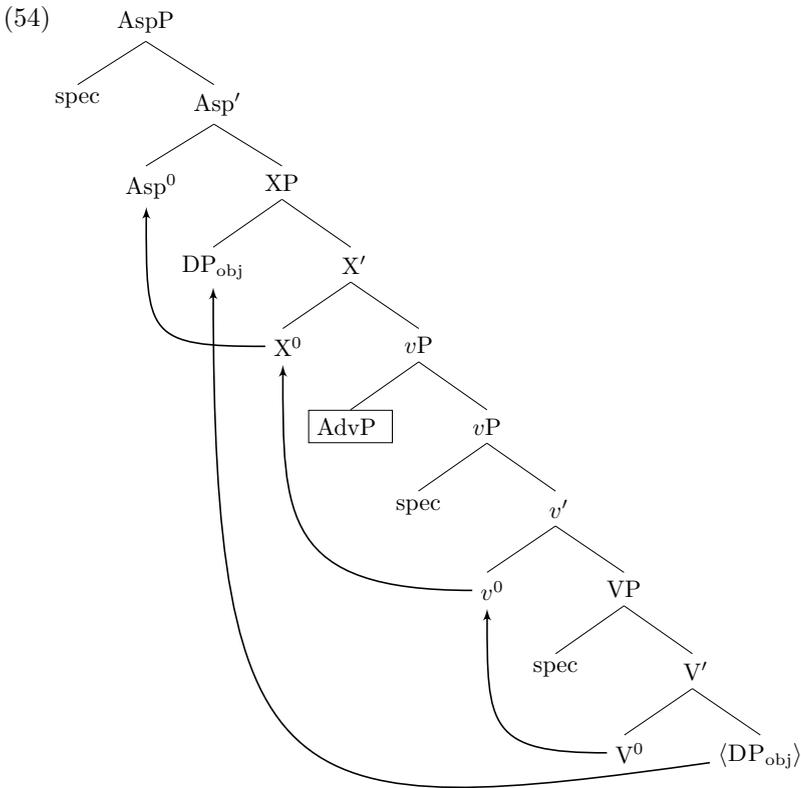
(54) shows that Ìgbo adverbs must surface in the clause-final position, as objects
shift to some higher projection, which I label as XP in (48). The analysis
correctly predicts the attested word-order facts in transitive clauses.

Ditransitives

The idea that objects in Ìgbo shift has also been proposed in Sáàh and Ézè (1997), who observe the order changes in ditransitive clauses with pronominal object clitics. Specifically, the default word order of ditransitives in Ìgbo is given in (55a), which is <V, IO, DO>. The indirect and direct objects cannot swap positions as this yields ungrammaticality, as shown in (55b). However, if the direct object is a pronominal clitic, then the arguments preferably swap positions. The direct object clitic *ya* in (55d) directly follows the verb.

(55)   *Ìgbo* (adapted from Sáàh and Ézè 1997:140)

    a.   Òbí nyè -re Chíké egó
           Obi give -ʀV Chike money
           'Obi gave Chike some money.'

    b. * Òbí nyè -re egó   Chíké
           Obi give -ʀV money Chike

    c. ?? Òbí nyè -re Chíké ya
           Obi give -ʀV Chike it

    d.   Òbí nyè -re ya Chíké
   Obi give -ʀV it Chike

While this indicates that direct objects move from their base-generated position, the position does not appear to be *v*P-external, since objects can swap position also in cases where we can show (with the position of adjuncts) that the verb surfaces *v*P-internally. For example, this is the case in habituals as shown in (56), where the pronoun *ya* 'it' precedes the direct object, even though the verb *e-nyè* 'give' does not move as the preverbal position of the adverb *ọsị̄ịsọ* in (56a) suggests.

(56)   *Ìgbo* (Chukwuma Okeke, p.c.)

    a.   Òbí ji   **ọsị̄ịsọ** e-nyè ya Chíké
           Obi ʜᴀʙ quickly *e*-give it Chike
           'Obi customarily quickly gives it to Chike.'

    b. ? Òbí ji   e-nyè ya Chíké **ọsị̄ịsọ**
           Obi ʜᴀʙ *e*-give it Chike quickly

    c. * Òbí **ọsị̄ịsọ** ji   e-nyè ya Chíké
           Obi quickly ʜᴀʙ *e*-give it Chike money

    d. * Òbí ji   e-nyè **ọsị̄ịsọ** ya Chíké
           Obi ʜᴀʙ *e*-give quickly it Chike

    e. * Òbí ji   e-nyè ya **ọsị̄ịsọ** Chíké
           Obi ʜᴀʙ *e*-give it quickly Chike

In sum, although there is no direct evidence that objects move to a *v*P-external position, there *is* evidence that direct objects can shift over indirect objects.

As already illustrated, object shift to a *v*P-external position is motivated by the position of adverbs in contexts with verb raising.

A potential problem for the analysis of transitive clauses in (54) is the fact that, in ditransitives, adverbs must appear after both direct and indirect objects but cannot intervene between the two. It is not clear why this is so, given that as (54) illustrates, the direct object moves to a *v*P-external position. We are left with three potential solutions to the contradicting fact that <V, DO, Adv, IO> orders are unattested: i) verb movement to a *v*P-external position is accompanied by obligatory direct and indirect object shifts, taking place in two individual steps (cf. 57a), ii) the entire *v*P containing the verb and both internal arguments raises to a position above adverbs (cf. 57b). iii) Adverbs are blocked in preverbal position when higher projections bear aspectual morphology that inflects on to the verb and can only be right-adjoined (cf. 57c).

(57) a. b. c.
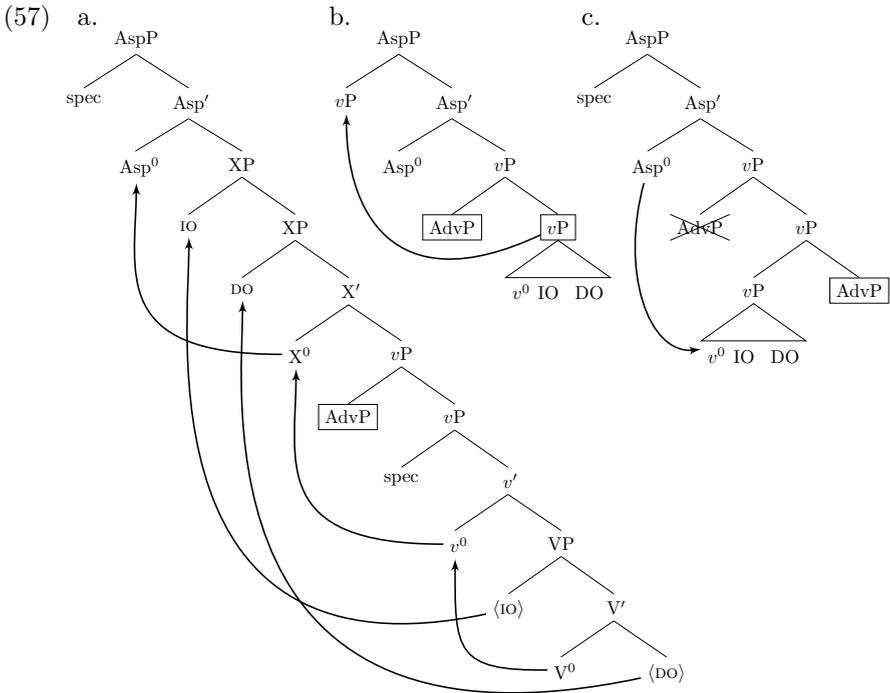
Let us first compare (57a) and (57b). One argument favoring (57a) over (57b) is that (57a) straightforwardly accounts for the aspectual suffix on the verb, since the analysis follows from the standard theory of verb movement, where a lower head moves to a higher head, from which it receives additional morphological markers. In contrast, if the entire *v*P were to move as in (57b), we do not have a coherent mechanism with which the verb inflects for aspect. This suggests that the analysis in (57a) is superior to the one in (57b).

Unlike in (57a) and (57b), the analysis (57c) takes a different approach, one in which the verb and its arguments remain *v*P-internal. The crucial require-

ment is that Asp^0 and v^0 must be adjacent after spell-out, barring adverbs from intervening, as a morphological merger between the verb and the suffix could not take place under such conditions. This leaves the only option of adjoining adverbs to the right, which yields the linear order in which adverbs appear at the end of the clause. The problem with this analysis however is that the clause-final position of adverbs in environments with non-suffixed verbs is not a default position, as the contrast between (45a) and (45b) suggests, repeated here:

(45)   *Ìgbo* (Chukwuma Okeke, p.c.)

    a.   Òbí ji   **ọsị̄ịsọ** e-nyè Chíké egó
           Obi HAB quickly *e*-give Chike money
           'Obi customarily quickly gives Chike some money.'

    b.   ? Òbí ji   e-nyè Chíké egó   **ọsị̄ịsọ**
           Obi HAB *e*-give Chike money quickly

The word order in (45b) requires additional structure to be fully acceptable, as illustrated in (58), where the clause from (45b) is embedded. The same pattern is found for other comparable freestanding adverbs.

(58)   *Ìgbo* (Chukwuma Okeke, p.c.)
     O   bu ya mere Òbí ji   e-nyè Chíké egó   **ọsị̄ịsọ**
     That is why   Obi HAB *e*-give Chike money quickly
     'That is why Obi gave Chike some money quickly.'

Since the clause-final position is obligatory in environments where the verb is suffixed (cf. 49, repeated below), it follows that the verb and its arguments (or entire vP) move over the adverb, and that it cannot be a simple case of right-adjunction.

(49)   *Ìgbo* (Greg Obiamalu, p.c.)

    a.   Òbí nyè -re Chíké egó   **ọsị̄ịsọ**
           Obi give -RV Chike money quickly
           'Obi quickly gave Chike some money.'

    b.   * Òbí **ọsị̄ịsọ** nyè -re Chíké egó
           Obi quickly give -RV Chike money

    c.   * Òbí nyè -re **ọsị̄ịsọ** Chíké egó
           Obi give -RV quickly Chike money

    d.   * Òbí nyè -re Chíké **ọsị̄ịsọ** egó
           Obi give -RV Chike quickly money

Consequently, under the assumption that the morphologically more complicated structure that yields (49) is derived from (45), the morphological merger in the analysis in (57c) cannot be sustained. We are thus left with the analyses in (57a) and (57b) that correctly account for the facts in ditransitives.

Although there is one argument favoring (57a) over (57b), both analyses (correctly) account for the distribution of adverbs, which are always vP-adjoined, making them adequate diagnostics for v-to-Arg movement.

Consequences for the RAH

The discussion on the Ìgbo basic clause structure above reveals rich aspectual morphology surfacing as suffixes on the verb. Given the base-generation of aspectual heads above vP, the affixation of aspectual morphemes on the verb is standardly assumed to trigger verb movement. Consequently, if we are to adequately test for potential v-to-Arg movement, we must control for verb raising triggered by these types of aspectual morphemes.

As demonstrated, there are several types of productive constructions that do not exhibit any morphology that independently triggers verb movement. Indeed, in such constructions there is evidence that the verb remains *in situ*, because adverbs, which I assume to be vP-adjuncts, must surface either before the verb or clause-finally (i.e. following the direct object). This observation supports the RAH given Ìgbo's status as a poor agreement language.

6.2.6 Vietnamese

This section discusses verb placement in Vietnamese. Vietnamese exhibits word order variation depending on the definiteness of the direct object. If the object is indefinite, none of the Vietnamese adverbs can intervene between the verb and the object, whereas if the object is definite one class of adverbs *can* intervene. In the discussion that follows I show that in controlled conditions Vietnamese verbs must surface vP-internally, confirming the RAH, given that Vietnamese is a poor agreement language. The absence of the verb-object adjacency in certain contexts is accounted for via rightward extraposition of direct objects.

Verbal morphology

Vietnamese verbs remain unaltered regardless of the (semantic) properties of subjects, as demonstrated here:

(59)   *Vietnamese* (Trang Phan, p.c.)
      tôi / ahn   / cô ấy *đi*
      I   / you.SG / she   went
      'I/you/she went.'

The verb *đi* 'go' has the same form regardless of either the tense or the φ-features of the subject, which shows that Vietnamese is a poor agreement language. Consequently, the RAH predicts that Vietnamese verbs remain vP-internal in controlled conditions.

Word order

Vietnamese is a head-initial language in which the verb always precedes the direct object, yielding strict SVO orders (Duffield 1999:93):

(60) *Vietnamese* (adapted from Phan 2013)

a.
$\overbrace{\text{Chú bò}}^{\text{S}}$ $\overbrace{\text{tím}}^{\text{V}}$ $\overbrace{\text{bạn}}^{\text{O}}$
CLS cow seek friend
'The cow looked for his friend.' (p. 56)

b.
$\overbrace{\text{Tôi}}^{\text{S}}$ $\overbrace{\text{tìm ra}}^{\text{V}}$ $\overbrace{\text{cuốn sách}}^{\text{O}}$
1.SG search out CLS book
'I found the book.' (p. 58)

The immediate verb-object adjacency suggests that there are no obvious reasons to suspect that verb movement takes place. Let's consider the distribution of adverbs and what it tells us about the surface position of the verb.

The discourse neutral position of adverbs in Vietnamese is at the end of the clause, following the verb and its direct object (cf. 61a). When the direct object is indefinite, adverbs in Vietnamese can occur preverbally (cf. 61b) but cannot intervene between the verb and its direct object, as indicated in (61c).

(61) *Vietnamese* (Trang Phan, p.c.)

a. Tôi sẽ **cẩn thận** / **nhanh chóng** / **thường xuyên** /
I   will careful   / quick   / often   /
luôn luôn / **chắc hẳn** *đọc* sách
always   / probably read book
'I will carefully/quickly/often/always/probably read books.'

b. Tôi sẽ *đọc* sách **cẩn thận** / **nhanh chóng** / **thường xuyên**
I   will read book careful   / quick   / often
/ **luôn luôn** / **chắc hẳn**
/ always   / probably

c. * Tôi sẽ *đọc* **cẩn thận** / **nhanh chóng** / **thường xuyên** /
I   will read careful   / quick   / often   /
luôn luôn / **chắc hẳn** sách
always   / probably book

However, when the direct object is definite, the same set of adverbs can also intervene between the verb and its object, with the exception of *luôn luôn* 'always' and *chắc hẳn* 'probably', as shown in (62):

(62)   *Vietnamese* (Trang Phan, p.c.)

a.   Tôi sẽ **cẩn thận** / **nhanh chóng** / **thường xuyên** /
     I   will careful   / quick   / often   /
     luôn luôn / **chắc hẳn** *đọc* cuốn sách này
     always   / probably read CLS   book this
     'I will carefully/quickly/often/always/probably read this book.'

b.   Tôi sẽ *đọc* cuốn sách này **cẩn thận** / **nhanh chóng** /
     I   will read CLS   book this careful   / quick   /
     thường xuyên / **luôn luôn** / **chắc hẳn**
     often   / always   / probably

c.   Tôi sẽ *đọc* **cẩn thận** / **nhanh chóng** / **thường xuyên** /
     I   will read careful   / quick   / often   /
     *luôn luôn / ***chắc hẳn** cuốn sách này
     always   / probably CLS   book this

These facts suggest that there are at least two classes of adverbs based on
their distribution in the clause: adverbs that can intervene between verbs and
definite direct objects (which I label AdvP$_1$), and adverbs that cannot intervene
between verbs and definite direct objects (which I label AdvP$_2$). Importantly, as
illustrated above, neither of these two classes of adverbs can intervene between
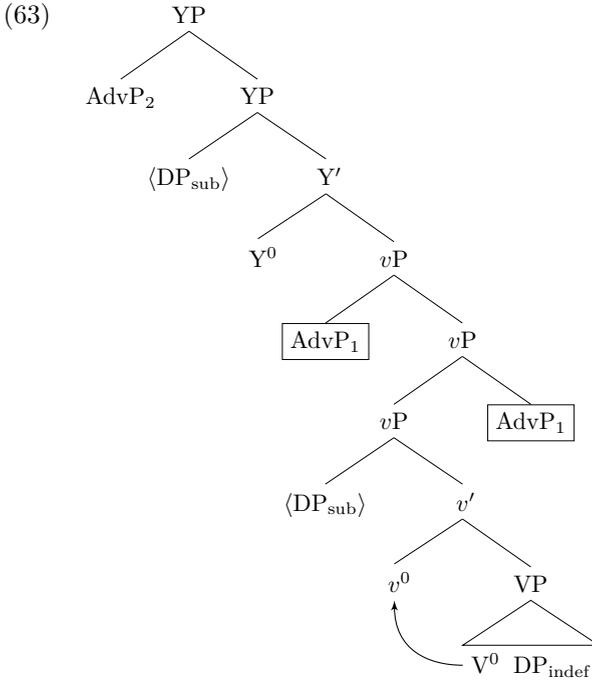verbs and indefinite direct objects.

Analysis

The variation in the context with definite objects suggests that AdvP$_2$ must
be adjoined above AdvP$_1$, to a position that neither direct objects (definite
or indefinite) nor verbs can cross. In contrast, AdvP$_1$ can be crossed in the
context with definite objects, suggesting that either the verb or direct object
(can) optionally raise out of vP.

The facts from Vietnamese reveal that the linear distribution of adverbs
correlates with the definiteness of direct objects. The word order in declarative
clauses with indefinite direct objects suggests that the verb must remain *in
situ*, whereas the order in clauses with definite direct objects suggest that the
verb can optionally move out of vP, crossing any vP-adjoined adverbs.

However, since the verb is morphologically identical in both contexts (with
definite and indefinite objects), there are no independent reasons to think that
the varying distribution of adverbs results from the verb surfacing in two dif-
ferent syntactic positions. As for the syntactic position of the verb, if indeed it
is the case that the verb is vP-external, then (61a) and (62a) would have been
(incorrectly) ruled out, since in these examples vP-adjuncts precede the verbs;
in other words, (61a) and (62a) dictate that the verb must be vP-internal.

Consequently, regarding the derivation of clauses with indefinite objects,

we can conclude that the finite verb must be vP-internal, as vP-adjuncts must precede the verb. This straightforwardly leads us to the following analysis of Vietnamese clauses with indefinite objects, which patterns with other poor agreement languages that have been hitherto investigated:

(63)

```
                        YP
                       /  \
                  AdvP_2   YP
                          /  \
                  ⟨DP_sub⟩    Y'
                            /    \
                         Y^0      vP
                                /    \
                           AdvP_1     vP
                                     /   \
                                   vP    AdvP_1
                                  /  \
                           ⟨DP_sub⟩   v'
                                     /   \
                                   v^0    VP
                                         /  \
                                      V^0   DP_indef
```

In (63) the verb raises to v^0, where it surfaces at PF, never crossing any vP-adjuncts.

The question then arises how the order with post-verbal adverbs is derived in clauses with definite objects. Under the assumption that the position of the verb is the same in both contexts (the assumption supported by the fact that the verb morphology is the same), it follows that the definite objects must optionally be able to undergo extraposition, raising to a vP-external specifier position to the right. I illustrate this in (64), where the definite direct object raises to some higher projection, which I label XP. Importantly, it is the change in the properties of objects, from indefinite to definite, that allows for the different word order; the obvious candidate for displacement are objects, and crucially not the verbs.

(64)
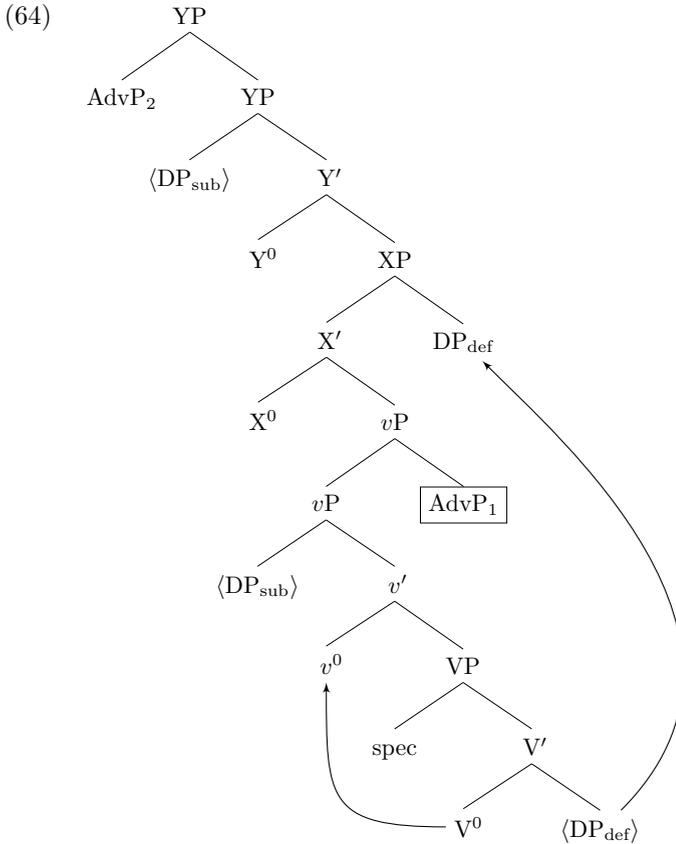
Thus, in the context in which $AdvP_1$ in (64) intervenes between the verb and the definite direct object, the latter moves out of vP, crossing the vP-right adjoined $AdvP_1$.

The idea that objects raise can be motivated by the relevance of definiteness, as only definite objects raise in Vietnamese, a correlation also attested in other languages. For example, this has been observed in Germanic languages, as in Dutch, where definite objects precede the vP-adjuncts (cf. 65a), suggesting object extraction out of vP, whereas the (65b) indefinite objects cannot extract under non-specific reading of *een boek* 'a book'.

(65) *Dutch*

    a.   . . . dat Jan *het boek* **waarschijnlijk** heeft gekocht.
          . . . that Jan the book probably   has   bought
          '. . . that Jan probably bought the book.'

    b. ?*. . . dat Jan *een boek* **waarschijnlijk** heeft gekocht
          . . . that Jan a   book probably   has   bought

In this regard, the observations in Vietnamese are fundamentally no different.

Consequences for the RAH

Based on this analysis of the declarative clauses in Vietnamese we can conclude that the RAH is confirmed as the verb remains *in situ*, as evidenced by the presence of preverbal vP-adjuncts. The potential counter-evidence comes from clauses with definite direct objects in which adverbs are attested in a position between verbs and direct objects.

There are two reasons to reject a v-to-Arg analysis that derives such orders. i) Since it is the object definiteness that correlates with the $<$V, Adv, $O_{def}>$ orders, it follows naturally that it is the object that moves to a vP-external position, and not the verb. ii) And more importantly, even if the $<$V, Adv, $O_{def}>$ orders are derived due to the verb raising across vP-adjuncts, then we incorrectly predict that $<$V, Adv, $O_{indef}>$ orders are also possible. Consequently, we are forced to analyze finite verbs as vP-internal, an analysis that the RAH predicts for Vietnamese, since Vietnamese does not have subject agreement morphology.

6.2.7 Hawaiian

The analysis of Hawaiian here is based on previous analyses, the so-called VP-remnant movement analyses (cf. Massam 2000; Medeiros 2013), according to which the object of the verb can vacate VP, which is followed by the 'remnant' of the VP moving to the front of the clause. However, Hawaiian shows optionality as regards the extraction of objects (i.e. object shifts). Specifically, objects can vacate VP, leaving them stranded at the end of the clause once the VP-remnant is fronted, yielding VSO orders. Or, alternatively, they can remain VP-internal and then be fronted together with the entire VP, yielding VOS.

Verbal Morphology

Hawaiian exhibits no agreement morphology in its clause structure. The shape of the verb *hana* 'to do' in (66) remains unaltered regardless of person and number changes of the subject:

(66)   *Hawaiian* (Judd 1977:8)
       ke   hana nei   au / oe   / ia / maua,kaua / makou,kakou
       PRES do   PRES I / you / he / we.DL   / we.PL
       'I/you/he/we two/we do.'

The only additional elements attested in (66) are the present tense morphemes *ke* and *nai* that sandwich the verb. In addition to present tense, Judd (1977) lists four additional tenses in Hawaiian, all of which are reflected in the morphology of the verb. In none of the five tenses does the verb reflect any features of its arguments. The distinctions in the paradigm of tense markings is illustrated in (67):

(67) Hawaiian tense morphology
(adapted from Judd 1977:8–12)

Tense		Verb		Subject
Present	**ke**	hana	**nei**	au
Past	**i**	hana		au
Perfect	**ua**	hana		au
Pluperfect	**ua**	hana	**e**	au
Future	**e**	hana		au

The facts in (66) and (67) extend to all Hawaiian verbs, which serves as evidence that Hawaiian is a poor agreement language. As such, the RAH does not predict an 'Arg-like' projection and any verb raising as a consequence thereof.

Word order

According to Medeiros (2013), the most straightforward observation with respect to the properties of Hawaiian is that it appears to be a predicate-initial language. Specifically, the predicate head and its complement tend to precede the subjects. In the following examples the predicate complements are clause-initial, arguably the predicate head (i.e. copula) being null.

(68)   *Hawaiian* (Medeiros 2013:74)

    a.   hau'oli 'o   Kekoa
           happy   SUBJ Kekoa
           'Kekoa is happy.'

    b.   he kumu kula   'o   Noelani
           a   teacher-school SUBJ Noelani
           'Noelani is a teacher.'

    c.   ua   ha'i 'o   Kekoa he kumu kula   'o   Noelani
           PERF say SUBJ Kekoa a teacher-school SUBJ Noleani
           'Kekoa said that Noelani is a teacher.'

The pattern is the same in both main clauses (68a-b) and in embedded clauses (68c). Note that the subject marker *'o* is invariable with respect to the (semantic) properties of the subject and it surfaces only when the subject is a proper name (Medeiros 2013).

The predicate material at the onset of the clause is rather uniform across all types of clauses in Hawaiian. In the context of transitive clauses, which are crucial for this discussion, there is some variation, however, as in some cases only the verb surfaces clause-initially, yielding VSO orders, whereas in others the verb in the initial position is directly followed by its object, yielding VOS.

These two orders exhibit additional variation. Specifically, in VSO orders the direct object is a DP that is obligatorily preceded by the object marker, the object marker being invariable regardless of the semantic properties of the object. Contrastively, in VOS orders the direct object is a bare NP that cannot

be preceded by the object marker. This is illustrated by the contrast between the VOS order in (69a), where the object marker *i* and the definite article *ke* cannot occur, and the VSO order in (69b) in which the two elements are obligatory:

(69)   *Hawaiian* (Medeiros 2013:78)

    a.   e   inu   (*i   ka) kope ana 'o   Noelani
        IMP drink   OBJ the coffee DIR   SUBJ Noelani
        'Noelani is drinking coffee.'

    b.   e   inu   ana 'o   Noelani *(i   ke) kope
        IMP drink DIR SUBJ Noelani   OBJ the coffee
        'Noelani is drinking the coffee.'

Furthermore, the Hawaiian VSO and VOS orders also show variation with respect to the position of adverbs. In VSO, adverbs immediately follow the sentence initial verb, as illustrated in the following example where the adverb *mau* 'always' and *ho'onu'u* 'relishingly' are right-adjacent to the verbs:[8]

(70)   *Hawaiian* (Medeiros 2013:79)

    a.   *holoholo* **mau**   'o   Kehau ma ke kaona
        cruise   always SUBJ Kehau in   the town
        'Kehau always cruises in town.'

    b.   *'ai* **ho'onu'u** iho la   lakou i   ka malolo
        eat relish   DIR DIR they OBJ the malolo(fish)
        'They relishingly ate the malolo.'

In VOS, on the other hand, adverbs follow the object NP and cannot intervene between the object and the verb, as illustrated in (71c-d):

(71)   *Hawaiian* (Medeiros 2013:79)

    a.   *inu*   kope **mau**   'o   Noelani
        drink coffee always SUBJ Noelani
        'Noelani always drinks coffee.'

    b.   *'olelo* Hawai'i **mau**   'o   Noelani
        speak Hawaiian always SUBJ Noelani
        'Noelani always speaks Hawaiian.'

    c.   * *inu*   **mau**   kope 'o   Noelani
        drink always coffee SUBJ Noelani

    d.   * *'olelo* **mau**   Hawai'i 'o   Noelani
        speak always Hawaiian SUBJ Noelani

The differences between VSO and VOS with respect to the position of adverbs are summarized in (72):

(72)   i. VSO orders
       <verb, adverb, subject, object.marker, object.DP>

---

8. PP adverbs are sentence final with the option of being sentence initial.

ii. VOS orders
  <verb, object.NP, adverb, subject>

Analysis

Since the entire predicates (including heads, complements and modifiers) tend to surface clause initially, I follow Massam (2000) and Medeiros (2013) in assuming that what we are dealing with is a systematic VP-movement to the front. The most straightforward cases that support this are copular clauses and clauses with VOS orders, in both of which the complements of the predicate heads are fronted.

The VP-movement analysis for VOS orders follows as illustrated in (73). Since Hawaiian has productive tense morphology, I assume that it projects TP, a projection to which the VP moves:

(73) **VOS analysis**
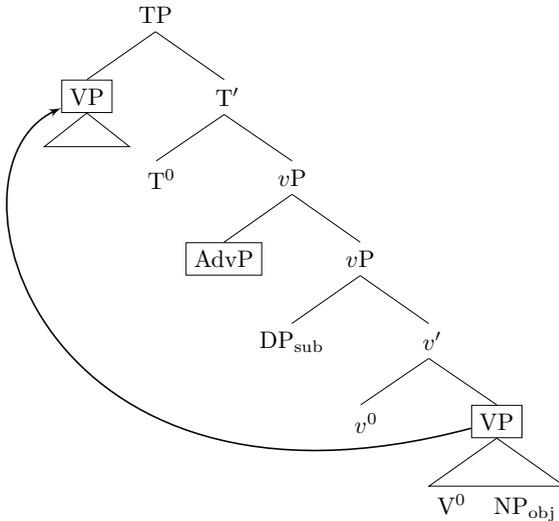
As shown in (73), the VP crosses optional AdvPs. Importantly, there are no reasons to think that the head of the VP undergoes head-to-head movement at any stage of the derivation. In fact, since AdvPs can never intervene between the verb and its object in Hawaiian VOS orders (cf. 71c-d), it follows that the verb and its object remain sisters throughout the derivation. This supports the idea that while the entire VP in Hawaiian moves, the head remains VP-internal.

Turning our attention to Hawaiian VSO orders, I assume that the VP-movement in Hawaiian VOS orders also takes place in VSO orders. Superficially, we might think that VSO orders need not involve VP-movement but can be derived by employing verb (i.e. head) movement. However, the VOS and VSO variation in Hawaiian could also be a result of the different surface position of objects.

This is particular advantageous since we can preserve the uniformity of having VP-movement in both analyses.

If indeed this is the case, the question arises as to why the object vacates the VP in VSO and not in VOS. A straightforward explanation is that this is related to the (in)definiteness of objects, as illustrated in (69). As already noted, the direct objects in VSO are obligatorily definite, whereas the objects in VOS are obligatorily indefinite. This is comparable to other languages in which we observe that definite objects tend to (or can) move out of vP, whereas the indefinite remain vP-internal, as in Vietnamese and in some Germanic languages, such as Dutch, as already discussed in §6.2.6.

Since this is evidence that object shifts are related to definiteness, I assume that objects in Hawaiian VSO orders also undergo object shifts vacating VPs, prior to the so-called 'VP-remnant' movement. Consequently, the VP-remnant moves to the front containing only the head verb, as illustrated in the following analysis:

(74) **VSO analysis**
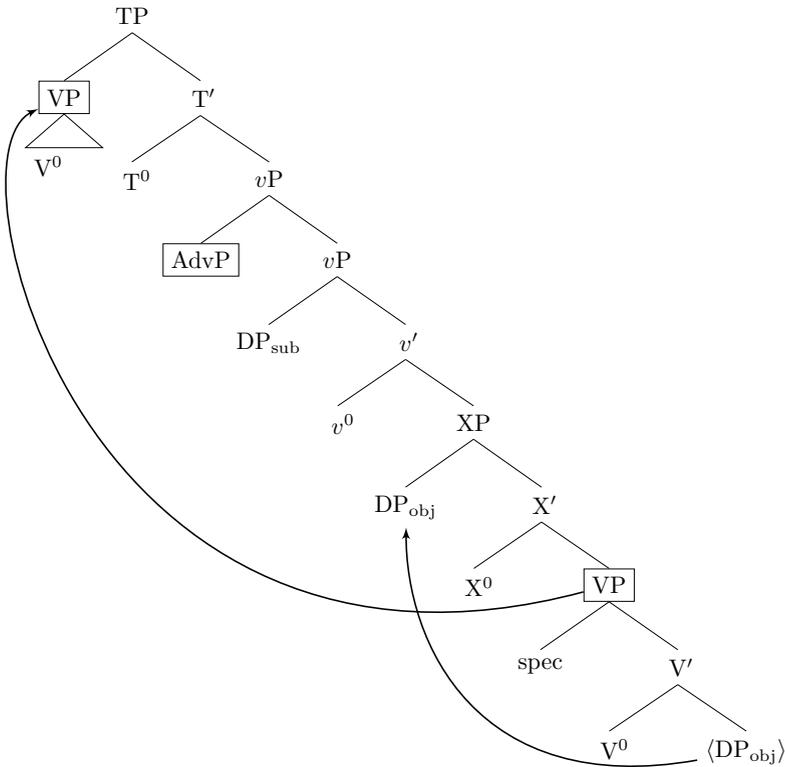
Regarding any potential verb raising in either VSO and VOS, the analysis here entails that the verb remains VP-internal.

Importantly, we may consider an alternative analysis for VSO orders (without the VP-remnant movement) in which verb (head) movement accompanies the object shift. This however becomes problematic because we have no way of accounting for why verb movement cannot take place when direct objects are indefinite (as in VOS orders).

I remain agnostic as to what triggers VP-movement to the front. However, as Medeiros (2013) assumes, this is compatible with cases of movement for reasons of EPP checking. Given that the subject DPs remain in their base-generated position, Hawaiian could be a language in which the VP checks the EPP-feature in both VOS and VSO orders. This idea that the EPP-feature triggers VP-movement has been proposed by Massam (2000) for Niuean, and the same kind of account can be extended to the analyses of Wariʼ (cf. §7.2.7) and Kaqchikel (cf. §7.2.8).

Consequences for the RAH

Regarding the RAH, there is evidence that there is no verb movement in Hawaiian VOS environments, since adverbs cannot intervene between the verb and its object. Given that Hawaiian does not exhibit any agreement morphology on the verb, the lack of *v*-to-Arg movement is correctly predicted by the RAH. In VSO environments there is evidence of displacement. Looking at the VSO orders alone, in which objects must be definite, there appears to be no way to decide whether verb movement or remnant VP-movement takes place, as both options can be derived. The evidence against the verb (head) movement analysis comes from the fact that verb movement is impossible when direct objects are indefinite. As noted in (72), adverbs can intervene in VSO orders. However, this follows from object shifts and not from verb movement. Consequently, the absence of *v*-to-Arg movement in VSO orders falls in line with the RAH predictions.

6.2.8   Thai, Pwo Karen, Hmong Njua

In contrast to how adverbs can show us the position of finite verbs in the hitherto-discussed poor agreement languages, the distribution of adverbs is sometimes far too restricted and the exact position of the verb cannot be readily determined. For example, in some languages adverbs can only appear in the clause-final position, where they cannot serve as diagnostics. This is attested in Thai, Pwo Karen, and Hmong Njua. All languages have rigid SVO word orders and lack subject agreement morphology, as illustrated here, where the form of the verb remains the same irrespective of the person and number properties of the subject:[9]

(75) *Thai* (adapted from Iwasaki and Ingkaphirom 2005:109 and Yates and Tryon 1970:2)
phǒm/dichǎn / khun   / khǎw   àan náŋsɯ̌ɯ
I.M/I.F   / you.HON / he/she/they read book
'I/you/(he/she/they) read a book.'

(76) *Pwo Karen*
jəwe. / nəwe. / ʔəwe. / ʔəθiːwe. khlàin chəkhlàin xɛ̀xɛ̀
1.SG / 2.SG / 3.SG / 1.PL   speak language slowly
' I.M/I.F / you.HON / he/ we speak slowly.'

(77) *Hmong Njua* (adapted from Taweesak 1984:67)
kǔ / kâo / nǔ̃ / pé   mong qéng qéng
1.SG / 2.SG / 3.SG / 1.PL walk slow slow
'I/you.sg/he/we walks quite slowly.'

---

9. It is worth pointing out that although Thai is classified as a member of the Austric family and Pwo Karen of the Sino-Tibetan (cf. Ruhlen 1987), the two languages are located in the same geographic area (in Thailand) and have the same distribution of adverbs.

However, in all three languages, optional elements such as the adverbs in (78) and (79) appear only clause-finally, following the direct object:

(78) *Thai* (Iwasaki and Ingkaphirom 2005:93, Nuttanart Muansuwan, p.c.)

    a.   mɛ̂ɛ-bâan *càt* dɔ̀ɔkmáay **yàaŋ-sǔayŋaam**
         maid   arrange flower   PFX-beautiful
         'The maid arranged the flowers beautifully.'

    b. *mɛ̂ɛ-bâan *càt* **yàaŋ-sǔayŋaam** dɔ̀ɔkmáay
         maid   arrange PFX-beautiful   flower

    c. *mɛ̂ɛ-bâan **yàaŋ-sǔayŋaam** *càt* dɔ̀ɔkmáay
         maid   PFX-beautiful   arrange flower

(79) *Pwo Karen* (Kato 2003:640, constructed, Atsuhiko Kato, p.c.)

    a.   θàʔwà *khlàiɴ* chəkhlàiɴ **xɛ̀xɛ̀**
         Thawa speak language slowly
         'Thawa speaks slowly.'

    b. *θàʔwà *khlàiɴ* **xɛ̀xɛ̀** chəkhlàiɴ
         Thawa speak slowly language

    c. *θàʔwà **xɛ̀xɛ̀** *khlàiɴ* chəkhlàiɴ
         Thawa slowly speak language

    d. ***xɛ̀xɛ̀** θàʔwà *khlàiɴ* chəkhlàiɴ
         slowly Thawa speak language

(80) *Hmong Njua* (Taweesak Kunyot, p.c.)

    a.   kǔ *hlai*   mblê **qéng**
         I   harvest rice slow
         'I harvest rice slowly.'

    b. *kǔ *hlai*   **qéng** mblê
         I   harvest slow rice

    c. *kǔ **qéng** *hlai*   mblê
         I   slow harvest rice

The same pattern is attested for all adverbs, regardless of their semantic properties. Consequently, the RAH cannot be evaluated in these two languages based on the distribution of adverbs, since the needed position that can tangibly allow us to evaluate the RAH — adverbs before the verbs, or adverbs between the verbs and direct objects — are impossible in Thai, Pwo Karen, and Hmong Njua.

Negation

Another way in which the RAH could be tested in Thai is by evaluating the position of the verb with respect to the Thai negative *mây*. In contrast to Thai adverbs, *mây* is rigidly preverbal and phonologically independent of any adjacent words, as shown here:

(81)   *Thai* (Nuttanart Muansuwan, p.c.)

    a.   Dara **mâj** *kin* khâaw
         Dara NEG eat rice
         'Dara did not eat rice.'

    b.   * Dara *kin* **mâj** khâaw
         Dara eat NEG rice

    c.   * Dara *kin* khâaw **mâj**
         Dara eat rice   NEG

It has been claimed in the literature that the negation in Thai is an adverb (c.f. Indrambarya 1998:86, Rungrojsuwan 2010). As such, negation could potentially be an adjunct to vP, which would straightforwardly lead us to conclude that verbs do not raise to a vP-external position in Thai, given the pattern in (81). However, recall that negation in many languages is generated as a head of NegP, rather than an adjunct, which renders it invalid as a diagnostic, because it could be generated high or low in the structure (cf. §4.2.4). And although Thai negation analyzed as a vP-adjunct would confirm the RAH, as the word order facts below show, the analysis below reveals that the adjunct analysis cannot be sustained. Let us then examine the syntax of Thai negation a bit more closely.

    The negative *mây* can also precede a number of tense and aspectual morphemes (TAM). In (82) I provide examples of such cases, while (83) illustrates TAMs that must precede *mây*:

(82)   *Thai* (Muansuwan 2002:156)

                NEG TAM   V
    a.   Dara mâj rɜ̂əm tham ŋaan
         Dara NEG start do   work
         'Dara did not start working.'

                NEG TAM   V
    b.   Dara mâj khəəj   tham ŋaan
         Dara NEG experience do   work
          'Dara did not experience working.'

                NEG TAM   V
    c.   Dara mâj tôŋ tham ŋaan
         Dara NEG must do   work

(83)   *Thai* (Muansuwan 2002:156)

                  NEG   TAM   V
    a.   * Wijada mâj kamlaŋ tham ŋaan
         Wijada NEG PROG   do   work

                  NEG TAM   V
    b.   * Wijada mâj càʔ   tham ŋaan
         Wijada NEG be about to do   work

$$\overset{\text{NEG}}{\overbrace{}} \overset{\text{TAM}}{\overbrace{}} \qquad \overset{\text{V}}{\overbrace{}}$$

c. * Wijada mâj phôŋ   tham ŋaan
   Wijada NEG just start do   work

These facts present us with two different analyses of the syntax of *mây*. Either *mây* heads a syntactic projection above *v*P or *mây* is a phrasal negation that can modify either *v*P, or heads of the TAM projections in (82).

While in the literature Thai negation is generally assumed to be an adjunct (i.e. modifier) (cf. Indrambarya 1998:86, Rungrojsuwan 2010), I argue that Thai negation *mây* is in fact a head projecting its own phrase, which cannot be reliably used as a diagnostic for *v*-to-Arg movement. To that end I present the example in (84), which raises some doubts as to the idea that *mây* is a head projecting its own phrase:

(84)   *Thai* (Indrambarya 1998:87)
       kháw *pay* thîi nân   **mây** bɔy
       he   go   at there NEG   often
       'He does not go there often.'

If the negative *mây* were to project its own phrase in the clausal spine, then the order in (84) would be unexpected, since *mây* is 'in the middle' of the *v*P. Instead, what appears to be the case is that *mây* forms an XP together with the AdvP *bɔy*. The *v*P-adjuncthood of *mây* is ruled out in (84), since the *v*P-adjoined negative adverbs are typically argued to be *v*P-adjuncts when they express sentential negation (cf. Acquaviva 1997; Zeijlstra 2004; Penka and Zeijlstra 2010). If Acquaviva (1997), Zeijlstra (2004), and Penka and Zeijlstra (2010) are correct, negation is predicted to either precede other *v*P-adjoined adverbs pre-verbally, or to follow them post-verbally, but not to precede them post-verbally as is the case in (84), where *mây* precedes *bɔy* 'often' post-verbally.

This leaves us with two options for the analysis of the example in (84). Either negation surfaces as an adjunct to the AdvP *bɔy* as in (85a) or negation heads its own phrase as in (85b):
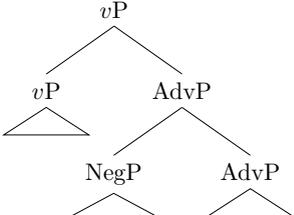
(85)   a.   b.
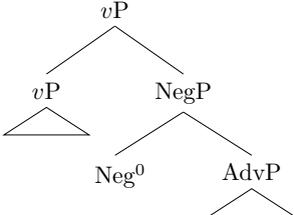
There are two reasons to adopt (85b) as the correct analysis for the syntax of *mây*. First, if negation is an adverb matching other Thai adverbs, then strict left-adjunction is unexpected, as all other Thai adverbs are uniformly right-adjoined. That is, if negation and adverbs are treated the same in syntax, then the following contrast is unexpected:

(86) a. i.   Neg V

  ii. * Adv V

  b. i. * V Neg

  ii.   V Adv

Second, and perhaps more importantly, the Thai negative *mây* fails the "why not?" test, which predicts that if negation is an adverb then the language should allow "why not?" collocations to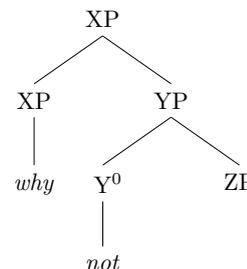 occur (cf. Merchant 2006). Specifically, if negation is an adverb, as in English, then "why not?" is allowed, having the structure in (87a). In contrast, if negation is a head then it must take a complement first before being merged with *why* as in (87b).

(87) a.   b.
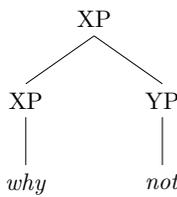
Thus the instances of "why not?" collocations in which the negative part is a head are ruled out, since the negative part requires a complement, as is the case in languages like Italian and Greek.

(88)   *Italian* (Merchant 2006:20)
          *perche non?
           why   not

(89)   *Greek*
          *giati dhen?
           why not

In Thai, the "why not?" counterpart is ungrammatical (90a). Instead, the negative morpheme *mây* requires a complement before it can adjoin to *tham-mai* 'why' (90a):

(90)   *Thai* (Nuttanart Muansuwan, p.c.)

  a.   * tham-mai **mây**?
           why   not

  b.   tham-mai **mây** kin?
           why   not   eating
          'Why are you not eating?'

Merchant's (2006) test reveals that *mây* is an X^0, and that it cannot be modified by an XP. Consequently, *mây* is not an adverb, and therefore not a *v*P-adjunct, rendering it invalid as a diagnostic for *v*-to-Arg movement.

Analysis

As shown thus far, there are no usable diagnostics for the RAH that can be applied to Thai, Pwo Karen, and Hmong Njua data, since adverbs are systematically right-adjoined, while the preverbal negation in Thai, although preceding verbs, is in fact a head that takes XPs as its complement. Importantly, even though what we observe is the negative *mây* preceding the verb, we cannot conclude that Neg^0 must be taking vP as its complement per se, as there could be another projection, say ArgP, intervening between NegP and vP yielding the hierarchy NegP > ArgP > vP, in which case Neg^0 takes ArgP as its complement. Thus, we cannot determine whether or not the verb has undergone v-to-Arg movement, as the absence of <V, Neg, O> orders is not definitive evidence for the absence of verb movement, because the verb could still be vacuously moving, yielding the attested <Neg, V, O> orders in Thai.

However, the Thai data does not contradict the RAH either, as finite verbs are always adjacent to direct objects, their semantically closest arguments. Moreover, being a quite isolating language (i.e. morphemes are phonologically independent), none of the functional projections above vP (e.g. Tense Aspectual Morphemes) require phonological support from the verb, as is often the case in many other languages. And while a theoretical framework might employ verb movement to a higher projection, there is no empirical evidence in Thai to support such claims. Indeed, for such theories verb movement in Thai would have to be vacuous.

Finally, although it cannot be shown with certainty that the verb in Thai, Pwo Karen, and Hmong Njua remains *in situ*, the fact that none of the functional projections above vP exhibit phonological dependencies on other elements suggests that it is highly unlikely that there is v-to-Arg movement in the two languages. That is, there are no overt functional morphemes triggering verb movement and therefore the support for movement by any (possible) covert functional morphemes is rather improbable.

We thus have two options for the analysis of the basic clause structure that correctly derives the word orders and the position of optional elements outlined above: i) either adverbs must be right-adjoined to the vP in all three languages, always appearing after the direct object, as shown in (91a), or there is a VP movement in which both the finite verb and the direct object move together to a higher position crossing vP-adjuncts, as in (91b):

(91) a.
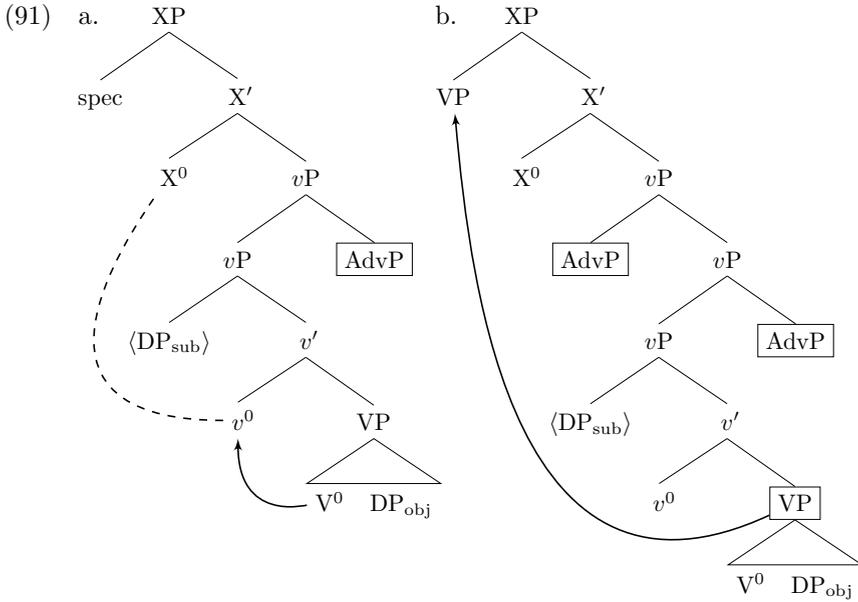
Consequences for the RAH

As demonstrated, we cannot prove with certainty that verbs surface vP-intern-
ally, since they might vacuously move to a higher projection, as indicated with
the dashed line in (91a). Consequently, there is no empirical evidence that re-
futes the RAH predictions. Similarly, there is no evidence in support of the
RAH either, since we cannot prove that the verb is *in situ*. Though logically
plausible, there is no evidence that (91b) is correct. Since both languages are
quite isolating, as morphemes are phonologically independent, verb movement
triggered by null affixes seems unlikely. Given the available data and the anal-
ysis here, both languages are inconclusive with respect to the RAH. However,
given the available evidence, the most parsimonious analysis is the one with-
out either v-to-Arg movement or VP movement, just as the RAH happens to
predict.

6.2.9 Quiegolani Zapotec

The basic clause structure of Quiegolani Zapotec (QZ) below shows that QZ
has verb raising that is invariably triggered by aspectual morphology, which is
present in all types of clauses in the language. Consequently, we cannot control
for aspect in QZ, and therefore cannot evaluate the validity of the RAH.

Verbal Morphology

QZ verbs are morphologically rich, exhibiting a variety of aspectual morphemes, all of which occur as prefixes on the verb. Crucially, some type of aspectual prefix is obligatorily present on the verb. The following examples illustrate habitual/progressive aspect:

(92) *Quiegolani Zapotec* (adapted from Black 2000:26, 34)
      r-a   noo / be / de / men skwel
      HAB-go 1.EX / 1.IN / 2 / 3   school
      'I/I.IN/you/they go to school.'

In addition, QZ has stative, completive aspects marked by *n-* and *w-* prefixes, respectively. Furthermore, QZ has three types of moods, unreal (93a), potential (93b), and future (93c) (Black 2000:27–29), that are also marked as prefixes on the verb:

(93) *Quiegolani Zapotec* (Black 2000)

      a.   che-bel ny-oon-t   Min   ny-oon-t   Lawer
           when-if UM-cry-NEG Yazmin UM-cry-NEG Laura
           'If Yazmin would not have cried, Laura would not have cried.' (p. 27)

      b.   yzhe   g-ool   noo liber
           tomorrow PM-read 1.EX book
           'Tomorrow I will read a book.' (p. 28)

      c.   s-oo   noo nis
           FM-oo 1.EX water
           'I will drink water.' (p. 30)

Finally, there are imperative and causative prefixes (cf. Black 2000, for more details).

In addition to prefixes, QZ has three types of suffixes on the verb: negation and two adverbials, as shown here:

(94) *Quiegolani Zapotec* (Black 2000:33)
      g-oo-t-re-ke   noo nis
      PM-drink-NEG-MORE-ASSOC 1.EX water
      'I will not drink more water either.'

For our purposes it is important to note that none of the morphological markers (prefixes or suffixes) on the verb reflect any features of its arguments. Black (2000) notes that some pronouns can be attached to the verb or "whatever precedes them in the sentence". However, since the features of these pronouns are not duplicated (cf. Zeijlstra 2008) it follows that they are not grammatical elements, and therefore cannot be agreement morphemes, the same conclusion that Black (2000:33) herself draws. In light of this and the facts outlined thus far, QZ is a poor agreement language according to our definition of richness.

Consequently, the RAH predicts that the verbs do not raise under controlled conditions.

Word order

QZ has strict VSO orders in discourse neutral transitive clauses:

(95) *Quiegolani Zapotec* (Black 2000)

            V   S   O

  a.   w-eey   Benit mël
        COMPL-take Benito fish
        'Benito took a fish.' (p. 45)

            V   S   O

  b.   r-u   mëëz ngyed
        HAB-eat fox   chicken
        'The fox is eating the chicken.' (p. 46)

Black (2000:47) reports that no optional elements can occur anywhere between the verb and its arguments. The only elements allowed between the verb and the subject, and between the subject and the object, are the three suffixes in (94). Elements like adverbs are restricted to clause-initial or clause final positions, as shown here:

(96) *Quiegolani Zapotec*

  a.   **yzhe**   ts-*a*   noo Mejiko
        tomorrow POT-go 1.EX Mexico
        'Tomorrow I will go to Mexico.'

  b.   ts-*a*   noo Mejiko **yzhe**
        POT-go 1.EX Mexico tomorrow

  c. * ts-*a* **yzhe**   noo Mejiko
        POT-go tomorrow 1.EX Mexico

  d. * ts-*a*   noo **yzhe**   Mejiko
        POT-go 1.EX tomorrow Mexico

Analysis

Given the distance between the verb and its semantically closest argument, the direct object, we can surmise that the verb is in a dislocated position, as evidenced by the intervening subject. Correspondingly, Black (2000) argues that the verb undergoes the standard *v*-to-I movement, given the obligatory presence of aspectual morphology. However, since in our framework the IP projection (i.e. ArgP) is the position at which the subject agreement morphology is generated, and not the aspectual morphology, I assume that the verb moves to an AspP projection, where it hosts aspectual morphology, as illustrated in (97):

(97)
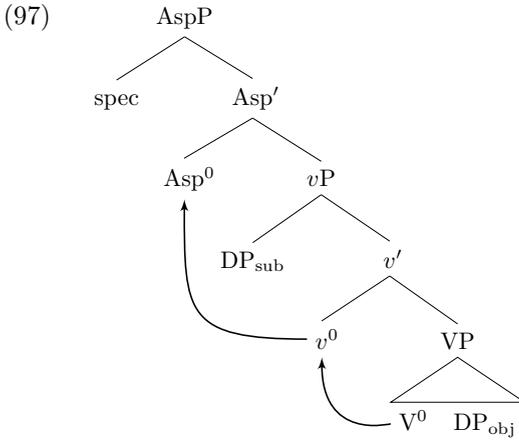
Consequences for the RAH

Importantly, verb movement in QZ is invariably triggered by aspectual morphology, and we have no way of controlling for Aspect triggering verb movement. Thus the movement for reasons of Aspect masks the movement that the RAH makes predictions about (i.e. v-to-Arg), rendering it undetectable. Consequently, we cannot draw any conclusions about the RAH.

6.3 Summary

This chapter provided the empirical facts and the analyses of poor agreement languages (labeled type D in §4.1.4), in which the RAH does not predict v-to-Arg movement. Notably, after a close scrutiny none of the languages have constructions that contradict the alleged correlation between verb raising and the richness of agreement morphology. In fact, in nine languages (N|uuki, Haitian, Martuthunira, Hatam, Bilua, Kadiwéu, Ígbo Vietnamese, and Hawaiian) we can detect the absence of v-to-Arg movement, while in 4 languages (Thai, Pwo Karen, Hmong Njua, and Quiegolani Zapotec) there is no way to determine if the verb moves.

Given the analyses in this chapter, three important general points can be made. First, as shown in Hatam, Bilua, and Kadiwéu, the doubled subject marking morphology that is attached to the verb is not *ipso facto* agreement morphology. Rather, as discussed in §4.1.2, a number of tests for each of these three languages suggest that the subject markers function as arguments of the verb. As a result, the RAH predicts that in the absence of independent triggers of verb movement, verb movement to a vP-external position cannot take place in these languages.

Second, in order to detect v-to-Arg movement, the language must have adjuncts that are adjoined to the left of vP. Specifically, as observed in Thai,

Pwo Karen, and Hmong Njua, the typical suspects for *v*P-adjuncthood can be constrained to the post direct object position, where they cannot serve as diagnostics for *v*-to-Arg movement, rendering the RAH untestable.

　　Third, there can be a variety of verbal morphology that can appear on the verb, all of which are potential triggers of verb movement, as discussed for example in Quiegolani Zapotec, where aspectual morphology appears in all constructions. We must be able to control for such independent triggers of verb movement. If this is not possible, like in Quiegolani Zapotec, then the RAH cannot be tested. Table 6.4 summarizes the key findings for each language:

Language	PA	AM	Motivation for verb raising	*v*-to-Arg
N|uuki	no	no	AdvP cannot intervene between V and O	no
Haitian	no	no	AdvP cannot intervene between V and O	no
Martuthunira	no	no	AdvP cannot intervene between V and O	no
Hatam	yes	no	AdvP cannot intervene between V and O	no
Bilua	yes	no	AdvP cannot intervene between V and O	no
Kadiwéu	yes	no	AdvP cannot intervene between V and O	no
Ìgbo	no	no	AdvP cannot intervene between V and O in particular contexts	no
Vietnamese	no	no	*id.*	no
Hawaiian	no	no	*id.*	no
Thai	no	no	AdvP always final	incon.
Pwo Karen	no	no	AdvP always final	incon.
Hmong Njua	no	no	AdvP always final	incon.
Q. Zapotec	no	no	S intervenes between V and O. Cannot control for Aspect	incon.

PA = pronominal argument language
AM = agreement marking language

Table 6.4 Overview of the key findings in the poor agreement languages

CHAPTER 7

Rich agreement languages

In this chapter I test the Rich Agreement Hypothesis (RAH) in languages
that have been documented to have rich agreement morphology (cf. Chap-
ter 5). Comparable to the outcome of the study of poor agreement languages
in Chapter 6, careful scrutiny of the interaction (or the absence thereof) be-
tween agreement morphology and verb movement leads to the conclusion that
in controlled conditions, the RAH makes correct predictions in most languages
and cannot be falsified in others.

As already discussed in Chapter 2, the strong RAH predicts restrictions
on the kinds of word orders that natural languages (in principle) can ex-
hibit. Inversely to VO languages with poor agreement morphology, in which
<V,AdvP,O> are not expected (and unattested in Chapter 6), VO languages
with rich agreement are not expected to exhibit <AdvP,V,O> orders where no
optional elements (e.g. adverbs) can intervene between V and O. These predic-
tions on word orders, as summarized in Table 7.1, are contingent on a natural
language exhibiting unbound, vP-adjoined adverbs, functioning as diagnostics
for the movement of any vP-internal elements to a vP-external position.

Agreement	no v-to-Arg	v-to-Arg
poor	✓	✗
rich	✗	✓

Table 7.1 Predicted typology of languages according to the strong RAH

This chapter presents the analyses of sampled rich agreement languages

(cf. Chapter 5) and assesses the extent to which the highlighted predictions in Table 7.1 are borne out. The languages discussed in this chapter include type A and B languages. As laid out in §4.1.4, in type A languages the RAH always predicts verb raising, since agreement is expressed by bound morphemes hosted by a verbal element. Type B languages can have v-to-Arg movement according to the RAH, but not obligatorily so, as agreement morphology can be bound to different (non-verbal) elements. Importantly, as the analyses here show, none of the investigated type A and B languages falsify the highlighted predictions in Table 7.1, though some remain inconclusive due to the absence of contexts in which the RAH can be tested.[1]

In addition to testing for verb movement, as carried out in poor agreement languages in Chapter 6, the investigation must establish i) that the subject doubling morpheme is in fact an agreement morpheme, and not an argument of the verb, and ii) that agreement morphemes phonologically depend on the verbs. There are a variety of tests that we can use to determine the category of the subject-doubling morpheme, which tend to be language-dependent. For example, I have already argued in §6.2.3 that the subject doubling prefixes in Hatam are not agreement morphemes because they can move, while in Bilua the same is true, since the subject DPs cannot be arguments of the verb because they are licensed by topic markers, suggesting that the subject-doubling morphemes must be arguments of the verb (cf. §6.2.2).

Importantly, languages vary with respect to the set of circumstances in which we can ascertain the nature of the subject-doubling morpheme, and we therefore do not have a diagnostic that we can universally apply. We thus have to look for language-specific evidence that might shed some light on the categorial properties of the subject-doubling morphemes. In most languages in this study the agreement morphology is readily identified and the discussion below on this matter is limited in the sense that it presents only a few tests (depending on the available/documented data) that show whether or not the subject-doubling morphemes are agreement morphology.

Parallel to the structure of Chapter 6, I first make a brief overview of the studied rich agreement languages, before delving into more in-depth analyses.

7.1 Chapter overview

In this chapter I analyze eleven languages, all of which have agreement morphology that reflects at least the features of the Person-Number Universal (cf. Chapter 5) and all of which have discourse neutral word orders that suggest that displacements must take place. Given the typology introduced in §4.1.4, nine out of eleven languages are type A, with bound morphemes hosted by a verbal element, and two are type B, where agreement is expressed by bound morphemes that are attached to any morpheme that happens to be adjacent to it,

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1. Note that although I postulated the existence of type C languages, in which agreement is an unbound morpheme, no such languages have been encountered in this study.

one of which can be V^0/VP/vP.

In five languages, namely, Ayoreo, Bukiyip, Finnish, Egyptian Arabic, and Wolof, adverbs readily appear between verbs and direct objects, indicating the presence of v-to-Arg. In particular, this is evident in Ayoreo, Bukiyip, and Finnish, where most adverbs follow the same pattern. In contrast, in Egyptian Arabic and Wolof, certain classes of adverbs show more flexibility, as they can both precede and follow the verb, making it more difficult to detect the exact syntactic position of the verb, whereas other classes of adverbs are more rigid, suggesting that the verb must raise.

In Hausa and Tiwi, adverbs cannot intervene between verbs and direct objects. However, in both languages agreement morphemes show a lack of phonological dependency on the verb. While this is always the case in Hausa, where agreement together with aspect forms a phonologically independent clitic cluster, the Tiwi agreement morpheme attaches to whatever morpheme is adjacent to it. Thus, in both languages, agreement morphemes do not trigger verb movement, and since adverbs cannot intervene between verbs and direct objects, the RAH is supported.

In the two verb-initial rich agreement languages, Wariʼ and Kaqchikel, there is evidence of vP/VP-fronting. While there are no adverbs to be found in Wariʼ, Kaqchikel adverbs appear only sentence-initially or sentence-finally. However, the surface word orders in both languages must be derived, given their respective morphological properties. In Wariʼ, as the analysis will show, vP-fronting brings the verb and agreement morphology into linear adjacency; although there is no verb (head) movement, the analysis neither contradicts nor provides evidence in support of the RAH. As for Kaqchikel, which has two discourse neutral word orders, VOS and VSO, the analysis suggests that VOS is derived through VP-raising, with a similar effect as the vP-raising in Wariʼ, while VSO is derived through verb (head) raising. If the VSO derivation is correct, then the RAH is supported, with the subject DP as a diagnostic for verb movement.[2]

In the last two languages, Lango and Moro, there is no way to properly assess the RAH. Comparable to what we see in Thai, Pwo Karen, and Hmong Njua (cf. §6.2.8), Lango appears to exhibit adverbs only in the clause-final position, which cannot be used to detect verb raising. As for Moro, like we have seen in Quiegolani Zapotec (cf. §6.2.9), there is no way to control for the non-agreement related morphology that can also trigger verb movement.

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2. Recall that in Hawaiian, the subject is not taken to be a diagnostic for v-to-Arg movement, since in Hawaiian VP-movement takes place in both VSO and VOS orders. Unlike in Kaqchikel VSO orders, in which the verb moves to the front, the Hawaiian VSO is straightforwardly derived via VP-remnant movement over the subject, following the definite object shifts.

7.2   Studies of the languages

7.2.1   Ayoreo[3]

Agreement Morphology

Ayoreo exhibits rich morphology on the verb that reflects the features of the subject, which are systematically duplicated on the verb. Consider the following examples in which the prefixes on the verb agree with the subject pronouns:

(1)   *Ayoreo* (Luca Ciucci, p.c.)

    a.   u(ju) **j**-i-catecâ(r)i aode
          I   1.SG-talk_to books.
          'I read books.'

    b.   uwa **b**-a-catecâ(r)i aode
          You 2.SG-talk_to   books.
          'You read books.'

    c.   ude Ø-Ø-catecâ(r)i aode
          He 3.SG-talk_to   books.
          'He reads books.'

    d.   ujok **wak**-a-catecâ-**cho**-ri aode
          We   1.talk_to-PL   books.
          'We read books.'

The roots of Ayoreo verbs are obligatorily inflected with the subject prefixes. Ciucci (2013:38) reports the presence of a thematic vowel between the subject prefixes and the root of the verb.

(2)   (Ciucci 2013:39, adapted)

tɕ-i-go 'to tell, to show'		
Person	Singular	Plural
1	j-**i**-ɡo	j-**i**-ɡo-ɡo
2	b-**a**-ɡo	wak-**a**-ɡo-jo
3	tɕ-**i**-ɡo	ore tɕ-**i**-ɡo

Importantly, no elements with semantic content can intervene between the two, suggesting that the subject affixes are strictly phonologically dependent on the verb and cannot move away from the verb, which suggests that they are agreement morphology.

    Since Ayoreo shows distinctions in three persons as well as in number in these agreement prefixes, reflecting at least two person features and a number feature, it follows that Ayoreo is a rich agreement language, since it conforms

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3. I am grateful to Luca Ciucci who collected the Ayoreo data, as well as from the closely related language Chamoco, during his field work in Paraguay/Bolivia. The examples are written in the orthography currently used by Ayoreo communities.

to the PNU distinctions (cf. Chapter 3). The full paradigm of verbal prefixes marking the subject person and number features is given in the following table:

(3) Ayoreo verbal prefixes
     (Ciucci 2013:39, adapted)

	Singular	Plural
1	j-	j- . . . -go
2	b-	wak- . . . -go
3	ø-	ø-

Word order

The discourse neutral word order is SVO, as illustrated in the following examples:

(4) *Ayoreo* (Luca Ciucci, p.c.)

  S   V   O
 Samane catecâ(r)i aode
 Samane 3.talk_to books
 'Samane reads books.'
 (lit. 'Samane talks to the books.')

Optional elements can intervene essentially anywhere between the verb and its arguments, though with some variation depending on the semantic properties of the adverb. For example, some adverbs, including *jecucha* 'often' (cf. 5) and *acacucha* 'never' (cf. 6) can only appear before or after the subject:

(5) *Ayoreo* (Luca Ciucci, p.c.)

 a. **jecucha** Samane *catecâ(r)i* aode
   often Samane 3.talk_to books
   'Samane often reads books.'

 b. Samane **jecucha** *catecâ(r)i* aode
   Samane often 3.talk_to books

 c. * Samane *catecâ(r)i* **jecucha** aode
   Samane 3.talk_to often books

 d. * Samane *catecâ(r)i* aode **jecucha**
   Samane 3.talk_to books often

(6) *Ayoreo* (Luca Ciucci, p.c.)

 a. **acacucha** Samane *catecâ(r)i* aode
   never Samane 3.talk_to books
   'Samane never reads books.'

 b. Samane **acacucha** *catecâ(r)i* aode
   Samane never 3.talk_to books

    c.   *Samane *catecâ(r)i* **acacucha** aode
          Samane 3.talk_to never   books

    d.   *Samane *catecâ(r)i* aode **acacucha**
          Samane 3.talk_to books never

In contrast, adverbs *gatuaque* 'always', *ja(r)ipe* 'immediately', *bu* 'quickly', *jo(r)ogui* 'in vain', *gaté* 'again', and *iji ujade* 'occasionally' (7-12) are restricted to either clause-final position or between the verb and the direct object:

(7)   *Ayoreo* (Luca Ciucci, p.c.)

    a.   Samane *catecâ(r)i* **gatuaque** aode
           Samane 3.talk_to always   books
           'Samane always reads books.'

    b.   Samane *catecâ(r)i* aode **gatuaque**
           Samane 3.talk_to books always

    c.   * **gatuaque** Samane *catecâ(r)i* aode
           always   Samane 3.talk_to books

    d.   *Samane **gatuaque** *catecâ(r)i* aode
           Samane always   3.talk_to books

(8)   *Ayoreo* (Luca Ciucci, p.c.)

    a.   Samane *catecâ(r)i* **ja(r)ipe**   aode
           Samane 3.talk_to immediately books
           'Samane will read books immediately.'

    b.   Samane *catecâ(r)i* aode **ja(r)ipe**
           Samane 3.talk_to books immediately

    c.   * **ja(r)ipe**   Samane *catecâ(r)i*i aode
           immediately Samane 3.talk_to   books

    d.   *Samane **ja(r)ipe**   *catecâ(r)i* aode
           Samane immediately 3.talk_to books

(9)   *Ayoreo* (Luca Ciucci, p.c.)

    a.   Samane *catecâ(r)i* **bu**   aode
           Samane 3.talk_to quickly books
           'Samane quickly reads books.'

    b.   Samane *catecâ(r)i* aode **bu**
           Samane 3.talk_to books quickly

    c.   * **bu**   Samane *catecâ(r)i* aode
           quickly Samane 3.talk_to books

    d.   *Samane **bu**   catecâ(r)i aode
           Samane quickly 3.talk_to books

(10)   *Ayoreo* (Luca Ciucci, p.c.)

    a.   Samane *catecâ(r)i* **jo(r)ogui** aode
        Samane 3.talk_to in.vain   books
        'Samane reads books in vain.'

    b.   Samane *catecâ(r)i* aode **jo(r)ogui**
        Samane 3.talk_to books in.vain

    c. * **jo(r)ogui** Samane *catecâ(r)i* aode
        in.vain   Samane 3.talk_to books

    d. * Samane **jo(r)ogui** catecâ(r)i aode
        Samane in.vain   3.talk_to books

(11) *Ayoreo* (Luca Ciucci, p.c.)

    a.   Samane *catecâ(r)i* **gaté** aode
        Samane 3.talk_to again books
        'Samane again reads books.'

    b.   Samane *catecâ(r)i* aode **gaté**
        Samane 3.talk_to books again

    c. * **gaté** Samane *catecâ(r)i* aode
        again Samane 3.talk_to books

    d. * Samane **gaté** catecâ(r)i aode
        Samane again 3.talk_to books

(12) *Ayoreo* (Luca Ciucci, p.c.)

    a.   Samane *catecâ(r)i* **iji ujade**   aode
        Samane 3.talk_to occasionally books
        'Samane occasionally reads books.'

    b.   Samane *catecâ(r)i* aode **iji ujade**
        Samane 3.talk_to books occasionally

    c. * **iji ujade**   Samane *catecâ(r)i* aode
        occasionally Samane 3.talk_to books

    d. * Samane **iji ujade**   catecâ(r)i aode
        Samane occasionally 3.talk_to books

Finally, temporal adverbs like *ni(r)ome* 'tomorrow' and *di(r)ica* 'yesterday' are the most flexible of all, as they can appear anywhere except between the subject and the verb, as shown in (13) and (14):

(13) *Ayoreo* (Luca Ciucci, p.c.)

    a.   Samane catecâ(r)i **ni(r)ome** aode
        Samane 3.talk_to tomorrow books
        'Samane is going to read books tomorrow.

    b.   Samane *catecâ(r)i* aode **ni(r)ome**
        Samane 3.talk_to books tomorrow

    c. * **ni(r)ome** Samane *catecâ(r)i* aode   '
        tomorrow Samane 3.talk_to books

     d.   * Samane **ni(r)ome** *catecâ(r)i* aode
          Samane tomorrow 3.talk_to books

(14)   *Ayoreo* (Luca Ciucci, p.c.)

     a.   **di(r)ica**   Samane *catecâ(r)i* aode
          yesterday Samane 3.talk_to books
          'Yesteday Samane read books.'

     b.   Samane *catecâ(r)i* **di(r)ica**   aode
          Samane 3.talk_to yesterday books

     c.   Samane *catecâ(r)i* aode   **di(r)ica**
          Samane 3.talk_to books yesterday

     d.   * Samane **di(r)ica**   *catecâ(r)i* aode
          Samane yesterday 3.talk_to books

Given the data, it appears that Ayoreo exhibits three different classes of adverbs, based on their syntactic distribution. Adverbs that appear immediately before or immediately after the subject ($AdvP_1$), adverbs that appear either between the verb and the direct object or after the direct object ($AdvP_2$) and adverbs that appear before the subject, between the verb and the direct object, and after the direct object ($AdvP_3$). The summary of distribution of all adverbs mentioned thus far is given in the following table:

| Class	Adverb		Adv,S,V,O	S,Adv,V,O	S,V,Adv,O	S,V,O,Adv
$AdvP_1$	*jecucha*	'often'	+	+	−	−
	acuacucha	'never'	+	+	−	−
$AdvP_2$	*gatuaque*	'always'	−	−	+	+
	ja(r)ipe	'immediately'	−	−	+	+
	bu	'quickly'	−	−	+	+
	jo(r)ogui	'in vain'	−	−	+	+
	gaté	'again'	−	−	+	+
	iji ujade	'occasionally'	−	−	+	+
$AdvP_3$	*di(r)ica*	'yesterday'	+	−	+	+
	ni(r)ome	'tomorrow'	+	−	+	+

Table 7.2 Distribution of Ayoreo adverbs (Luca Ciucci, p.c.)

Analysis

The crucial fact in Table 7.2 is that Ayoreo exhibits two syntactic classes of adverbs ($AdvP_2$ and $AdvP_3$) that can intervene between the verb and the direct object. This evidence alone suggests that the verb must be in a dislocated

position. And, with $AdvP_2$ and $AdvP_3$ as vP-adjuncts, the surface position of the verb must be vP-external. As for $AdvP_1$, which cannot appear between the verb and the direct object, we are left with the option of adjoining them to projections that dominate vP, but crucially not directly to vP or a projection dominated by vP.

In light of this reasoning, the derivation of the basic clause structure in Ayoreo must proceed as in (15), where $AdvP_2$ and $AdvP_3$, over which the verb moves, are vP-adjuncts. In contrast, $AdvP_1$ must be adjoined to a projection above ArgP.

(15)
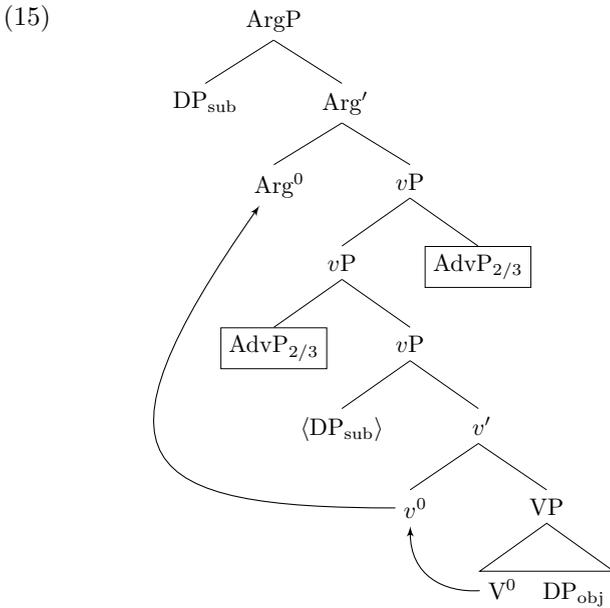
Importantly, this analysis, involving verb movement, is the simplest analysis under two standard assumptions: i) that particular adverbs like the Ayoreo adverbs *bu* 'quickly' or *iji ujade* 'occasionally' can be vP-adjuncts, and ii) that rightward movement of objects is unavailable in this language. The unavailability of rightward movement effectively rules out object shifts to the right crossing a right-adjoined adverb that could plausibly derive the attested <V,Adv,O> order.

Recall that we were forced to apply rightward movement in Vietnamese, where <V,AdvP,O> orders are attested when objects are definite. However, unlike in Vietnamese, <V,AdvP,O> orders in Ayoreo are irrespective of the definiteness of direct objects. And while object shifts (when objects are definite) could be taking place, this alone cannot preclude the necessity of verb movement in contexts where objects are indefinite, since indefinite objects typ-

ically do not shift.[4] We could infer that object shifts are uniform, however the Ayoreo data presented here does not offer any morphological support for this.

Consequences for the RAH

The empirical facts discussed here along with the simplest analysis that I propose in (15) fall in line with the RAH predictions. Ayoreo is a rich agreement language in which we can control for all potential triggers of verb movement other than agreement, and in which optional elements must (be able to) intervene between verb and direct object, suggesting that v-to-Arg movement takes place, as predicted by the RAH.

7.2.2   Bukiyip (Bukiyúp, Mountain Arapesh)

This section deals with the basic properties of the clause structure of Bukiyip. Based on the observations by Conrad and Wogiga (1991), who show that a particular class of adverbs is invariably post-verbal, it is argued that under the standard assumption that these adverbs surface as vP-adjuncts, the finite verb in Bukiyip must raise out of vP. This correlates with the fact that the agreement morphology in Bukiyip is rich, as predicted by the RAH.

Agreement Morphology

Like Ayoreo, Bukiyip too has rich verbal morphology that reflects distinct semantic features of the subject. Consider the following examples in which the morphemes *i-*, *ny- n-*, and *m-* that appear as prefixes on the verbs specify the person and number features of the subjects.

(16)   *Bukiyip* (Conrad and Wogiga 1991)

    a.   kaman   **i-**   nak wabél
         tomorrow 1.SG.IRR- go   village
         'Tomorrow I will go to the village.' (p. 15)

    b.   **ny-** ú-   galúk -ém -anú
         2.SG- IMPER- return -BEN -3.SG.M
         'You give the things back to him.' (p. 29)

    c.   énan **n-**   a- leh
         3.SG.M 3.SG.M- R- cry
         'He cried.' (p. 16)

    d.   amom **m-**   a-nak
         they.M 3.PL.M R-   go
         'They (male) went.' (p. 15)

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4. For example in this study alone, this has been shown in Vietnamese (cf. §6.2.6), Hawaiian (cf. §6.2.7), and Kaqchikel (cf. §7.2.8). In addition, it has been attested in Dutch with non-specific indefinite objects.

Note that subjects are left out in (16a-b), which may lead to a conclusion that the prefixes are in fact pronouns. However, this is immediately ruled out in (16c-d), in which the subject arguments are (overtly) realized with the free pronouns *énan* 'he' and *amom* 'they' surfacing together with the prefixes, indicating that the prefixes are in fact agreement morphology. Thus, the contrast between (16a-b) on the one hand and (16c-d) on the other, shows that Bukiyip is a *pro-drop* language, since it can leave out subjects. In contrast to subjects, Bukiyip agreement prefixes are always obligatory.

For our purposes, the agreement prefixes in (16) reflect a rich set of φ-features, marking the distinctions between the subjects in three persons and in three numbers. The paradigm of agreement prefixes is provided in the following table:

(17) Bukiyip subject-verb agreement prefixes
(Conrad and Wogiga 1991:15–16)

	Singular	Dual	Plural
1	i-/y-	w-	m-
2	ny-	p-	p-
3	n-$^\text{M}$, kw-$^\text{F}$		h-$^\text{M}$, w-$^\text{F}$
			ch-$^\text{MG}$/m-

The facts in (17) straightforwardly lead to the conclusion that Bukiyip is a rich agreement language, providing specification for both person features [speaker] and [participant], as well as the number features: [singular], [dual], and [plural]. Given the RAH predictions, verb movement to a *v*P-external position is expected in Bukiyip.

Word order

Regarding word orders, it is important to note that Bukiyip declarative clauses appear to be quite rigid, exhibiting VO orders, as illustrated in the following sentences:

(18) *Bukiyip* (Conrad and Wogiga 1991:85–86)

a.
$$\overbrace{\text{yek}}^{\text{S}} \ \overbrace{\text{y-o-wak-anú}}^{\text{V}} \qquad \overbrace{\text{bolany Anis}}^{\text{O}}$$
I 1.SG-R-send-3.SG.M.OBJ talk Anis
'I sent Anis the talk.'

b.
$$\overbrace{\text{atúnú}}^{\text{S}} \ \overbrace{\text{n-é-kéna-li}}^{\text{V}} \qquad \overbrace{\text{suluhw nauklinenú}}^{\text{O}}$$
one.M 3.SG.M.SUBJ-R-give-3.SG.M.OBJ-come rings father.in.law
'He will return the rings to the father in law.'

The verbs *y-o-wak-anú* and *n-é-kéna-li* in (18) are adjacent to their semantically closest arguments (i.e. objects). On a first encounter there are no reasons to assume that any verb raising takes place, agreement morphology aside.

This leads us to question whether there are any additional clausal elements that might disrupt the VO adjacency. Adopting the facts as described by Conrad and Wogiga (1991), in the next section I investigate adverbs as potential candidates that might shed more light on the verb position in Bukiyip.

Adverbs

According to Conrad and Wogiga (1991) there are three classes of adverbs in Bukiyip. The first and the most productive class of adverbs occur preverbally and are marked with an affix that matches the agreement features of the verb:

(19) **AdvP$_1$** (Conrad and Wogiga 1991:41)

    a.   echech **ch-   a- natimogúk** ch-   a- nak
           3.PL.MG 3.PL.MG- R- all   3.PL.MG- R- go
           'They all went.'

    b.   énan **n-   a- nubu**   n-   a- gak
           3.PL.M 3.PL.M- R- completely 3.PL.M- R- die
           'He died completely.'

    c.   awou **w-   a- gamu** w-   a- dúkemech
           3.PL.F 3.PL.F- R- well   3.PL.F- R- understand
           'The women understood well.'

Note that the adverbs *natimogúk* 'all', *nubu* 'completely' and *gamu* 'well' receive the same morphological markers for agreement and tense morphology as the verbs they modify. The fact that these elements bear verbal morphology suggests that it is likely that they are verbs rather than adverbs. This is further supported by the fact they must appear to the left of the VP, patterning with (other) verbs that must appear to the left of the direct objects.

    The second class of adverbs, AdvP$_2$, is a small group of adverbs that, unlike AdvP$_1$, are not inflected for agreement. However, like AdvP$_1$, AdvP$_2$ also occur preverbally, as the following examples illustrate:

(20) **AdvP$_2$** (Conrad and Wogiga 1991:51)

    a.   **a**   n-   a- itak
           'past' 3.SG.M- R- get.up
           'He got up.'

    b.   **wotak** n-   e- chuh
           more   3.SG.M R- sleep
           'He is still sleeping.'

The third class of adverbs is another small group that, unlike AdvP$_1$ and AdvP$_2$, are placed post-verbally:

(21) **AdvP$_3$** (Conrad and Wogiga 1991:51)

    a.   deke m-   u-   nek **usinabél**
           FUT 1.PL- IRR- do quickly
           'We will do it quickly.'

b.   w-   e- chúlokuh **jélúg**
       3.PL.F R- wash   enough
       'They (female) washed and then they finished.'

c.   ch-   a- ho -guh   **sili**   **sili**   **ati**
       3.PL.MG- R- tie -CL10.PL different different only
       'They tied up the pigs separately.'

Like $AdvP_2$, $AdvP_3$ also do not bear any agreement morphology.

The three classes of adverbs differ in terms of their distribution within the clause. While $AdvP_1$ and $AdvP_2$ are attested only pre-verbally, $AdvP_3$ occur post-verbally (1991:40–41). Conrad and Wogiga provide the following table to illustrate this difference in word order:

(22)   Distribution of adverbs w.r.t verb
     (adapted from Conrad and Wogiga 1991:50)

Modifier$_1$	Head	Modifier$_2$
$AdvP_1$	verb class 1-7	$AdvP_3$
$AdvP_2$		adverb phrase

The elements Modifier$_1$ Head Modifier$_2$ represent the linear order of elements in the clause.

Unfortunately, Conrad and Wogiga's (1991)reference grammar does not provide any transitive clauses with overt arguments that include these adverbs that would concretely illustrate the position of the verb. So, based on the available data, we cannot be certain whether the verb moves or whether $AdvP_3$ are obligatorily right-adjoined, and would also follow objects, as either option correctly accounts for the surface word order.

However, they do provide a generalization for the position of elements in transitive indicative clauses, in which verb phrases as in (22) are distributed as shown in (23). Conrad and Wogiga claim that the following is the most frequent word order:

(23)   Word order in the indicative transitive clause
     (Conrad and Wogiga 1991:80)

Subject	Transitive predicate	Direct Object
NP	Modified VP	NP

Given that adverbs in the view of Conrad and Wogiga are a part of the Modified VP in (23) as shown in (22), $AdvP_1$ and $AdvP_2$ precede the verb, while $AdvP_3$ follows the verb and precedes the direct object.

Analysis

If it is correct that $AdvP_3$ are sandwiched between verbs and their objects, as Conrad and Wogiga (1991) claim, then this suggests that the verb is displaced from its base-generated position, i.e. the position where it is the sister of the direct object. Consequently, under the assumption that $AdvP_3$ are vP-adjuncts,

the dislocated position of the verb must be vP-external, since if the verb were to surface inside vP, the $<$V, AdvP$_3$, O$>$ orders would be incorrectly barred.

Furthermore, with respect to their semantics AdvP$_3$ seems to be a distinct class. Consider the translation of the following examples:

(24)   **AdvP$_3$** (Conrad and Wogiga 1991:41)

yúh	'completely, all, when completed'
mealúh/meoh	'for no reason'
namudak	'like that'
ati	'only, just'
dédag	'strongly, firmly'
kalbúk	'all right, well'
nebegún	'strongly', or 'excessively'
atúguún	'together'
jélug	'enough, finished'
hwaleoh	'irregularly, any old way'
chokubél	'not excessive, moderately, quietly, softly'
usinabél/wisinabél	'quickly'
take	'continuous'

Given their meaning, most of the adverbs in (24) fall into the category of manner adverbs typically considered to be low adverbs, as attested in many languages. This in combination with the default $<$V, AdvP$_3$, O$>$ orders shows that AdvP$_3$ are appropriate diagnostics for verb movement, which straightforwardly leads us to the following analysis, in which the verb moves across vP-adjoined AdvP$_3$ to the Arg^0 position, which hosts the agreement morpheme.

(25)
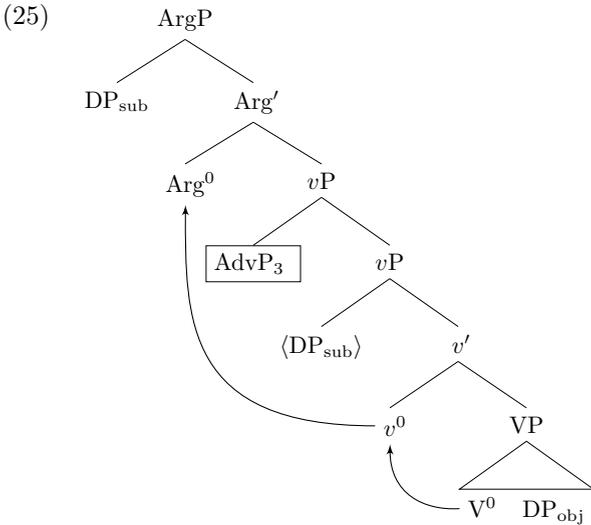
An important prediction of this analysis is that the other two classes of adverbs, AdvP$_1$ and AdvP$_2$, must be positioned even higher in order to account for the

basic word order in (23). This renders them unusable as diagnostics for v-to-Arg movement.

Regarding $AdvP_1$, the straightforward account is that they are categorially different from the other two classes, since, as indicated above, they are inflected for agreement and tense, which is unexpected of adjuncts in general. Consequently, if they cannot be adjuncts, then they must be adjoined to a higher projection and as such cannot tell us whether verb raising takes place.[5]

$AdvP_2$, all of which are provided in (26), exhibit semantics that is typical of higher (temporal) adverbs:

(26) **$AdvP_2$** (Conrad and Wogiga 1991:41)

wotak	'more, not yet, still'
eke/deke	'future'
a/ya	'past'

Consequently, along with their preverbal position, it is likely that these elements are also base-generated vP-externally, comparable to TP-adjoining adverbs in other languages (like Egyptian Arabic, discussed in §7.2.6).

What follows from this analysis is that the left-to-right word order <{$AdvP_1$, $AdvP_2$}, V, $AdvP_3$, O> reflects the hierarchy of the syntactic positions in which these elements surface, yielding the surface hierarchy, {$AdvP_1$, $AdvP_2$} > V > $AdvP_3$ > O. Since there is no immediate verb-object adjacency, it follows that the verb has undergone movement from a lower position adjacent to its object to a position dominating $AdvP_3$.

Consequences for the RAH

The analysis above shows that under the standard assumption of treating manner adverbs, (i.e. Bukiyip $AdvP_3$) as vP-adjuncts, the surface position of the verb cannot be vP-internal. Given the fact that Bukiyip is a rich agreement language as established above, the RAH is confirmed in Bukiyip.

7.2.3 Finnish

Agreement Morphology

Finnish exhibits rich verbal morphology that reflects the person and number features of the subjects; it is realized as a suffix on the verb, as illustrated in the following examples:

(27) *Finnish* (Karlson 1983:60)

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5. Note that I use the term adverb as described by Conrad and Wogiga (1991), however they are more like modal type verbs, given the morphological properties that they have.

  a.   (minä) sano-**n**
       I   say-1.SG
       'I say.'

  b.   (sinä) sano-**t**
        you   say-2.SG
       'You say.'

  c.   hän sano-**ø**
       he   say-3.SG
       'He says.'

  d.   (me) sano-**mme**
        we   say-1.PL
       'We say.'

Finnish has productive case morphology marked on the nominal DPs, as shown here:

(28) *Finnish* (Huhmarniemi 2012)

  a.   Minä löysin   avaimen
       I.NOM find.PT.1.SG key.ACC
       'I found a/the key.' (p. 23)

  b.   Kenet   Pekka   luuli   että Merja   tapasi?
       who.ACC Pekka.NOM think.PT.3.SG that Merja.NOM meet.PT.3.SG
       'Who did Pekka think that Merja met?' (p. 69)

This suggests that the nominal DPs must be arguments of the verb . This indicates that the inflections on the verb cannot be arguments, but either agreement markers or subject doubling morphemes. Since subject doubling morphemes can typically be left out, it means that the obligatory nature of these subject marking morphemes suggests that they must be agreement morphology. The full paradigm of verbal agreement markers is given in the following table:

(29) Finnish verbal agreement inflections in present tense
      (Karlson 1983:59)

	Singular	Plural
1	–n	–mme
2	–t	–tte
3	–	–vat∼–vät

Relevant fact from Finnish is that agreement morphology does not uniformly appear on the verb, but can also surface on the negation, as the following example shows:

(30) *Finnish*
      Minä <u>en</u>   *lukenut* kirja -a
      I   NEG.1.SG read.SG book -PAR
      'I did not read the book yesterday.'

In the example above only the negative word *en* realizes a rich set of agreement features (both person and number), whereas the finite verb only marks the number feature of the subject.

These data show that Finnish is a rich agreement language, realizing a rich set of person and number features on finite verbs that conform to the PNU (cf. Chapter 3), and, if negation is generated, then the rich features appear on the negative element. Consequently, the discussion below revolves around both negative and affirmative declarative clauses, with the aim of determining whether or not there is a correlation between verb movement and the rich agreement morphology.

Word Order

In discourse neutral conditions Finnish exhibits SVO orders:

(31)   *Finnish* (Huhmarniemi 2012)

             S   V   O

    a.   Pekka   tapasi   Merjan

        Pekka.NOM meet.PT.3.SG Merja.ACC

        'Pekka met Merja.' (p. 47)

                  S   V   O

    b.   Graham Greene on kirjoittanut   tämän kirjan

        Graham Greene have.3.SG written.SG this.ACC book.ACC

        'Graham Greene has written this book.' (p. 35)

On the basis of the facts in (31) there are no reasons to think that any of the arguments of the verb are dislocated from their base-generated position.

Adverbs

However, temporal (32), frequency (33), and manner (34) adverbs all intervene between the verb and the direct object, and when placed in a preverbal position, the sentences become ungrammatical:

(32)   *Finnish*

    a.   Minä *luin*   **eilen**   kirja -n

        I   read.1.SG yesterday book -ACC

        'I read the book yesterday.'

    b.   * Minä **eilen**   *luin*   kirja -a

        I   yesterday read book -ACC.

(33)   *Finnish*

    a.   Minä *luin*   **usein** kirja -n

        I   read.1.SG often book -ACC

        'I read the book yesterday.'

    b.   * Minä **usein** *luin* kirja -a
           I   often read book ACC

(34) *Finnish*

    a.   Minä *luin*   **nopeasti** kirja -n
           I   read.1.SG quickly   book -ACC
           'I quickly read the book.'

    b.   * Minä **nopeasti** *luin* kirja -a
           I   quickly   read book ACC

In addition to the three classes of adverbs in (32) through (34), Finnish also has another class of adverbs that adjoin higher in the clause, having a higher scope (cf. Holmberg, Nikanne, Oraviita, Reime, and Trosterud 1993). A few examples are given in the following list, under the heading, AdvP$_1$.

(35) Adverb classes (adapted from Holmberg et al. 1993)

AdvP$_1$		AdvP$_2$	
varmaan	'surely'	*aina*	'always'
ehkä	'perhaps'	*pian*	'soon'
näköjään	'evidently'	*usein*	'often'
kai	'probably'	*koskaan*	'ever'
ilmeisesti	'obviously'	*kokonaan*	'completely'

Since AdvP$_1$ cannot be used as diagnostics for verb movement, I leave them aside (see Holmberg et al. 1993:194–195 for more details), and focus on AdvP$_2$ as the only adequate diagnostic in the analysis below.

Negation

In negated clauses we observe a slightly different set of facts. The most neutral word order is in (36a), where the negative and the verb are clustered together in front of the adverbs. Conversely, adverbs in front of the negation-verb clusters are ruled out (36b), while adverbs intervening between the negative *en* and the verb (36c) are rare and less acceptable:

(36) *Finnish*

    a.   Minä <u>en</u>   *lukenut* **eilen**   kirja -a
           I   NEG.1.SG read.SG yesterday book -PAR
           'I did not read the book yesterday'.

    b.   * Minä **eilen**   <u>en</u>   *lukenut* kirja -a
           I   yesterday NEG.1.SG read.SG book -PAR

    c. ?? Minä <u>en</u>   **eilen**   *lukenut* kirja -a
   I   NEG.1.SG yesterday read.SG book -PAR

However, (36c) becomes quite acceptable in an environment with contrastive stress, as illustrated here:

(37) *Finnish*

Minä <u>en</u>   **eilen**   *lukenut* kirja -a,   mutta luin   tänään.
I   NEG.1.SG yesterday read.SG book -PAR but   read.1.SG today
'I did not read the book yesterday but I did read one today.'

What this means is that the adverb *eilen* 'yesterday' in (37) and in (36c) is in a focused position. Consequently, (37) and (36c) are not discourse neutral orders and therefore we cannot test the validity of the RAH in such conditions, as they likely involve additional displacements that (could) mask the *v*-to-Arg movement.

Analysis

The facts above show that in all discourse neutral orders (whether negated or affirmative declarative clauses) finite verbs in Finnish precede the AdvP$_2$ class of adverbs. It follows that finite verbs surface in a *v*P-external position after having undergone movement. Since the agreement morphology is rich, the syntax generates an ArgP projection above *v*P, which hosts the φ-features of the subject, to which the verb moves, as illustrated here:

(38)
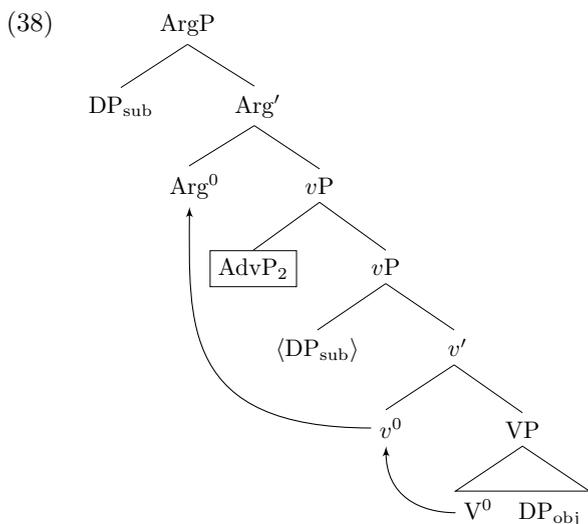
This analysis correctly predicts the discourse neutral, <V, AdvP$_2$, O> word orders in Finnish declarative clauses. In contrast, an analysis in which the verb remains *v*P-internal would incorrectly block <V, AdvP$_2$, O> word orders, leaving the analysis that involves verb movement to a *v*P-external position, as in (38), as the only possible option under the standard set of assumptions.

   As for negated clauses in which the agreement morpheme on the verb is poor, reflecting only the number features (cf. 36a), we see that the verb precedes the *v*P-adjunct even if the verb has a subset of agreement features, which suggests that *v*-to-Arg movement must take place.

Consequences for the RAH

Given the necessity of verb movement in Finnish, along with the presence of rich agreement morphology that is phonologically dependent on the verb, the RAH correctly predicts the attested word order facts in Finnish. What is particularly relevant from the Finnish data is that we see that the verb always moves to a vP-external position, even if it contains only a subset of agreement features. This strongly suggests that the RAH must be bidirectional, and that the presence of rich morphology on the finite verb in the input during acquisition leads to the generation of additional structure above vP to which the verb invariably moves, even if in some contexts the (rich) agreement morphology appears elsewhere.

7.2.4   Hausa

Hausa is a particularly interesting language, since even though it exhibits rich agreement morphology, verb movement is not expected, since agreement morphology does not show any phonological dependency on the verb. The data and subsequent analysis below show that there cannot be any verb raising to a vP-external position in discourse neutral word orders.

A few types of optional (adverbial) elements that could be used as verb movement diagnostics occur either preverbally or in post-vP positions. The only category that can surface between verbs and their objects are modal particles. However, this is restricted to cases with nominal objects, since the modal particles cannot intervene between finite verbs and pronominal clitic objects. It is argued that modal particles are not adjoined to the clausal spine and are therefore not a proper diagnostic for verb movement. In contrast, under the most parsimonious assumption that the preverbal modifiers are vP-adjuncts, it follows that verb raising to a vP-external position is absent in Hausa, as predicted by the RAH.

Agreement Morphology

Clausal morphology in Hausa is characterized by the Person-Aspect-Complex (PAC), a phonologically independent preverbal morpheme composed of two parts: i) pronominal morpheme reflecting the properties of subject, and ii) a Tense, Aspect, or Mood (TAM) morpheme. Note that personal pronouns do not occur as subjects, since the subjects are marked with the pronominal part of the PAC (cf. 39a and 39d), which Newman (2000:718) refers to as 'weak pronouns'. However, the 'weak pronouns' co-occur with nominal subjects (cf. 39b-c). Consider the following examples in which PACs are elements in bold and verbs in italics:

(39)   *Hausa* (Jaggar 2001)

    a.   (*ní) **nā**   *tayà* Tankò baƙin cikì
          I   1.SG.PF help Tanko unhappiness
          'I consoled Tanko.' (p. 423)

b. yārònā **yā** *sakà* rìgā cikin àkwàtì
boy.of.1.SG 3.SG.M.PF put gown inside box
'My boy put the gown inside the box.' (p. 419)

c. mālàmīnā **yanà̀** *kōyà* miní Hausa
teacher.of.1.SG 3.SG.M.IMP teach to.1.SG Hausa
'My teacher is teaching me Hausa.' (p. 415)

d. (*sū) **zā sù** *gyārà* mōtàr̃sà
they FUT 3.3.PL fix car.of.3.M
'They will fix his car.' (p. 425)

In (39a-b) the morphemes *nā* and *yā* are portmanteau morphemes marking both pronominal features and aspect, whereas in the imperfective aspect (39c) and in the future tense (39d) the morphemes *yanà̀* and *zā sù*, respectively, exhibit two unique phonological parts, one of which is the weak pronoun and the other a TAM morpheme.

The obligatory absence of the independent personal pronouns occurring as subject suggests that the weak pronominal part of the PAC is in fact the subject pronoun. However, the fact that the weak pronominal part obligatorily occurs with nominal subjects supports the idea that the pronominal parts of PACs are 'doubled' formal features, in line with the FFFH (cf. Zeijlstra 2008, cf. §4.1.2). Furthermore, the pronominal part of the PAC cannot move away from the other part of the PAC morpheme. This suggests that the doubled subject marker is in fact agreement morphology. What follows then is that the absence of the independent personal pronouns as subjects falls in line with standard *pro*-drop analyses, as Newman (2000:718) suggests, with the additional stipulation that *pro*-drop is 'obligatory' when subjects are independent personal pronouns. In contrast, when subjects are full nominal DPs, they can be optionally *pro*-dropped.

In most cases in which the two parts of a PAC can be segmented, the TAM morpheme follows the agreement morpheme. The exception to this are the TAM morphemes marking future tense, which obligatorily precede the agreement morpheme, as shown in (39d). The PAC paradigms substantially differ in terms of their phonological realization, depending on the type of TAM morpheme that they contain. In the following table I illustrate the simplest paradigm (which happens to be the perfective), which for our purposes is sufficient evidence to indicate that Hausa is a rich agreement language:

(40) Hausa perfective paradigm of agreement morphology
(Jaggar 2001:155, adapted)

	Singular	Plural
1	nā	mun
2	kā^M/kin^F	kun
3	yā^M/tā^F	sun^M/an

However, an important property of these clusters of agreement and TAM morphemes is that they are morphologically and phonologically independent from the matrix verb, which invariably follows them (cf. Abdoulaye 1992:102; Newman 2000; Jaggar 2001). A number of elements can easily intervene between PACs and verbs, for example Hausa modal particles (MP):

(41) *Hausa* (Newman 2000:330, adapted)
      Sulè bài   **mā** *faɗà* wà màtar̃sà ba
      Sulè NEG.3.SG.M PART tell his wife   NEG
      'Sulè didn't even tell his wife.'

This fact is crucial because verb movement in Hausa is not predicted by the RAH. Specifically, Hausa rich agreement morphemes do not attach to verbs, but to adjacent elements that are standardly assumed to be base-generated *v*P-externally. Consequently, given the absence of any phonological dependency between the verb and the agreement morpheme, as Hausa is a type B language as elaborated on in (§4.1.4), the RAH does not predict verb raising. Let's see if we can establish the position of the verb.

Word order

Hausa has a strict SVO word order (Jaggar 2001:415):

(42) *Hausa* (Jaggar 2001)

                         V   O
a.   nā   cì gōr̃ò
     1.SG.PF eat kolanut
     'I ate/have eaten kolanut.' (p. 156)

           S   V   O
b.   sōjōjī   sun   ƙuntàtā musù
     soldiers 3.PL.PF persecute 3.PL
     'The soldiers persecuted them.' (p. 418)

The objects *gōr̃ò* 'kolanut' and *musù* 'them' are immediately to the right of the verb, suggesting that there are no reasons to think that the surface VO order in Hausa is derived.

For the most part, optional elements in Hausa, such as adverbs, surface after the verb and its object (43a-e) or in front of the subject (43f):

(43) *Hausa*

a.   yā   *rasà* ùbā **nandànan**
     3.SG.M.PF lost father quickly
     'He lost his father quickly.'   (Abdoulaye 1992:195)

b.   inà̀   *sôntà* **ainùn**
     1.SG.IMP love
     'I love her very much.'   (Newman 2000:34, adapted)

    c.   sun   *ɗaurḕ* shi **tam**
          3.SG.PF tie   it   tightly
          'They tied it up tightly.'   (Newman 2000:39, adapted)

    d.   yā   *iyà*   Hausa **kwaṝai**
          3.SG.M know Hausa really.well
          'He knows Hausa really well!'   (Jaggar 2001:661, adapted)

    e.   nakàn   *zō*   ōfis **gālìbī/yawancī/gālibàn** dà karfè taṝà
          3.SG.HAB come office usually   at nine o'clock
          'I come to the office usually at nine o'clock.'

    f.   **gālìbī/yawancī/gālibàn** nakàn   *zō*   ōfis dà karfè taṝà
          usually   3.SG.HAB come office at nine o'clock
          'Usually, I come to the office at nine o'clock.' (Jaggar 2001:662, adapted)

These adverbs belong to the largest group of optional elements (henceforth AdvP$_1$) that surfaces clause-finally or clause-initially, but not between the verb and its object or between the verb and its subject. As such, AdvP$_1$ are not a reliable diagnostic for verb movement.

    However, there are other elements that surface at these positions. According to Newman (2000:721), Hausa has verbal modifiers that precede the verb, as shown in the following examples:

(44)   *Hausa*

    a.   bā sà̀   **kō** *sôn* buṝōdì dà ruwā
          NEG 3.PL.IMP even want bread and water
          'They do not even want bread and water.'

    b.   Kànde tā   **ɗan** *tàimàkē* nì
          Kande 3.SG.F.PF a.little help   me
          'Kande helped me a little.'   (Newman 2000:721, adapted)

    c.   bài   **taɓà** *zuwà̀* makaṝanta ba
          3.SG.M:NEG.PF ever go   school   NEG
          'He has never been to school.'   (Green 2007:11)

The elements *kō* 'even', *ɗan* 'a little' and *taɓa* 'ever' (henceforth AdvP$_2$) occur preverbally. In addition, Newman (2000) reports that the preverbal element *yawàn* 'a.lot' also occurs in a post-VP position as a prepositional phrase:

(45)   *Hausa* (Newman 2000:721, adapted)

    a.   yanà̀   **yawàn** *mārìntà*
          3.SG.M.IMP a.lot   slap.her
          'He is slapping her a lot.'

    b.   yanà̀   *mārìntà* **dà yawà̀**
          3.SG.M.IMP slap.her a.lot
          'He is slapping her a lot.'
          (with the normal prepositional phrase in post-VP position)

Crucially, neither *yawàn* or *dà yawà̰* occur between verbs and objects.

The only optional elements that have been reported to exhibit more freedom (than what has been hitherto described), as they can surface between the verb and its object, are the so-called modal particles (MP). In total, there are six phonologically small words that constitute the class of MPs: *fa*, *dai*, *kúwa*, *kuma*, *mā*, and *kàm*. Most of these are monosyllabic and contain the vowel /a/ as a part of their nucleus (Jaggar 2001:680).

Concerning the semantics of MPs, Newman (2000:326) reports that they are "often essentially untranslatable" and their contribution in English "is typically expressed by stress, intonation or non-verbal gestures." They have a pragmatic or discourse function expressing personal attitude, state of mind, emphasis, contrast etc. Presumably due to their "pragmatic significance in sprucing up a sentence", Hausa people have a specific term for these words: *gishirin Hausa* meaning "salt (i.e. seasoning) of the language". "Except in cases where they function as conjuncts, the MPs appear after the word, phrase, or clause to which they apply." (Newman 2000:326)

Turning our attention to the position of MPs in the sentences, Newman (2000:326) and Jaggar (2001:680) report that MPs can precede or follow VPs, but can also occur between verbs and objects, as illustrated here:

(46)   *Hausa*

    a.   nī **kàm**, bàn   *san* shì   ba
          1.SG PART 1.SG.NEG.PF know 3.SG.M NEG
          'As for me, I don't know him.'

    b.   wasu **kuma** sunà̰   *ganin*   shī   tsōhon ministà̰. . .
          SID.PL PART 3.PL.IMP feel.VN.of 3.SG.M old.of minister
          'and some feel that the former minister. . . '

    c.   bài   **dai** *sanḭ̀* ba
          3.SG.M.NEG.PF PART know NEG
          'He just didn't know.'

    d.   nā   *sàyi* **mā** r̀gā
          1.SG.PF buy PART gown
          'I also bought a gown.'   (Green 2007:20)

    e.   màkānikḛ̀ yā   **fa**   gy*a*rà mōtàr̃
          mechanic 3.SG.M.PF indeed repair the.car
          'The mechanic indeed repaired the car.'

    f.   màkānikḛ̀ yā   *gyārà* mōtàr̃ **fa**
          mechanic 3.SG.M.PF repair the.car indeed
          'The mechanic repaired the car indeed.'   (Newman 2000:721,
          adapted)

For our purposes the relevant example is in (46d), where the particle *mā* occurs between the verb and its object.

In contrast, MPs cannot intervene between verbs and pronominal clitic objects, as demonstrated in the examples (47c-d):

(47)   *Hausa* (Newman 2000:331)

    a.   tā   *tàmbàyi* **kùwa** màtâr̃
         3.SG.F.PF ask   PART woman
         'She moreover asked the woman.'

    b.   mun   *kāwō* **fa**   màkằmai
         1.PL.PF bring PART weapons
         'We indeed brought weapons.'

    c.   ya   *tàmbàyē* (***kùwa**) tà
         3.SG.M.PF ask   PART   her
         'He asked her.'

    d.   mun   *kāwō* (***fa**) sù
         1.PL.PF bring   PART them
   'We brought them.'

In sum, the majority of optional sentential elements in Hausa are adverbial in nature and mostly occur sentence-finally, with the option of occurring sentence-initially (43). Furthermore, a small group of adverbial modifiers immediately precede the finite verb (44-45), while the Hausa MPs (46) can also intervene between verbs and nominal objects, but cannot intervene between verbs and pronominal clitic objects.

Analysis

The syntactic position of the verb cannot be determined based on the position of the class $AdvP_1$, which can appear only after both the verb and its object. There appears to be a constraint on $AdvP_1$, as it must either be clause-final or appear in the sentence-initial position. Whether right-adjoined to the vP-projection or perhaps some higher projection does not tell us if verb raising takes place. Consequently, these adverbs cannot be used as diagnostics for verb movement.[6]

    This leaves us with the smaller group of adverbs that precede the verb ($AdvP_2$), and MPs, which can both precede the verb and intervene between the verb and its object. Regarding $AdvP_2$, there are two options for analyzing them under the standard assumptions: i) $AdvP_2$ are left-adjoined vP-adjuncts, and ii) $AdvP_2$ are left-adjoined to a (higher) projection dominating vP. If i) is correct then it shows that the verb remains vP-internal, whereas if ii) is correct, the verb may have undergone a vacuous movement to a vP-external position. Since i) requires fewer stipulations, the most parsimonious analysis of $AdvP_1$ and $AdvP_2$ is that they are both adjuncts of vP with the $AdvP_1$ obligatorily surfacing clause-finally, with $AdvP_2$ occurring both clause-finally and preverbally. This yields the following analysis:

---

6. These adverbs are comparable to the right-adjoined adverbs that we encountered in Thai, Pwo Karen and Hmong Njua in which they could also not be used as diagnostics for verb movement (cf. §6.2.8).

(48)
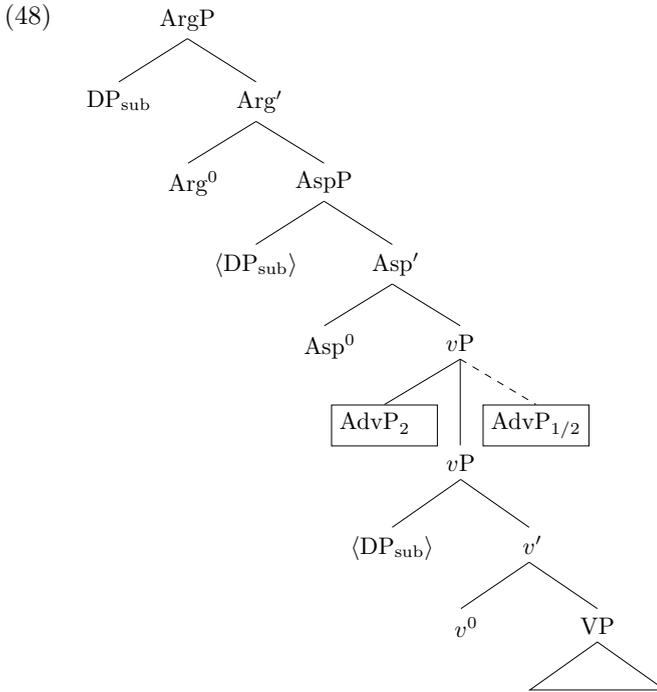
Regarding MPs, the question arises as to their syntactic position and whether this can reveal further insights as to the exact position of the verb. A crucial fact given in the previous section is that these particles are extremely flexible, as they can occur at almost any position in the clause. Consider the following data set in which the MP *mā* can intervene between nearly all other elements of the clause:

(49)   *Hausa* (Newman 2000:330)

   a.   Sulè **mā**   bài   *fad̃ã* wà m̀atãrsà ba
        Sulè PART NEG.3.SG.M tell his wife   NEG
        'Sulè too didn't tell his wife.'

   b.   Sulè bài   **mā** *fad̃ã* wà m̀atãrsà ba
        Sulè NEG.3.SG.M PART tell his wife   NEG
        'Sulè didn't even tell his wife.'

   c.   Sulè bài   *fad̃ã* wà **mā**   m̀atãrsà ba
        Sulè NEG.3.SG.M tell his PART wife   NEG
        'Sulè didn't even tell his wife.'

   d.   Sulè bài   *fad̃ã* wà m̀atãrsà' **mā** ba
        Sulè NEG.3.SG.M tell his wife   PART NEG
        'Sulè didn't tell even his wife.'

   e.   Sulè bài   *fad̃ã* wà m̀atãrsà ba   **mā**
        Sulè NEG.3.SG.M tell his wife   NEG PART

'Sulè didn't tell his wife even.'

As mentioned above, MPs apply to whatever word, phrase, or clause they follow. They can also split up a nominal phrase, as exemplified in (49c), making them a different category from adverbs. If it is uniform that MPs apply only to the element that they directly follow, as Newman (2000:326) claims (and if 'apply' here entails 'scope'), then these particles in post-verbal positions must be somehow modifying verb heads.

However, we can interpret the particle *mā* in (50) in three different ways. i) If it applies to the verb, as Newman (2000) claims, then this implies that the subject has also done something else with a gown (e.g. sold it, stolen it, or else). ii) *mā* is a part of the direct object in which case the subject bought several items, one of which is 'a gown'. iii) the subject has made several different achievements, and 'buying a gown' is one of them.

(50) *Hausa* (Green 2007:20)
      nā   sàyi **mā** rìgā
      1.SG.PF buy PART gown
      'I also bought a gown.'

Only in iii) can *mā* be considered an adjunct to the clausal spine, making it a diagnostic for verb movement. If i) and/or ii) is true, then *mā* cannot be used to detect verb movement, since in these cases *mā* would have to be a constituent modifier and not a *v*P-adjunct. I assumed that option i) applies to (50), as Newman (2000) points out, though this interpretation is somewhat unusual. As such, MPs cannot be used as diagnostics for verb movement.

Consequences for the RAH

Based on the analysis above, only AdvP$_2$ is a usable diagnostic for verb movement, as they can appear in preverbal position, where, under the assumption that they are *v*P-adjuncts, they show that Hausa finite verbs must surface inside the *v*P. This outcome is correctly predicted by the RAH, since Hausa agreement morphemes and aspectual morphemes, each heading their own *v*P-external projections, ArgP and AspP, form a cluster that is phonologically independent of the verb. In contrast to AdvP$_2$, MPs do not adjoin to the clausal spine, and are therefore of no use as verb movement diagnostics.

7.2.5 Tiwi

The discussion below shows that (comparable to Hausa) Tiwi lacks verb raising despite its rich agreement morphology. This is due to the fact that Tiwi agreement morphemes are flexible, since they attach to any category that they immediately precede. This follows from the fact that agreement morphemes are directly prefixed on the verb stem iff there are no intervening morphemes (e.g. mood, aspect). However, if there *are* intervening morphemes, then agreement

prefixes attach to those morphemes. Consequently, I argue that this directly follows from syntactic adjacency, arising from the order in which phrases are projected. The *v*P-internal position of the verb is independently confirmed by the fact that optional *v*P-adjuncts cannot intervene between verbs and objects.

Agreement Morphology

Tiwi has rich verbal morphology reflecting the φ-features of the subject, indicated with prefixes ŋə- and ṯ- in (51):

(51)   *Tiwi* (Osborne 1974)

     a.   ŋia **ŋə-** məṉ-ṯitəmaɹnti ŋiṉṯa
             I   1.SG- 2.SG-want   you
             'I want you.' (p. 60)

     b.   ṯapara **ṯ-**   uuṉai waijai
             Ṯapara 3.SG.PT- find   Waijai
             'Ṯapara found Waijai.' (p. 62)

The subject can be left out, as the following set of data indicates:

(52)   *Tiwi* (Osborne 1974:41)

     a.   **ŋə-** ru- apa
             1.SG PT eat
             'I ate.'

     b.   **ṯu-** apa
             2.SG eat
             'You ate.'

     c.   **ju-** apa
             3.SG eat
             'He ate.'

     d.   **ŋa-** ru- apa
             1.PL PT eat
             'We (inclusive) ate.'

In most cases these subject features form a single morphological unit, together with the tense features (Osborne 1974:38). In other cases, the two sets of features can be separated into individual morphemes that systematically surface adjacent to one another, the subject morpheme preceding the tense morpheme. The paradigms in past and non-past tenses are given in (53).

(53) Tiwi subject-verb agreement morphology
      (Osborne 1974:38, adapted)

	Non-past		Past	
	Singular	Plural	Singular	Plural
1ᴵᴺ	mu-	ŋa-	mu-	ŋa-
1ᴱˣ	ŋə-	nə-pə-	ŋə-	ŋə-tə-
2	n̪ə-pə-	nə-pə-	t̪i-	ŋə-tə-
3	a-/a-pə-	wu-	ji- / t̪i-	pu-

In addition to agreement and tense, Tiwi exhibits a range of other types of morphemes that intervene between the subject morphology in (53) and the verb stem. This is illustrated in (54), where adverbial-like prefixes *atə-* 'morning' and *əmənaɲi-* 'before-getting-up' as well as aspectual (durative) prefix *ut̪iŋə-*, occur between the subject morphology and the verbal stem:

(54) *Tiwi* (Osborne 1974)

    a.   ŋə-ra-tu-apa
        ŋə- rə- <u>atə-</u>   apa
        1.SG- PT- morning- eat
        'I ate in the morning.' (p. 26)

    b.   ŋə-rə-pumənaŋ-apa
        ŋə- rə- əmənaɲi- apa
        1.SG- PT- get up   eat
        'I ate before getting up.' (p. 32)

    c.   ŋu-ut̪iŋ-apa
        ŋə- ut̪iŋə- apa
        1.SG- DUR- eat
        'I'm eating.' (p. 28)

These facts indicate that Tiwi agreement morphemes do not directly attach to the verbal stem per se. Instead, they can be prefixed on the already prefixed verb by other types of morphemes. Osborne (1974) provides the full set of these prefixes. When present on the verb, they appear in the order in which they are listed in Table 7.3:

Order	Type	Form
1	subject agreement	*var.*
2	tense	*var.*
3	locative	*nə-*
4	subjunctive	*ma-*
	incompletive	*a-*
5	'morning'	*atə-*
6	object agreement	*var.*
7	durative	*uṯiŋə-*
	'beginning'	*wi-*
	'inceptive'	*i-*
8	connective-emphatic	*cə-*
9	future-imperative	*ca-*
10	'evening'	*kə-*
11	'half way'	*ŋə-*
	'walking'	*raja-*

Table 7.3 Tiwi prefix orderings (Osborne 1974:37, adapted)

Thus, there are ten different types of prefixes that intervene between the subject agreement prefix and the verb. Since the subject agreement prefix attaches to a variety of other prefixes, we can conclude that it is not phonologically dependent on the verb stem, but rather on whatever morpheme surfaces to the right of it. Consequently, the RAH does not predict verb raising out of *v*P for reasons of agreement morphology, since Tiwi, like Hausa, is a type B language in which agreement can be dependent on other morphological elements (cf. §4.1.4). Let's see if this prediction follows from the word order facts.

Word Order

In general, Tiwi is a free order language. However, it exhibits two discourse neutral word orders. In one type there is a heavy use of incorporation of the object noun that incorporates into the verb, essentially yielding an SOV word order:

(55)   *Tiwi* (Osborne 1974:47)

    a.   jimənikəmarikuaŋəpəkəɹiŋa
         ji-   məni- kəmarikuaŋəpə- kəɹi- ŋa
         3.SG.M 2.SG   dancing   hand grab
         'He grabbed me by the hand while I was dancing.'

    b.   jiməniŋilimpaŋalipiaŋkina
         ji-   məni- ŋilimpaŋ- alipi- aŋkina
         3.SG.M 2.SG   sleeping meat steal
         'He stole my meat while I was asleep.'

Since the verb and its object are phonologically integrated, there is no way to detect whether verb movement took place on the basis of the position of optional *v*P-adjuncts. Therefore, I leave aside the SOV constructions in (55), as there are is no way to detect *v*-to-Arg movement in OV orders (cf. §4.2.2).

In the other discourse neutral word order there is no incorporation of the object into the verb. It is invariably SVO, as the following data set shows:

(56) *Tiwi* (Osborne 1974:60, 62)

  a. $\overbrace{\text{jərəkati}}^{\text{S}}$ $\overbrace{\text{ji-ikəɹimi}}^{\text{V}}$ $\overbrace{\text{mampuŋa}}^{\text{O}}$
      Jərəkati 3.SG.PT-make canoes
      'Jərəkati made canoes.'

  b. $\overbrace{\text{ţapara}}^{\text{S}}$ $\overbrace{\text{ţ-uuņai}}^{\text{V}}$ $\overbrace{\text{waijai}}^{\text{O}}$
      Ţapara 3.SG.PT-find Waijai
      'Ţapara found Waijai.'

  c. $\overbrace{\text{ŋia}}^{\text{S}}$ $\overbrace{\text{ŋə-mən-ţitəmaɹnti}}^{\text{V}}$ $\overbrace{\text{ŋinţa}}^{\text{O}}$
      I   1.SG-2.SG-want   you
      'I want you.'

In discourse neutral word orders, Temporal, Locative, and Manner optional elements in (57a), (57b), and (57c) respectively tend to occur clause-finally:

(57) *Tiwi* (Osborne 1974:65)

  a. juatəɹiani   **ţapinuaɹi**
      3.SG.M-go-REP morning
      'He used to go out in the morning.'

  b. ţiimaruˈɹi   ŋampi **kukuni**
      3.SG.F-took to   water
      'She took it to the water.'

  c. ŋara jiikəɹimi   mampuŋa **ţiiŋa**
      he   3.SG.M-made   canoe   bad
      'He made the canoe badly.'

However, these optional elements can occur in other positions as well. Osborne (1974) lists the following data illustrating the positions in which optional elements such as adverbs can occur:

(58) Tiwi word orders (Osborne 1974:65-66, adapted)

  a. <S, V, O, Adv>
  b. <V, O, Adv, S>
  c. <Adv, V, O, S>

Although no particular word order is completely excluded, Osborne explicitly notes that optional elements do not intervene between verbs and objects. Such

orders are "undesirable and generally avoided" (1974:66). Thus, there appears to be a relatively rigid (left to right) verb-object adjacency, despite the overall word order flexibility that Tiwi exhibits.

Analysis

The description of basic facts from Tiwi has thus far shown that there are no reasons to think that Tiwi verbs raise out of vP in controlled conditions. This follows from the fact that the verb stem is invariably left-adjacent to the object. As to the questions where these prefixed morphemes are base-generated and how they attach to the verb, the simplest and most straightforward account is to treat them as heads of functional projections, generated in a hierarchical order that matches the left-to-right orders in which they appear on the verb (à la Baker 1985). This yields the following structure:

(59)
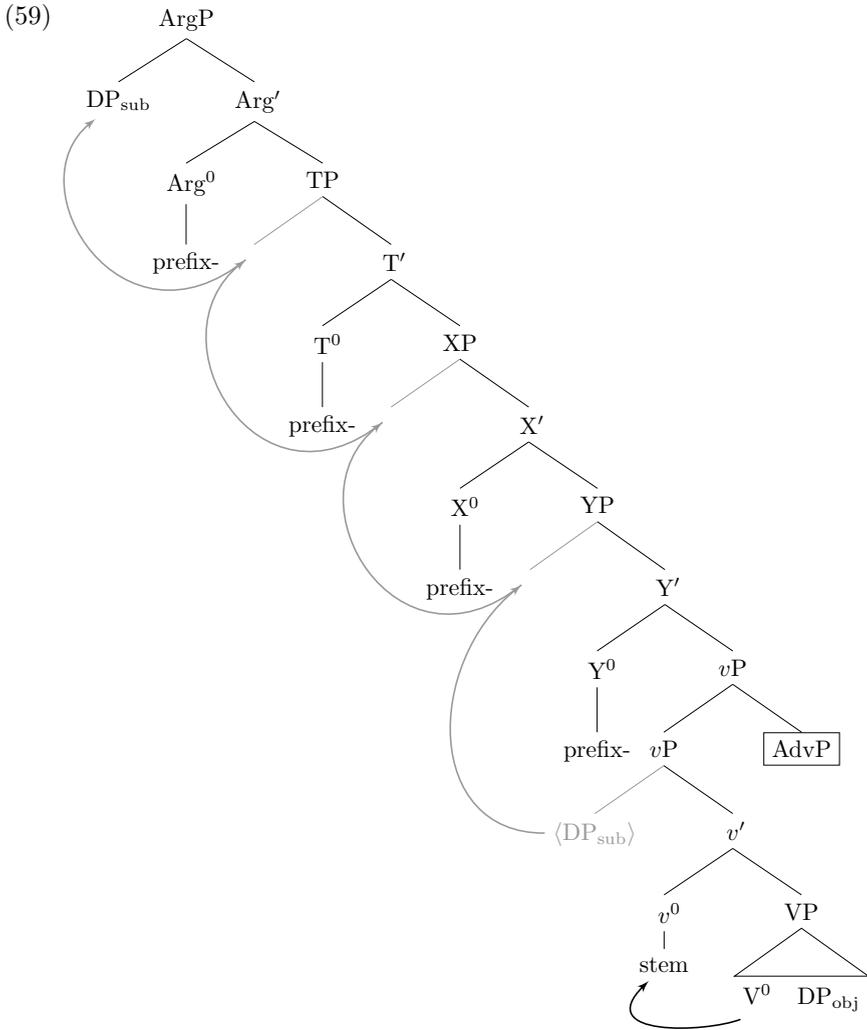
The XP and YP projections in (59) stand for any given functional projection, each headed by a prefix that intervenes between Arg^0 and T^0 on the one hand, and verb on the other. Furthermore, the structure can be expanded to include additional (intervening) projections, as listed in Table 7.3.

Crucially, in (59) the verb does not raise out of vP. Instead, the heads are in immediate adjacency, which underlies the phonological dependency. The evidence that there is no verb movement comes from the fact that these prefixes are flexible, in the sense that they can be adjoined to either different prefixes or to verb stems. For example, the Arg^0 and T^0 heads, which are always adjacent, can be prefixed on the verb stem if no intervening functional heads are generated. However, if there are intervening heads, then Arg^0 and T^0 adjoin to these heads, but crucially not to verbal stems. This straightforwardly shows

that Arg^0 and T^0 do not systematically adjoin to a specific category. Instead, they adjoin to the heads of any phrase that TP immediately dominates. It follows then that the phonological effects between the functional heads take place irrespective of their categories. The observed constraint on the ordering of prefixes follows from the specific hierarchy of projections in syntax. In essence, the realizations of these functional heads, which Osborne (1974) refers to as prefixes, in fact show the properties of clitics, since they can attach to a variety of hosts with different categorial statuses (cf. §4.1.3).

Consequences for the RAH

Although rich, Tiwi agreement morphology exhibits phonological dependency on a variety of hosts and not on verbs per se. As such, it does not trigger verb movement, but attaches to any functional morpheme that is generated to the right of it. These facts suggest that despite its rich agreement morphology, Tiwi verbs remain vP-internal, just as the RAH predicts to be the case in poor agreement languages. This is precisely in line with the attested word order facts of the Tiwi clause, in which optional elements cannot intervene between verbs and objects. In essence, the RAH is confirmed in Tiwi, since the absence of the uniform phonological dependency between agreement morphology and verbs is correlated with the absence of verb movement. Interestingly, all prefixes in Table 7.3 phonologically depend on each other and ultimately on the verb. Arguably, agreement prefixes always depend on the verb and this can be achieved via concatenation with the intervening prefixes. This makes Tiwi unique in the sense that this is the only case that agreement-verb dependency can be achieved in this way, without triggering displacement of the verb.

7.2.6   Egyptian Arabic

Thus far I have discussed rich agreement languages in which adverbs used to diagnose verb movement are relatively rigid, appearing only between the verbs and direct objects in languages in which there is a phonological dependency between the agreement morphology and the verb. In this section I discuss Egyptian Arabic , in which particular adverbs exhibit more flexibility, as they can appear both between finite verbs and direct objects, but also in front of finite verbs. The analyses below show that <AdvP,V> and <V,AdvP> order optionality arises due to AdvP adjoining to either a vP projection or a higher projection. This allows both orders and crucially requires verb movement to the head that intervenes between the two adjunction positions. Consequently, while such AdvPs in <AdvP,V> orders *prima facie* falsify the RAH, they are in fact unreliable as a diagnostic for verb movement, as discussed in (§4.2.4). However, Egyptian Arabic in fact has syntactically rigid AdvPs that allow us to ascertain the position of the verb more accurately.

Agreement Morphology

Egyptian Arabic (EA) exhibits morphological markers on the verb that match the φ-features of the referential DPs:

(60) *Egyptian Arabic*

    a.   ana ṛufi-<u>t</u>
               I   go-1.SG
               'I went.'

    b.   inta / inti ṛufi-<u>t</u>   /-<u>ti</u>
               you.M / you.F went-2.SG.M /F
               'You went.'

    c.   huwwa / hiyya ṛaafi-<u>ø</u>   /-<u>it</u>
               he   / she   went-3.SG.M /F
               'He/she went.'

    d.   ifina ṛufi-<u>na</u>
               we   went-1.PL
               'We went.'

The underlined φ-markers in (60) are morphologically unique and semantically distinct from one another, reflecting φ-features of the nominal subject DPs. The subject DP can be left out without any consequences for the morphological form of the verb, as shown in (61). This raises the question whether or not the subject DPs are arguments.

(61) *Egyptian Arabic*

    a.   Layla kānit   katab-it   gawāb.
               Layla was.3.SG.F wrote-3.SG.F letter
               'Layla had written a letter.'

    b.   *pro* kānit   katab-it   gawāb.
                     was.3.SG.F wrote-3.SG.F letter
               'She had written a letter.'

However, similar to what we have seen in Finnish (cf. §7.2.3), the nominal DPs *al-bint-u* 'the girl' and *xitaab-an* 'a letter' referring to the subject and object bear nominative and accusative case morphology, respectively:

(62) *Egyptian Arabic*
       al-bint-u   katabat   xiṭāb-an
       DEF-girl-NOM wrote.3.SG.F letter-ACC
       'The girl wrote a letter.'

Consequently, these DPs must be arguments (cf. Figure 4.1). It then follows that the φ-marked affixes cannot be arguments themselves, but rather agreement morphology. The table in (63) shows the paradigm of subject verb agreement marking in EA:

(63)   Egyptian Arabic verb 'to write' in perfective and imperfective forms
       katab and *yiktib* (Abdel-Massih, Abdel-Malek, and Badawi 1981:262)

	Perfective		Imperfective	
	Singular	Plural	Singular	Plural
1	katab **-t**	katab **-na**	**a-** ktib **-ø**	**ni-** ktib **-ø**
2	katab **-t**^M/**-ti**^F	katab **-tu**	**ti-** ktib **-ø**^M/**-i**^F	**ti-** ktib **-u**
3	katab **-ø**^M/**-it**^F	katab **-u**	**yi-** ktib **-ø**	**yi-** ktib **-u**

Given that the paradigmatic distinctions in (63) reflect the PNU (cf. Chapter 3), I conclude that EA is a rich agreement language, and given that the agreement morphology is phonologically dependent on the verb, the RAH predicts that the verb moves out of *v*P.

Word order

Although EA clauses can exhibit different word orders to a certain extent, the default (i.e. canonical) word order is SVO, as shown in (64a):

(64)   *Egyptian Arabic* (Buell 2009)

a.   Layla kānit katab-it   gawāb.
      Layla was.3.SG.F wrote-3.SG.F letter
      'Layla had written a letter.'

b.   kānit   Layla katab-it   gawāb.
      was.3.SG.F Layla wrote-3.SG.F letter
      'Layla had written a letter.'

Adverbs

As regards the properties of adverbs, different types in EA exhibit distinct distributions in the clause. For example, time adverbs like *sa'-āt* 'sometimes' in (65) and *dayman* 'always' in (66) show a great deal of flexibility, in the sense that they can appear anywhere in the clause:

(65)   *Egyptian Arabic* (Liesbeth Zack, p.c.)

a.   Layla **sa'-āt**   *bi-ti-ktib*   gawab-āt
      Layla sometimes PRES-IMP.3.SG.F-write letters
      'Layla sometimes writes letters.'

b.   **sa'-āt**   Layla *bi-ti-ktib*   gawab-āt
      sometimes Layla PRES-IMP.3.SG.F-write letters

c.   Layla *bi-ti-ktib*   **sa'-āt**   gawab-āt
      Layla PRES-IMP.3.SG.F-write sometimes letters

d.   Layla *bi-ti-ktib*   gawab-āt **sa'-āt**
      Layla PRES-IMP.3.SG.F-write letters   sometimes

(66) *Egyptian Arabic* (Liesbeth Zack, p.c.)

    a.   Layla **dayman** *bi-ti-ktib*   gawab-āt
           Layla always   PRES-IMP.3.SG.F-write letters
           'Layla always writes letters.'

    b.   Layla *bi-ti-ktib*   **dayman** gawab-āt
           Layla PRES-IMP.3.SG.F-write always   letters

    c.   Layla *bi-ti-ktib*   gawab-āt **dayman**
           Layla PRES-IMP.3.SG.F-write letters   always

The unmarked position in which *sa'-āt* and *dayman* occur is in front of the verb in (65a) and (66a) (Liesbeth Zack and Mona Hegazy, p.c.).

However, other types of adverbs, such as frequency and manner adverbs, are much more rigid as regards their positions in the clause. For instance, the adverbs *'ulayyel* 'rarely' and *bi-sur'a* 'with speed' have fixed positions in the clause, always following the verb or occurring at the end of the clause:

(67) *Egyptian Arabic* (Mona Hegazy, p.c.)

    a.   Layla *katab-it*   gawabāt **'ulayyel**
           Layla wrote-3.SG.F letters   rarely
           'Layla rarely wrote letters.'

    b.   Layla *katab-it*   **'ulayyel** gawabāt
           Layla wrote-3.SG.F rarely   letters

    c. * Layla **'ulayyel** *katab-it*   gawabāt
           Layla rarely   wrote-3.SG.F letters

(68) *Egyptian Arabic* (Mona Hegazy, p.c.)

    a.   Layla *katab-it*   gawāb **bi-sur'a**
           Layla wrote-3.SG.F letter   with.speed
           'Layla quickly wrote a letter.'

    b.   Layla *katab-it*   **bi-sur'a**   gawāb
           Layla wrote-3.SG.F with.speed letter

    c. * Layla **bi-sur'a**   *katab-it*   gawāb
           Layla with.speed wrote-3.SG.F letter

As the examples in (67c) and (68c) show, *'ulayyel* and *bi-sur'a* are ungrammatical in front of the finite verb.

Following the standard claim that such adverbs are vP-adjuncts, it follows that EA verbs must move out of vP, yielding the correct word orders in (67a-b) and (68a-b). In contrast, with other adverbs, as illustrated in (65) and (66), it cannot be established that the verb has moved. Assuming that verb movement is systematic in the basic clause structure of EA, it follows that the verb must have moved out of vP in all four examples. This means that there is a relevant syntactic difference between the 'flexible' adverbs in (65) and (66) and 'rigid' adverbs in (67) and (68).

Consequently, an adequate analysis of the clause structure in EA, while having a uniform verb movement out of vP, would have to be based on a theory according to which flexible adverbs can either i) move from the position where they are base-generated to different positions in the clause, or, alternatively, ii) they can be base generated at different locations in the clause as proposed in Cinque (2004).

Option i) can be rejected for two reasons. First, the unmarked (i.e. discourse neutral) position of flexible adverbs is pre-verbal, while the default position of rigid adverbs is post-verbal. Based on my claim that the verb has moved on the basis of the position of rigid adverbs, the null hypothesis for discourse neutral orders is that two types of adverbs are base-generated at the location where they sandwich the surface position of the verb, as illustrated here:

(69) $\text{Adv}_{\text{TEMP.}} > \text{V}_{\text{FINITE}} > \text{Adv}_{\text{TEMP./MANNER}} > t_v$

Second, in negated clauses the different positions of the flexible EA adverb *dayman* 'always' yields different interpretations:

(70)   *Egyptian Arabic*

    a.   Layla <u>ma</u>-*bi-ti-ktib*-<u>š</u>-ə   **dayman** gawab-āt
        Layla NEG-PRES-IMP.3.SG.F-write-NEG always   letters
        'Layla does not always write letters.'

    b.   Layla **dayman** <u>ma</u>-*bi-ti-ktib*-<u>š</u>-ə   gawab-āt
        Layla always   NEG-PRES-IMP.3.SG.F-write-NEG letters
        *'Layla does not always write letters.'
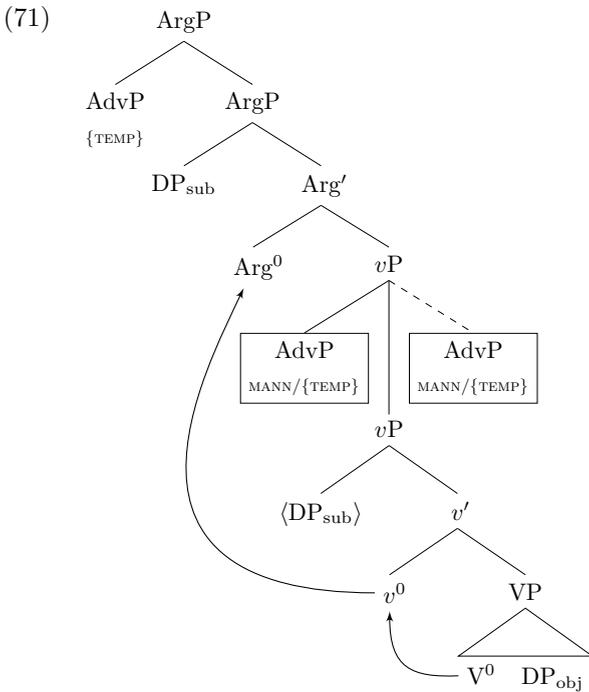   √'Layla never writes letters.'

In (70a) *dayman* follows the verb and negation, the latter attaching to the verb as a circumfix, whereas in (70b) *dayman* precedes the negation and the verb.[7] Crucially, the reading *Layla does not always write letters* is not available in the (70b) example, nor is the reading expressed in (70b), *Layla never writes letters*, available in (70a). Consequently, if the flexible adverb *dayman* is always base-generated vP internally with the possibility of moving higher up, one would expect the negation to scope over its trace/copy, allowing for the interpretation in (70a) for example (70b).

This leaves us with option ii), which allows different base-generation sites for flexible adverbs, essentially showing that the flexible adverbs in (65) and (66) can be adjoined to vP, but also to a projection above vP in non-discourse neutral settings. Given their varying base-generation, these flexible adverbs are not a proper diagnostic for verb movement. In contrast, rigid adverbs cannot

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7. EA negation patterns with French negation, which is standardly analyzed as a projection above vP and not a vP-adjunct. As such, EA negation cannot be considered to be a diagnostic for verb movement, since it is not a vP-adjunct (cf. §4.2.4 for a discussion on this; cf. Shlonsky 1997 for an analysis of Palestinian Arabic, which has the same type of negation as EA).

be independently shown to be vP-external. As such, they are a proper diagnostic for verb movement, which indeed *does* take place in the EA basic clause structure.

Given the argumentation presented here, I propose the following analysis of the clause structure of EA:

(71)

```
                        ArgP
                       /    \
                   AdvP      ArgP
                  {TEMP}    /     \
                      DP_sub      Arg'
                              /        \
                          Arg^0         vP
                                      /    \  ⸱
                                  AdvP      AdvP
                             MANN/{TEMP}  MANN/{TEMP}
                                      |
                                     vP
                                   /    \
                            ⟨DP_sub⟩     v'
                                       /    \
                                     v^0     VP
                                           /    \
                                         V^0    DP_obj
```

In this analysis the verb obligatorily moves to Arg^0 in order to satisfy the phonological needs of the rich inflectional morphology. This structure accounts for the positions of flexible and rigid adverbs with respect to the position of the verb. In contrast, an analysis in which the verb remains vP-internal cannot be sustained, given the syntax of 'rigid' adverbs such as *'ulayyel* 'rarely'and *bi-sur'a* 'quickly', which must intervene between verbs and direct objects.

Recall from §4.2.4 that a particular type of adverbs cannot adjoin to a projection that is semantically sensitive to different types of adverbs. This is precisely how we can account for the distribution of manner and temporal adverbs in EA, as manner adverbs can only be adjoined to vP but not higher up, since they would be c-commanding TP, which is only sensitive to temporal adverbs. It means that the hierarchy of projections in EA then is ArgP > TP > vP, where TP is a boundary allowing only the adjunction of temporal adverbs, but bars the adjunction of manner adverbs. In contrast, temporal adverbs *can* adjoin to vP in the narrow syntax, since they get rescued later on in the derivation, specifically at LF, as they move to the adjunct position of TP.

Consequences for the RAH

The analysis of EA shows that given the attested word order facts, verb must move to a *v*P-external position, crossing the rigid (i.e. manner and frequency) *v*P-adjuncts. Alternative analyses of EA in which verb movement is absent would predict <Adv, V, O> orders, which are impossible with the rigid adverbs. The most parsimonious analysis that accounts for the data must involve *v*-to-Arg movement. This is correctly predicted by the RAH, since the agreement morphology in the language is rich.

7.2.7   Wariʼ

In this section I discuss Wariʼ clause structure. The analysis below shows that, while there are no standard *v*P-adjuncts in Wariʼ that allow us to assess whether or not the verb raises out of *v*P, the basic word order must be the result of a predicate displacement, which perfectly correlates with the presence of rich agreement morphology. I begin by describing the Wariʼ subject and object clitics, showing that they are agreement morphology and that they are phonologically dependent on the verb. Subsequently, I argue that these clitics, which under the standard assumptions must be generated *v*P-externally, serve as adequate diagnostics for verb movement.

Agreement Morphology

All referential (argument) DPs of the verb in Wariʼ clauses can be omitted, as illustrated in the following examples:

(72)   *Wariʼ* (adapted from Everett and Kern 1997:307)

    a.   jami   na-on   pijeʼ narimaʼ.
          turn:over 3.SG:RP/P-3.SG.M child woman
          'The woman turned the child over.'

    b.   jami   na-on   narimaʼ.
          turn:over 3.SG:RP/P-3.SG.M woman
          'The woman turned it over.'

    c.   jami   na-on   pijeʼ.
          turn:over 3.SG:RP/P-3.SG.M child
          'She turned the child over.'

    d.   jami   na-on.
          turn:over 3.SG:RP/P-3.SG.M
          'She turned it over.'

Note that both DPs, *pijeʼ* 'child' or *narimaʼ* 'woman' in (72), can be left out. In contrast, the clitic group reflecting φ-features of the arguments of the verb cannot.

(73) *Wari'*

   a.   jami   na-on   pije' narima'.
        turn:over 3.SG:RP/P-3.SG.M child woman
        'The woman turned the child over.'

   b. * jami   na-   pije' narima'.
        turn:over 3.SG:RP/P- child woman

   c. * jami   -on   pije' narima'.
        turn:over 3.SG.M child woman

   d. * jami   pije' narima'.
        turn:over child woman

Importantly, these subject and object clitics are in fixed positions, as there is no evidence that either of the two can move. This suggests that they are agreement morphology.

    With respect to their phonological dependencies, Wari' agreement clitics form a prosodic 'clitic group' together with the finite verb, which in declarative clauses always appears sentence-initially. In the following examples the subject marking clitics *'ina*, *nana*, and *na*, and the object marking clitic *in*, respectively, form a 'breath-group' together with the verb *'cao* 'eat', as indicated with an overbrace (Everett and Kern 1997:5–6).

(74) *Wari'* (Everett and Kern 1997)

           clitic group
           ⏞
   a.   noc 'ina-in   maja-in memem
        dislike 1.SG.RP/P-3.N worm-3.N fruit.
        'I don't like wormy fruit (or fruit's worms).' (p. 334)

           clitic group
           ⏞
   b.   cao' nana-in   cwere-in mijac
        eat 3.PL.RP/P-3.N body-3.N pig
        'They ate pig's meat.' (p. 224)

          clitic group
          ⏞
   c.   cao' na-in   carawa
        eat 3.SG:RP/P-3.N animal
        'He ate meat.' (p. 168)

Although these distinctions are the same regardless of what the tense is in any given construction, the typically one-syllabic subject marking clitic conflates together with the one-syllabic tense marking clitic, forming a morphologically unique one-syllabic clitic that marks both tense and φ-features of the subject. This mechanism is readily observed in negated sentences in which the verb intervenes between the tense the subject clitics. Thus the subject clitic *na* in (74c) above could be a result of phonological fusion of the tense clitic *ca* and the subject clitic *ca*, which occur separately in negated clauses:

(75)   *Wari'* (Everett and Kern 1997:168)

ˈom   ca   cao' ca-in   carawa.
not:exist INFL.N:RP/P eat 3.SG.M-3.N animal
'He did not eat meat.'

The same is found in questions where the tense clitic is also separated from the subject clitic:

(76)   *Wari'* (Everett and Kern 1997:17)

ma'   carawa ca   pa' caca   mon tarama'
that:prox:hearer animal INFL:N.RP/P kill 3.PL.M COLL man
'What thing/animal did the men kill?'

Now we can establish that, as illustrated below, the paradigm of subject marking clitics reflects PNU distinctions, which tells us that Wari' is a rich agreement language:

(77)   Wari' agreement clitics
       (adapted from Everett and Kern 1997:324–325)

	Tenseless		Tensed	
	Singular	Plural	Singular	Plural
1[IN]	—	xi'/ˈiri'	—	ˈiri'
1[EX]	ta'	xut/ˈurut	ˈina	ˈurut
2	ma	hwe	ma	hwe
3	ca[M]/cama[F]/ne[N]	caca[M]/cacama[F]	na	nana

Tenseless agreement clitics combine with the realis past/present clitic *ca*, giving the corresponding paradigm of tensed clitics. Tense clitics that mark other tenses (e.g. future realis clitic *ta*) produce different tensed agreement clitics. The data given in (77) shows that Wari' is a rich agreement language.

Given that Wari' is morphologically rich, the question arises whether Wari' syntax projects the head that hosts the rich morphology (i.e. Arg^0). The answer to this question is yes, since the referential DPs must be arguments of the verb, which suggests that the clitics cannot be elements of the vP itself, but must be projected outside of the vP (Arg_OP for the object clitic and Arg_SP for the subject clitic). Consequently, since Arg_SP is headed by the agreement clitic, the question arises if Wari' agreement clitics require phonological support. The answer to this question is also yes, as the empirical data presented so far strongly indicate that these agreement markers always prosodically integrate with another element that precedes them.

Word order

Wari' declarative clauses typically exhibit rigid VOS orders (Daniel Everett, p.c.):

(78) *Wari'*

            V   O   S

a.   kao na-on   hwam Elizeu

     eat 3.SG:RP/P-3.SG.M fish   m:name

     'Elizeu ate the fish.'

            V   O   S

b.   pa' na-on   taramin Silas

   kill 3.SG:RP/P-3.SG.M macaw   m:name

     'Silas killed the macaw.'

Declarative clauses are always verb-initial and the verb is followed by a clitic group marking verbal morphology that includes tense, and subject and object φ-agreement (φ-features = person, number, and gender).[8] Arguments of the verb are placed at the end. I illustrate this with the following examples from Wari':

(79) *Wari'*

  a. *Transitive*

     i.   pa' na-on   towarao Silas

         kill 3.SG.RP/P-3.SG.M parrot   Silas

         'Silas killed the parrot.'

     ii. * na-on   pa' towarao Silas

          3.SG.RP/P-3.SG.M kill parrot   Silas

  b. *Intransitive*

     i.   pan na   Susanna

         fall 3.SG.RP/P Susanna

         'Susanna fell.'

     ii. * na   pan Susanna

         3.SG.RP/P fall Susanna

Note that the first clitic in the examples in (79a), *na*, carries both tense and subject agreement φ-features, whereas the second clitic, *on*, carries only object agreement properties. As shown in (79aii) and (79bii), the agreement clitics must be preceded by the verb.

    The ordering of the clitics forms a mirror image of the ordering of the nominal arguments. That is, the outer clitic and the outer argument are subject-related, whereas the inner clitic and the inner argument are object-related. This is illustrated in the following diagram representing the basic order of elements of Wari' declarative clauses:

(80) | VERB | TENSE CL | SUBJECT CL | OBJECT CL | OBJECT DP | SUBJECT DP |

---
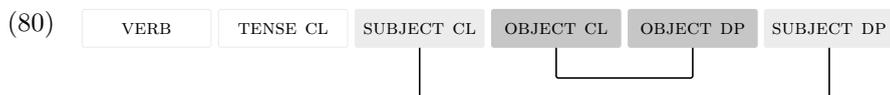
8. Although object typically precedes the subject, they have been observed to swap positions occasionally, if it can be understood from the context which DP is the subject and which is the object (Everett and Kern 1997).

This productive mirroring of clitics and argument DPs suggests systematicity in the structural relations between arguments and clitics, as illustrated here:[9]

(81)
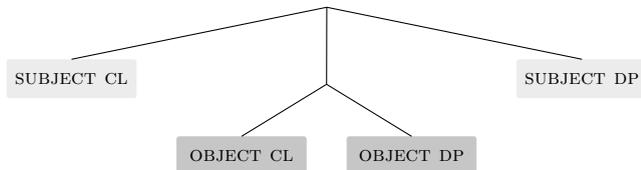
The hierarchically higher subjects are structurally closer to the subject clitics, whereas the hierarchically lower objects are closer to object clitics. This provides further support for the idea that referential arguments in Wari' occupy 'fixed' positions, a distinct behavior typical of arguments. Consequently, this 'systemic' mirroring effect is evidence against analyses that assume that overt arguments are adjuncts, given that such analyses allow for different orderings of the verb and its arguments.

   Crucial question for the investigation of the RAH is: is the verb base-generated clause-initially or has it moved there? The standard assumption is that the verb is generated closer to objects than to subjects. This is empirically well supported across many languages. In line with this, I assume that the verb is base-generated near the object DP, where it assigns θ-roles to its arguments after which it moves to the clause-initial position. Since the verb does not surface near the object, this indicates that the mirroring effect that we see in (81) is caused by the copy of the verb (or trace, depending on the framework). This in itself provides evidence that there are two copies of the verb (i.e. there is verb movement) in basic clause structure of Wari', as illustrated in (82):

(82)
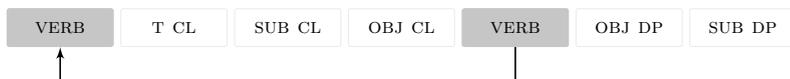
If this analysis is correct, it requires some kind of motivation for the verb's movement to the clause initial position. Such movement could perhaps best be motivated by the fact that all elements preceding the verb in (82) are clitics that form a group that requires phonological support from other elements. This then drives the verb to the front, where the clitics can attach to it.

   As will become clear later on, this idea is further supported by the fact that in different types of clauses, elements other than verbs (e.g. negation, questions words) surface clause-initially, where they host the tense clitic, while the verb hosts the subject and object morphemes at a lower position in the clause structure, as clearly attested in (75) and (76), repeated in (83a) and (83b):

(83)   *Wari'* (Everett and Kern 1997)

---

9. This mirroring effect is reminiscent of Koster's (1974) analysis of different types of adjunct PPs in Dutch that can occur on either side of the verb forming a mirror image, suggesting that the outer PP must be adjoined to a higher phrase.

  a. 'om   <u>ca</u>   cao'   <u>ca</u>-in   carawa
     not:exist INFL.N:RP/P eat   3.SG.M-3.N animal
     'He did not eat meat.' (p. 168)

  b. ma'   carawa <u>ca</u>   pa' <u>caca</u>   mon tarama'
     that:prox:hearer animal INFL:N.RP/P kill 3.PL.M COLL man
   'What thing/animal did the men kill?' (p. 17)

This yields the following surface order:

(84) | WH/NEG | T CL | **VERB** | SUB CL | OBJ CL | **VERB** | OBJ DP | SUB DP |
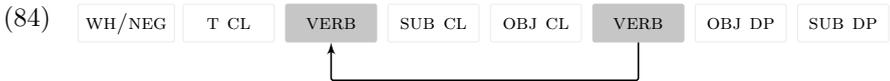
Crucially, in (82) the verb moves all the way to the front, where it hosts the agreement clitics, whereas in (84) the first position is occupied by either negation or the *wh-* word that appears to block the verb moving all the way to the front. Consequently, the verb moves to an intermediate position hosting agreement clitics, but not the tense clitic.

Clause analysis

In light of the facts described so far, I propose an analysis of the Wari' clause structure that follows from the assumption that all projections up to and including Arg_SP (i.e. VP, vP, Arg_OP and Arg_SP) have <head,spec> orderings, whereas the projections above Arg_SP (TP, NegP, CP) have <spec,head> orderings. The basic Wari' clause structure employs the following hierarchy of projections:

(85) **Hierarchy of projections in Wari' clause**

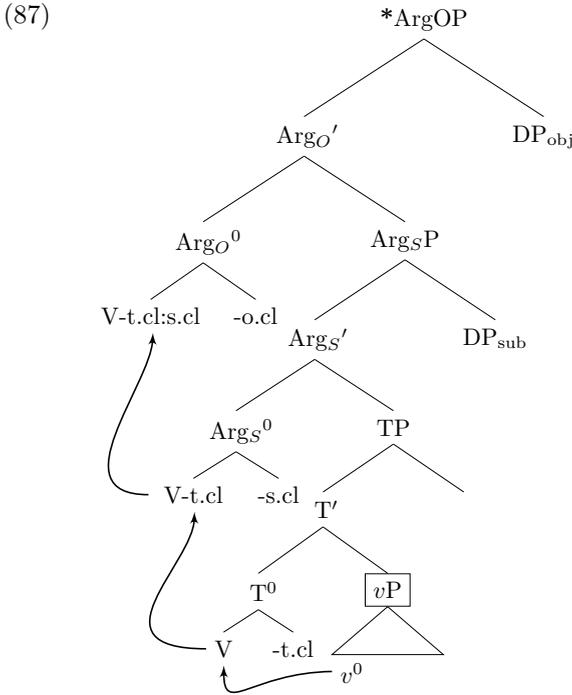$$\underbrace{CP > (NegP) > TP}_{<spec,head>} > \underbrace{Arg_SP > Arg_OP > vP > VP}_{<head,spec>}$$
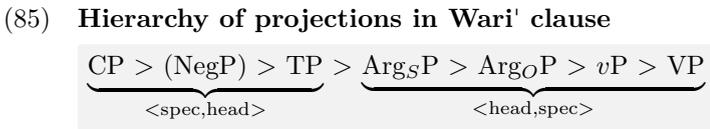
Assuming the stipulations in (85), the derivation of the correct surface order in Wari' follows straightforwardly without postulation of additional functional projections, which is unavoidable under an analysis with uniform <spec, head> orderings, as this would otherwise generate ungrammatical word orders.

     The analysis that I propose presents a structure-dependent account (spec-head relations) of subject and object agreement operations. The derivation of the example in (72), repeated below, is derived as illustrated in (86):

(72)   *Wari'*
     jami   na-on   pije' narima'
     turn:over 3.SG:RP/P-3.SG.M child woman
     'The woman turned the child over.'

(86)
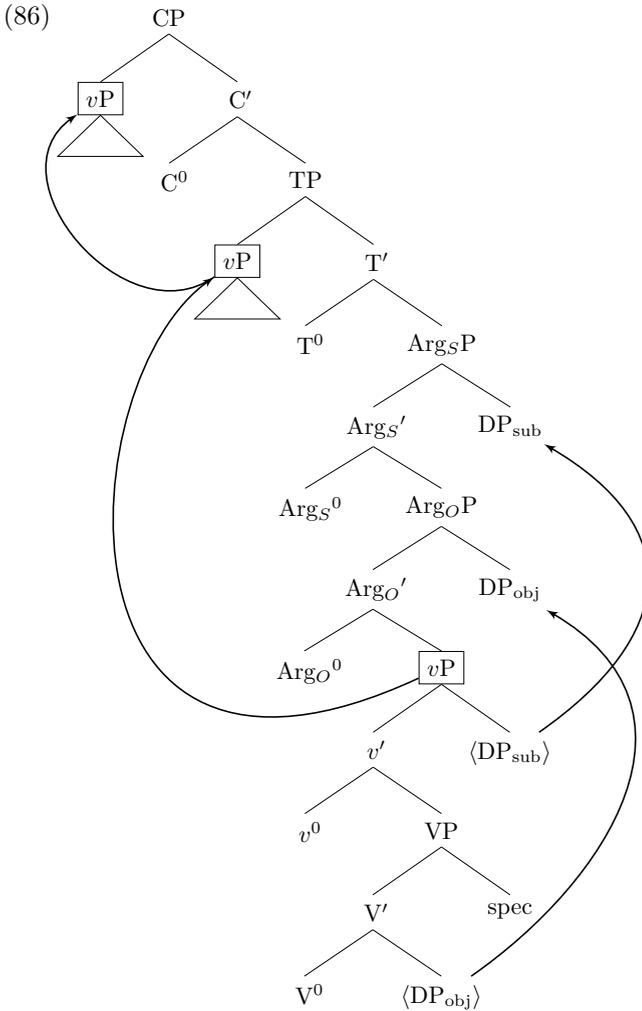
In (86) the entire *v*P moves to spec,CP. This is supported by the fact that (adverb-like) verbal modifiers are always pied-piped with the verb in front of the clitic group. It is therefore highly unlikely that verbal head movement takes place in Wariʼ. Crucial support comes from the fact that deriving the correct word order with the successive-cyclic head-to-head movement requires (selective) stipulations of ex-corporation of agreement heads, as the verb moves higher up the clausal spine. And if we attempt to match the hierarchy of projections with the order of tense and agreement morphemes, then that would yield an ungrammatical structure in (87). Notice that while (87) gives a correct order of verb and clitics within the clitic cluster, we incorrectly get the VSO order:

(87)

$$\text{*ArgOP}$$

Tree diagram:

- *ArgOP
  - Arg$_O$′
    - Arg$_O$^{0}
      - V-t.cl:s.cl
      - -o.cl
    - Arg$_S$P
      - Arg$_S$′
        - Arg$_S$^{0}
          - V-t.cl
          - -s.cl
        - TP
          - T′
            - T^0
              - V
              - -t.cl
            - vP
              - v^0
      - DP$_{\text{sub}}$
  - DP$_{\text{obj}}$

Another possible way to derive the structure could be to say that the verb moves over the three clitic heads. However this violates the (well-known) head movement constraint (HMC), according to which "an X^0 may only move into the Y^0 which properly governs it" (Travis 1984)[10]. This leaves us with only one option, namely vP-fronting, which I employ in (86).

Although Everett and Kern (1997) claim that all Wariʼ verbal modifiers form compounds with the verb, whether they are analyzed as such or whether they are analyzed as adjuncts, it is inconsequential for the analysis above, since the order of the verb and its modifiers remains 'fixed' throughout the derivation, moving as an 'atomic' unit, as shown here:

(88) *Wariʼ* (Joshua Birchall, p.c.)

a.
$\overbrace{\text{maquiʼ hwap}}^{\text{compund}}$ na   tarama'
   come   fast:s 3.SG:RP/P man
   'The man came in a hurry.'

b. % hwap maquiʼ na   tarama'
     fast:s come   3.SG:RP/P man
     'The man came in a hurry.'

---

10. Note in these Wariʼ examples, HMC prohibits the verb's skipping over the clitic heads.

c. * maqui' na   hwap tarama'
       come   3.SG:RP/P fast:s man

                    ⏞compund⏞
d. 'om ca   maqui' hwap ca   tarama'.
    NEG RP/P come   fast:s 3.SG man
   'The man did not come in a hurry.'

The verb *maqui'* 'come' and its modifier *hwap* 'fast' must remain adjacent,
rendering example (88c) ungrammatical. The adjacency is preserved in negated
sentences (cf. 88d).

   Once vP-movement takes place, the tense and the agreement clitics form a
'clitic group' together with the vP host. Importantly, the subject and object
DPs 'escape' from the vP before it moves to spec,TP. However, if another
element surfaces in front of the clitics — as in *wh*-questions and negation —
the tense clitic (that has moved to C^0) receives phonological support from it.
In such cases, the subject agreement clitic can no longer join the tense clitic,
so it gets rescued by the vP-movement to spec,TP. Thus, for negated clauses
(cf. 83a) and *wh-* questions (cf. 83b), repeated below, this yields the structures
in (89) and (90), respectively.

(83) *Wari'* (Everett and Kern 1997)

      a. 'om   ca   cao'   ca-in   carawa
          not:exist INFL.N:RP/P eat 3.SG.M-3.N animal
          'He did not eat meat.' (p. 168)

      b. ma'   carawa ca   pa' caca   mon tarama'
          that:prox:hearer animal INFL:N.RP/P kill 3.PL.M COLL man
          'What thing/animal did the men kill?' (p. 17)

(89)

(90)
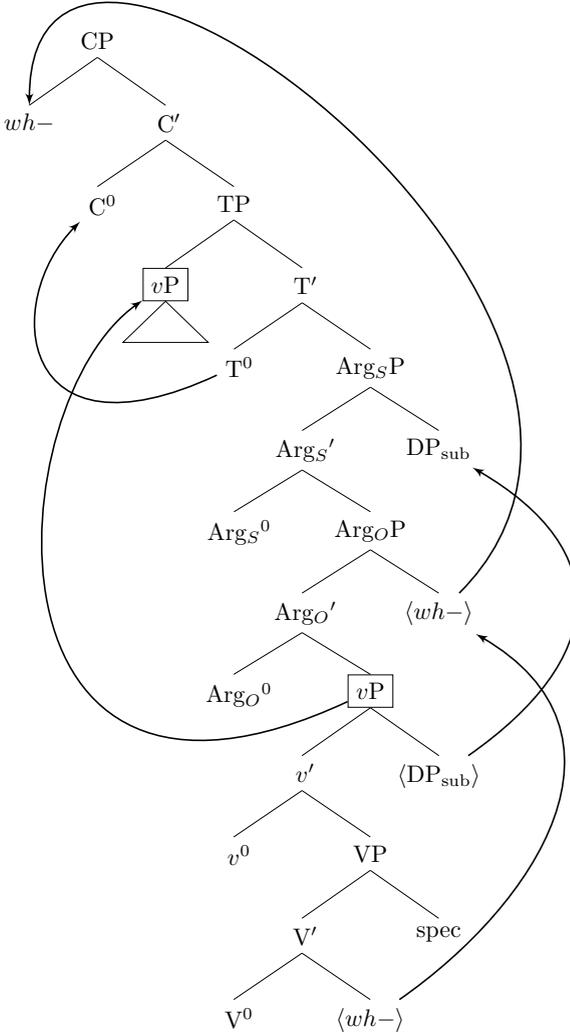
The data from Wari' show that — whatever the finer details of the clause analysis are — the analysis must involve V/vP dislocation to the left. The simpler option that I proposed here involves the movement of the entire vP to the front. In contrast, verb movement (i.e. head movement) analysis would require the stipulation of additional functional projections as potential landing sites,

for which there appears to be no independent support, making it implausibly complex.

The vP-movement analysis is similar to what I have argued for Hawaiian (cf. §6.2.7) and to what has been argued for other verb-initial languages (cf. Coon 2010 for Chol, and Massam 2000 for Niuean). Assuming vP-to-TP is triggered by some feature, we would expect vP to always precede the tense clitic at T^0. This hypothesis appears to be borne out, in the sense that vP always moves at least as high as spec,TP. The byproduct of this movement in Wari' is that verbs and agreement clitics are then in immediate adjacency. This means that the VOS order is derived by phenomena independent of agreement that yield verb-agreement adjacency. Consequently, the agreement clitics themselves do not play a role in the displacement of the verb.

Consequences for the RAH

Although ordering of adverbs and negation with respect to the verb cannot be used as a diagnostic in Wari', since they are not vP-adjuncts, the fact that subject and object agreement clitics intervene between the verb and the direct object suggests that displacements must be taking place. The analysis above suggests that the most parsimonious option for a derivation of the Wari' clause involves vP-movement, whereas a head-movement analysis either violates the head-movement constraint or yields ungrammatical word orders. Although there is no head movement in Wari', the phonological dependency of the agreement clitics appears to correlate with the displaced position of the verb, and while this does not provide evidence for the RAH, it is not contrary to the RAH predictions.

7.2.8 Kaqchikel (Cakchiquel)

In this section I describe and analyze the basic clause structure of Kaqchikel. The discussion shows that the verb-initial word orders in the language can be derived with both verb (head) movement and VP-movement, giving rise to two discourse neutral word orders, VOS and VSO. The analysis below shows that, in order to derive the two word orders, movement of either verb or VP must take place. This correlates with the fact that Kaqchikel is a rich agreement language, as predicted by the RAH.

Agreement Morphology

Kaqchikel is a morphologically rich language with a variety of morphemes that attach to the verbs. With regard to subject-verb agreement, the language exhibits a set of absolutive morphemes marking intransitive subjects and a set of ergative morphemes marking transitive subjects. The two sets are illustrated in (91) and in (92), where the prefixes on the verb in bold reflect the φ-features of the subject pronouns:

(91) *Kaqchikel* (Brown, Maxwell, and Little 2006:29)

    a.   rïn **yi-**   wär
          I   ABS.1.SG- sleep
          'I sleep.'

    b.   rat **ya-**   wär
          you ABS.2.SG- sleep
          'You sleep.'

    c.   rija' **n-**   wär
          she/he ABS.3.SG- sleep
          'She/he sleeps.'

    d.   röj **yoj-**   wär
          we ABS.1.PL- sleep
          'We sleep.'

(92) *Kaqchikel* (Brown, Maxwell, and Little 2006:49)

    a.   rïn **nin-**   tz'ët
          I   ERG.1.SG see
          'I see (it).'

    b.   rat **na-**   tz'ët
          you ERG.2.SG see
          'You see (it).'

    c.   rija' **nu-**   tz'ët
          she/he ERG.3.SG see
          'She/he sees (it).'

    d.   röj **nqa-**   tz'ët
          we ERG.1.PL see
          'We see (it).'

The full paradigm of agreement morphemes is given in the following table:

(93) Kaqchikel agreement prefixes
     (adapted from Brown, Maxwell, and Little 2006:29, 49)

	Intransitive		Transitive	
	Singular	Plural	Singular	Plural
1	yi-	yoj-	nin-	nqa-
2	ya-	yix-	na-	ni-
3	n-	ye-	nu-	nki-

The distinguishing morphemes for three persons and two numbers indicate that Kaqchikel is a rich agreement language exhibiting the PNU distinctions Chapter 3. Consequently, the RAH predicts verb movement, since the agreement morphemes are hosted by the verb.

Word order

Kaqchikel exhibits two discourse neutral word orders: verb initial orders and SVO orders, as illustrated in (94a-b) and (94c), respectively:

(94) *Kaqchikel*

               V   S   O

  a.   x-u-b'a   ri tz'i'   ri me's
       COMPL-3.SG.ERG-bite the dog the cat
       'The dog bit the cat.'

               V   O   S

  b.   x-u-b'a   ri me's ri tz'i'
       COMPL-3.SG.ERG-bite the cat the dog
       'The dog bit the cat.'

            S   V   O

  c.   ri tz'i' x-u-b'a   ri me's
       the dog COMPL-3.SG.ERG-bite the cat
       'The dog bit the cat.'

Verb-initial orders show ambiguity if the subject and the object have "equal degrees of definiteness" (Broadwell 2000). That is, either of the argument DPs following the verb can either be the subject or the object of the verb if both arguments are definite or if both arguments are indefinite:

(95) *Kaqchikel* (Broadwell 2000)

  a.   x-r-oqotaj   ri   tz'i' ri   me's
       COMPL-3.SG.ERG-chase the dog the cat
       'The dog chased the cat.'
       'The cat chased the dog.'

  b.   x-r-oqotaj   ri   me's ri   tz'i'
       COMPL-3.SG.ERG-chase the cat   the dog
       'The dog chased the cat.'
       'The cat chased the dog.'

However, if one of the argument DPs is definite and the other one indefinite, then the definite DP must be the subject and it must follow the object, yielding VOS orders. In the following example, the definite DP *ri tz'i'* 'the dog' must follow the indefinite DP *jun me's* 'a cat', and it must be the subject of the verb:

(96) *Kaqchikel* (Broadwell 2000)

  a.   x-r-oqotaj   jun me's ri   tz'i'
       COMPL-3.SG.ERG-chase a   cat   the dog
       √'The dog chased a cat.'
       *'A cat chased the dog.'

  b. ?* x-r-oqotaj   ri   tz'i' jun me's
       COMPL-3.SG.ERG-chase the dog a   cat

The summary of possible word orders depending on the definiteness of subject and object is given in the following table:

(97)   Word order and subject-object definiteness

S$_{indef}$	O$_{indef}$	VOS, VSO, SVO
S$_{def}$	O$_{def}$	VOS, VSO
S$_{indef}$	O$_{def}$	SVO
S$_{def}$	O$_{indef}$	VOS

An important observation in (97) is that the definite arguments cannot precede the indefinite ones.

Verb-initial orders on the one hand and SVO on the other show a crucial difference with respect to the placement of adverbs, as SVO exhibits more flexibility. Specifically, in verb-initial orders temporal adverbs like *iwir* 'yesterday' can only be either clause-initial or clause-final (98), whereas in SVO orders adverbs can also intervene freely anywhere between the verb and its arguments and between the arguments of the verb, as illustrated in (99).

(98)   *Kaqchikel* (Broadwell 2000)

   a.   **iwir**   x-r-oqotaj   ri tz'i' ri me's Adv V S O
        yesterday COMPL-3.SG.ERG-chase the dog the cat
        'Yesterday the dog chased the cat.'

   b.   * x-r-oqotaj   **iwir**   ri tz'i' ri me's *V Adv S O
        COMPL-3.SG.ERG-chase yesterday the dog the cat

   c.   * x-r-oqotaj   ri tz'i' **iwir**   ri me's *V S Adv O
        COMPL-3.SG.ERG-chase the dog yesterday the cat

   d.   ? x-r-oqotaj   ri tz'i' ri me's **iwir**   ?V S O Adv
        COMPL-3.SG.ERG-chase the dog the cat   yesterday

(99)   *Kaqchikel* (Broadwell 2000)

   a.   **iwir**   ri tz'i' x-r-oqotaj   ri me's Adv S V O
        yesterday the dog COMPL-3.SG.ERG-chase the cat

   b.   ri tz'i' **iwir**   x-r-oqotaj   ri me's S Adv V O
        the dog yesterday COMPL-3.SG.ERG-chase the cat

   c.   ri tz'i' x-r-oqotaj   **iwir**   ri me's S V Adv O
        the dog COMPL-3.SG.ERG-chase yesterday the cat

   d.   ? x-r-oqotaj   ri tz'i' ri me's **iwir**   ?S V O Adv
        COMPL-3.SG.ERG-chase the dog the cat   yesterday

According to Broadwell (2000), SVO orders are obligatory when the subject is indefinite and when the possessor of the subject is antecedent to a following pronoun. For example, in (100) the indefinite DP *jun tz'i'* 'a dog' can only be the subject if it precedes the verb:

(100)   *Kaqchikel* (Broadwell 2000)

    a.   jun tz'i' x-u-b'a   ri a   Juan
           a   dog COMPL-3.SG.ERG-bite the CLS Juan
           'A dog bit Juan.'

    b.   x-u-b'a   jun tz'i' ri a   Juan
           COMPL-3.SG.ERG-bite a   dog the CLS Juan
           'John bit a dog.'
           *'A dog bit Juan.'

Similarly, the subject in which the possessor is co-referential with the object DP must precede the verb:

(101)   *Kaqchikel* (Broadwell 2000)

    a.   r-ixjayil   a Manuel n-u-kanoj   rija'
           3.SG.ERG-wife CLS Manuel CON-3.SG.ERG-look:for s/he
           'Manuel's$_i$ wife is looking for him$_i$.'

    b. * n-u-kanoj   r-ixjayil   a Manuel rija'
           CON-3.SG.ERG-look:for 3.SG.ERG-wife CLS Manuel s/he
           'Manuel's$_i$ wife is looking for him$_i$.'

The summary of possible word orders with the subject in initial position is given in the following table:

(102)   Subject-initial word orders

(AdvP)	S$_{indef}$	(AdvP)	V	(AdvP)	O$_{indef}$	(AdvP)
(AdvP)	S$_{indef}$	(AdvP)	V	(AdvP)	O$_{def}$	(AdvP)

In sum, the subject must be indefinite in the initial position, and in such cases adverbs can occur in initial position, in final position, and they can intervene anywhere between the verb and its arguments.

Analysis

The fact that adverbs cannot intervene between the verb and its arguments in verb-initial orders, but can be freely added anywhere in SVO orders, suggests that the verb-initial order, as Broadwell (2000) argues, is indeed the basic word order in Kaqchikel. I assume that there is only one basic word order and that the SVO order is derived from the verb-initial order as a result of additional movement operations. Therefore, since SVO orders are likely to involve additional movement operations and thus mask any potential movement for reasons of agreement morphology, the focus of the analysis here is on clauses with verb-initial orders.

    The fact that adverbs can only be clause-initial or clause-final in the verb-initial orders suggests that they can only be either left or right-adjoined to a projection dominating the verb and both of its arguments. This fact is particularly crucial for the VSO orders, which must be derived because subjects intervene between the verb and the object. This suggests that the verb has

moved in front of the subject and is in a derived (vP-external) position. Consequently, these Kaqchikel adverbs cannot be vP-adjuncts and are therefore not a proper diagnostic for verb movement.

Leaving adverbs aside, the analysis that I propose attempts to account for the previously described argument ambiguity, in which either of the two noun phrases that appear after the verb can be interpreted either as subject or object of the verb, respectively; the analysis relies on the observation that the definiteness of the arguments plays a role in determining the word order. Subsequently, I will discuss the consequences that it has on the RAH.

To an extent, Kaqchikel basic word orderings are determined by the definiteness of the two argument DPs. As illustrated in (97), definite arguments cannot precede the indefinite ones. Assuming uniform spec-initial phrase structure, this entails that definite arguments cannot be hierarchically higher than indefinite ones. As will become clear below, this is crucial since, it suggests that if a definite argument is base-generated over an indefinite one, then the indefinite argument must raise over the definite one.

Since the discourse neutral word orders in Kaqchikel are verb-initial with equivalent VOS and VSO alternatives, some type of displacement must be taking place, suggesting that these orders are derived. Since arguments must shift over each other to a vP-external position for reasons of definiteness, it follows that the verb must cross arguments to the initial position.

If we assume that we have a uniform verb movement to the front in both VOS and VSO, then we are inevitably forced to stipulate that an (in)definite argument can optionally and without semantic effects raise over another argument with the same definiteness value. It is not clear why this would be the case.

This brings us to the option of having a remnant VP-movement to the front of the clause, instead of verb (i.e. head) movement. However, uniform VP-movement raises the exact same questions as uniform head-movement, as we are still forced to raise an indefinite object together with the verb across an indefinite subject, or perhaps optionally to evacuate an indefinite object to a projection below an indefinite subject, a movement that is then followed by the remnant VP-movement containing the verb alone. Consequently, the only option left is to have optionally either VP-movement or verb movement. This entails that either VP moves to the front, along with the direct object, thus crossing the subject and yielding VOS, or alternatively the verb alone moves to the front, yielding VSO. This means that either of the two elements could be triggered for movement in the derivation, allowing for both types of orders.

We can thus apply this same way of accounting for semantically vacuous optionality between VOS and VSO orders, where both VP and V^0 bear the same feature and can be optionally triggered for movement. Consequently, we get the following derivations for VOS in (103a) and VSO in (103b):

(103) a.
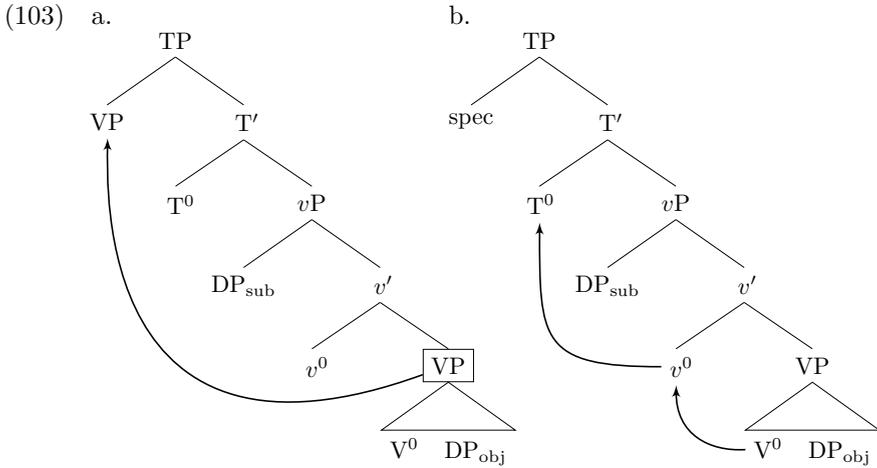
I assume that the projection to which either VP or the verb moves is TP. In the case of verb movement in (103b), the subject raises to spec,TP yielding the following structure in (104).

(104)
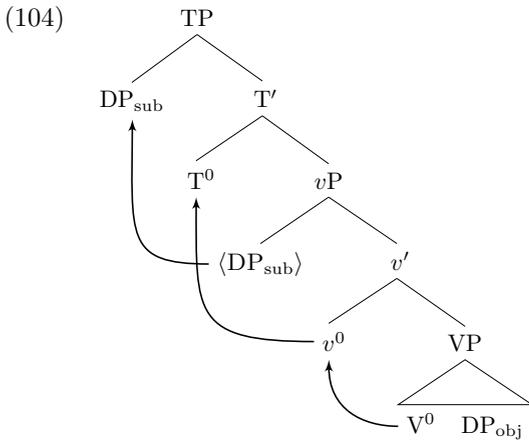
Consequently, we are forced to raise the verb in (104), in order to derive the correct word order. Since Kaqchikel is morphologically rich, the verb movement to the higher position can be triggered by the rich prefixal morphology. The prefixes cannot inflect on the subject at spec,TP. Hence, the additional movement of the verb across the subject. In the context with VP-movement in (103a), prefixal needs are satisfied by virtue of the verb appearing as the first element in the phrase. Thus, (103a) and (103b) are derived to yield the following two structures:

(105)   a.   b.
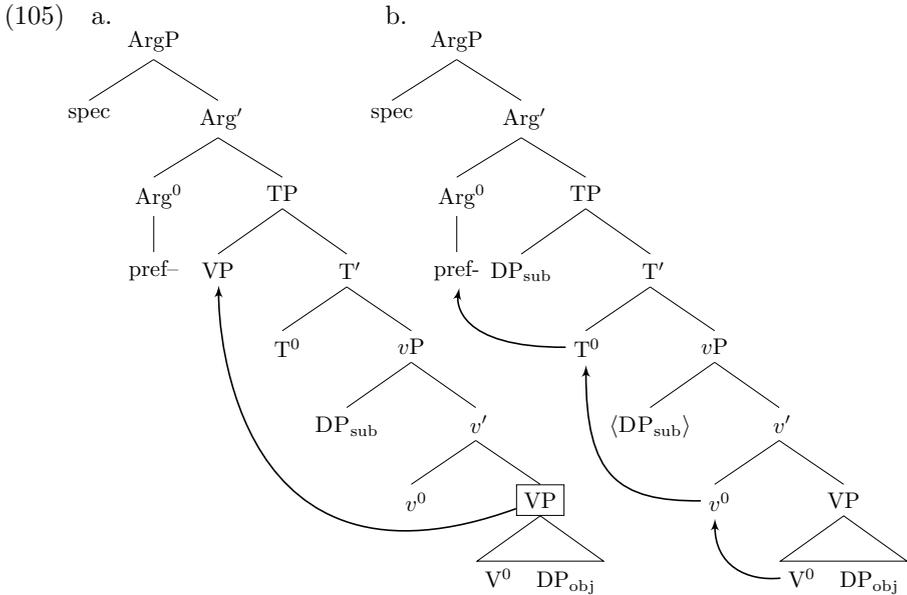
For verb-initial orders with arguments of equal definiteness, there is a choice of deriving either (105a) or (105b). However, if the subject is definite and the direct object indefinite, then VP-movement is obligatory, yielding VOS orders. In contrast, verb movement is obligatory when subject are indefinite and direct objects definite, yielding VSO orders. This follows from the observation in (97) that definite arguments cannot precede indefinite ones.

Note that the VP movement in (105a) and the subject DP movement in (105b) to the TP projection are often claimed to take place for reasons of checking the EPP-feature, as Massam (2000) argues for Niuean. As already mentioned in the discussions of Hawaiian (cf. §6.2.7) and Wariʼ (cf. §7.2.7), I remain agnostic here as to what is the nature of the feature that triggers the movement.

Consequences for the RAH

The basic set of facts from Kaqchikel forces us to derive the verb-initial word orders by employing the V/VP-movement to a vP-external position, before we even consider the syntax of optional elements such as adverbs, which standardly serve as diagnostics for verb movement. If the analysis here is correct, the phonological dependency between the prefixes and the verb in (105a) is satisfied by virtue of the verb and the prefixal heads being immediately adjacent. Therefore, no movement for phonological support is required.

In contrast, in the head movement analysis in (105b), the T-to-Arg movement correlates with the richness of agreement morphology. Since the standard diagnostics (adverbs) can intervene anywhere between the verb and its argu-

ments, they cannot be used to determine if verb movement takes place. However, since the structure yields VSO orders, the subject at spec,TP in (105b) naturally serves as a diagnostic for verb movement. Consequently, this provides evidence in support of the RAH.

7.2.9 Wolof

Similar to Egyptian Arabic, Wolof has a group of flexible AdvPs appearing both between finite verbs and direct objects, but also in front of finite verbs. However, like Egyptian Arabic, Wolof also has other, syntactically rigid AdvPs that can be used as verb movement diagnostics.

Agreement Morphology

Wolof is a morphologically rich language exhibiting a great deal of affixes on the finite verbs. Wolof systematically marks the φ-features of the subject on the verbal suffix, as illustrated in the following set of data:

(106) *Wolof* (adapted from Torrence 2003:7)

    a.   lekk **-naa** jën wa
            eat -1.SG fish the
            'I ate the fish.'

    b.   lekk **-nga** jën wa
            eat -2.SG fish the
            'You ate the fish.'

    c.   lekk **-na** jën wa
            eat -3.SG fish the
            'He ate the fish.'

    d.   lekk **-nanu** jën wa
            eat -1.PL fish the
            'We ate the fish.'

In addition to verbs (cf. 107a), these subject affixes can also attach to the imperfective auxiliary *di* (cf. 107b). However, the affixes are not pronominal, as we have seen in Hatam, Bilua, and Kadiwéu (cf. §6.2.3, §6.2.2 and §6.2.4), because there is no evidence that they can move. The evidence for the absence of movement comes from the fact that they cannot appear on the verb when *di* is present (cf. 107c), which suggests that they are agreement morphology.

(107) *Wolof* (Torrence 2003:7)

    a.   xác bi   màtt -na góór gi
            dog the.SG bite -3.SG man the.SG
            'The dog has bitten the man.'

    b.   xác bi   di -na màtt góór gi
            dog the.SG AUX -3.SG bite man the.SG
            'The dog bites/will bite the man.'

    c. *xác bi   di   màtt -na góór gi
       dog the.sg aux bite -3.sg man the.sg

Wolof is thus a *pro*-drop language with rich agreement morphology, marking distinctions for subjects in (at least) three persons and two numbers (cf. Chapter 3). The RAH therefore predicts that Wolof verbs must surface *v*P-externally. Let's see if this indeed is the case, given the word order facts and the placement of adverbs.

Word order

The discourse neutral word order in Wolof is SVO, as illustrated here:

(108)   *Wolof*

            S   V   O
    a. xale -yi   bëgg -ø-na -nũ   ceeb
       child def.pl want -pt -fin -3.pl rice
       'The children want rice.'   (Zribi-Hertz and Diagne 2002:829)

            S   V   O
    b. xác bi   màtt -na góór gi
       dog the.sg bite -3.sg man the.sg
       'The dog has bitten the man.'   (Torrence 2003:7)

Adverbs

However, the verb-object adjacency is not obligatory, as particular adverbs can intervene. For example, Wolof manner adverbs like *ndànk* 'slowly' in (109b) readily appear between finite verbs and objects:

(109)   *Wolof* (Cheikh Bamba Dione, p.c.)

    a. *lekk -naa* jën wa **ndànk**
       eat -1.sg fish the slowly
       'I slowly ate the fish.'

    b. *lekk -naa* **ndànk** jën wa
       eat -1.sg slowly   fish the
       'I ate the fish.'

    c. * **ndànk** *lekk -naa* jën wa
       slowly eat -1.sg fish the

Furthermore, manner adverbs can intervene between the verb and its object even if the agreement affix is not present on the verb. In (110) the agreement affix appears on the imperfective auxiliary *di*, but not on the verb. Nevertheless, the same pattern persists, as in (109):

(110)   *Wolof* (Cheikh Bamba Dione, p.c.)

    a.   di -naa *lekk* jën wa **ndànk**
            AUX -1.SG eat fish the slowly
            'I will slowly eat the fish.'

    b.   di   -naa *lekk* **ndànk** jën wa
            AUX- 1.SG eat slowly fish the
            'I will slowly eat the fish.'

    c. * di -naa **ndànk** *lekk* jën wa
            AUX -1.SG slowly eat fish the

In addition to manner adverbs, temporal adverbs can also intervene between verb and object. However, temporal adverbs appear to be more flexible, as they can also precede the verb:

(111) *Wolof* (Cheikh Bamba Dione, p.c.)

    a.   Awa *lekk -naa* jën wa **léegi**
            Awa eat -3.SG fish the now
            'Awa ate the fish now.'

    b.   Awa *lekk -naa* **léegi** jën wa
            Awa eat -3.SG now fish the

    c. ? Awa **léegi** *lekk -naa* jën wa
            Awa now eat -3.SG fish the

    d.   **léegi** Awa *lekk -naa* jën wa
            Now Awa eat -3.SG fish the

In the context with the imperfective *di*, temporal adverbs cannot intervene between the imperfective morpheme and the verb, as (112c) shows:

(112) *Wolof* (Cheikh Bamba Dione, p.c.)

    a.   di -naa *lekk* jën wa **léegi**
            IMP -1.SG eat fish the now
            'I will eat the fish now.'

    b.   di -naa *lekk* **léegi** jën wa
            IMP -1.SG eat now fish the

    c. * di -naa **léegi** *lekk* jën wa
            IMP -1.SG now eat fish the

    d.   **léegi** di -naa *lekk* jën wa
            now   IMP -1.SG eat fish the

Finally, Wolof only has two frequency adverbs, *lu bari* 'very often' and *lu néew* 'very rarely'. These two adverbs are restricted to a position following the direct object, and they cannot occur elsewhere in the clause (Cheikh Bamba Dione, p.c.):
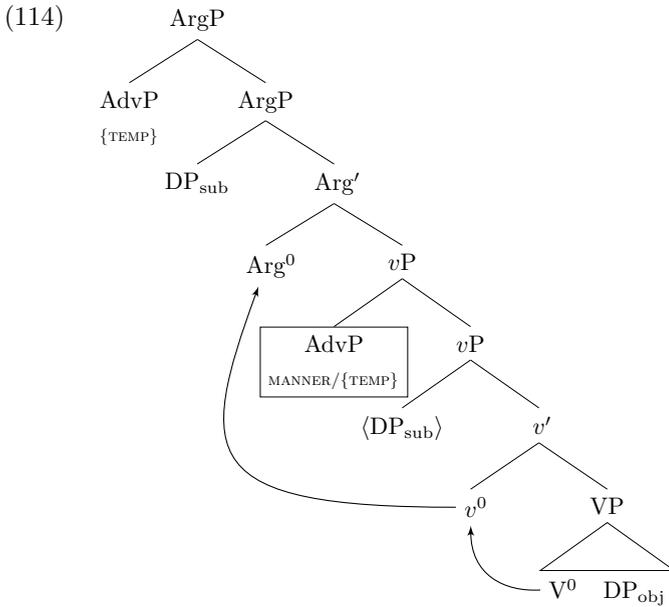
(113) *Wolof* (Cheikh Bamba Dione, p.c.)

    a.   di -naa *lekk* jën wa **lu bari**   / **lu néew**
          IMP -1.SG eat fish the very often / very rarely
          'I will very often/very rarely eat the fish.'

    b.   * di -naa *lekk* **lu bari**   / **lu néew**   jën wa
          IMP -1.SG eat very often / very rarely fish the

    c.   * di -naa **lu bari**   / **lu néew**   *lekk* jën wa
          IMP -1.SG very often / very rarely eat fish the

    d.   * **lu bari**   / **lu néew**   di -naa *lekk* jën wa
          very often / very rarely IMP- 1.SG eat fish the

In sum, Wolof manner adverbs rigidly appear between verbs and direct objects, whereas temporal adverbs can appear either before verbs, or between verbs and direct objects. In general, the placement of manner and temporal adverbs in Wolof patterns with the placement of adverbs in Egyptian Arabic, where we also find temporal adverbs either preceding or following the verb, while manner adverbs rigidly appear between the verb and the direct object. Furthermore, Wolof frequency adverbs that always incorporate a modifier (≈very) must follow the direct object.
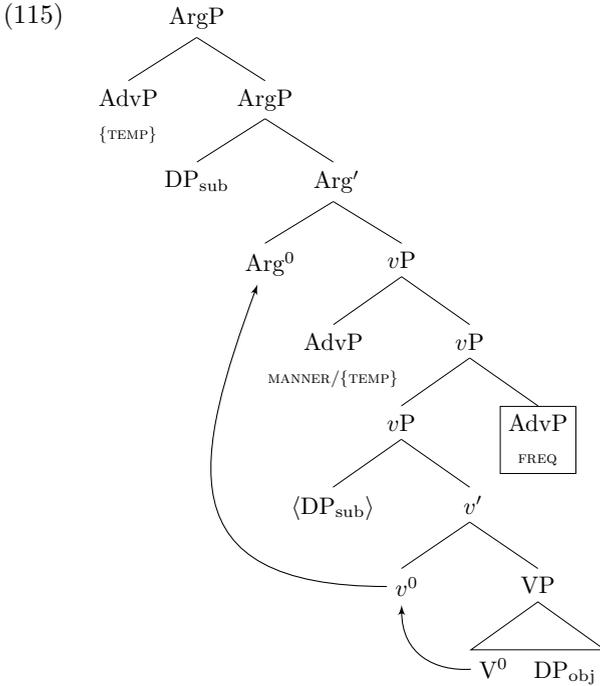
Analysis

Given the facts described thus far, along with the standard assumptions that manner adverbs are adjoined to vP, it follows that Wolof verbs must move to a vP-external position, as <V,AdvP,O> orders are readily attested. In contrast to manner adverbs, temporal adverbs can i) either be base-generated as vP-adjuncts and then optionally move to a higher position above the verb, or ii) temporal adverbs can be base-generated in both positions, as illustrated in the following tree, where the temporal adverb following the verb is adjoined to vP and the temporal adverb preceding the verb is adjoined to ArgP:

(114)

ArgP
AdvP ArgP
{TEMP}
DP$_{sub}$ Arg′
Arg^0 *v*P
AdvP *v*P
MANNER/{TEMP}
⟨DP$_{sub}$⟩ *v*′
v^0 VP
V^0 DP$_{obj}$

(114) shows that the verb must move out of *v*P, regardless of the analysis of temporal adverbs, since an analysis in which the verb remains *v*P-internal incorrectly predicts <AdvP,V,O> orders.

Regarding Wolof frequency adverbs, the key observation is that they must be clause-final. Furthermore, the semantics of these adverbs, which is always intensified with a modifier that approximates the English adverb 'very', suggests that these adverbs are in a focused position that requires obligatory clause-finality. This particular fact can be accounted for either through an obligatory right-dislocation or an obligatory right-adjunction. Both of these operations could be considered to be a requirement for obligatory focus, as adverbs *lu bari* 'very often' and *lu néew* 'very rarely' must be focused. Regardless of which of these two options is correct, Wolof frequency adverbs cannot tell us whether or not the verb is in a dislocated position, as they do not intervene between the two positions, as illustrated here with an analysis with the right-adjunction of frequency adverbs:

(115)

```
                          ArgP
                       ╱        ╲
                   AdvP          ArgP
                  {TEMP}       ╱      ╲
                          DP_sub      Arg′
                                    ╱      ╲
                                Arg⁰        vP
                                          ╱    ╲
                                      AdvP       vP
                                  MANNER/{TEMP}  ╱  ╲
                                              vP    AdvP
                                            ╱   ╲   FREQ
                                      ⟨DP_sub⟩   v′
                                               ╱    ╲
                                             v⁰      VP
                                                    ╱  ╲
                                                  V⁰   DP_obj
```

One problem that remains for this analysis pertains to the word orders in the clauses containing the imperfective auxiliary *di*, which gets inflected with the agreement suffix. We could propose that this simply means that agreement morphology is flexible, in that it can attach to either the verb or the auxiliary. However, we do not have an explanation why the verb must cross the adverb in those contexts (cf. 112-113). One proposal that explains the agreement morpheme on the auxiliary *di* was given in Torrence (2003), who argues that *di* moves in a head-to-head movement, while the verb remains in the "underlying position" (p. 29). However, this account does not explain why the uninflected verb must cross the adverb, as Torrence (2003) does not consider the distribution of adverbs in his analysis.

A potential account of the data in (112) and (113) could be a kind of "complex predicate" analysis (cf. Chomsky 1955; Neeleman 1994; Neeleman and Van de Koot 2002; Tvica 2012). In this analysis, the imperfective *di* forms a complex predicate head together with the verb. The movement of the complex predicate head out of vP is triggered by Arg⁰. In the presence of additional morphology, such as negation, *di* moves higher to host negation (cf. 116), whereas in perfective contexts which are marked by the absence of *di*, it is the verb that moves to host any negation and any other functional morphology.

(116) *Wolof* (Torrence 2003:11)
        D-oon-u-ma   *dem*
        di-PT-NEG-1.SG go
        'I had not been going.'

If this analysis is on the right track, Wolof is a case in which Arg^0 (and other functional heads) triggers the movement of the (im)perfective auxiliary, which is an element of the complex v^0, for phonological support. This can be independently supported by the fact that adverbs cannot intervene between the (im)perfective auxiliary and the verb (cf. 112c-113c).

Crucially, only when the (im)perfective auxiliary is null (as in Wolof perfectives) is the content of the verb used for the phonological support of functional morphology. This accounts for why the verb moves higher up in the absence of visible (im)perfective morphology.

Consequences for the RAH

While the analysis of the imperfective *di* here is at best a tentative attempt to try and understand its syntactic properties, the evidence strongly suggests that under the standard assumptions the verb in Wolof must move out of vP, as the distribution of adverbs suggests. When we control for the presence of additional morphology, including *di*, verb movement correlates with the agreement marker on the verb. Given that the agreement markers are rich, the RAH predictions are borne out.

7.2.10   Lango

Lango is a morphologically rich language in which the standard RAH diagnostics, adverbs, are always-clause final. As such, adverbs cannot tell us whether or not the finite verb has raised out of vP. Given that the language appears to lack left-adjoined vP-adjuncts altogether, we cannot confirm the RAH. However, we cannot falsify RAH either. The following sections outline basic facts in declarative clauses in Lango, leading to an analysis in which we cannot with certainty establish the exact surface position of the verb.

Agreement Morphology

Lango realizes prefixes on the verb that reflect the φ-features of the subject, as examples in (117) show:

(117) *Lango* (Noonan 1992:119)
        a. i. án **à-**   cámo dèk
                 I   1.SG- eat.PF stew
                'I ate stew.'

        ii.   **à-**   cámo dɛ̀k
                1.SG- eat.PF stew
                'I ate stew.'

   b. i.   lócɔ̀ **ò-**   càmò dɛk
                man 3.SG- eat.PF stew
                'The man ate stew.'

        ii.   **ò-**   càmò dɛk
                3.SG- eat.PF stew
                'He ate stew.'

The prefixes on the verb attach to the verbs and cannot appear on other hosts in the clause, suggesting that they do not move to a different position. Consequently, as outlined in Figure 4.1, the prefixes on the verb are agreement morphology; Lango is a *pro*-drop language as the subjects can be left out, as illustrated in (117aii) and (117bii). The following table provides the full set of agreement affixes in Lango:

(118)   Lango agreement affixes (Noonan 1992:91)

	Perfective Subjunctive, Habitual			Progressive		
	Singular	Plural	Dual	Singular	Plural	Dual
1	ă-	ŏ-	ŏ-	â-	ô-	—
2	ĭ	ĭ- -wùnú		î-	î- -wùnú	
3	ò-/Ø-/ŏ-/ɛ̆-	ŏ-/ĭ-		à-/ɛ̂-	ô-/î-	

The rich morphology in (118) shows that Lango is a rich agreement language, since it reflects the PNU features (cf. Chapter 3). Consequently, the RAH predicts that *v*-to-Arg movement must take place.

    In addition to agreement morphology, Lango exhibits three types of aspectual morphology: *perfective*, *habitual*, and *progressive*. The 'verbal stem of the progressive aspect reflects perfectly its infinitival origin' (Noonan 1992:91), whereas habituals and perfectives show verb stem alterations. This is illustrated in the following table, in which the transitive verb *gìkkò* 'to stop something' shows the least morphology in the progressive aspect:

(119)   Conjugation of the Lango verb *gìkkò* 'to stop something'
        (Noonan 1992:92, adapted)

	Perfective	Habitual	Progressive
1sg	àgíkò	àgíkô	á**gìkkò**
2sg	ìgíkò	ìgíkô	í**gìkkò**
3sg	ògìkô	gíkô	à**gìkkò**
3sg	ògíkò	"	"
3sg	ɛ̀gíkò	ɛ̀gíkô	ɛ́**gìkkò**
1dl	–	–	–
1pl	ògíkò	ògíkô	ó**gìkkò**
2pl	ìgíkòwùnú	ìgíkòwùnú	í**gìkkò**wùnú
3pl	ògíkò	ògíkô	ó**gìkkò**
3pl	ìgíkò	ìgíkô	í**gìkkò**

Aside from the agreement affix, all progressive forms of the verb *gìkkò* incorporate the verbal stem, that has the same shape as the infinitive. In contrast, perfective and habitual alter morpho-phonological properties of the verbal stem, which are realized as changes in tone and vowel length.

Based on the hitherto discussed facts, the RAH predicts verb movement to a position outside of *v*P, given the rich agreement morphology in Lango. To test this, we would ideally have to control for other phenomena that may trigger verb movement. In Lango we see that habituals and perfectives substantially alter verb morphology, whereas progressives show no phonological effects on verb stems. On the first encounter, this might suggest that verbs in perfective and habitual raise out of *v*P for reasons independent of agreement, whereas the progressive aspect, could in fact be a default aspect since the morphology of the verb, agreement prefixes aside, is unaffected. This suggests that out of the three, progressive is the ideal environment for testing the RAH. However, as demonstrated below, there is no independent syntactic evidence, morphology aside, that suggests that these three types of aspect are syntactically different.

Word Order

Lango exhibits rigid SVO order, as shown in (120) (Noonan 1992:119):

(120)   *Lango* (Noonan 1992:120)

             S   V   O

a.   dákô   òtèdò   rìŋó

       woman 3.SG-cook-PF meat

       'The woman cooked the meat.'

             S   V   BEN   O

b.   dákô   òtèddì   lócɛ̀ rìŋó

       woman 3.SG-cook-BEN-PF man meat

'The woman cooked the meat for the man.'

The crucial question arising is: can we find other syntactic items intervening between verb and direct object? And if not, does Lango have vP-adjuncts that precede the finite verb? The answer to both of these questions appears to be negative, as the preliminary investigation suggests that elements that are standardly assumed to be vP-adjuncts, must be clause-final in Lango.

Consider manner adverbs in (121) and (122), degree adverbs in (123), and frequency adverbs in (124). In all cases, there appears to be a constraint of sorts that allows adverbs to appear only after direct objects, whereas the placements of adverbs between verb and direct object, and in front of the verb, are ungrammatical, as b-c examples in (121) through (124) illustrate:

(121) *Lango* (Noonan 1992:181)

    a. ɛ́n *ɲámô*   cɛ̀m **nî** **mwɔ́k-mwɔ́k**
        he 3.sg-chew.hab food part noisily
        'He chews food noisily.'

    b. * ɛ́n *ɲámô*   **nî** **mwɔ́k-mwɔ́k** cɛ̀m
        he 3.sg-chew.hab part noisily   food

    c. * ɛ́n **nî** **mwɔ́k-mwɔ́k** *ɲámô*   cɛ̀m
        he part noisily   3.sg-chew.hab food

(122) *Lango*

    a. John *kwano*   buke **oyot oyot**
        John 3.sg-read.hab books quickly
        'John reads books quickly.'

    b. * John *kwano*   **oyot oyot** buke
        John 3.sg-read.hab quickly   books

    c. * John **oyot oyot** *kwano*   buke
        John quickly   3.sg-read.hab books

(123) *Lango* (Noonan 1992:183)

    a. án *à-márô*   ɛ̀ntébbɛ̀ **tùtwàl**
        I   1.sg-like.hab Entebbe very.much
        'I like Entebbe very much.'

    b. * án *àmárô*   **tùtwàl**   ɛ̀ntébbɛ̀
        I   1.sg-like.hab very.much Entebbe

    c. * án **tùtwàl**   *àmárô*   ɛ̀ntébbɛ̀
        I   very.much 1.sg-like.hab Entebbe

(124) *Lango*

    a. Adongo *camo*   amacunga **kare kare**
        Adongo 3.sg-eat.hab oranges   often
        'Adongo often eats oranges.'

    b. * Adongo *camo*   **kare kare** amacunga
        Adongo 3.sg-eat.hab often   oranges

c. * Adongo **kare kare** *camo*   amacunga
     Adongo often   3.SG-eat.HAB oranges

The clause-finality of adverbs is obligatory regardless of whether aspect is progressive, perfective, or habitual. Importantly, none of these classes of adverbs can tell us anything about the syntactic position of the verb. Therefore, they are not a proper diagnostic for the RAH. Consequently, the verb could be surfacing either vP-internally or vP-externally.

Analysis

Given the facts presented thus far, the analysis of the basic clause structure follows as given in the following tree:

(125)
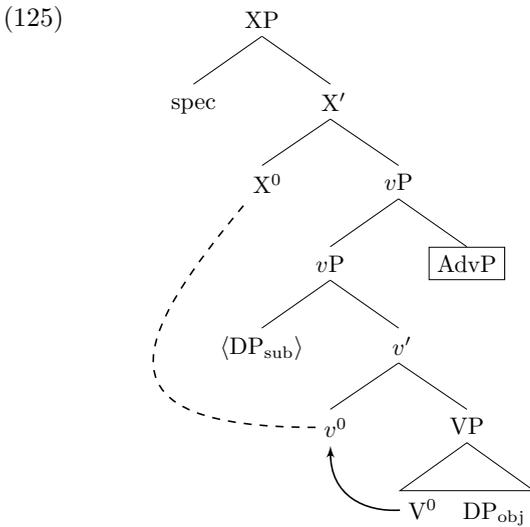
Adverbs are obligatorily right-adjoined, whereas no optional elements appear to be left adjoined to vP. The dashed line connecting v^0 and X^0 indicates that movement could be taking place and the verb could be surfacing in either of the two positions. However, there is no way to tell with any certainty based on the syntactic properties of adverbs, since none of them surface in the intervening positions.[11]

Consequences for the RAH

Regarding the RAH, the analysis above is inconclusive and based on the standard adverb tests there is no way to tell whether or not the rich agreement morphology triggers verb movement, irrespective of the type of (additional)

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11. Interestingly, Lango patterns with Thai, Pwo Karen, and Hmong Njua (cf. §6.2.8), in which adverbs also rigidly appear in clause-final position.

aspectual morphology. Verb-object adjacency appears to be uniform across different environments. Consequently, the data from Lango neither confirms nor disconfirms the RAH.

7.2.11   Moro

Similar to Quiegolani Zapotec, which has aspectual morphology in all contexts (cf. §6.2.9), Moro too does not have contexts in which we can control for non-agreement related triggers of verb movement. Although the ordering facts are not contrary to RAH predictions, there is no way to tell if *v*-to-Arg takes place for reasons of agreement.

Agreement Morphology

Moro is a morphologically rich, *pro*-drop language that invariably incorporates a variety of morphemes that attach to the verb, including morphemes that reflect the φ-features of the subject, as shown in the following example, where the prefix *a-* obligatorily appears on the auxiliary and the main verb:

(126)   *Written Moro* (Peter Jenks, p.c.)

(aganŋa) **a-**   g-a-fo   **a-**   g-a-b-aləŋ-a   erreka
2.SG   2.SG- CLG-RTC-PT.AUX 2.SG- CLG-RTC-PROG-sing-IMP yesterday

ulëdiṭano ŋələŋa ŋəŋəra kañ
morning   song   good   very
'You have sung a very beautiful song yesterday morning .'

Moro makes sufficient distinctions in its agreement paradigm, reflecting (at least) a three-way distinction in person and a two-way distinction in number (cf. 127).

(127)   Moro agreement paradigm (Rose 2013, adapted)

	Singular	Dual	Plural
1	é-	ál(ɔ́)-	ɲa-[EX], ál(ɔ́)-...-r[IN]
2	á-	—	ɲa-
3	ø-	—	l-

In addition to agreement, Moro attaches a variety of other functional morphemes on the verb, including aspectual morphology appearing as a suffix. Importantly, like agreement morphology, aspect in Moro, being strictly dependent on the verb is also a suspect for triggering verb movement, and unlike in a language like Ígbo (cf. §6.2.5) where we can control for aspect as a verb movement trigger by assessing the verb position in environments in which aspectual morphology is phonologically independent of the verb, Moro aspectual morphology, comparable to Quiegolani Zapotec (cf. §6.2.9), does not have such environments. Consequently, if there is verb movement, there is no way to tell whether or not agreement triggers it. At best we could falsify the RAH should

no optional elements be allowed to intervene between verbs and objects, in which case we could conclude that none of the verbal morphology triggers verb movement in Moro.

Word order

In discourse neutral contexts Moro exhibits SVO orders in both main and embedded clauses:

(128) *Moro* (Rose 2013, adapted)

    a.
$\overbrace{\text{um:iə}}^{\text{S}}$ $\overbrace{\text{g-a-land̪-ó}}^{\text{V}}$ $\overbrace{\text{ʌuɾí}}^{\text{O}}$
boy SM.CLG-RTC-close-PF door
'The boy closed the door.'

    b.
mama g-a-v-át̪-á $\overbrace{\text{um:iə}}^{\text{S}}$ $\overbrace{\text{g-a-ker-ó}}^{\text{V}}$
mama SM.CLG-RTC-PROG-think-IMP boy SM.CLG-RTC-broke-PF
$\overbrace{\text{gəla}}^{\text{O}}$
plate
'Mama thinks the boy broke the plate.'

Adverbs

However, adverbs can appear anywhere in the clause and they can intervene between verbs and objects (cf. 129c-130c) (Peter Jenks, p.c.):

(129) *Thotegovela Moro* (Peter Jenks, p.c., tag: 20090725)

    a.
éganᵂanat̪ó úri tərəbésa káre **rámrám**
1.SG-CLG-RTC-see-LA-PF mouse table under suddenly
'I saw the mouse under the table suddenly.'

    b.
éganᵂanat̪ó úri **rámrám** tərəbésa káre
1.SG-CLG-RTC-see-LA-PF mouse suddenly table under

    c.
? *éganᵂanat̪ó* **rámrám** úri tərəbésa káre
1.SG-CLG-RTC-see-LA-PF suddenly mouse table under

    d.
rámrám *éganᵂanat̪ó* úri tərəbésa káre
suddenly 1.SG-CLG-RTC-see-LA-PF mouse table under

(130) *Thotegovela Moro* (Peter Jenks, p.c., tag: 20090725)

    a.
éganᵂanat̪ó úri tərəbésa káre **ɲómón ɲigítʃín**
1.SG-CLG-RTC-see-LA-PF mouse table under time two
'I saw the mouse under the table two times.'

b. *éganᵂanaṭó*   úri **ɲómón ɲigítʃín** tərəbésa káre
    1.SG-CLG-RTC-see-LA-PF mouse time   two   table   under

c. *éganᵂanaṭó*   **ɲómón ɲigítʃín** úri   tərəbésa káre
    1.SG-CLG-RTC-see-LA-PF time   two   mouse table   under

d. **ɲómón ɲigítʃín** *éganᵂanaṭó*   úri   tərəbésa káre
    time   two   1.SG-CLG-RTC-see-LA-PF mouse table   under

Analysis

The absence of the requirement for immediate adjacency between verbs and objects, as adverb placement above indicates, constitutes ample evidence that the verb must be raising to some *v*P-external projection, labeled XP in the following tree:

(131)
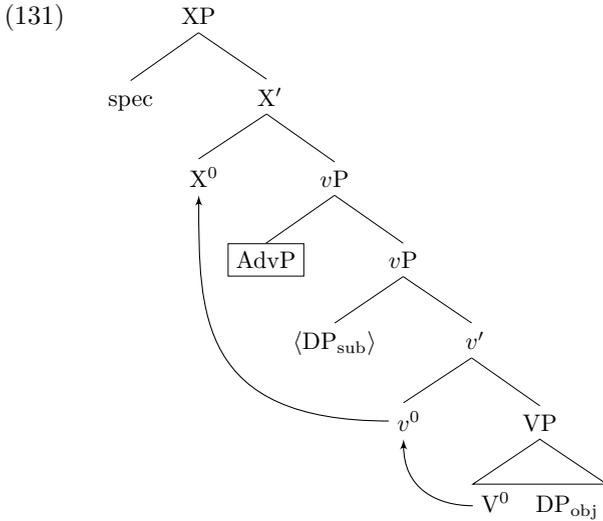
Since there is no way to isolate either of the functional morphemes attaching to the verb (i.e. aspect and agreement), we cannot tell whether one of them or both of them trigger verb movement.

Consequences for the RAH

Although the evidence from the distribution of adverbs suggests that verb movement must take place, it is impossible to detect whether verb movement correlates with rich agreement in Moro. Consequently, the data as analyzed here does not confirm the RAH, but it is not inconsistent with RAH predictions.

7.3   Summary

This chapter provided the empirical facts and analyses of eleven agreement marking (AM) languages, in which agreement morphemes exhibit (at least) PNU distinctions. Nine languages are type A languages, in which the agreement morpheme is bound to verbs, namely, Ayoreo, Bukiyip, Finnish, Egyptian Arabic, Wolof, Wariʼ, Kaqchikel, Lango, and Moro. Two languages, Hausa and Tiwi, are of type B, in both of which agreement morphemes are bound to elements other than verbs. No language of type C has been encountered in the study (cf. §4.1.4).

None of the investigated type A and B languages exhibit constructions that are contrary to the RAH. In fact, in five type A languages (Ayoreo, Bukiyip, Finnish, Egyptian Arabic, and Wolof) there is direct evidence of the presence of v-to-Arg movement in controlled contexts. In Kaqchikel, which exhibits two discourse neutral word orders (VOS and VSO), there is evidence of both v-to-Arg movement and vP movement, while in Wariʼ there is evidence of vP movement. In the two type B languages, Hausa and Tiwi, v-to-Arg movement is absent. In the remaining two type A languages, Lango and Moro, there is no way to detect verb movement or the absence thereof.

Similar to the observation made about poor agreement languages in §6.3, such as Thai, Pwo Karen, and Hmong Njua, we also find that in some rich agreement languages the RAH cannot be tested due to the obligatory right-adjunction of adverbs, as demonstrated in Lango. In addition, there are also rich agreement languages in which verb movement always takes place for independent reasons, as is the case in Moro, similar to what we have found in Quiegolani Zapotec (cf. §6.2.9).

In addition to the fact that adverbs are unusable as diagnostics when constrained to clause-final positions, their reliability as diagnostics for verb movement is degraded when they can freely adjoin to different projections in the clause, allowing them to appear both before and after the verb. Specifically, we have observed this in Egyptian Arabic and Wolof, where particular kinds of adverbs exhibit flexibility w.r.t. adjoining to vP or to a higher projection, rendering them unreliable as diagnostics for verb movement.

In addition to verb movement, there is also evidence for vP/VP movement as a way of supporting the phonologically dependent rich agreement morphology. In both Wariʼ and Kaqchikel, vP/VP movement creates the condition in which the verb and the agreement morpheme are in linear adjacency. And while for Wariʼ we may surmise that something other than agreement morphology is the trigger for vP movement, as there is no head movement, Kaqchikel has an alternative discourse neutral word order in which there is also a head movement that provides phonological support for the agreement morpheme. Table 7.4 summarizes the key findings for each language:

Language	PA/AM	PNU	Motivation for verb raising	v-to-Arg
Ayoreo	AM	yes	AdvP intervenes between V and O	yes
Bukiyip	AM	yes	AdvP intervenes between V and O	yes
Finnish	AM	yes	AdvP intervenes between V and O	yes
E. Arabic	AM	yes	certain AdvP can intervene between V and O	yes
Wolof	AM	yes	certain AdvP can intervene between V and O	yes
Kaqchikel	AM	yes	AdvP always clause-initial or clause-final, orders derived with V^0-/VP-movement	yes
Wari'	AM	yes	No AdvPs in the language, orders derived with vP-movement	no
Hausa	AM	yes	AdvP cannot intervene between V and O, but agreement does not depend on V^0/VP/vP	no
Tiwi	AM	yes	*id.*	no
Lango	AM	yes	AdvP always final	incon.
Moro	AM	yes	cannot control for Asp^0 as a trigger of verb movement	incon.

PA = pronominal argument language
AM = agreement marking language
PNU = person number universal reflected in agreement

Table 7.4 Overview of the key findings in rich agreement languages

CHAPTER 8

Conclusions

The main objective of this dissertation is to evaluate the Rich Agreement Hypothesis (RAH) from a typological perspective, employing the method of sampling by Rijkhoff, Bakker, Hengeveld, and Kahrel (1993). The investigation focuses on the novel data from a sample of languages outside the Indo-European family; it assesses the alleged correlation between verb placement and the richness of agreement morphology, as exemplified in English and French in (1) and (2), concentrating on the syntactic position of the verb in controlled conditions.

(1) *English*
     a.   John **often** *kisses* Mary.
     b.   * John *kisses* **often** Mary

(2) *French* (Pollock 1989:367, adapted)
     a.   Jean *embrasse* **souvent** Marie.
          Jean kisses   often   Marie
     b.   * Jean **souvent** *embrasse* Marie
          Jean often   kisses   Marie

The collective outcome of the analyses presented in Chapter 6 and Chapter 7 suggests that, given the standard set of theoretical assumptions in generative grammar, the correlation between verb placement and the richness of agreement morphology, where 'richness reflects a three-way person distinction and a two-way number distinction, obtains on empirical grounds well beyond Indo-European languages.

The studied languages come from eleven language families from the total of twenty-seven families in Ruhlen's (1987) classification. The remaining sixteen

families, with the exception of Indo-European, in which the RAH has been extensively studied, include only languages with OV orders, in which the RAH cannot be tested with standard adverb tests (cf. §4.2.2), and from families with extinct languages from which the relevant data could not be obtained. In sixteen languages, the RAH can be readily evaluated with standard adverb tests. In two languages, Wari' and Kaqchikel, adverbs cannot be used as diagnostics, because the derivation of word orders in both languages requires the displacement of the verb or the phrases containing the verb (i.e. VP or vP). However, although adverbs cannot be used as diagnostics, in Wari' agreement morphemes function as diagnostics for VP displacement, while in Kaqchikel the placement subject DPs in VSO orders suggests the presence of verb movement. In the remaining six languages, the RAH cannot be tested, as four languages, Thai, Hmong Njua, Pwo Karen, and Lango, did not have any (reliable) diagnostics for verb movement, while in two languages, Quiegolani Zapotec and Moro, there was no way to control for independent triggers of verb movement. In Table 8.1, I provide the findings for all twenty-four languages w.r.t. the two variables of the RAH, namely, the presence/absence of rich agreement morphology that is phonologically dependent on the verb, and whether or not v-to-Arg movement is detectable.

Family	Subfamily	#	Language	rich agr. dependent on V	detectable V-to-Arg movement	support for RAH	support against RAH	undecided w.r.t. RAH
Afro-Asiatic	Semitic	1	Egyptian Arabic	yes	yes	✓		
	Chadic	2	Hausa	no	no	✓		
Amerind	Northern Amerind	3	Kaqchikel	yes	yes	✓		
	Central Amerind	4	Quiegolani Zapotec	no	incon.			✓
	Equatorial-Tucanoan	5	Wari'	yes	no		✓	
	Equatorial-Tucanoan	6	Ayoreo	yes	yes	✓		
	Ge-Pano-Carib	7	Kadiwéu	no	no	✓		
Australian	*Unclassified*	8	Tiwi	no	no	✓		
	South-West	9	Martuthunira	no	no	✓		
Austric	Austro-Tai > Daic	10	Thai	no	incon.			✓
	Austro-Tai > Austronesian	11	Hawaiian	no	no	✓		
	Austroasiatic	12	Vietnamese	no	no	✓		
	Miao-Yao	13	Hmong Njua	no	incon.			✓
Indo-Pacific	Toricelli	14	Bukiyip	yes	yes	✓		
	West Papuan	15	Hatam	no	no	✓		
	East Papuan	16	Bilua	no	no	✓		
Khoisan	Southern Africa	17	N|uuki	no	no	✓		
Niger-Kordofanian	Niger-Congo > Central	18	Ìgbo	no	no	✓		
	Niger-Congo > West-Atlantic	19	Wolof	yes	yes	✓		
	Kordofanian	20	Moro	yes	incon.			✓
Nilo-Saharan	East Sudanic	21	Lango	yes	incon.			✓
Pidgins & Creoles	Creole	22	Haitian	no	no	✓		
Sino-Tibetan	Tibeto-Karen	23	Pwo Karen	no	incon.			✓
Uralic-Yukaghir	Uralic	24	Finnish	yes	yes	✓		

Table 8.1 The Rich Agreement Hypothesis in the sampled languages

The straightforward conclusion from Table 8.1 is that none of the investigated languages falsify the predictions of the bidirectional RAH, repeated in Table 8.2. More strongly, in eighteen languages there is concrete evidence in support of the bidirectional RAH.

Agreement	no v-to-Arg	v-to-Arg
poor	✓	✗
rich	✗	✓

Table 8.2 Predicted typology of languages according to the strong RAH

In addition to the data collection and the empirical investigation, an important objective of this dissertation was to evaluate the consequences of the empirical findings on the theoretical approach that accounts for the most rigid version of the RAH. In Chapter 2, I have discussed three different approaches, each having a different set of predictions w.r.t. the extent to which verb movement and the richness of agreement morphology correlate.

In one approach, which I have termed the no-RAH approach, v-to-I movement (i.e. v-to-Arg) is predicted to be possible in all instances, regardless of the properties of agreement (cf. Bentzen, Hrafnbjargarson, Hróarsdóttir, and Wiklund 2007). Another approach predicts a unidirectional correlation between the v-to-I movement and the richness of agreement, in which v-to-I is obligatory only in rich agreement languages, where the term 'rich' entails the presence of multiple (distinct) morphemes on the verb (cf. Bobaljik and Thráinsson 1998). Finally, the most rigid approach accounts for a bidirectional correlation between the v-to-I movement and the richness of agreement, predicting obligatory v-to-I if and only if the agreement morphology on the verb is rich, the term 'rich' indicating the presence of features that yield a three-way person distinction and a two-way number distinction (cf. Koeneman and Zeijlstra 2014); of the three approaches, the bidirectional approach predicts the smallest set of possible languages. As already illustrated in Table 8.2, the bidirectional RAH predicts that two out of four possible types cannot exist. In contrast, the unidirectional RAH predicts the absence of only one type of languages, with rich agreement in the absence of v-to-I movement, while the no-RAH predicts that all four types are possible.

Importantly, nothing in this dissertation directly falsifies any of the three approaches, as any of them could prove to be correct, because we cannot empirically exclude the potential existence of languages with poor agreement and v-to-I, nor can we exclude languages with rich agreement and no v-to-I (absence of evidence is not evidence of absence). Importantly, none of the sampled languages in Chapter 6 and Chapter 7 falsify the strongest (bidirectional) RAH. This means that — within the narrow empirical domain of correlation between the v-to-I movement and the richness of agreement morphology — the unidirectional and the no-RAH approaches generate structures for which there may

not be sufficient empirical support. At the very least, these approaches would have to account for why the two unattested types of languages may be impossible. And even if it turns out that such languages (can) exist, it is likely that they are extremely rare, which also necessitates a theoretical account. The crucial point to be made is that the correlation between the v-to-I movement and the richness of agreement morphology is ubiquitous and potentially a result of a fundamental property of natural languages, rather than an epiphenomenon arising from independent operations.

In light of the pervasiveness of the correlation between the v-to-I movement and the richness of the person and number features in the agreement morphology, in Chapter 3, I presented the results of a survey that aimed to determine the most minimal set of person and number features that arguments must have. This is needed to motivate the v-to-I movement, because if the subject agreement is indeed a realization of grammaticalized argumenthood that is projected in syntax, as proposed by Koeneman and Zeijlstra (2014), then ideally we need to empirically establish the most minimal set of features that arguments must have. The survey reveals that arguments in all hitherto-investigated languages reflect a three-way person distinction and a two-way number distinction, a generalization that I have called the Person-Number Universal (PNU). Interestingly, what Greenberg (1963) proposed for pronouns with Universal 42 "all languages have pronominal categories involving at least three persons and two numbers", turns out to be correct for DP arguments, involving both nominal and pronominal categories, as well as agreement morphology. We can thus relate the PNU in a meaningful way to the projection of the Arg^0 head, along the lines of Koeneman and Zeijlstra (2014), as there is a strong empirical support for the existence of a minimal set of person and number features in all hitherto-investigated natural languages.

As for the outcome of the analyses presented in Chapter 6 and Chapter 7, while they often directly support the RAH, they tend to be the most parsimonious ones when compared to alternatives. I will illustrate this with a few cases in which the proposed analyses yield more simplicity than potential alternatives. Take for example Haitian, a poor agreement language that does not allow <V, Adv, O> orders, as illustrated in (3). Suppose we are to analyze (3) as a counterexample to the RAH, in which v-to-Arg movement takes place. In this scenario, verb raising would have to be followed by adverb movement around the verb, or, alternatively, one would have to assume that adverbs are placed higher in this language and that adverb placement is subject to cross-linguistic variation. In both cases, the verb *in situ* analysis wins easily over a v-to-Arg analysis, as it is the more parsimonious one.

(3)   *Haitian* (Glaude and Zribi-Hertz 2014:250)

    a.   Boukinèt **preèske** *kite* Bouki
            Boukinèt almost   leave Bouki
            'Boukinèt almost left Bouki '

b. * Boukinèt *kite* **preèske** Bouki
    Boukinèt leave almost   Bouki

Now consider a rich agreement language, such as Ayoreo, which exhibits oblig-
atory <V, Adv, O> orders, as illustrated in (4). In order for (4) to falsify the
RAH, the verb would have to remain *v*P-internal, in which case Ayoreo would
have to generate verbs and objects non-adjacent to each other within the verbal
domain. This, however, fails to capture the generalization that the direct object
is the closest argument of the verb and that the verb merges with the object
first. And in addition, the correlation with rich agreement inflection would not
be straightforwardly captured.

(4)   *Ayoreo* (Luca Ciucci, p.c.)

   a.   Samane *catecâ(r)i* **gatuaque** aode
        Samane 3.talk_to always   books
        'Samane always reads books.'

   b.   * Samane **gatuaque** *catecâ(r)i* aode
        Samane always   3.talk_to books

   Even in languages in which the surface word order patterns blatantly seem
to falsify the RAH, analyses that are simpler than potential alternatives con-
sistently support the strong RAH, once we consider the full set of facts. Take,
for example, Vietnamese and Hawaiian, in both of which object shifts are a
key movement in the derivation of the basic clause structure. In Vietnamese,
adverbs can intervene between the verb and its object only when the object is
definite:

(5)   *Vietnamese* (Trang Phan, p.c.)

   a.   Tôi sẽ   *đọc* **cẩn thận** cuốn sách   này
        I   will read careful   CLS   book this
        'I will carefully read this book.'

   b.   * Tôi sẽ   *đọc* **cẩn thận** sách
        I   will read careful   book

We might be inclined to conclude based on (5a) that the verb can move to a
higher position, crossing the adverb. If so, however, we do not have a coher-
ent account of why verb movement must be absent when objects are indefinite
(5b). Under the proposed analysis which employs object shifts, this problem
disappears, since it is the definiteness of objects that correlates with the dis-
placement. This means that definite objects undergo movement crossing the
right-adjoined adverbs, while the verb remains *v*P-internal in both cases. A
similar account straightforwardly extends to the analysis of VOS and VSO or-
ders in Hawaiian (6), both of which are derived through VP-movement to the
initial position. However, while in VOS orders the indefinite objects move to-
gether with the VP, in VSO the definite objects shift prior to VP-movement,
leaving the definite object at the end of the clause.

(6) *Hawaiian* (Medeiros 2013:78)

    a.   e   inu   (*i   ka) kope ana 'o   Noelani
           IMP drink OBJ the coffee DIR SUBJ Noelani
           'Noelani is drinking coffee.'

    b.   e   inu   ana 'o   Noelani *(i   ke) kope
           IMP drink DIR SUBJ Noelani   OBJ the coffee
           'Noelani is drinking the coffee.'

In the proposed analysis of Hawaiian, the two word orders are unified as they both involve VP-movement to the front of the clause. Alternative ways of deriving these orders through verb movement fail to capture the effects of object definiteness.

Considering the data in both Vietnamese and Hawaiian, the stronger account of the facts employs object shifts, but not verb movement. That these object shifts are related to the definiteness of objects in both Vietnamese and Hawaiian is no surprise from a crosslinguistic perspectives, as the correlation is also at the heart of object shift phenomena in many Germanic languages. Under the proposed analyses, which are simpler than the alternatives, the strong RAH is supported in both languages.

The relevance of theory within typology

The methodological approach to the study of languages in this dissertation differs from the large body of research in generative frameworks in that the focus is not directed at minimizing assumptions, as initiated in Chomsky (1993, 1995), but rather on expanding the observables by studying a large set of diverse languages. In this sense, and apart from the application of the sampling method by Rijkhoff et al. (1993), the approach here falls largely in line with Baker's (2010) Formal Generative Typology (FGT), a method in which a range between 10–20 diverse languages is selected for a study (see also Baker and McCloskey 2007). As Baker (2010) points out, the degree of explanation can increase either by means of reducing the set of theoretical assumptions, or by increasing the number of observable phenomena under investigation. Importantly, by no means are these two seemingly contradicting ways of increasing explanation opposed to one another. In fact, they complement each other and can even be seen as synergistic (cf. Baker 2010).

Another important aspect that this study shares with Baker's FGT approach is that they both stand apart from traditional typological studies in that the focus of the investigation is on abstract properties rather than on the surface patterns. To that end, in the analyses of individual languages in this dissertation I adopt a worked-out, explicit theoretical proposal for a core part of the grammar that in addition to studying surface patterns, involves assumptions about functional structure, verb and object displacements, adverb placement and the status of subject markers. In contrast, functional typological studies do not necessarily impose such theoretical assumptions on the data.

Rather, they examine surface patterns from which generalizations are formed that are then used to construct explanations (cf. Croft 2002:§1.1).

Since the RAH is a hypothesis about *v*-to-Arg movement, it can only be (dis)confirmed in the absence of interfering factors. This necessitates the understanding of the syntax of these languages in a broader sense, which requires in-depth, theoretical analyses. In general, there are many important reasons why such an approach is needed, three of which I will briefly discuss here as they pertain to the RAH. First, the idea that *v*-to-Arg might correlate with the richness of agreement morphology in every language does not automatically indicate that the correlation must be observable in the word order patterns of every language. As the investigation of a number languages in Chapter 6 and Chapter 7 suggests, the placement of verbs in the linear order often seemingly falsifies the RAH. For example, Hawaiian has VSO orders, suggesting that the verb has moved over the subject, which is unexpected since the language lacks agreement morphology. However, after a careful scrutiny, it becomes clear that VSO arises as a result of the VP movement in conjunction with the definite object shifts; when objects are indefinite, VOS orders are obligatory, generally indicating that it is the definite objects that move in VSO orders, and not the verbs. Without this analysis, VSO order in and of itself would suggest verb (head) movement, which would (incorrectly) lead one to conclude that the RAH is refuted. Other phenomena that mask reliable detection of potential *v*-to-Arg movement include independent triggers of verb movement such as aspectual morphology, as observed in Ìgbo, Moro, and Quiegolani Zapotec. In all constructions in which these phenomena can be controlled for, the evidence consistently supports the RAH.

Second, in-depth theoretical analyses are crucial for the investigation of the RAH in that not all adverbs can be used to detect *v*-to-Arg movement in each language. As observed in Egyptian Arabic and Wolof, certain types of adverbs can appear both preverbally and post-verbally. This renders them unreliable as diagnostics for *v*-to-Arg movement, because obviously we cannot determine if the verb moves or if the adverb moves, or whether the adverb can be base-generated in different positions. Similar to this, the semantic properties of adverbs alone are not sufficient for determining their syntactic position, as, for example, manner adverbs in Kaqchikel must adjoin to higher projections, rendering them unusable as diagnostics for *v*-to-Arg movement, while in many other languages manner adverbs appear low in the structure, where they are a proper diagnostic for *v*-to-Arg movement. Crucially, only those adverbs that adjoin to *v*P can be used as reliable diagnostics for *v*-to-Arg movement.

Third, in-depth analyses are also vital in determining the category of the subject marking morphemes that attach to the verbs. We cannot coherently establish if the subject morphemes are agreement morphology or pronominal arguments by simply looking into the specific properties of the morphemes themselves. Rather, we are often forced to determine the properties of nominal subject DPs first, and then, on the basis thereof, to infer the category of the subject marker. For example, nominal DPs in Bilua are licensed by topic mark-

ers, suggesting that the subject morpheme must be the argument of the verb. Likewise, case morphology on nominal DPs in Egyptian Arabic suggests that nominal DPs cannot be adjuncts but must be arguments, which suggests that the subject morpheme on the verb must be agreement morphology. In sum, the presence of a doubled subject marker on the verb or elsewhere in the clause is not *ipso facto* evidence that it must be agreement.

Importantly, these reasons for the in-depth analysis clearly show that the RAH cannot be evaluated by examining the surface orders alone, much like an abstract universal cannot be dismissed by the absence of a corresponding surface universal. However, a considerable degree of regularity in the language that may look like a surface universal can result from an abstract universal. As Baker (2010) notes, a frequent, evidence-based assumption in generative studies (including this study) is that "the verb combines with its object to form a linguistic unit that cannot include the subject", the so-called *Verb-Object Constraint* (VOC). The VOC is directly (though not perfectly) reflected in the surface properties of languages, as more than 75% of languages exhibit verb-object adjacency. Parallel to this, the correlation between *v*-to-Arg movement and the richness of agreement morphology is reflected in the adverb-verb orders in most languages in this study, but not all.

On a different note, the outcome of the combination of theory and typology in this study leads to the conclusion that if the relation between syntax and morphology (e.g. as formulated by the RAH) is fundamental in natural languages, then a non-theoretic look at the data would inevitably fail to yield such a result.

Syntax-morphology interaction

The investigation of the RAH in this dissertation contributes to a more general inquiry pertaining to the extent to which syntax and morphology interact. There have been two main (opposing) views over the past few decades on how the two modules are related, with the key difference in whether morphology is pre- or post-syntactic. In this final part of the conclusion, I briefly discuss the two views and show that neither is (quite) sufficient to account for why the richness of agreement morphology and verb movement correlate as pervasively as they do, and that a more nuanced view on the interaction between syntax and morphology is needed.

The general standpoint in most, current generative frameworks is that morphology interprets the output of syntactic structures. Under this view syntax is the (only) engine that combines abstract bundles of features below and above the level of a word, while morphology is realizational. As such, morphology is entirely post-syntactic, consisting of a list of abstract features that the syntax manipulates, and a vocabulary list which links the abstract features to their phonological exponents. Thus, morphology operates at multiple locations in the grammar; this model has been aptly termed 'Distributed' Morphology (DM) (Halle and Marantz 1993, 1994; Harley and Noyer 1999). Since according to

DM morphology follows syntax, morphology *ipso facto* does not have a say in how the syntactic structures are generated in the course of the derivation, but simply provides morphological content to syntactic structures already built. Consequently, an architecture that adopts DM cannot account for why there is a correlation between verb movement and agreement morphology (and potentially other correlations), apart from suggesting that the syntax yields such correlations and morphology merely reflects them.

According to Lexical Morphology (LM) — opposing view to DM on the status of morphology as a module of grammar — morphology is a distinct engine of its own in that it generates structures separately from the syntax and is involved in the formation of words that receive semantic and phonological interpretation in the morphological component itself (Chomsky 1995; Wunderlich and Fabri 1995; Kiparsky 2016). The output of the morphological component feeds directly into syntax, which then generates structures above the word level. Importantly, under LM, morphology precedes syntax and can *a priori* drive syntactic structures. As a result, it can be straightforwardly argued that the presence/absence of rich agreement morphology on the verb entering a syntactic derivation is a determining factor of whether or not the verb will raise. In contrast to DM, which does not drive syntactic structures but merely interprets them, LM can be adapted to fit in the architecture with morphologically-driven syntax.

The question that we may ask now is why semantically and phonologically interpretable complex terminals generated by LM require more structure in the syntax? The empirically robust bidirectional correlation between verb movement and agreement morphology suggests that syntax and morphology are two sides of the same coin, as morphological complexity goes hand-in-hand with syntactic complexity, suggesting that the two structure-building components are closely integrated and may in fact be better thought of as a single component. Indeed, if morphology and syntax were two separate structure-building engines, one would expect them to complement each other in terms of complexity, as opposed to being equally complex/simplex. Thus, if the syntax-morphology 'integration' can be empirically supported, it constitutes evidence against the LM assumption that morphology and syntax are two separate, structure-building engines. In contrast, the idea that a single syntactic engine manipulates abstract morphemes all the way down below the word level, as in the DM model, becomes considerably more feasible.

Another relevant question pertains to how we motivate syntactic movement. In DM (i.e. single-engine model), individual morphemes head separate functional projections. If a higher head requires phonological support from a lower head, then this motivates the movement of the lower head to support it. This then provides a concrete explanation as to why morphologically complex elements tend to move, and why morphologically simplex elements tend not to. In contrast to DM, LM is lacking in its explanatory power in that we cannot straightforwardly motivate the syntactic movement because the two morphemes are manipulated by syntax as a single atomic element. Thus, in order to yield

the correct surface conditions, an architecture that adopts LM needs to be enriched with additional stipulations that motivate syntactic movement.

Within the empirical domain of the correlation between verb movement and the richness of agreement, LM has an advantage, since the morphological component can directly drive syntactic structures that yield the correlation. At the same time, the robustness of the correlation strongly suggests that there is a single structure-building engine, along the lines of DM. However, unlike in the LM model, the morphological component in DM cannot drive syntax. One could propose that morphology need not drive syntax in the single-engine model, because the presence of the abstract agreement morpheme (in the numeration) is a sufficient reason for the syntax to merge it in a higher position. This explains why rich agreement morphemes (e.g. in Italian) are merged in a higher position, but does not explain why poor agreement morphemes (e.g. English) are not. Consequently, the injunction to merge an agreement morpheme in a higher position must come from the properties of the agreement morpheme itself, which informs us that morphology (in this instance) must guide syntax.

This suggests that the single-engine architecture need not be modified so that morphology can drive syntax. Rather, as has been proposed by Koeneman and Zeijlstra (2014), this can be achieved during language acquisition. In their view, if the agreement morphemes that reflect a rich set of features are acquired, then they will instigate the (higher) projection to host them. If correct, this suggests that morphology shapes syntax in the sense that the properties of individual (abstract) morphemes (i.e. syntactic primitives) determine the complexity of the syntactic structure. In this sense, the relation between morphology and syntax seems to be direct. However, when it comes to complex morphological elements (composed of multiple morphemes), such as inflected verbs, the relation is indirect in the sense that morphology affects syntax once the individual morphemes and their features have been determined from the input in the acquisition process. Thus, in combination with this acquisition account, the realizational characteristic of DM, that (complex) morphology cannot drive syntax in the grammar itself, can be maintained.

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Summary: Agreement and Verb Movement, the Rich Agreement Hypothesis from a Typological Perspective

It has been often observed that the position of the verb relative to the vP-adjoined adverbs varies across languages in that finite verbs inflected with poor (or no) agreement morphology, as in English (1) precede adverbs, whereas verbs with rich agreement morphology, as in French (2) follow adverbs.

(1) a. John **often** *kisses* Mary.

     b. * John *kisses* **often** Mary

(2) a. Jean *embrasse* **souvent** Marie.
          Jean kisses   often   Marie
          'Jean often kisses Marie.

     b. * Jean **souvent** *embrasse* Marie
            Jean often   kisses   Marie

Within the framework of generative grammar this correlation gave rise to the so-called Rich Agreement Hypothesis (RAH), a hypothesis that straightforwardly predicts the word order variation in (1) and (2) by means of verb movement over the adverbs, triggered by the presence of a vP-external agreement affix that requires phonological support; in the absence of the vP-external agreement affix, the RAH predicts the absence of verb movement (cf. Rohrbacher 1999; Koeneman 2000; Koeneman and Zeijlstra 2014). Over the past few decades the RAH in its strongest form, which bidirectionally correlates the position of the verb with the richness of agreement, has been loosened up by some scholars, leading to a unidirectional correlation (cf. Bobaljik and Thráinsson 1998), while others have dismissed the RAH altogether (cf. Bentzen, Hrafnbjargarson, Hróarsdóttir, and Wiklund 2007). Recently however, these objections have been disputed by Koeneman and Zeijlstra (2014), who upon reexamining the alleged counterexamples argue that the strong RAH holds across all investigated languages within the Indo-European (IE) family.

In light of this and given that the investigations into the RAH have been constrained to IE languages, in this dissertation, I expand the crosslinguistic data by including non-IE languages in order to evaluate the extent to which the hypothesis holds. Specifically, I conduct a typological study using a method of language sampling, based on Rijkhoff, Bakker, Hengeveld, and Kahrel (1993), that ensures maximal genetic distance between individual languages and takes into account genetic diversity across all language families, as classified by Ruhlen (1987).

Although many typological studies focus primarily on descriptive typology and, thus, abstain from any version of grammatical theory, this study, along with its descriptive typology, involves a great deal of theorizing within the framework of generative grammar. This is crucial for RAH testing, because merely relating verb placement to the type of agreement morphology alone often leads to a conclusion that neglects other phenomena that can affect verb placement in such a way that they mask any potential effects of agreement morphology. Therefore, we have to be able to control for such phenomena, and for that, the theoretical underpinnings that I rely on in this study are unavoidable.

In Chapter 2, I review three different theoretical approaches that have different consequences for the generalization that verb movement is correlated with the richness of agreement morphology, each approach leading to the formulation of three different versions of the RAH: bidirectional, unidirectional, and no-RAH. Importantly, the three versions of the RAH have different predictions with respect to the types of languages that can exist.

The bidirectional RAH predicts obligatory verb raising if and only if the agreement morphology is rich. Specifically, the verb moves from its base position inside vP to the head of the inflectional (IP) domain, in the so-called 'v-to-I' movement. Importantly, the bidirectional RAH predicts that only two types of languages can exist given the two variables. That is, verbs must undergo v-to-I movement in languages in which they are inflected with rich subject agreement, whereas, v-to-I movement must be absent in those languages in which verbs lack rich subject agreement inflection. The typology is summarized in the following table:

	no v-to-I	v-to-I
Rich agr.	✗	✓
Poor agr.	✓	✗

Table 8.1 Predicted typology of languages according to the bidirectional RAH

While these predictions hold for all accounts that purport the bidirectional RAH, the accounts differ in terms of what it takes for agreement to count as rich. In one view, agreement is rich if the paradigm reflects a three-way person distinction (cf. Rohrbacher 1994, 1999). Similarly, Koeneman and Zeijlstra

(2014) propose that agreement morphology counts as rich if it reflects distinctions in the paradigm. In addition, they propose that the distinctions must reflect at least those person and number features that are found in the most minimal pronominal system; this set of features in the agreement morphology suggests that the subject argument has been grammaticalized, having its own projection, labeled ArgP (Arg= argumenthood).

In contrast to the bidirectional RAH, the unidirectional RAH allows for optional *v*-to-I movement as the (*v*P-external) agreement-hosting projections can be generated even if the morphology on the verb is poor or absent (cf. Bobaljik and Thráinsson 1998). In Bobaljik and Thráinsson's (1998) view, verb movement to a *v*P-external projection can take place for a number of different reasons, one of which is the richness of agreement, which they define as the presence of multiple distinct morphemes on the verb, marking tense and agreement. This yields the following predictions:

morphemes	no *v*-to-I	*v*-to-I
≥ 2	✗	✓
1 ≤	✓	✓

Table 8.2 Predicted typology of *v*-to-I in relation to the number of distinct inflectional morphemes (cf. Bobaljik and Thráinsson 1998)

Unlike the unidirectional and bidirectional approaches to the RAH, the no-RAH approach maintains that the correlation between verb movement and the richness of agreement morphology, which led to the formulation of the RAH, is merely a byproduct of other movement effects (cf. Bentzen et al. 2007). Consequently, all four types of languages can in principle exist. This is based on the placement of adverbs in Regional Northern Norwegian (ReNN) (3) and Icelandic (4), for which Bentzen et al. (2007) argue that neither bidirectional or unidirectional RAH can be sustained.

(3)　Æ　vet　koffer ho Hedda ⟨*kjøpe*⟩ **ifte**　⟨*kjøpe*⟩ sko.
　　　I　know　why　she Hedda　buys　often　buys　shoes
　　　'I know why Hedda often buys shoes.'

(4)　Ég veit　af hverju Hedda ⟨*kaupir*⟩ **oft**　⟨*kaupir*⟩ skó.
　　　I　know　why　　　Hedda　buys　often　buys　　shoes
　　　'I know why Hedda often buys shoes.'

However, after a close inspection, Koeneman and Zeijlstra (2014) argue that neither example falsifies the bidirectional RAH. In ReNN, a poor agreement language, there are more reliable adverbs, such as negative adverbs, that obligatorily precede the verb, while the Icelandic example in (4) allows object shifts, which shows that both the verb and the object must move over the negative adverb. Therefore, these "counterexamples" do not contradict the RAH.

On the basis of presented arguments, the chapter end with the conclusion that the bidirectional version of RAH survives the objections and holds across the investigated IE languages. As a result, the bidirectional version ought to be evaluated first, since it is the most rigid version, and therefore the easiest to falsify.

Since the bidirectional RAH is specifically tied to the richness of person and number features that appear on the verbal inflection, Chapter 3 addresses the question of what it takes for agreement to count as 'rich'. Following Koeneman and Zeijlstra (2014), I assume that richness entails a set of person and number features that are found in arguments in all natural languages. In order to determine what the properties of those features are, I conduct a typological study that seeks to determine the most minimal set of person and number features that any language must exhibit in its arguments. The study focuses primarily on free pronouns, as they are naturally the richest in terms of their person and number properties. The findings indicate that arguments in any given language reflect (at least) a three-way distinction in person and a two-way distinction in number. I refer to this as the Person-Number Universal (PNU). The body of the chapter discusses languages that appear to falsify the PNU. Although PNU distinctions have recently been claimed not to be universal if attention is restricted to pronominal systems (cf. Harbour 2015), the distinctions obtain once we consider arguments in general, involving both pronominal and nominal systems, as well as the agreement inflection on the verb.

The crucial insight that I rely on is that the number of distinctions, say n, minimally requires $n-1$ features. Thus, languages that only mark the feature [singular] have a two-way number distinction, distinguishing [singular] from unspecified number, as is the case in Classical Chinese, Thai, and Kawi, all of which have specifically singular pronouns that are distinguished from general pronouns. A two-way number distinction can also arise due to the presence of the [plural] feature or group-like readings that are distinct from unspecified number, as is the case in Pirahã. Similarly, the presence of a three-way person distinction can be achieved by the presence of two features, as in Sanapaná, which only has the overtly realized features [speaker] and [non-speaker].

Additionally, the study reveals that in many languages the absence of featural distinctions in pronominal systems are robustly compensated for by the presence of features in the agreement morphology. For example, in Wāmbule, Oneida, Tiwa (Northern), Winnebago, and Kiowa the person and number features are 'split up', appearing in both free pronouns and in agreement morphology. This compensatory behavior consistently leads to a richer set of features than what is only found in pronouns, and it is precisely the kind of behavior we would expect if the PNU holds true, but a surprise if it would not exist. I propose two potential analyses of these languages, suggesting that the dropped features could in fact be a version of an obligatory *pro*-drop, in which only particular features can be left out and not the entire set of features, leaving an impoverished set of free pronouns.

The chapter ends with the conclusion that all hitherto studied languages

exhibit (at least) a three-way person distinction and a two-way number distinction in their arguments, thus conforming to the PNU. The PNU features are thus taken to be the baseline for determining the richness of agreement morphology.

Chapter 4 serves as a toolkit for establishing the properties of agreement morphology and for assessing diagnostics for verb movement. I begin by discussing the distinction between pronominal argument languages and agreement marking languages, both of which exhibit subject-marking morphemes on the verb. This is important because in controlled conditions the RAH predicts verb movement in agreement marking languages, but not in pronominal argument languages, and the two are not straightforwardly distinguishable. Following Jelinek (1984, 2006), I utilize the following criteria for establishing if a subject-marking morpheme is either an argument of the verb or agreement morphology:

- the complementary distribution of the subject markers and the nominal subjects; if the subject marker and the DP are in complementary distribution, then the subject marker must be an argument.
- the presence of case marking on the nominal DP; if nominal DPs are marked for case, then they are arguments, indicating that the subject-marker on the verb is agreement.
- obligatory DP topic/focus; if the nominal DPs are obligatorily focused or marked as topics then they are licensed by topic and focus heads, indicating that the subject marker on the verb must be the argument.
- subject marker movement; if there is evidence that the subject marking morpheme can undergo movement, then it must be an argument.

Once established that the subject marking morpheme is agreement, we have to determine if it phonologically depends on the verb, because the RAH predicts verb movement if and only if the (rich) agreement morpheme is phonologically dependent on the verb. To that end, I distinguish the following four types of languages:

- type A, where agreement is expressed by bound morphemes hosted by a verbal element (i.e. $V^0/VP/vP$),
- type B, where agreement is expressed by bound morphemes that are attached to any morpheme that happens to be adjacent to it, one of which can be $V^0/VP/vP$,
- type C, where agreement is expressed by unbound morphemes, and
- type D, where agreement morphology is poor/absent.

Given these distinct phonological properties of different types of agreement morphology, the RAH predicts that

- for A, agreement is always expected to trigger verb movement,
- for B, agreement can trigger verb movement, but it need not, since it can also attach to other adjacent elements,
- for C, agreement is phonologically independent of $V^0/VP/vP$ and it does not trigger verb movement, and

- for D, there is no verb movement in controlled conditions.

Once we ascertain whether or not the category of the subject doubling morpheme is agreement that is phonologically dependent on the verb, we can determine RAH predictions w.r.t. the v-to-Arg movement.

In addition to the properties of agreement morphology, the chapter discusses specific contexts in which the RAH can be tested. For example, the RAH cannot be tested in OV languages, as they are well known to be lacking in reliable diagnostics for verb movement (cf. Vikner 1997; Bobaljik and Thráinsson 1998; Koeneman and Zeijlstra 2014, among others). Consequently, this study is restricted to the investigation of VO languages. However, although a necessary condition, there is no guarantee that we can test the RAH in any VO language; we have to control for other phenomena that can mask v-to-Arg movement, such as

- V2-effects (the obligatory placement of the verb in the second position of the clause)
- presence of vP-external functional heads that require phonological support from the verb (e.g. Aspect),
- information-structural effects

These kinds of phenomena are known to trigger verb movement to a vP-external position independently of agreement morphology. The consequence of this is that when there is another potential trigger of verb movement alongside agreement, say aspectual morphology, there is no way to tell whether both elements or just one of them triggers verb movement. Thus, the RAH cannot be evaluated in environments with independent triggers of verb movement.

The chapter rounds off with the discussion on phrasal adverbs as the main diagnostic for verb movement. Importantly, phrasal adverbs can vary greatly in terms of their syntactic properties, as some can appear in a variety of positions, whereas others are more rigid. Since we are testing for v-to-Arg movement, the more rigid adverbs that adjoin to vP are the most reliable diagnostics. On a scale from most rigid to most flexible, adverbs rank as given in (5), with the negative adverbs being the most rigid, and the temporal adverbs being the most flexible.

(5)   negative adverb $\rightarrow$ manner/frequency adverb $\rightarrow$ temporal adverb

When these classes of adverbs are in conflict w.r.t. v-to-Arg movement taking place, I take the class to the left of '$\rightarrow$' to be a more reliable diagnostic than the class to the right.

Chapter 5 provides the details of the procedure for language sampling, following Rijkhoff et al. (1993). The sampling method ensures maximal genetic distance between individual languages and takes into account genetic diversity across all language families, as classified by Ruhlen (1987). Languages were selected from each phylum, provided that they allow for the controlled testing of

the RAH. This naturally excludes OV languages and environments in which independent verb movement cannot be controlled for. I have also taken measures to select equal numbers of poor and rich agreement languages to the extent possible. From the sample of forty languages that were selected for the study, sixteen languages could not be studied, since they come from the families that only contain OV languages, or from extinct families for which the data could not be obtained. The remaining twenty-four languages that were studied are Egyptian Arabic, Hausa, Kaqchikel, Quiegolani Zapotec, Wariˀ, Ayoreo, Kadiwéu, Tiwi, Martuthunira, Thai, Hawaiian, Vietnamese, Hmong Njua, Bukiyip, Hatam, Bilua, N|uuki, Ìgbo, Wolof, Moro, Lango, Haitian, Pwo Karen, and Finnish.

In Chapter 6, I analyze languages in which the RAH does not predict verb movement. Of the investigated twelve type D languages, six languages (Mandarin, N|uuki, Kadiwéu, Haitian, Martuthunira, Hatam, and Bilua) do not allow any adverbs to intervene between finite verbs and objects, while they can precede finite verbs, indicating the absence of v-to-Arg movement, and thus supporting the RAH.

In three languages, Thai, Pwo Karen, and Hmong Njua, all adverbs appear exclusively in the clause-final position (i.e. following objects), and while there is no evidence that v-to-Arg movement takes place, since no adverbs intervene between finite verbs and objects, there is also no evidence that it cannot either, since adverbs cannot appear (immediately) in front of the finite verbs. Consequently, the RAH cannot be evaluated in Thai, Pwo Karen, and Hmong Njua.

The RAH cannot be tested in Quiegolani Zapotec, which appears to have verb raising simply by virtue of having discourse neutral VSO orders. However, there is no way to correlate this to the absence of agreement morphology, since the language productively utilizes aspectual morphology on the verb for which we cannot control.

In Ìgbo, adverbs are restricted to clause-final positions in environments with aspectual morphemes that are bound to verbs, and thus trigger verb movement. However, unlike Quiegolani Zapotec, Ìgbo exhibits environments that lack aspectual morphemes. In such environments, the distribution of adverbs is different as they can now also precede the verb, but crucially cannot intervene between the verb and direct object. This shows that Ìgbo lacks v-to-Arg movement, as predicted by the RAH.

In Vietnamese and Hawaiian there is evidence of adverbs intervening between the finite verbs and objects. However, object definiteness plays the key role in both languages. In Vietnamese, <V, Adv, O> orders are only attested when objects are definite, whereas the order is ungrammatical with indefinite objects. The more straightforward analysis that does not involve any verb raising that I propose utilizes object shifts to account for the <V, Adv, O_{def}> orders. Similarly, Hawaiian also exhibits variation in word orders due to the definiteness of objects. That is, the clauses with definite objects have VSO orders, whereas VOS orders come with indefinite objects. While there is evi-

dence suggesting that VP fronts in Hawaiian (cf. Medeiros 2013), the locus of variation between the two word orders arises due to object shifts taking place when objects are definite prior to VP fronting, yielding VSO orders, whereas the indefinite objects are pied-piped with the entire VP, yielding VOS orders. Crucially, when we control for object shifts in both Vietnamese and Hawaiian, adverbs cannot intervene between verbs and direct objects, suggesting the absence of verb movement, as predicted by the RAH.

In most languages studied in Chapter 6, the analyses show that the RAH makes correct predictions w.r.t their word orders. In the remaining few languages, the RAH is inconclusive, due to the absence of diagnostics that allow us to reliably detect verb movement.

In Chapter 7, I analyze eleven languages all of which have agreement morphology that reflects at least the features of the PNU, and most of which have discourse neutral word orders that suggest that displacements must take place.

In five languages, namely, Ayoreo, Bukiyip, Finnish, Egyptian Arabic, and Wolof adverbs readily appear between verbs and direct objects, indicating the presence of v-to-Arg. In particular this is evident in Ayoreo, Bukiyip, and Finnish, in which most adverbs follow the same pattern. In contrast, in Egyptian Arabic and Wolof, certain classes of adverbs show more flexibility, as they can both precede and follow the verb, making it more difficult to determine the exact syntactic position of the verb. Nevertheless, the two languages have other classes of adverbs that are syntactically more rigid, suggesting that the verb must raise.

In Hausa and Tiwi, adverbs cannot intervene between verbs and direct objects. However, in both languages agreement morphemes show a lack of phonological dependency on the verb. While this is always the case in Hausa, where agreement together with aspect forms a phonologically independent clitic cluster, the Tiwi agreement morpheme attaches to whatever morpheme is adjacent to it. Thus, in both languages, agreement morphemes do not trigger verb movement, and since adverbs cannot intervene between verbs and direct objects, the RAH is supported.

In the two verb-initial rich agreement languages, Wariʼ and Kaqchikel, there is evidence of vP/VP-fronting. While there are no adverbs to be found in Wariʼ, Kaqchikel adverbs appear only sentence-initially or sentence-finally. However, given their respective syntactic properties, the surface word orders must be derived in both languages. In Wariʼ, independent vP-fronting brings the verb and agreement morphology into linear adjacency, and because the verb and agreement are adjacency, there is no need for agreement to trigger verb movement. This analysis neither contradicts nor provides evidence in support of the RAH. As for Kaqchikel, which has two discourse neutral word orders, VOS and VSO, the analysis suggests that VOS is derived with VP-raising with a similar effect as the vP-raising in Wariʼ, while VSO is derived through verb (head) movement. If the VSO derivation is correct, then the RAH is supported, with the subject DP as a diagnostic for verb movement.

In the last two languages, Lango and Moro, there is no way to properly eval-

uate the RAH. Similar to three poor agreement languages, Thai, Pwo Karen, and Hmong Njua, Lango appears to exhibit adverbs only in clause-final positions, which cannot be used to detect *v*-to-Arg movement. As for Moro, like what we have seen in Quiegolani Zapotec, there is no way to control for the non-agreement related morphology that can also trigger verb movement.

The summary of the analyses of the studied languages are given in the following table:

#	Language	rich agr. depend. on V	detectable v-to-Arg	support for RAH	support against RAH	undecided w.r.t. RAH
1	Egyptian Arabic	yes	yes	✓		
2	Hausa	no	no	✓		
3	Kaqchikel	yes	yes	✓		
4	Quiegolani Zapotec	no	incon.			✓
5	Wari˺	yes	no			✓
6	Ayoreo	yes	yes	✓		
7	Kadiwéu	no	no	✓		
8	Tiwi	no	no	✓		
9	Martuthunira	no	no	✓		
10	Thai	no	incon.			✓
11	Hawaiian	no	no	✓		
12	Vietnamese	no	no	✓		
13	Hmong Njua	no	incon.			✓
14	Bukiyip	yes	yes	✓		
15	Hatam	no	no	✓		
16	Bilua	no	no	✓		
17	N|uuki	no	no	✓		
18	Ìgbo	no	no	✓		
19	Wolof	yes	yes	✓		
20	Moro	yes	incon.			✓
21	Lango	yes	incon.			✓
22	Haitian	no	no	✓		
23	Pwo Karen	no	incon.			✓
24	Finnish	yes	yes	✓		

Table 8.3 The bidirectional Rich Agreement Hypothesis in the sampled languages

In conclusion, although in a number of languages the placement of verbs seemingly falsifies the RAH, a closer look suggests that such observables arise due to independent phenomena, such as object shifts, independently triggered verb movement (e.g. by aspectual morphology), and flexible distribution of certain types of adverbs. When these phenomena are controlled for, the evidence consistently supports the RAH. This is crucial because it validates the approach of conducting typological studies that are grounded in theoretical frameworks. If the relation between the displacement and morphology, as formulated by the RAH, is fundamental in natural languages, then a non-theoretic look at word orders would inevitably fail to yield such a conclusion.

The investigation of the RAH in this dissertation contributes to the general

question pertaining to the extent to which syntax and morphology interact. Although the general standpoint in most, current generative frameworks is that morphology follows syntax and therefore cannot drive syntax in the course of the derivation, it is hard to deny that morphology shapes syntax in some way, given the empirical findings in this study, which show a cross-linguistically consistent, bidirectional correlation between the syntactic position of the verb and the properties of agreement that phonologically depends on the verb. As proposed by Koeneman and Zeijlstra (2014), this syntax–morphology interaction can be made compatible with the current frameworks through acquisition, as the morphology in the input of a child acquiring her first language shapes the development of her syntax.

Samenvatting: Congruentie en werkwoordverplaatsing, de RAH vanuit het typologische perspectief

Het is een bekende observatie dat het werkwoord volgt op een bijwoord, indien het werkwoord in een taal weinig of geen gebruik maakt van congruentie-morfologie, zoals in het Engels (1), terwijl het werkwoord vooraf gaat aan bijwoorden als het werkwoord gebruik maakt van rijke congruentie-morfologie, zoals in het Frans (2).

(1)   a.   John **often** *kisses* Mary.
                John vaak   kust   Mary
                'John vaak kust Mary.'

        b.   * John *kisses* **often** Mary
                John kust   vaak   Mary

(2)   a.   Jean *embrasse* **souvent** Marie.
                Jean kust   vaak   Marie
                'Jean vaak kust Marie.'

        b.   * Jean **souvent** *embrasse* Marie
                Jean vaak   kust   Marie

Vanwege deze relatie tussen de plaatsing van het bijwoord en de mate van inflectie van het werkwoord, werd in de generatieve grammatica de zogenaamde "Rijke Congruentie Hypothese" (Engels: Rich Agreement Hypothesis (RAH)) geformuleerd. Volgens de RAH komt het verschil tussen de volgordes in (1) en (2) voort uit een werkwoordverplaatsing die afhangt van de aanwezigheid van het *v*P-externe congruentieaffix die fonologische ondersteuning van het werkwoord vereist; als het congruentieaffix afwezig is, voorspelt de RAH de afwezigheid van werkwoordverplaatsing (zie Rohrbacher 1999; Koeneman 2000 Koeneman en Zeijlstra 2014). In de afgelopen decennia werd de 'meest sterke versie van de' RAH, die waarin de positie van het werkwoord bidirectioneel correleert met de rijkheid van de congruentie-morfologie, afgezwakt door sommige taalkundigen, wat leidde tot de unidirectionele RAH (zie Bobaljik en Thráinsson 1998),

terwijl andere taalkundigen alle versies van de RAH hebben afgewezen (zie Bentzen, Hrafnbjargarson, Hróarsdóttir, en Wiklund 2007). Onlangs zijn deze bezwaren betwist door Koeneman en Zeijlstra (2014), die in hun analyses van de vermeende tegenvoorbeelden laten zien dat de bidirectionele RAH toch de juiste voorspellingen maakt in alle onderzochte talen binnen de Indo-Europese (IE) familie.

Gezien het feit dat het onderzoek naar de RAH tot nu toe beperkt is gebleven tot de IE talen, breid ik in dit proefschrift de crosslinguïstische data uit en bestudeer ik de RAH in talen buiten de IE familie. In het bijzonder voer ik een typologisch onderzoek uit met behulp van de sampling methode van Rijkhoff, Bakker, Hengeveld, en Kahrel (1993). Deze methode zorgt voor maximale genetische afstand tussen de geselecteerde talen en houdt rekening met de genetische diversiteit in alle taalfamilies, zoals die geclassificeerd zijn door Ruhlen (1987).

Hoewel veel typologische studies zich voornamelijk richt(t)en op beschrijvende typologie en zich dus onthouden van grammaticale theorie, wordt in deze studie, naast de beschrijvende typologie, ook gebruik gemaakt van een expliciet grammaticaal framework, namelijk dat van de generatieve grammatica. Dit is cruciaal voor het onderzoek naar de RAH omdat het vaststellen van de relatie tussen werkwoordplaatsing en de eigenschappen van congruentie-morfologie zonder diepgaande theoretische analyses vaak tot een conclusie leidt zonder acht te nemen van andere factoren die de werkwoordplaatsing kunnen beïnvloeden. Door deze factoren is het vaak niet mogelijk te zien of de congruentie-morfologie ook effecten op werkwoordverplaatsing heeft. Het is daarom van belang dat we dergelijke factoren controleren, en hiervoor is het gebruik van een theoretisch kader onontbeerlijk.

In Hoofdstuk 2 bespreek ik drie theoretische benaderingen die verschillend aankijken tegen de vermeende correlatie tussen de werkwoordverplaatsing en de rijkheid van de (subject) congruentie-morfologie. Elke benadering leidt tot de formulering van een verschillende versie van de RAH: de bidirectionele, de unidirecionele, en de no-RAH. Belangrijk is dat deze drie versies van de RAH verschillende voorspellingen doen voor de soorten talen die kunnen bestaan.

De bidirectionele RAH voorspelt verplichte werkwoordverplaatsing alleen dan als de congruentie-morfologie rijk is. Concreet verplaatst het werkwoord van de basispositie binnen de vP naar het hoofd van het inflectionele (IP) domein, via een zogenaamde 'v-naar-I' verplaatsing. Dit voorspelt dat er slechts twee soorten talen kunnen bestaan. Volgens de bidirectionele RAH ondergaan werkwoorden v-naar-I verplaatsing in talen waarin zij worden verbogen met rijke congruentie-morfologie, terwijl v-naar-I verplaatsing afwezig is in die talen waarin de congruentie-morfologie arm (of afwezig) is. Deze typologie wordt samengevat in Tabel 1.

congruentie	geen v-naar-I	v-naar-I
rijk	✗	✓
arm	✓	✗

Tabel 8.1 De typologie van talen volgens de bidirectionele RAH

Hoewel deze voorspellingen horen bij alle theorieën die de bidirectionele RAH verdedigen, verschillen de verklaringen over de definitie van rijkheid van congruentie-morfologie. Rohrbacher (1994, 1999) stelt voor dat congruentie-morfologie rijk is als het paradigma van congruentieaffixen eerste, tweede en derde persoon onderscheidt. Onderscheidingen in het paradigma werden ook door Koeneman en Zeijlstra (2014) voorgesteld als basis voor de definitie van rijkheid. Zij beweren dat 'rijke' paradigmata ten minste de persoons- en getalskenmerken van het meest minimale pronominale systeem in de talen van de wereld weerspiegelt. Als deze set van kenmerken uit de morfologische contrasten binnen het paradigma is af te leiden, impliceert dit dat het subjectargument gegrammaticaliseerd is, waarvoor de syntaxis een specifieke frase projecteert, gelabeld ArgP (Arg = argumenthood).

In tegenstelling tot de bidirectionele RAH voorspelt de unidirectionele RAH dat v-naar-I verplaatsing optioneel is omdat de vP-externe projecties gegenereerd kunnen worden zelfs in die gevallen waarin de congruentie-morfologie arm (of afwezig) is (zie Bobaljik en Thráinsson 1998). Volgens Bobaljik en Thráinsson (1998) zijn er verschillende redenen waarom v-naar-I verplaatsing kan plaatsvinden, waaronder ook de rijkheid van congruentie-morfologie, die zij definiëren als de aanwezigheid van meerdere afzonderlijke morfemen op het werkwoord die tijd en congruentie markeren. Hun theorie maakt de volgende voorspellingen:

aantal morfemen	geen v-naar-I	v-naar-I
≥ 2	✗	✓
$1 \leq$	✓	✓

Tabel 8.2 De typologie van v-naar-I in relatie tot het aantal afzonderlijke morfemen (zie Bobaljik en Thráinsson 1998)

In tegenstelling tot de unidirectionele en bidirectionele benaderingen van de RAH, stelt de no-RAH dat de correlatie tussen werkwoordverplaatsing en de rijkheid van de congruentie-morfologie slechts een bijverschijnsel is van andere verplaatsingseffecten (zie Bentzen et al. 2007). Op basis van de positie van bijwoorden in het 'Regionaal Noord-Noors' (ReNN) (3a) en het IJslands (3b) stellen Bentzen et al. (2007) dat noch de bidirectionele, noch de unidirectionele RAH aannames kunnen standhouden.

(3) Æ vet koffer ho Hedda ⟨*kjøpe*⟩ **ifte** ⟨*kjøpe*⟩ sko.
  ik weet waarom zij Hedda koopt vaak koopt schoenen
  'Ik weet waarom Hedda vaak schoenen koopt.'

(4) Ég veit af hverju Hedda ⟨*kaupir*⟩ **oft** ⟨*kaupir*⟩ skó.
  ik weet waaroom Hedda koopt vaak koopt schoenen
  'Ik weet waarom Hedda vaak schoenen koopt.'

Echter, na een grondige analyse stellen Koeneman en Zeijlstra (2014) vast dat deze 'tegenvoorbeelden' de bidirectionele RAH niet falsificeren. In ReNN, dat geen congruentie-morfologie heeft, zijn er betrouwbare diagnostieken zoals negatieve adverbia, die verplicht voor het werkwoord staan, terwijl de IJslandse zin in (3b) objectverschuivingen toelaat waaruit blijkt dat zowel het werkwoord als het object zich over de negatieve adverbium moeten verplaatsen. Gezien deze feiten is het bestaan van de *v*-naar-Arg vreplaatsing in deze talen goed gemotiveerd.

Het hoofdstuk concludeert op basis van de gepresenteerde argumenten dat de bidirectionele versie van RAH de juiste voorspellingen maakt in alle onderzochte IE talen. Omdat de bidirectionele RAH ook de meest rigide versie is, wordt hij in dit proefschrift geëvalueerd in de talen buiten de IE familie.

Omdat de bidirectionele RAH specifiek gekoppeld is aan de rijkheid van de persoons- en getalskenmerken die op de verbale verbuiging verschijnen, richt Hoofdstuk 3 zich op de vraag wat er nodig is om congruentie-morfologie als 'rijk' te bestempelen. In navolging van Koeneman en Zeijlstra (2014) neem ik aan dat rijkheid (ten minste) een set van persoons- en getalskenmerken met zich meebrengt die te vinden zijn in de argumenten van alle talen. Om te bepalen wat de eigenschappen van die kenmerken zijn, voer ik een typologische studie uit met het doel om de meest minimale set van persoons- en getalskenmerken vast te stellen. Het onderzoek richt zich vooral op vrije pronomina omdat die vanzelfsprekend de rijkste zijn in het uitdrukken van persoon en getal eigenschappen. Uit dit onderzoek blijkt dat argumenten in alle onderzochte talen (ten minste) drie onderscheidingen in persoon en twee onderscheidingen in getal vertonen. Ik noem dit de "Persoon-Getal Universaal" (Engels: Person-Number Universal (PNU)). De kern van het hoofdstuk bespreekt talen die naar verluidt de PNU falsificeren. Hoewel de PNU distincties niet universeel zijn in de pronominale systemen (zie Harbour 2011), blijkt de PNU te kloppen wanneer we argumenten in het algemeen beschouwen, waarbij zowel pronominale als nominale systemen, alsmede de congruentie-morfologie op het werkwoord, meetellen.

Het cruciale inzicht waarvan ik gebruik maak is dat het aantal onderscheidingen, zeg n, minimaal $n-1$ kenmerken vereist. Talen die dus alleen het kenmerk [enkelvoud] markeren, onderscheiden [enkelvoud] van een ongespecificeerd getal. Dit vinden we in talen die alleen enkelvoudige en algemene (ongespecificeerde) pronomina hebben, zoals bijvoorbeeld in het Klassiek Chinees, het Thais, en het Kawi. Twee onderscheidingen in getal kunnen ook ontstaan door de aanwezigheid van [meervoud] dat te onderscheiden valt van ongespecificeerd getal, zoals het geval is in het Pirahã. Ook kan de aanwezigheid van drie on-

derscheiden in persoon door de aanwezigheid van twee kenmerken ontstaan, zoals bijvoorbeeld in het Sanapaná, dat alleen de [spreker] en [niet-spreker] kenmerken heeft.

Daarnaast blijkt uit dit onderzoek dat in veel talen de afwezigheid van onderscheidingen in pronominale systemen wordt gecompenseerd door de aanwezigheid van kenmerken in de congruentie-morfologie. Bijvoorbeeld, in het Wāmbule, Oneida, Tiwa (Noord), Winnebago en Kiowa wordt een deel van de persoons- en getalskenmerken in de pronominale vormen uitgedrukt en een deel als congruentie. Dit leidt tot een rijkere set kenmerken dan wat alleen te vinden is in pronomina, en het is precies dit soort gedrag dat we zouden verwachten als de PNU geldt, en het zou een verrassing zijn als het niet zou bestaan. Ik stel twee potentiële analyses van deze talen voor, waarmee ik suggereer dat het ontbreken van kenmerken in feite een versie van verplichte subject-drop (*pro*-drop) is. In deze analyse wordt alleen een specifieke set kenmerken (maar niet alle kenmerken) weggelaten, waardoor er een verarmde set vrije pronomina gerealiseerd kan worden.

Het hoofdstuk eindigt met de conclusie dat alle tot nu toe onderzochte talen (minstens) drie onderscheidingen in persoon en twee onderscheidingen in getal vertonen in hun argumenten, zoals de PNU voorspelt. De PNU kenmerken worden dus aangenomen als basis voor het bepalen van de rijkheid van de congruentie-morfologie.

In Hoofdstuk 4 presenteer ik de criteria voor het vaststellen van de eigenschappen van congruentie-morfologie, en voor de beoordeling van diagnostieken voor werkwoordverplaatsing. Ik begin met de bespreking van het onderscheid tussen de talen met pronominale affixale argumenten en de congruentietalen. Beide typen vertonen subjectmarkerende morfemen op het werkwoord, en deze zijn niet eenvoudig te onderscheiden. Dit is belangrijk omdat de RAH *v*-naar-I verplaatsing voorspelt in de congruentie-markering talen, maar niet in de pronominale argumenttalen. Naar aanleiding van Jelinek (1984, 2006) maak ik gebruik van de volgende criteria voor het vaststellen wanneer een subjectmarkerende morfeem ofwel een argument van het werkwoord of congruentie-morfologie is:

- de complementaire distributie van subjectmorfemen en nominale subjecten; als het subjectmorfeem en de DP in complementaire distributie staan, dan moet het subjectmorfeem een argument zijn.
- de aanwezigheid van casusmorfologie op de nominale DP; als nominale DP's met casusmorfologie verbogen zijn, dan zijn ze argumenten, wat aangeeft dat het subjectmorfeem op het werkwoord congruentie-morfologie moet zijn.
- verplichte DP topic/focus; als de nominale DP's verplicht gefocust of getopicaliseerd zijn, dan zijn ze geïntroduceerd door topic- en focusmarkeerders, wat suggereert dat het subjectmorfeem op het werkwoord de argument moet zijn.
- verplaatsing van subjectmarkeerders; als er aanwijzingen zijn dat het subjectmorfeem verplaatsing kan ondergaan, dan moet het een argument zijn.

Zodra het vaststaat dat het subjectmorfeem congruentie-morfologie is, moeten we bepalen of het fonologisch afhankelijk van het werkwoord is, want de RAH voorspelt alleen werkwoordverplaatsing als het (rijke) congruentiemorfeem fonologisch afhankelijk van het werkwoord is: daarom onderscheid ik de volgende vier typen talen.

- type A, waarin de congruentie wordt uitgedrukt door gebonden morfemen die op een werkwoordelijk constituent verschijnen,
- type B, waarin de congruentie wordt uitgedrukt door gebonden morfemen, die aangehecht zijn aan een naastgelegen morfeem, waarvan één ook een werkwoordelijk constituent kan zijn,
- type C, waarin de congruentie door ongebonden morfemen wordt uitgedrukt, en
- type D, waarin de congruentie-morfologie arm of afwezig is.

Gezien deze fonologische eigenschappen van verschillende soorten congruentie-morfologie, voorspelt de RAH dat

- voor A, congruentie altijd de werkwoordverplaatsing triggert,
- voor B, congruentie werkwoord verplaatsing kan triggeren, maar niet per se, omdat de congruentie aan andere aangrenzende elementen kan hechten,
- voor C, congruentie fonologisch onafhankelijk van het werkwoord is en geen werkwoordverplaatsing triggert, en
- voor D, er geen werkwoordverplaatsing plaatsvindt in gecontroleerde omstandigheden.

Zodra we zijn nagegaan of de categorie van het subjectmorfeem congruentie-morfologie is, die fonologisch afhankelijk van het werkwoord is, kunnen we de RAH voorspellingen bepalen met betrekking tot de v-naar-Arg verplaatsing.

Naast de eigenschappen van congruentie-morfologie bespreekt het hoofdstuk ook de specifieke contexten waarin de RAH getest kan worden. Zo kunnen we de RAH niet in de OV-talen testen, want, zoals bekend is, zijn er geen betrouwbare diagnostieken voor werkwoordverplaatsing (zie Vikner 1995; Bobaljik en Thráinsson 1998, Koeneman en Zeijlstra 2014, onder andere). Daarom beperkt dit onderzoek zich tot een onderzoek binnen de VO-talen. Naast de OV-volgordes moeten we ook voor andere verschijnselen controleren, zoals bijvoorbeeld

- V2-effecten, de verplichte plaatsing van het werkwoord naar de tweede positie in de bijzin
- aanwezigheid van vP-externe functionele hoofden die fonologische ondersteuning van het werkwoord nodig hebben (bijvoorbeeld aspect),
- plaatsingsregels die te maken hebben met informatiestructuur.

Dit soort verschijnselen kunnen werkwoordverplaatsing triggeren onafhankelijk van congruentie-morfologie. Het gevolg hiervan is dat wanneer er sprake is van een andere potentiële trigger van werkwoordverplaatsing, we niet kunnen

bepalen of beide bestanddelen of slechts één ervan tot de werkwoordverplaatsing leidt. Zo kan de RAH niet geëvalueerd worden in contexten met onafhankelijke triggers voor werkwoordverplaatsing.

Het hoofdstuk wordt afgerond met een discussie over bijwoordelijke bepalingen als belangrijkste diagnostieken voor werkwoordverplaatsing. Bijwoorden kunnen flink variëren in hun syntactische eigenschappen, want sommige bijwoorden kunnen in verschillende posities verschijnen, terwijl andere meer rigide zijn. Omdat we de v-naar-Arg-verplaatsing testen, vormen rigide bijwoorden die de linkerzijde van de vP markeren de meest betrouwbare diagnostiek. Op een schaal van meest rigide tot meest flexibele typen bijwoorden zijn de negatieve bijwoorden het meest rigide en de temporele het meest flexibel, zoals hier wordt getoond:

(5)   negatief bijwoord → wijze/frequentie bijwoord → temporeel bijwoord

Wanneer deze klassen van bijwoorden afwijkende resultaten opleveren ten opzichte van de aanwezigheid van v-naar-Arg verplaatsing, neem ik aan dat een bijwoord dat links van '→' staat een meer betrouwbare diagnostiek is dan een bijwoord rechts ervan.

Hoofdstuk 5 geeft de details van de methode voor de selectie van talen (zie Rijkhoff et al. 1993). Deze samplingmethode garandeert maximale genetische afstand tussen de talen en houdt rekening met de genetische diversiteit in alle taalfamilies. Talen werden geselecteerd uit elke stam, voor zover de RAH in die talen getest kan worden. Dit sluit natuurlijk OV-talen uit, maar ook de contexten waarin we niet kunnen controleren voor onafhankelijke triggers van werkwoordverplaatsing. Ik heb er ook voor gezorgd – voor zover mogelijk – om gelijke aantallen van talen met arme en rijke congruentie te selecteren. In het sample van veertig talen die werden geselecteerd voor de studie konden de talen uit zestien families niet worden bestudeerd, omdat die allemaal óf de OV-volgordes vertonen, óf uitgestorven zijn, waardoor de gegevens niet verkregen konden worden. De overige vierentwintig talen die werden bestudeerd zijn het Egyptisch Arabisch, Hausa, Kaqchikel, Quiegolani Zapotec, Wariˀ, Ayoreo, Kadiwéu, Tiwi, Martuthunira, Thais, Hawaïaans, Vietnamees, Hmong Njua, Bukiyip, Hatam, Bilua, N|uuki, Ìgbo, Wolof, Moro, Lango, Haïtiaans, Pwo Karen, en Fins.

In hoofdstuk 6 analyseer ik de talen waarin de RAH geen werkwoordverplaatsing voorspelt. In zes van de onderzochte twaalf type D talen (N|uuki, Haïtiaans, Martuthunira, Kadiwéu, Hatam, en Bilua), kunnen bijwoorden niet verschijnen tussen werkwoorden en objecten, terwijl ze wel links van het werkwoord kunnen staan. Dit suggereert direct dat die talen geen v-naar-Arg verplaatsing hebben, en dat de RAH bevestigd is.

In drie talen, Thais, Pwo Karen, en Hmong Njua, verschijnen alle bijwoorden uitsluitend in de zinsfinale positie (dwz na objecten), en hoewel er geen bewijs is dat v-naar-Arg verplaatsing plaatsvindt — aangezien er geen bijwoorden interveniëren tussen werkwoorden en objecten — is er ook geen bewijs dat het niet kan, omdat bijwoorden niet (direct) voor werkwoorden kunnen

verschijnen. Bijgevolg kan de RAH niet worden geëvalueerd in het Thais, Pwo Karen, en Hmong Njua.

De RAH kan ook niet worden getest in Quiegolani Zapotec, waarin er zeker sprake is van werkwoordplaatsing, omdat deze taal de VSO-neutrale volgorde vertoont. Echter, het is niet noodzakelijk de werkwoordverplaatsing op te vatten als een onverwacht geval van v-naar-Arg verplaatsing, aangezien de taal productief gebruik maakt van aspectuele morfologie aan het werkwoord, waarvoor niet gecontroleerd kan worden.

In het Ìgbo zijn bijwoorden beperkt tot finale posities in contexten met aspectuele morfemen die aan werkwoorden gebonden zijn, en die dus waarschijnlijk werkwoordverplaatsing triggeren. In tegenstelling tot het Quiegolani Zapotec, vertoont Ìgbo contexten waarin de aspectuele morfemen ontbreken. Cruciaal is dat in dergelijke contexten de distributie van bijwoorden uiteenloopt, want ze kunnen ook voor het werkwoord verschijnen, maar niet tussen het werkwoord en het object. Dit laat zien dat Ìgbo geen v-naar-Arg verplaatsing heeft, zoals de RAH voorspelt.

In het Vietnamees en Hawaïaans is er wel sprake van bijwoorden die verschijnen tussen werkwoorden en objecten. Echter, de bepaaldheid van objecten speelt een belangrijke rol in beide talen. In het Vietnamees worden <V, Adv, O> volgordes alleen geattesteerd als objecten definitief zijn, terwijl de volgordes met onbepaalde objecten ongrammaticaal zijn. In de analyse die ik voorstel blijft het werkwoord in de vP-interne positie, terwijl het object zich naar een vP-externe positie verplaatst aan de rechterzijde, waardoor de <V, Adv, O_{def}>volgordes ontstaan. Op dezelfde manier vertoont ook het Hawaïaans variatie in woordvolgordes als gevolg van de bepaaldheid van objecten. Dat wil zeggen dat zinnen met bepaalde objecten de VSO-volgordes hebben, terwijl zinnen met onbepaalde objecten de VOS-volgordes hebben. Hoewel er aanwijzingen zijn dat de VP zich verplaatst naar het begin van de zin (zie Medeiros 2013), ontstaat er variatie tussen de twee volgordes als gevolg van objectverplaatsingen die plaatsvinden wanneer objecten definitief zijn. De verplaatsingen van bedpaalde objecten gaan vooraf aan VP-verplaatsing, waardoor de VSO-volgordes ontstaan, terwijl onbepaalde objecten zich als onderdeel van VP aan het begin verplaatsen, waardoor de VOS volgordes ontstaan. Wanneer we voor objectverplaatsingen controleren in zowel het Vietnamees als Hawaïaans, kunnen bijwoorden niet tussen werkwoorden en objecten interveniëren. Dit suggereert dat werkwoordverplaatsing (dwz hoofdverplaatsing) afwezig is, zoals voorspeld door de RAH.

Uit de analyses in dit hoofdstuk blijkt dat de RAH juiste voorspellingen maakt voor de meeste talen in het sample. In een paar talen kan de RAH niet getest worden omdat de diagnostieken voor werkwoordverplaatsing afwezig zijn.

In hoofdstuk 7, analyseer ik elf talen waarin de congruentie-morfologie ten minste de kenmerken van de PNU weerspiegelt. De meeste talen in dit hoofdstuk vertonen neutrale woordvolgordes die suggereren dat werkwoordverplaatsingen plaats moeten vinden. In vijf talen, namelijk het Ayoreo, Bukiyip, Fins, Egyptisch Arabisch, en Wolof verschijnen bijwoorden gemakkelijk tussen

het werkwoord en het lijdend voorwerp, wat de aanwezigheid van *v*-naar-Arg verplaatsing suggereert. In het bijzonder is dit duidelijk in het Ayoreo, Bukiyip, en Fins, waar de meeste bijwoorden hetzelfde patroon volgen. Daarentegen vertonen bepaalde typen bijwoorden in het Egyptische Arabisch en Wolof meer flexibiliteit, omdat ze zowel voor als achter het werkwoord kunnen staan, waardoor het moeilijk is om de exacte syntactische positie van het werkwoord bepalen. Andere typen bijwoorden, daarentegen, zijn meer rigide, suggererend dat het werkwoord zich moet verplaatsen.

In het Hausa en Tiwi kunnen bijwoorden niet interveniëren tussen werkwoorden en objecten. In beide talen vertonen congruentiemorfemen weinig (zelfs geen) fonologische afhankelijkheid van het werkwoord. Hoewel dit altijd het geval in het Hausa is, waar de congruentie samen met aspect een fonologisch onafhankelijke cliticgroep vormt, hecht in het Tiwi het congruentie-morfeem zich aan elk morfeem dat ernaast zit. In beide talen wordt de werkwoordverplaatsing dus niet door congruentie-morfemen getriggerd, en omdat de <V, Adv, O> volgordes onmogelijk zijn, wordt de RAH ondersteund.

In de twee talen met rijke congruentie talen met werkwoord-initiële volgordes, het Wari' en Kaqchikel is er evidentie voor *v*P/VP-verplaatsing. Hoewel er geen bijwoorden te vinden zijn in het Wari', verschijnen de Kaqchikel bijwoorden alleen aan het begin of aan het eind van zinnen. Gezien hun syntactische eigenschappen zouden de woordvolgordes in beide talen afgeleid moeten worden. In het Wari', brengt de *v*P-verplaatsing het werkwoord en congruentiemorfologie in lineaire nabijheid. Hoewel het werkwoord (hoofd) zich niet verplaatst, is deze analyse niet in tegenspraak met, noch levert het bewijs ter ondersteuning van, de RAH. Wat betreft het Kaqchikel, dat twee neutrale volgordes heeft, namelijk VOS en VSO, blijkt dat VOS afgeleid is door VP-verplaatsing met een vergelijkbare effect als de *v*P-verplaatsing in Wari', terwijl VSO via het werkwoordverplaatsing afgeleid is. Als de analyse van deze VSO volgorde juist is, is de RAH ondersteund, omdat het subject-DP als diagnostiek voor de werkwoordverplaatsing functioneert.

In de laatste twee talen, het Lango en Moro, kunnen we de RAH niet beoordelen. Net als bij de drie arme congruentietalen, het Thais, Pwo Karen, en Hmong Njua, plaatst het Lango bijwoorden alleen aan het eind van zinnen, waardoor ze niet gebruikt kunnen worden als diagnostiek voor werkwoordverplaatsing. In het Moro, net als wat we in het Quiegolani Zapotec hebben gezien, kunnen we niet controleren voor morfologie die onafhankelijk van congruentie werkwoordverplaatsing kan triggeren.

Tabel 3 geeft de samenvatting van de analyses van de bestudeerde talen:

#	Taal	rijke congruentie aan V	v-naar-Arg detecteerbaar	bewijs voor de RAH	bewijs tegen de RAH	onbeslist t.o.v. de RAH
1	Egyptisch Arabisch	ja	ja	✔		
2	Hausa	nee	nee	✔		
3	Kaqchikel	ja	ja	✔		
4	Quiegolani Zapotec	nee	onb.			✔
5	Wari'	ja	nee			✔
6	Ayoreo	ja	ja	✔		
7	Kadiwéu	nee	nee	✔		
8	Tiwi	nee	nee	✔		
9	Martuthunira	nee	nee	✔		
10	Thais	nee	onb.			✔
11	Hawaïaans	nee	nee	✔		
12	Vietnamees	nee	nee	✔		
13	Hmong Njua	nee	onb.			✔
14	Bukiyip	ja	ja	✔		
15	Hatam	nee	nee	✔		
16	Bilua	nee	nee	✔		
17	N|uuki	nee	nee	✔		
18	Ìgbo	nee	nee	✔		
19	Wolof	ja	ja	✔		
20	Moro	ja	onb.			✔
21	Lango	ja	onb.			✔
22	Haïtiaans	nee	nee	✔		
23	Pwo Karen	nee	onb.			✔
24	Fins	ja	ja	✔		

Tabel 8.3 De bidirectionele RAH in de geselecteerde talen

Concluderend, hoewel in een aantal talen de plaatsing van werkwoorden schijnbaar de RAH falsifieert, laten verdere analyses zien dat dit soort patronen door onafhankelijke verschijnselen ontstaan, zoals objectverplaatsingen, onafhankelijk getriggerde werkwoordverplaatsing (bijvoorbeeld door aspectuele morfologie), en flexibele distributie van sommige typen adverbia. Wanneer we voor deze verschijnselen controleren, wordt de RAH ondersteund. Dit is belangrijk omdat het de aanpak van het uitvoeren van typologische studies in combinatie met theorie valideert. Als de relatie tussen verplaatsing en morfologie, zoals geformuleerd door de RAH, van fundamenteel belang is, dan zou een niet-theoretische kijk op woordvolgordes onvermijdelijk niet tot dezelfde conclusie komen.

Het onderzoek naar de RAH in dit proefschrift draagt bij aan het antwoord op een algemene vraag, namelijk: in hoeverre is er een relatie tussen syntaxis en morfologie. Hoewel het algemene standpunt in de meeste huidige generatieve theorieën is dat morfologie syntaxis volgt, waardoor morfologie de syntaxis niet kan sturen, is moeilijk te ontkennen dat morfologie de syntaxis vorm geeft. De empirische bevindingen in deze studie laten duidelijk zien dat er een crosslin-

guïstisch consistente, bidirectionele correlatie bestaat tussen de syntactische positie van het werkwoord en de eigenschappen van congruentie-morfologie. Zoals Koeneman en Zeijlstra (2014) voorstellen, kan deze syntaxis-morfologie interactie compatibel gemaakt worden met de huidige theoretische kaders, want de morfologie heeft effecten op syntaxis via taalverwerving. De congruentie-kenmerken in de input van een kind dat zijn eerste taal verwerft, leiden tot meer (vP-externe) structuur in de syntaxis, waarnaar het werkwoord zich ver-plaatst om het congruentiemorfeem fonologisch te kunnen ondersteunen.

Curriculum Vitae

Seid Tvica received his BA in English Language and Culture in 2009 and his MA in Linguistics (cum laude) in 2012 from the University of Groningen. He worked on his doctorate between 2012–2016 at the Amsterdam Center for Language and Communication (ACLC). In 2015, he spent a semester at the Massachusetts Institute of Technology (MIT) as a visiting PhD student. This dissertation is the result of his PhD research. Seid is currently employed as a university lecturer at the University of Groningen.