

The Mixed LBE Generalisation, Branan's Generalisation and implications for the theory of left-branch extraction



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Declaration

Authorship. This thesis is the result of my own work and includes nothing which is the outcome of work done in collaboration except where specifically indicated in the text.

Statement of length. This thesis is 30,064 words in length. Excluded from this wordcount are the title page, declarations, abstract, table of contents, list of figures, list of tables, list of abbreviations, figures, tables, glosses and translations, mathematical formulae and diagrams and references.

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Abstract

This thesis is an investigation of left-branch extraction (LBE): that is, what is traditionally understood as the A'-extraction of elements first-Merged 'high' in the nominal extended projection, landing in a position outside the nominal (e.g. Corver 1990; Branán 2018). It focuses in particular on two generalisations over left-branch extraction: the Mixed LBE Generalisation, proposed for the first time in this thesis; and Branán's Generalisation, drawn from Branán (2018). These generalisations are shown to have non-trivial implications for theories of LBE, leading to a proposal for a new theory of LBE, based on the assumption that LBE is always performed by 'composite probes' containing [ϕ] and [A'] features, following (e.g.) van Urk (2015), Scott (2021), Coon et al. (2021) and Lohninger (2023b).

The first half of the thesis focuses on the Mixed LBE Generalisation: the generalisation that dependencies which can extract left-branch elements in a given language always show a 'mix' of canonical properties of A- and A'-dependencies. This is motivated on the basis of a genetically diverse sample of thirty-five languages, whose LBE-permitting dependencies are shown to fall into three types: A-minimal LBE - i.e. LBE with A'-properties and the A-property of obeying A-minimality; No-WCO LBE - i.e. LBE with A'-properties and the A-property of lacking weak crossover effects; and Case/agreement LBE - i.e. LBE with A'-properties and the A-property of inducing case-assignment to/control of predicate-agreement by the moved left-branch element. I show more specifically that the presence/absence of these mixed properties in a given dependency in a given language consistently correlates with its ability to license LBE. This draws on literature previously reported in the literature, as well as new data - particularly relating to the No-WCO type - elicited for this thesis. This section also combines both phenomena traditionally treated as A'-extraction of left-branch elements - i.e. 'LBE' - as well as a phenomenon traditionally treated as A-extraction, external possession; it argues that both are consistently mixed, and thus unifiable under the Mixed LBE Generalisation.

The second half of the thesis focuses on the second generalisation of interest, termed Branán's Generalisation: the generalisation that non-argument extraction - of which LBE is taken to be a subset - is only possible from nominals which can control ϕ -Agree. I demonstrate that contemporary theories of LBE cannot account for this generalisation:

this includes both the standard phase-based theory of Bošković (2005b, *et seq*); as well as more recent proposals which explicitly engage with Branán's Generalisation, like Davis and Branán (2019) and Branán (2022).

This leads to a theoretical proposal: the Mixed LBE Generalisation can be exploited to help explain Branán's Generalisation. More specifically, I argue that the Mixed LBE Generalisation entails that all LBE-permitting dependencies - being mixed - must be performed by composite probes containing $[\Phi]$ and $[A']$ features (e.g. Coon and Bale 2014; van Urk 2015; Lohninger 2023b). I then propose, moreover, that a recent theory of composite probing - Branán's (2022) - is able to model the range of 'mixed' dependencies described in the first half of the thesis, with one important additional consequence: the relevant probes are guaranteed to obey Branán's Generalisation. Insofar as we assume that LBE can only be performed by probes of this type, then both generalisations are accounted for.

The final section of the thesis then offers more speculative discussion of how, in turn, to derive the assumption which explains the Mixed LBE Generalisation and Branán's Generalisation: that LBE is performed by these composite probes. This is shown to be at least partly consistent by a recent theory of locality, Thivierge's (2021) *phasehood-as- Φ -intervention* - though fully reconciling the findings of this thesis with the standard theory is left to future work.

Table of contents

List of tables	xiii
List of abbreviations	xv
1 Introduction	1
1.1 Two generalisations and a theoretical solution	1
1.2 Outline	4
2 Mixed LBE Generalisation	5
2.1 Outlining the Mixed LBE Generalisation	5
2.2 LBE is mixed: A-minimal LBE	7
2.2.1 Ergative extraction constraint languages	8
2.2.2 Pivot-only extraction constraint languages	14
2.2.3 Other languages	19
2.3 LBE is mixed: No-WCO LBE	23
2.3.1 Local No-WCO LBE	24
2.3.1.1 Slavic	30
2.3.1.2 Hungarian	37
2.3.1.3 Hindi-Urdu	38
2.3.1.4 Turkish	39
2.3.1.5 Japanese	40
2.3.2 Long-distance no-WCO movement	41
2.3.2.1 Varieties with ‘mixed’ long-distance movement	42
2.3.2.2 Varieties without ‘mixed’ long-distance movement	49
2.3.3 Is no-WCO universal?	54
2.3.4 Interim summary	56
2.4 ‘A-movement’ of left-branch elements is mixed too: External possession	57
2.4.1 ‘Type B’ external possession	58

2.4.1.1	Deal’s examples: Japanese, Chickasaw, Tz’utujil, Nuuchah-nulth	58
2.4.1.2	Other examples	61
2.4.2	‘Type A’ external possession	64
2.4.2.1	Brazilian Portuguese	64
2.4.2.2	Austronesian	65
2.4.2.3	Bantu	67
2.4.2.4	Dinka	70
2.5	Interim summary	71
3	Branan’s Generalisation	77
3.1	Motivation for Branan’s Generalisation	77
3.2	Inadequacy of current theories of LBE	80
3.2.1	The standard theory	81
3.2.2	Davis & Branan (2019): Cyclic Linearisation	83
3.2.3	Branan (2022): Contingent probing	85
4	Towards an explanation for MiLBEG and BG	89
4.1	Desiderata	90
4.2	MiLBEG entails the Mixed LBE Thesis	90
4.3	The Mixed LBE Thesis explains Branan’s Generalisation	92
4.3.1	A theory of composite probing	92
4.3.1.1	Three logical possibilities	92
4.3.1.2	How the probes capture the mixed dependencies	94
4.3.2	Comparison with other theories	100
4.4	Desiderata in review	101
5	Deeper questions: Phasehood-as-ϕ-intervention	103
5.1	Phasehood-as- ϕ -intervention	103
5.2	How phasehood-as- ϕ -intervention can explain MiLBET	105
5.3	ϕ intervening for A’: some speculation	106
6	Implications and conclusions	111
6.1	Selected implications	111
6.1.1	Diachrony	111
6.1.2	Acquisition	113
6.2	Conclusions	113

List of tables

1	Canonical properties of A- and A'-dependencies	6
2	Deal's (2017) typology of external possession	57
3	Summary of data from Chapter 2	72
4	The distribution of external possession in the language sample obeys Branana's Generalisation	81
5	Primitive operations underlying Agree (Branan 2022)	86
6	Primitive operations underlying Agree (Branan 2022) [repeated]	93

List of abbreviations

1	1st-person
2	2nd-person
3	3rd-person
III	Class III clitic (Choctaw)
1, 3, 7, 9	Noun classes (Bantu)
ABS	Absolutive
ACC	Accusative
ADV	Adverb(ial)
APPL	Applicative
ASSOC	Associative
AUG	Augment
AUX	Auxiliary
AV	Actor Voice
BEN	Benefactive
BG	Branan's Generalisation
C	Complementiser
CL	Classifier
CNV	Converb
COMPL	Completive
CS	Construct state
DAT	Dative
DEF	Definite
DET	Determiner
DIR	Directive
ERG	Ergative
FOC	Focus
FUT	Future
GEN	Genitive

INCOMPL	Incompletive
IND	Indicative
INDEP	Independent
INF	Infinitive
LNK	Linker
MiLBEG	Mixed LBE Generalisation
MiLBET	Mixed LBE Thesis
MOD	Modal future
NEG	Negation
NOM	Nominative
NSREL	Non-subject relative
OBJ	Object
OBL	Oblique
OBLV	Oblique Voice
OV	Object Voice
PASS	Passive
PL	Plural
POL	Politeness (marker)
POSS	Possessive
PR	Present
PREP	Preposition
PRF	Perfective
pro	pro (null pronoun)
PROG	Progressive
PST	Past tense
PV	Patient Voice
Q	Question (marker)
REFL	Reflexive
REL	Relative
RL	Realis
SBJV	Subjunctive
SG	Singular
SREL	Subject relative
SUBJ	Subject
SV	Subject Voice
TEMP	Temporal marker

TNS	Default tense
TR	Transitiviser
WH[SUBJ]	Subject wh-agreement

Chapter 1

Introduction

1.1 Two generalisations and a theoretical solution

This thesis is a study of subextraction from nominals, and specifically left-branch extraction (LBE). This is standardly understood as A'-extraction of elements occurring in a nominal's 'left-edge' – i.e. as specifiers or adjuncts 'high' in the nominal extended projection – where that extraction crosses the nominal boundary (Branan 2018: 409; Corver 1990: 1). As will become clear, however, this thesis construes LBE more broadly as any type of extraction of left-branch elements which crosses the nominal boundary. This traditionally includes extraction of possessors, demonstratives, adjectives and quantifiers, potentially among others (e.g. Bošković 2005b: 2). In the Chamorro example, (1), wh-possessor *hayi* 'who(se)' undergoes LBE: it wh-moves from a position (*ex hypothesi*) internal to the nominal headed by *famagon-ña* 'children', to the clause-initial position.

(1) **Chamorro: Wh-LBE**

Hayi₁ ti man-mäguf [famagon-ña _____₁]?
who not 3PL.RL-happy children-3SG.POSS

'Whose children are unhappy?'

(Chung 1991: 109)

It has been known since at least Ross (1967) that LBE is subject to cross-linguistic variation: for example, variation in which left-branch elements (if any) can subextract, and out of which nominals. This thesis focuses on two cross-linguistic generalisations over this variation: one novel generalisation, first described in this thesis; and one drawn from recent literature (Branan 2018).

The novel generalisation, and the subject of the first half of the thesis, is (2). This is the **Mixed LBE Generalisation, MiLBEG**.

(2) **Mixed LBE Generalisation**

If a movement dependency can extract a left-branch element in a given language [including both traditional ‘LBE’ and traditional ‘external possession’], it will show ‘mixed’ A/A’-properties in that language.

MiLBEG predicts, in other words, that where a type of movement dependency in a given language – e.g. wh-movement, scrambling, movement-to-subject – can target a left-branch element, that movement dependency will show independent evidence that it is ‘mixed’: i.e., it has a non-zero set of properties of A-dependencies and a non-zero set of A’-dependencies. This follows recent work which has challenged the traditional assumption that dependencies can be categorised discretely, on the basis of a variety of diagnostics (on which, see below), into two types: A-dependencies and A’-dependencies (e.g. Chomsky 1977). Instead, dependencies exist which exhibit canonical properties of both A- and A’-dependencies simultaneously (e.g. Saito 1985, 1992; Webelhuth 1989; Mahajan 1990; more recently, van Urk 2015; van Urk and Richards 2015; Longenbaugh 2017; Coon et al. 2021; Gong 2022; Chen 2023a, 2024). MiLBEG predicts that all dependencies which can extract left-branch elements should be of this type.

Evidence for this comes from the thirty-five language sample in (3). All of these languages exhibit some dependenci(es) which extract left-branch elements from nominals; these are shown to be consistently ‘mixed’.

(3) **Language sample**

Kaqchikel, Q’anjob’al, K’iche, Tz’utujil (all Mayan), Halkomelem (Salishan), Chamorro, Palauan, Indonesian, Javanese, Madurese, Balinese, Sundanese, Tagalog, Rejang, Malagasy, Cebuano (all Austronesian), Bosnian-Serbian-Croatian, Czech, Russian, Polish, Slovenian, Ukrainian (all Slavic), Hungarian (Uralic), Turkish (Turkic), Hindi-Urdu (Indo-Aryan), Japanese (Japonic), Chickasaw, Choctaw (both Muskogean), Nuu-chah-nulth (Wakashan), Swahili, Zulu, Chimwiini (all Bantu), Dinka (Nilo-Saharan), Brazilian Portuguese (Romance), West Flemish (Germanic)

The evidence includes both dependencies traditionally treated as “A’-extraction” of left-branch elements, i.e. “LBE” in the standard sense; as well as a type of dependency, external possession, which has traditionally been treated as “A-extraction” of a left-branch element. Both are argued to be mixed.

Outlining and motivating MiLBEG is the thesis’ primary purpose. The remainder of the thesis addresses MiLBEG’s theoretical implications. Here the second generalisation becomes relevant: **Branan’s Generalisation, BG**, (4), named for its originator (Branan 2018).

(4) **Branan's Generalisation** (adapted from Branan 2018: 410)

Extraction of nonarguments from DP [where I take LBE to be a sub-case of this; JM] cannot take place from a phrase that is not targeted for (ϕ -)Agree.

BG states that extraction of non-arguments from nominals – where LBE, being extraction of non-arguments in the ‘left-branch’, is a subset of this² – is only possible where the nominal is accessible to ϕ -Agree in that language. I show that extant theories of LBE cannot account for this. Crucially, however, the Mixed LBE Generalisation presents a path to explaining Branan's Generalisation. This involves a theoretical proposal that I term the **Mixed LBE Thesis, MiLBET**, (5).

(5) **Mixed LBE Thesis**

LBE is only possible where the movement-triggering probe is a ‘composite’ [ϕ, A'] probe.

This exploits the recent suggestion that mixed A/A'-dependencies arise from an interaction between [ϕ]-features, associated with A-properties, and [A']- or [Op]-features, associated with A'-properties (see especially van Urk 2015; Lohninger 2023b a.o.). The probes involved a mixed movement dependency are ‘composite’, containing both [ϕ]- and [A']-features which may probe together and target the same goal (e.g. Coon and Bale 2014). This thesis argues that the Mixed LBE Thesis follows straightforwardly from the Mixed LBE Generalisation. Crucially, it is then shown that the Mixed LBE Thesis can in turn explain Branan's Generalisation. This requires exploiting possibilities which I show follow independently from a pre-existing theory of composite probing, Branan (2022).

Notice that the Mixed LBE Thesis clearly calls for its own explanation: why should LBE only be possible with composite probes? The final section offers preliminary discussion of this question. In particular it draws on recent work demonstrating that [ϕ]- and [A']-features interact in syntax in ways not traditionally acknowledged (e.g. Miyagawa 2010, 2017; Baier 2018; Chen 2023b), and on a recent proposal for reducing at least some ‘phasehood’ effects to ϕ -intervention (Thivierge 2021). I propose to extend this model to nominals (Thivierge 2021: 157-158), and show that this could derive the need for composite probing in LBE – and thus, MiLBET.

²Technically speaking, external possession – which is included in my broad construal of ‘LBE’ – is not a subset of Branan's notion of ‘non-argument extraction’, because Branan refers explicitly to ‘A'-extraction’ (Branan 2018: 410). I argue below (§3.1) that BG nonetheless does hold of at least the external possession constructions discussed here too.

1.2 Outline

Chapter Two outlines and motivates the Mixed LBE Generalisation. The evidence is in three subsections: §2.2 describes one type of ‘mixed’ LBE pattern, which I term A-minimal LBE; §2.3 describes another type, No-WCO LBE. §2.4 then presents evidence that external possession – traditionally described as “A-movement” of left-branch elements – is also mixed. Chapter Three addresses Branau’s Generalisation: first, the evidence for it (§3.1); before an argument that contemporary theories of LBE cannot account for it (§3.2). Chapter Four outlines a proposal for how to explain both generalisations. This requires justifying the Mixed LBE Thesis: both the fact that it follows from MiLBEG; and that it can, in principle, account for BG. The latter requires sketching a novel model of composite probing. Chapter Five makes a preliminary proposal for how to explain MiLBET itself, based on Thivierge’s (2021) phasehood-as- ϕ -intervention model. Chapter Six considers implications – diachronic and acquisitional – before concluding.

Chapter 2

Mixed LBE Generalisation

2.1 Outlining the Mixed LBE Generalisation

Consider first the Mixed LBE Generalisation, repeated in (6).

(6) **Mixed LBE Generalisation**

If a movement dependency can extract a left-branch element in a given language [including both traditional ‘LBE’ and traditional ‘external possession’], it will show ‘mixed’ A/A’-properties in that language.

Note two things about this generalisation. First, it is a one-way implication: if LBE occurs, the relevant dependency – e.g. *wh*-movement, relativisation – must be ‘mixed’. Conversely, it is not the case that if a dependency is ‘mixed’, it must be able to perform LBE. (See Longenbaugh 2017 who shows that English *tough*-movement is ‘mixed’, though it cannot license LBE.) Second, it does not specify the precise properties a LBE-permitting dependency will show – only that they must be ‘mixed’. This is because, as below, LBE can be performed by different dependencies which show different ‘mixed’ profiles of A-/A’-properties.

The set of A- and A’-properties I define, following much prior work (see van Urk 2015: ch.2), in Table 1.

In this chapter I show that MiLBEG holds for a sample of thirty-five languages.

(7) **Language sample**

Kaqchikel, Q’anjob’al, K’iche, Tz’utujil (all Mayan), Halkomelem (Salishan), Chamorro, Palauan, Indonesian, Javanese, Madurese, Balinese, Sundanese, Tagalog, Rejang, Malagasy, Cebuano (all Austronesian), Bosnian-Serbian-Croatian, Czech, Russian, Polish, Slovenian, Ukrainian (all Slavic), Hungarian (Uralic), Turkish (Turkic), Hindi-Urdu (Indo-Aryan), Japanese (Japonic), Chickasaw, Choctaw (both Muskogean),

Properties	A-dependencies	A'-dependencies
Long-distance	✗	✓
Restricted to nominals	✓	✗
Reconstructs for Condition C	✗	✓
Shows weak crossover effects	✗	✓
Creates new antecedents for anaphors	✓	✗
Licenses parasitic gaps	✗	✓
Has effect on information-structure	✗	✓
Results in case-assignment to moved element	✓	✗
Results in predicate agreement controlled by the moved element	✓	✗

Table 1 Canonical properties of A- and A'-dependencies

Nuu-chah-nulth (Wakashan), Swahili, Zulu, Chimwiini (all Bantu), Dinka (Nilo-Saharan), Brazilian Portuguese (Romance), West Flemish (Germanic)

Note that this sample not representative of LBE-permitting languages *in toto*, insofar as clearly only a (small) subset of languages and families which permit LBE are included. I nonetheless take it to be informative in the spirit of Baker and McCloskey's (2007: 294ff) 'Middle Way' approach to syntactic typology: the thirty-five language sample is sufficiently large to provide more cross-linguistic depth than traditional generative 'typology'; but sufficiently small that each language can be analysed in moderate ('intermediate') depth. The specific languages involved were selected for the sample on the basis that they are languages for which (i) previous generative work (Corver 1990; Gavrusseva 2000; Duguine 2008; Deal 2017; Branam 2018; Reeve 2019; i.a.) analyses them as showing subextraction of left-branch elements and (ii) data on the mixed dependency diagnostics – i.e. A-minimality effects, the presence/absence of weak crossover, the presence/absence of Case/agreement effects, the presence/absence of discourse-conditioning – is available. A clear goal of future work is to expand the dataset to make it more representative, and thus stronger corroboration for MiLBEG.

More particularly, I show that the relevant dependencies in these languages fit into three broad types of mixed dependencies, (8).

(8) Types of LBE-permitting mixed dependencies

a. Type 1: A-minimal LBE

Dependency shows A-minimality in addition to some set of A'-properties.

b. **Type 2: No-WCO LBE**

Dependency shows a lack of weak crossover effects in addition to some set of A'-properties.

c. **Type 3: Case/agreement LBE**

Dependency causes the moved element to trigger predicate agreement and/or be assigned structural C/case in addition to some set of A'-properties.

Each type is defined by an A-property it shows, in addition to its A'-properties: A-minimality; a lack of weak crossover effects; triggering case assignment or predicate agreement.

In the next two sections (§2.2-2.3) I focus on demonstrating that MiLBEG holds of movement included in the traditional definition of LBE – i.e. “A'-movement” of left-branch elements. Here only the first two types of mixed dependencies are relevant: the A-minimality type and the No-WCO type. In §2.4 I argue that MiLBEG also holds of (at least a subset of) phenomena usually called ‘external possession’: that is, canonically “A-movement” of a left-branch element. Here Type 1 and Type 3 are relevant.

Notice that a language need not show the same type of mixed dependency across all of its LBE-permitting dependencies.

2.2 LBE is mixed: A-minimal LBE

Consider first Type 1, A-minimal LBE. These are dependencies which show some A'-properties – e.g. the information-structural properties of canonical A'-movement – and the A-property of A-minimality. This means it can target only the ‘closest’ A-goal, *qua* nominal; in general, this means the highest nominal in the clause for the dependencies below³.

I divide the data into two main groups of languages with some Type 1 LBE-permitting dependencies: languages with ergative extraction constraints (§2.2.1); and languages with pivot-only extraction constraints (§2.2.2)⁴. For each language, I demonstrate that the availability of LBE correlates with the relevant dependency showing A-minimality. In §2.2.3 I then discuss several languages which show some evidence for A-minimality but which do not fall into either group; a subset of these also show a systematic exception, which I flag before briefly discussing avenues for resolving them.

³One might take this to entail that Type 1 dependencies are restricted to nominals (another A-property). This in turn might predict that only nominal left-branches (e.g. possessors) are extractable by Type 1 dependencies. This appears to be false. In Chapter 4, I adopt Branan’s (2022) analysis for Type 1 dependencies, which predicts only that the domain from which LBE occurs is the ‘closest nominal’; the target of LBE itself may be any element, including non-nominals, within that closest nominal.

⁴*Pace* e.g. Aldridge (2004, 2008), I assume that these constraints are distinct (see Erlewine et al. 2017).

2.2.1 Ergative extraction constraint languages

Languages with an ergative extraction constraint (EEC) disallow A'-extraction of ergative arguments. Ergatives are only extractable by first performing some syntactic repair, like antipassivisation or (in Mayan) Agent Focus (e.g. Deal 2016). Crucially, recent work (Coon et al. 2014; Sheehan 2017; Coon et al. 2021; Branan and Erlewine 2024b) argues that this reduces to A-minimality. Absolutive arguments move above ergative arguments, becoming the closer goal to some higher A'-probe. If this A'-probe is subject to A-minimality, it can therefore only target the absolutive. I adopt this analysis herein.

The prediction of the Mixed LBE Generalisation is thus that, in languages with an EEC, LBE should only be possible (absent other types of mixed dependencies) where the LBE-permitting dependency shows the EEC. That way LBE involves a mixed dependency. I show that this holds.

I begin with Kaqchikel. Wh-movement in Kaqchikel obeys the EEC: absolutive nominals can wh-move, (9a); ergatives cannot, (9b).

(9) Kaqchikel: wh-movement

a. Wh-movement of an absolutive

Achike₁ x-Ø-u-tz'et _____₁ ri achi?
 who PRF-3SG.ABS-3SG.ERG-see DET man

'Who did the man see?' (Imanishi 2014: 28)

b. Wh-movement of an ergative

*Achike₁ n-Ø-u-q'et-ej _____₁ ri xtän _____₁?
 who INCOMPL-3SG.ABS-3SG.ERG-hug-TR DET girl

Intended: 'Who is hugging the girl?' (Heaton et al. 2016: 37)

It is thus consistent with MiLBEG that Kaqchikel permits wh-LBE. In fact wh-LBE also tracks the EEC: wh-possessors – here, *achof rixjayil* 'whose wife' – can extract from absolutives, (10a); but not ergatives, (10b).

(10) Kaqchikel: wh-LBE

a. Wh-LBE from an absolutive

[Achoj rixjayil]₁ x-Ø-a-ch'ey [rutz'i' _____₁] rat?
 whose wife PRF-3SG.ABS-2SG.ERG-hit dog you

'Whose's wife's dog did you hit?' (Imanishi 2014: 86)

b. Wh-LBE from an ergative

maktxel₁ max s-maq' naq winaq ____₁?
 who COMPL-3SG.ABS 3SG.ERG-hit CL man

'Who did the man hit?' (Coon 2009: 86)

b. **Wh-movement of an ergative**

*maktxel₁ max s-maq' ____₁ naq winaq?
 who COMPL-3SG.ABS 3SG.ERG-hit CL man

Intended: 'Who hit the man?' (Coon 2009: 86)

(13) **K'iche: wh-movement**

a. **Wh-movement of an absolutive**

Jas₁ x-u-k'ut ____₁ ri ixoq?
 what PRF-3SG.ERG-teach the woman

'What did the woman teach?' (Pixabaj 2004: 29)

b. **Wh-movement of an ergative**

*Jachiin₁ x-u-loq' ri uuq ____₁?
 what PRF-3SG.ERG-buy the cloth

Intended: 'Who bought the cloth?' (Aissen 2011: 12)

Again, wh-LBE is possible, and tracks the EEC in both languages: wh-LBE from absolutives is fine – illustrated by LBE of *maktxel* 'whose' from an absolutive transitive object in Q'anjob'al (14), of *jachin* 'whose' from an absolutive intransitive subject in K'iche (15a); wh-LBE from ergatives is not, as with *jachin* extracting from the ergative transitive subject in (15b). I provide no ergative wh-LBE for Q'anjob'al, absent examples in the literature; though the same contrast is reported (Coon 2009: 88). This is again consistent with MiLBEG.

(14) **Q'anjob'al: Wh-LBE from an absolutive**

maktxel₁ max h-el [s-nwej ____₁]?
 whose CM.3SG.ABS 3SG.ERG-see 3SG.POSS-sister

'Whose sister did you see?' (Coon 2009: 87)

(15) **K'iche: Wh-LBE**

a. **Wh-LBE from an absolutive**

Jachin₁ x-t'ixjn [____₁ le r-al]?
 whose COMPL-sneeze the 3SG.POSS-son

'Whose son sneezed?' (Broadwell 2005: 6)

‘Who helped you?’ (Chung 2014: 14)

(17) **Palauan: Wh-movement**

a. **Wh-movement of an absolutive**

Ngngerai₁ a le-silseb-ii _____₁ a se’el-il?
 what the 3SG.SUBJ-burn-3SG.OBJ the friend-3SG.POSS

‘What did his friend burn?’ (Georgopoulos 1985: 67)

b. **Wh-movement of an ergative**

Ngte’ai₁ a {*le-} kileld-ii a sub _____₁
 what the {3SG.SUBJ-} heat-3SG.OBJ the soup

‘Who heated up the soup?’ (Georgopoulos 1985: 67)

(18) **Halkomelem: relativisation**

a. **Relativisation of an absolutive**

te st’θaq^wi₁ [ʔi= x^w k^wuk^w-t _____₁]
 the fish AUX= 2SG.SUBJ cook-TR

‘the fish that you cooked’ (Thompson 2012: 50)

b. **Relativisation of an ergative**

tl’ó te ile swiyeqe₁ [q’oy-t (-*es) _____₁ te qwá:]
 3INDEP the here man kill-TR (-3SG.SUBJ) the mosquito

‘This is the man who killed the mosquito.’ (Wiltschko 2003: 254)

Each of these dependencies also permits LBE. In fact LBE tracks the EEC more robustly than movement of arguments does: wh-LBE of possessors in Chamorro (Baker 1988; Chung 2020) and Palauan (Georgopoulos 1985) and Rel-LBE of possessors (Gerdtts 1988) in Halkomelem are impossible from ergative subjects, but possible from absolutes. I illustrate wh-LBE from only absolutes in Chamorro and Palauan (19-20), absent examples; the contrast between rel-LBE from absolutes (21a) and ergatives (21b) is illustrated fully for Halkomelem.

(19) **Chamorro: Wh-LBE from an absolutive**

Hayi₁ un yuland [munika-ña _____₁]?
 whose 2SG break doll-3SG.POSS

‘Whose doll did you break?’ (Gavruseva 2000: 754)

(20) **Palauan: Wh-LBE from an absolutive**

Ngteʔa₁ a ʔomulsa [a del-al _____₁]?
 whose the 2SG.SUBJ.PRF.saw the mother-3SG.POSS

‘Whose mother did you see?’ (Georgopoulos 1985: 68)

(21) **Halkomelem: rel-LBE**a. **Rel-LBE from an absolutive**

statəlstəxw cən ə séni₁ ni q’wə-ət-əs [_____₁ kwθə
 know 1SG.SUBJ the woman AUX bake-TR-3SG.SUBJ the
 scétəns]
 salmon.3SG.POSS

‘I know the woman whose salmon he baked.’ (Gerdtts 1988: 74)

b. **Rel-LBE from an ergative**

*statəlstəxw cən ə seni₁ ni q’wəl-ət-əs [_____₁ kwθə
 know 1SG.SUBJ the woman AUX bake-TR-3SG.SUBJ the
 sqeʔəq-s] kwθə scétəns
 younger.brother.3SG.POSS the salmon

Intended: ‘I know the woman whose younger brother baked the salmon’ (Gerdtts 1988: 74)

This pattern is thus very similar to the more standard examples of EEC languages above. Note, to reconcile both patterns, we would need to establish two things: (i) that the ‘repair’ involved in ergative extraction – i.e. absence of finite agreement – reflects a syntactic repair, so that ergative extraction in a ‘standard’ transitive clause is genuinely impossible; (ii) absolutes are actually the closest goal to the probe in standard transitives. Neither is uncontroversial, but there is at least some precedent. Aldridge (2017a, 2017b) analyses ‘wh-agreement languages’ generally – including Chamorro and Palauan – as languages where ‘wh-movement’ is triggered by a [ϕ]-probe which can only target the closest accessible nominal. Wh-agreement contexts then involve a syntactic ‘repair’; specifically, for Aldridge, this is the external argument being exceptionally unable to be assigned ergative Case, and thus becoming accessible to the ‘wh-movement’ [ϕ]-probe – making it the closest nominal. Sheehan (2017) and Coon et al. (2021) explicitly treat Chamorro as having an EEC. Insofar as one adopts this analysis, then these languages instantiate Type 1 mixed dependencies – and thus corroborate MiLBEG.

Note, Baier (2018) claims that wh-agreement effects are purely morphological, and thus do not reflect any syntactic extraction restriction. Interestingly, even if this is correct

and these languages do not show Type 1 mixed dependencies, I show in §2.3.3 that wh-movement in at least Chamorro and Palauan apparently also exhibits the properties of Type 2 mixed dependencies, i.e. no weak crossover effects.

2.2.2 Pivot-only extraction constraint languages

I now move on to the pivot-only extraction constraint. In Austronesian-style voice systems, verbs exhibit ‘voice’ alternations depending on which element in a clause bears ‘subjecthood’ properties; this is the ‘pivot’. Among these, Philippine-style and Indonesian-style voice systems differ in that the former have two voices – ‘Actor Voice’ (or equivalent for subject pivots, ‘Object/Patient Voice’ elsewhere; whereas the latter have more voices – e.g. Tagalog has Actor Voice for external argument pivots, Patient Voice for internal argument pivots, Locative and Circumstantial for various other pivots (Chen 2023b). These systems also show an extraction restriction (in at least some languages), whereby only the pivot can undergo A’-extraction.

Again, crucially, this extraction restriction has been analysed as an A-minimality effect, on the assumption that the ‘pivot’ is the syntactically highest nominal in the clause, whether by base-generation or movement (e.g. Aldridge 2004, 2008; Erlewine 2018; Douglas 2018; Erlewine and Lim 2023; Branam and Erlewine 2024b; Branam 2022). I adopt this analysis herein. These languages thus show Type 1 mixed dependencies. I now show that the availability of LBE again tracks this mixed dependency.

Consider first Tagalog. In Tagalog, only the pivot can undergo A’-extraction; in Actor Voice, for example, this is the agent/external argument. (22a-b) illustrates this. Crucially LBE is also possible; and only from elements within the pivot (23a), never the non-pivot (23b). Again, insofar as (wh-)LBE shows the same A-minimality restriction as A’-extraction (here, wh-movement) of arguments, we have evidence that they are the same ‘mixed’ dependency, and thus that Tagalog obeys MiLBEG.

(22) Tagalog: Wh-movement

a. Wh-movement of a pivot

Sino₁ ang bumili ng damit ____₁?
 who NOM bought.AV GEN dress

‘Who bought the dress?’

(Branam 2018: 14)

b. Wh-movement of a non-pivot

*Ano₁ ang bumili si Juan ____₁?
 what NOM bought.AV NOM Juan

Intended: ‘What did Juan buy?’

(Branan 2018: 14)

(23) **Tagalog: Wh-LBE**

a. **Wh-LBE from a pivot**

Sino₁ ang bumili [ang ____₁ nany] ng kotse?
 whose NOM bought.AV NOM mother GEN car

‘Whose mother bought the car?’

(Branan 2018: 4)

b. **Wh-LBE from a non-pivot**

*Sino₁ ang bumili si Juan [ng ____₁ kotse]?
 whose NOM bought.AV NOM Juan GEN car

Intended: ‘Whose car did John buy?’

(Branan 2018: 4)

Now consider four more languages: Indonesian, Javanese, Balinese and Sundanese. Before proceeding, note that in all of these languages canonical A'-movement dependencies – specifically wh-movement and relativisation – involve pseudo-clefting: the displaced element precedes a relative marker followed by a clause containing a gap corresponding to the displaced element (on Indonesian and Javanese, see Jeoung 2018a; on Balinese, see Wechsler and Arka 1998). That they nonetheless involve movement is indicated by sensitivity to island constraints, illustrated in (24) for Indonesian (Saddy 1991; Jeoung 2018a, 2018b). Jeoung (2018a) shows that the same holds of at least Javanese; I currently lack data on Balinese and Sundanese (though cf. Davies and Kurniawan 2013). Prior work thus treats these constructions as involving base-generation of the displaced element in clause-initial position and null operator movement corresponding to the gap (e.g. Dahl 1986; Paul 2000, 2001; Jeoung 2018a, 2018b). The crucial point is that these languages must still license LBE – of the null operator – even on this analysis.

(24) **Indonesian: island-sensitivity**

a. **Wh-movement from a complex NP**

*Siapa₁ yang Susan dapat [complexNP kesimpulan ____₁ suka kue]?
 who REL Susan get conclusion like cake

Intended: ‘Who did Susan get the conclusion likes cakes?’

(Jeoung 2018b: 5)

b. **Wh-movement from an adjunct**

*Apa₁ yang Ayah senang [adjunct ketika lihat ____₁]?
 what REL father happy when see

Intended: ‘What was father happy when he saw?’

(Jeoung 2018b: 5)

Now consider the extraction facts, Indonesian first. Actor Voice in Indonesian, occurring where the pivot is the ((in)transitive) subject, is marked by the nasal prefix *meN-* on the verb. Object Voice occurs elsewhere and is marked by the absence of *meN-*. A'-extraction tracks this: wh-movement and relativisation can only extract the subject in Actor Voice (25a), and not the object (25b). The object can only extract in Object Voice (whereupon the subject cannot extract; Cole and Hermon 1998). I illustrate only with wh-movement, since wh-movement and relativisation in all four languages both involve the same structure, *qua* (pseudo)clefting (Jeoung 2018a, 2018b). Again, Indonesian permits wh-LBE of possessors, which tracks A-minimality: it is possible from subjects in Actor Voice (26a), but not objects (26b).

(25) **Indonesian: Wh-movement**

a. **Wh-movement of a pivot**

Apa-kah₁ yang ____₁ telah mem- baca buku itu?
 who-Q that PRF AV- read book the

'Who has read the book?' (Keine and Zeijlstra 2023: 26)

b. **Wh-movement of a non-pivot**

Apa-kah₁ yang Ali telah (*mem-) baca ____₁?
 what-Q that Ali PRF (AV-) read

'What has Ali read?' (Keine and Zeijlstra 2023: 26)

(26) **Indonesian: Wh-LBE**

a. **Wh-LBE from a pivot**

Siapa₁ yang [rumah- nya ____₁] di- rata- kan kemarin?
 who that house- DEF PASS- flat- APPL yesterday

'Who is it that (their) house was destroyed yesterday?' (Jeoung 2018a: 124)

b. **Wh-LBE from a non-pivot**

Siapa₁ yang adik (*mem-) baca [buku- nya ____₁]?
 who REL younger.sibling (*AV-) read book- DEF

'Who is it that little brother is reading (her) book?' (Jeoung 2018b: 10)

The facts for Javanese, Balinese and Sundanese are similar. In Javanese (Jeoung 2018a) and Balinese (Wechsler and Arka 1998), Actor Voice is marked by a homorganic nasal prefix (*N-*); in Sundanese, by *ng(a)-* (Davies and Kurniawan 2013). Object Voice is marked by the absence of the prefix. Actor Voice occurs with ((in)transitive) subjects as pivots, Object

Voice elsewhere. A'-extraction tracks the voice alternation. Thus in Javanese, relativisation and wh-movement can target subjects in Actor Voice (78a) but not objects (27b); and LBE of possessors is possible, from the subject (28a), not the object (28b).

(27) **Javanese: Wh-movement**

a. **Wh-movement of a pivot**

Sapa₁ sing ____₁ meh m- angan apel?
 who REL FUT AV- eat apple

'Who will eat the apple?' (Cole et al. 2002: 100)

b. **Wh-movement of a non-pivot**

[Buku-ne penulis iku]₁ sing aku kate {woco/*m-oco} ____₁.
 book-DEF writer that REL 1SG.SUBJ will {read/*AV-read}

'It is that writer's book that I will read.' (Cole et al. 2002: 100)

(28) **Javanese: Wh-LBE**

a. **Wh-LBE from a pivot**

Sopo₁ sing [buku-ne ____₁] di- woco adik?
 who REL book-DEF PASS- read younger.sibling

'Who is it that (her) book was read by little brother?' (Jeoung 2018b: 8)

b. **Wh-LBE from a non-pivot**

penulis₁ sing aku kate {woco/*m-oco} [buku-ne ____₁]
 writer REL 1SG.SUBJ will {read/AV-read} book-DEF

'the writer that I will read her book' (Jeoung 2018b: 10)

The same holds in Balinese: the subject is relativised in Actor Voice in (29a), indicated by the (coalesced) nasal prefix on *maca*; the internal argument is relativised unsuccessfully in (29b). Rel-LBE tracks the same pivot-only restriction (30a,b).

(29) **Balinese: Relativisation**

a. **Relativisation of a pivot**

i Warta₁ ane ____₁ maca koran
 the Warta REL AV.read newspaper

'Warta who read the newspaper' (Wechsler and Arka 1998: 390)

b. **Relativisation of a non-pivot**

*koran₁ ane I Warta maca ____₁
 newspaper REL the Warta AV.read

Intended: ‘the newspaper that Warta read’ (Wechsler and Arka 1998: 390)

(30) **Balinese: Rel-LBE**

a. **Rel-LBE from a pivot**

anak-e₁ ane [panak-ne ____₁] ngeling ento
 person-DEF REL child-3.POSS cry that

‘the person whose son is crying’ (Arka 2003: 11)

b. **Rel-LBE from a non-pivot**

*anak-e₁ ane tiang ngalih [panak-ne ____₁]
 person-DEF REL 1.SUBJ AV.search child-3.POSS

Intended: ‘the person whose son I searched’ (Arka 2003: 11)

Finally, this is replicated for Sundanese. In (31), an internal argument wh-extracts: this is possible if the verb bears Patient Voice (i.e. is bare *beuli*), i.e. the internal argument is the pivot; but not if the verb bears the Actor Voice prefix (*meuli*), because the internal argument is not the pivot. In (32) we see that wh-LBE of possessors is also possible, where the possessor is extracting from the pivot – here, the underlying internal argument *mobil-na (saha)* ‘(whose) car’, hence Patient Voice on the verb. I lack an example to show the ungrammaticality of wh-LBE from a non-pivot, but this is reported (Davies and Kurniawan 2013: 126ff.)

(31) **Sundanese: Wh-movement**

[Mobil naon]₁ nu kakara di-beuli/ *meuli ____₁ ku Hasan?
 car what REL recently PV-buy/ *AV.buy by Hasan

‘What did Hasan recently buy?’ (adapted from Davies and Kurniawan 2013: 114)

(32) **Sundanese: Wh-LBE**

Saha₁ nu [mobil-na ____₁] di-jual Ku Asép?
 who REL car-DEF PV-sell ERG Asep

‘Whose car was sold by Asep?’ (Davies and Kurniawan 2013: 127)

This is thus further suggestive evidence in favour of MiLBEG: LBE’s availability correlates with the presence of an A-minimality restriction.

2.2.3 Other languages

I now address six further languages which do not fall neatly into either the EEC or pivot-only extraction constraint categories. Three – Madurese, Rejang, Turkish – nonetheless fit the Type 1 profile straightforwardly; three more – Tzotzil, West Circassian, San Martín Peras Mixtec – deviate from Type 1 slightly. I offer preliminary discussion of ways to reconcile this with MiLBEG, though this is largely deferred to future work.

Madurese and Rejang differ from the Austronesian-style voice systems above in that they prohibit (at least some types of) object extraction *regardless* of voice. Thus in Madurese wh-movement and relativisation (though I illustrate with wh-movement), and Rejang relativisation⁵, subjects can be extracted in the Actor Voice (33a,34a); but objects cannot be extracted whether the verb bears the Actor Voice prefix or not (33b, 34b). This is illustrated especially clearly for Madurese in (33b), where object extraction fails when the verb is marked for Actor Voice (*m-acah*) and when it is bare, the form used for non-subject pivots (*acah*).

(33) Madurese: wh-movement

a. Wh-movement of a subject

Paserah₁ se _____₁ ampon m-acah buku panekah?
 who REL PRF AV-read book that

‘Who read that book?’

(Jeoung 2017: 28)

b. Wh-movement of an object

*Ponapah₁ se ramah ampon m-acah/acah _____₁?
 what.POL REL father PRF AV-read/read

Intended: ‘What did father read?’

(Jeoung 2017: 29)

(34) Rejang: relativisation

a. Relativisation of a subject

tun [gi _____₁ t<en>akep pelisi kelem] o
 person C_{gi} <PASS>catch police last.night the

‘the person that was arrested by the police last night’
 2024b: 385)

(Branan and Erlewine

⁵I omit wh-movement for Rejang on the basis of a lack of data; see also Branan and Erlewine (2024b).

b. **Relativisation of an object**

*tun [gi pelisi o m-akep ____₁ kelem] o
 person C_{gi} police the AV-catch last.night the

Intended: ‘the person that the police arrested last night’ (Branan and Erlewine 2024b: 385)

Again, this has been analysed as reflecting A-minimality: the A'-probe can only target the closest nominal; if, unlike the systems described in the previous sections, these languages do not move non-subjects above subjects, this means only subjects can A'-extract, regardless of voice (Branan and Erlewine 2024b on Rejang; Jeoung 2018b, 2018a on Madurese). We thus predict that LBE is possible; this is borne out. Moreover LBE again tracks the extraction restriction: it occurs from subjects (35a,36a) but never from objects, regardless of voice (35b,36b).

(35) **Madurese: Wh-LBE**

a. **Wh-LBE from a subject**

Sapah₁ se [kalambhi-nah ____₁] e-sasa?
 whose REL clothing-DEF PASS-wash

‘Who is it that (his) clothing was washed?’ (Jeoung 2018b: 8)

b. **Wh-LBE from an object**

*Sapah₁ se ale' macah/bacah [buku-nah ____₁]?
 whose REL younger.sibling AV.read/read book-DEF

Intended: ‘Who was it that little brother read (his) book?’ (Jeoung 2018b: 27)

(36) **Rejang: Rel-LBE⁶**

a. **Rel-LBE from a subject**

tun [gi [nyung ne] panjang] o
 person C_{gi} nose 3SG.GEN long the

‘the person whose nose is long’ (Branan and Erlewine 2024b: 388)

⁶Note the obligatory presence of a resumptive pronoun for possessor relativisation. Branan and Erlewine: 389 nonetheless assume a movement analysis because of (i) locality-sensitivity, indicating this “does not reflect a free process of pronominal binding” and (ii) the fact that the occurrence of complementiser *gi* correlates with movement independently.

b. **Rel-LBE from an object**

*tun [hi Alui klea' [ngenyān ne]] o
 person C_{gi} Alui <ACT>see wife 3SG.GEN the

Intended: 'the person whose wife Alui saw' (Branan and Erlewine 2024b: 388)

Turkish is similar. Turkish has two relativisation strategies: subject relatives (SRs), marked by *-an*; and non-subject relatives (NSRs), marked by *-tuğ* (Underhill 1972). SRs can only be used for relativising subjects (37a); NSRs are obligatory for non-subject relativisation (37b). Branan and Erlewine (2024b) analyse SRs as involving an A-minimal probe⁷. Again, LBE is available, and tracks A-minimality: subject-internal (38a) but not object-internal (38b) possessors can relativise in the SR construction.

(37) **Turkish: relativisation**a. **Relativisation of a subject**

[____₁ kız-1 sok -an] arı₁
 girl-ACC sting -SREL bee

'the bee that stung the girl' (Branan and Erlewine 2024b: 381)

b. **Relativisation of an object**

[arı-nın ____₁ sok {-*an / -tuğ-u}] kız₁
 bee-GEN sting {-SREL / -NSREL-3SG} girl

'the girl that the bee stung' (Branan and Erlewine 2024b: 381)

(38) **Turkish: Rel-LBE**a. **Rel-LBE from a subject**

[[____₁ oğl-u] mekteb-e gid -en] adam₁
 son-POSS.3SG school-DAT go -SREL man

'the man whose son goes to school' (Branan and Erlewine 2024b: 382)

b. **Rel-LBE from an object**

[(birkaç) arı [____₁ bacağ-ın-ı] sok {-*an / -tuğ-u}] kız₁
 some bee leg-3SG.POSS-ACC sting {-SREL / -NSREL-3SG} girl

'the girl whose leg the/some bee stung' (Branan and Erlewine 2024b: 383)

⁷Branan and Erlewine however also assume that this probe can default to non-A-minimality if the subject is not an appropriate goal; this yields NSRs. This is not obviously consistent with MiLBEG, insofar as a non-A-minimal – hence, plausibly non-mixed – dependency is relativising possessors in NSRs. I set this aside for future work.

Consider finally three more problematic cases. These deviate from the patterns reviewed so far in one or both of the following ways: (i) only clausebound LBE – *not* cross-clausal LBE – shows A-minimality; (ii) even though LBE shows A-minimality, non-LBE A'-extraction does not.

San Martín Peras Mixtec (SMPM) has property-(i). A'-extraction can only target absolutive arguments; the EEC holds. Clausebound LBE is available and tracks this, only occurring from absolutives. But cross-clausal LBE is different, in allowing LBE from ergatives (Hedding and Yuan 2023). This suggests that clausebound LBE is subject to A-minimality, so is a Type 1 mixed dependency; but apparently cross-clausal LBE is not. Tzotzil conversely has property-(ii). Its LBE consistently obeys the EEC: it is only possible from absolutives. But A'-extraction of arguments does not: absolutives *and* ergatives can extract without, e.g., obligatory Agent Focus (Aissen 1999). Thus LBE does appear to involve a Type 1 mixed dependency, but this is apparently not the same dependency which targets arguments. Finally, West Circassian shows both properties-(i)/-(ii) (Ershova 2024). Like Tzotzil there is no EEC on argument movement; and clausebound LBE does show an EEC-type effect, only occurring from absolutives. But like SMPM, cross-clausal LBE can occur from non-absolutives, including ergatives.

These patterns are not predicted by MiLBEG, and I do not resolve this here. This leaves us with three of the thirty-eight (the thirty-five languages listed above, plus the above three) languages considered here being non-MiLBEG-compliant, 7.9%. Two observations suggest that this need not undermine MiLBEG entirely, however. First, these languages have been shown to be problematic for alternative theories of LBE too, requiring novel theoretical assumptions (see Hedding and Yuan 2023 on the 'Phase Obviation Generalisation'; Ershova 2019 on a modified definition of 'closest' and feature-ordering, i.a.). It is thus not a unique flaw of the proposal here that it is problematised by these languages. Second, there are plausible routes to explaining at least some of the deviance. Property-(i) would be MiLBEG-consistent insofar as (non-MiLBEG-compliant) long-distance LBE is not performed by the same kind of dependency as (MiLBEG-compliant) local LBE. This has been independently proposed for various languages (see, e.g., Davies 2003; Davies and Kurniawan 2013). Whether this is viable for these languages is a topic for future research. Nonetheless, insofar as the thirty-five language sample still obeys MiLBEG, I take it to remain well-evidenced.

2.3 LBE is mixed: No-WCO LBE

I now consider mixed dependency Type 2, the No-WCO type: movement dependencies which show A'-properties and the A-property of lacking weak crossover (WCO) effects. WCO effects arise when a quantified phrase moves from a position below (but not c-commanded by) a coindexed pronoun, to a position which c-commands it. The quantified phrase thus 'crosses-over' the pronoun. WCO effects are standardly induced by A'-movement but not A-movement. Hence (39a), where *who* undergoes wh-movement that crosses-over the coindexed pronoun *his*, internal to the subject, is ungrammatical; whereas (39b), where the quantified phrase *every man* undergoes A-movement (raising) over the coindexed pronoun internal to *his mother*, is grammatical (Postal 1971).

- (39) a. *Who_i does his_i mother love _____i?
 b. Every man_i seems to his_i mother _____i to be handsome.

I discuss two types of no-WCO movement: wh-movement and scrambling. It has been known since Rudin (1988) and Richards (1997) that there is a class of languages whose wh-questions do not show WCO effects. This has been taken to indicate a 'mixed' A/A'-dependency (e.g. Lohninger 2022; Katochoritis 2023; Katochoritis and Lohninger 2023). That no-WCO scrambling is (at least superficially) mixed is also an old observation (e.g. Webelhuth 1989; Mahajan 1990; Saito 1992); and again has yielded analyses in terms of 'mixed' movement (e.g. Webelhuth 1989; Chen 2024). Note that no-WCO wh-movement and scrambling in fact may be cross-linguistically correlated (e.g. Lohninger 2023b).

I present the data in two subsections: on local (i.e. clausebound) no-WCO dependencies; and on long-distance (i.e. cross-clausal) no-WCO dependencies. This is because it is generally assumed that, even in languages with no-WCO, 'mixed' local wh-movement and scrambling, long-distance wh-movement and scrambling revert to showing consistent A'-properties – including WCO effects (see Gong 2022: sec.3.2.3). Nonetheless, I will show that, where a language permits LBE in long-distance scrambling, there is evidence that it is still mixed – and where this evidence is missing for a variety or speaker, so is long-distance scrambling-LBE.

Note, before proceeding, that Bošković (2005b, 2009a) has already postulated an indirect link between LBE and the lack of WCO: specifically, no-WCO scrambling, no-WCO wh-movement and LBE are all properties of his NP-languages. Note that this is only indirect, though, because all three are one-way implications: having them entails being an NP-language, but not vice versa. Consequently, in principle each property could be present in a disjoint proper subset of NP-languages. This provides useful precedent for my claim,

which is similar: at least some LBE-permitting dependencies are of the no-WCO type; but it's not necessary that all LBE-permitting dependencies are.

2.3.1 Local No-WCO LBE

First, let's consider local no-WCO dependencies, i.e. where the landing-site of movement is within the same clause as the launch-site. I show for a set of languages – six Slavic languages, Hungarian, Turkish, Hindi-Urdu and Japanese – that (i) local scrambling and local wh-movement are of the 'mixed' Type 2 and (ii) when they are mixed they license LBE.

In (40-49) I illustrate the two crucial properties for each of these languages: that they lack WCO effects in local wh-movement ((a)-examples) and scrambling ((c)-examples); and that they permit LBE in wh-movement ((b)-examples) and scrambling ((d)-examples) respectively⁸.

(40) **Bosnian-Serbian-Croatian**

a. **Local wh-movement lacks WCO**

Koga_i voli njegov_i majka _____i?
 who.ACC loves his mother.NOM

'Who_i does his_i mother love_ç' (Richards 1997: 33)

b. **Local wh-LBE**

Čijeg₁ si vidio [____₁ oca]?
 whose are seen father.ACC

'Whose father did you see_ç' (Bošković 2005b: 3)

c. **Local scrambling lacks WCO**

Svakoga_i njegov_i otac planira kazniti _____i.
 everyone.ACC his father.NOM plans punish.INF

lit. 'Everyone_i his_i father is planning to punish.'
 (Bošković 1997: 27)

d. **Local scrambling-LBE**

Andrićevu₁ su preveli [____₁ knjigu].
 Andric.GEN are translated book.ACC

'They translated Andric's book.'
 (Bašić 2004: 29)

⁸Note that scrambling is sometimes stated as a movement operation which targets only nominals; for present purposes, I follow (e.g.) Bošković (2005a), Bošković (2009c) in treating the dependency involved in scrambling as being able to extract non-nominals like noun modifiers too.

(41) **Polish**⁹a. **Local wh-movement lacks WCO**

Kogo_i zawołała jego_i matka _____i?
 who.ACC loves his mother.NOM

‘Who_i does his_i mother love?’ (Witkoś 2008: 317)

b. **Local wh-LBE**

Czyjego₁ widziałeś [____₁ brata]?
 whose saw brother.ACC

‘Whose brother did you see?’ (Borsley 1983: 340)

c. **Local scrambling lacks WCO**

Piotra_i jego_i matka zawołała _____i już trzy razy.
 Piotr.ACC his.NOM mother called already three times

lit. ‘Piotr_i his_i mother has already called three times.’ (Witkoś 2008: 317)

d. **Local scrambling-LBE**

Pięć₁ chc-ę zaprosi-ć [____₁ czarownic].
 five want-1SG invite-INF witch.ACC

‘I want to invite five witches.’ (Lyskawa 2020: 10)

(42) **Russian**a. **Local wh-movement lacks WCO**

Kogo_i ljubit ego_i podругa _____i?
 who.ACC loves his girlfriend.NOM

‘Who_i does his_i girlfriend love?’ (Nossalik 2005: 92)

b. **Local wh-LBE**

Čju₁ on kupil [____₁ mašinu]?
 whose he.NOM bought car.ACC

‘Whose car did he buy?’ (Grebnyova 2012: 21)

c. **Local scrambling lacks WCO**

[Kazduju iz etix sobak]_i striz’ot ee_i xozjajka _____i.
 each of these dogs grooms her owner.NOM

⁹The local scrambling judgements seem to vary for Polish: one informant (Maksymilian Litwin, p.c.) does show WCO effects in local scrambling; crucially, he concomitantly disallows scrambling-LBE. The reverse pattern, illustrated below, seems more common in the literature (e.g. Witkoś 2008; Szczegielniak 2001). Note that both patterns are MiLBEG-compliant.

lit. ‘Each of these dogs_i its_i owner grooms. (Nossalik 2005: 95)

d. **Local scrambling-LBE**

Eě₁/ego₁ Lena ne vzjala s soboj [____₁ otkrytku], ne
 her/his Lena.NOM NEG took with self card.ACC NEG
 obnaruziv v komnate.
 discover.CNV in room

‘Lena did not take her/his card with her, not having found it in the room.’
 (Bondarenko and Davis 2023: 17)

(43) **Czech**

a. **Local wh-movement lacks WCO**

?Koho_i jeho_i přítelkyne pozvala _____i?
 who.ACC his girlfriend.NOM invite.3SG.PST

‘Who_i did his_i girlfriend invite?’ (Šimík 2009: 4)

b. **Local wh-LBE**

Jakou₁ čte Petr [____₁ knihu]?
 which read.3SG Peter.NOM book.ACC

‘Which book is Peter reading?’ (Corver 1990: 329)

c. **Local scrambling lacks WCO**

[Kazdou holčicku]_i miluje její_i pes _____i.
 every girl.ACC love.3SG her dog.NOM

‘Every girl_i her_i dog loves.’ (Kučerová 2007: 189)

d. **Local scrambling-LBE**

Její₁ čte Peter [____₁ knihu].
 Her read.3SG Peter.NOM book.ACC

‘Peter reads her book.’ (Corver 1992: 68)

(44) **Ukrainian**

a. **Local wh-movement lacks WCO**

Koho_i ljuvit yioho_i sestra _____i?
 who.ACC love.3SG his sister.NOM

‘Who_i does his_i sister love?’ (Bashutski 2008: 61)

b. **Local wh-LBE**

Chyju₁ ty bachyv [____₁ mamu]?
 whose you.NOM saw.2SG.PST mother.ACC

‘Whose mother did you see?’ (Fanselow and Féry 2013: 273)

c. **Local scrambling lacks WCO**

Koznoho_i ljubit yiioho_i mama _____i.
 everyone.ACC love.3SG his mother.NOM

‘Everyone_i his_i mother loves.’ (Bashutski 2008: 57)

d. **Local scrambling-LBE**

Marijky₁ vin zgradav [ljubov ____₁].
 Marijka.GEN he.NOM remembered.3SG.PST love.ACC

‘He remembered Marijka’s love.’ (Teliga 2011: 27)

(45) **Slovenian**

a. **Local wh-movement lacks WCO**

Koga_i njegov_i prijatelji občudujejo _____i?
 who.ACC his friends.NOM admire.3PL

‘Who_i do his_i friends admire?’ (Mišmaš 2015: 213)

b. **Local wh-LBE**

Cigave₁ mi prinasas [____₁ pozdrave]?
 whose me.DAT bring.2SG greetings.ACC

‘Whose greetings are you bringing me?’ (Stepanov et al. 2016: 254)

c. **Local scrambling lacks WCO**

Včeraj je Peter [pred Tonetom_i]₁ skirl nejove_i ključe
 yesterday AUX Peter.NOM from Tone.DAT hid.3SG.PST his keys.ACC
 ____₁.

‘Yesterday Peter hid Tone’s keys from him.’ (Mišmaš 2015: 213)

d. **Local scrambling-LBE¹⁰**

Rosignolove₁ si je omislil [____₁ smučke].
 Rosignol.GEN REFL be.3SG got skis.ACC

‘He got Rosignol’s skis.’ (Bošković 2009b: 69)

¹⁰The availability of scrambling-LBE of the type in this example, i.e. scrambling-LBE of a possessor, appears to be subject to inter-speaker variation in Slovenian: both Franks (2013) and Runić (2014) report that it is unavailable for their informants, in contrast to Bošković (2009b).

(46) **Hungarian**a. **Local wh-movement lacks WCO**

Ki_i hívott fel az (pro_i) anyjá _____i?
 who.NOM called.3SG.PST up the (his) mother.3SG.POSS.NOM

‘Who_i did his_i mother call up?’ (Surányi 2006: 397)

b. **Local Wh-LBE**

Ki-nek₁ ismertétek [____₁ a vendégét]?
 who-DAT know.2SG.PST the guest.3SG.POSS.ACC

‘Whose guest did you know?’ (Szabolcsi 1983: 92)

c. **Local scrambling lacks WCO**

Felismerte [’mindegyik ’lányt]_i az a ferfi, aki
 recognised.3SG.PST every girl.ACC that the man.NOM who
 bement (pro_i) hozzá _____i.
 in.went.3SG (pro) to.her

‘The man who dropped by her_i recognised every girl_i.’ (lit. ‘Recognised every girl_i the man who dropped by her_i.’) (Surányi 2006: 425)

d. **Local scrambling-LBE**

János-nak₁ vettem meg [____₁ az autóját].
 John-GEN bought PRF the car.ACC

‘I bought John’s car.’ (Szilvi Daczó, p.c.)

(47) **Hindi-Urdu**a. **Local wh-movement lacks WCO**

[Kaun-sii kitaab]_i uske_i maalik-ne _____i pheNk dii?
 which book its author-ERG threw away

‘Which book_i did its_i author throw away?’ (Mahajan 1994: 305)

b. **Local wh-LBE**

Kis-ka₁ us-ne [____₁ cake] chura-ya?
 who-POSS 3SG-ERG cake steal-PST

‘Whose cake did you steal?’ (Aayush Bagchi, p.c.)

c. **Local scrambling lacks WCO**

[Har bacce-ko]_i us-kii_i mää-ne _____i dekhaa.
 every child-ACC s/he-GEN mother-ERG saw

lit. ‘Every child_i his_i/her_i mother saw.’ (Keine 2018: 5)

d. **Local scrambling-LBE**

Ram-ki₁ adđ [____₁ kitabe] k^hub biki.
 Ram-POSS today books well sold

‘Ram’s books sold well today.’ (Beshears 2017: 101)

(48) **Turkish**

a. **Local wh-movement: no WCO**

Kim-i_i (pro_i) anne-si _____i aradi?
 who-ACC (pro) mother-3POSS call.3SG.PST

‘Who_i did his_i mother call?’ (Özsoy 2009: 6)

b. **Local wh-LBE**

Kim-in₁ dün [____₁ araba-sın-ı] aldın?
 who-GEN yesterday car-3SG.POSS-ACC buy.PST.1SG

‘Whose car did you buy yesterday?’ (Uktu Turk, p.c.)

c. **Local scrambling: no WCO**

?Herkesi_i (pro_i) sekreteri _____i aradi.
 everyone.ACC (his) secretary.NOM called.3SG.PST

lit. ‘Everyone_i his_i secretary called.’ (Kural 1992a: 3)

d. **Local scrambling-LBE**

Mehmet-in₁ ben aldım [____₁ araba-sın-ı].
 Mehmet-GEN I buy.1SG.PST car-3SG.POSS-ACC

‘I bought Mehmet’s car.’ (Uktu Turk, p.c.)

(49) **Japanese**

a. **Local scrambling lacks WCO**

John-o_i kare-no_i hahaoya-ga _____i aisiteiru.
 John-ACC he-GEN mother-NOM loves

lit. ‘John_i his_i mother loves.’ (Saito and Hoji 1983: 247)

b. **Local scrambling-LBE**

Tanaka-sensei-no₁ tabun kore-ga [____₁ saigo-no chosho-ni naru].
 Tanaka-Prof.-GEN probably this-NOM last-GEN book-DAT become

‘This will probably become Prof. Tanaka’s last book.’ (Kazune Sato, p.c.)

The absence of WCO in local wh-movement/scrambling indicates that both have a non-zero set of A-properties in these languages. This has been taken in prior work to indicate that these are thus ‘pure’ A-dependencies (see, e.g., Richards 1997, Lohninger 2023b on ‘A-wh-movement’; on ‘A-scrambling’, e.g., Mahajan 1990, 1994, McGinnis 1999). This would make their licensing LBE problematic: MiLBEG predicts that only mixed dependencies license LBE, not ‘pure’ (A-)dependencies of this type.

In this section I argue that this is false. Local wh-movement and scrambling are not pure A-dependencies in these languages because they show a non-zero set of A’-properties. The specific set of A’-properties attested varies between languages; but in each case, *some* set of A’-properties is attested. These are thus genuine mixed dependencies; so their licensing LBE is again MiLBEG-compliant.

Note, insofar as wh-movement has a clear information-structural effect, I will assume that it necessarily has A’-properties (see, e.g., Lohninger 2023a). More formally, one might assume specifically that wh-movement necessarily involves a [wh] feature, i.e. a species of [A’]-feature. I thus do not discuss A’-properties of wh-movement in detail below.

2.3.1.1 Slavic

Consider first Slavic. Above, I gave data from Bosnian-Serbian-Croatian, Polish, Russian, Czech, Ukrainian and Slovenian¹¹.

Evidence that local scrambling (and local wh-movement) is nonetheless mixed comes from three A’-properties: parasitic gap (PG) licensing; obligatory reconstruction; and information-structural restrictions. I begin with parasitic gap licensing. Canonically A’-dependencies can license parasitic gaps, but A-dependencies cannot (Engdahl 1983). Both local scrambling/wh-movement have been shown to license parasitic gaps in at least Polish (Witkoś 2008; Bondaruk 1996), Slovenian (Mišmaš, 2015) and Russian (Bondarenko & Davis, 2023). That it is wh-movement/scrambling which licenses the PGs is indicated by the coreference between the scrambled/wh-moved element and the PG¹².

(50) Local scrambling licenses parasitic gaps

a. Polish

¹¹I omit discussion of Lower Sorbian – which permits LBE (Pankau 2021) – because of a lack of data with respect to WCO effects (Andreas Pankau, p.c.).

¹²A complication for Russian data is that Bondarenko and Davis (2023) show that possessor-scrambling, in contrast to argument-scrambling, does not license PGs. They take this to show that these are different dependencies, the former involving ‘concealed pied-piping’ rather than genuine LBE.

[Te zienmaki]₁ Piotr najpierw obrał _____₁ [zanim
these potatoes.ACC Piotr.NOM first peeled.3SG.PST before
ugotował _____₁ (PG)].
cooked.3SG.PST

‘Piotr first peeled [these potatoes]₁ before he cooked (them₁).’ (Witkoś 2008: 301)

b. **Slovenian**

Majo₁ je Peter povabil _____₁ k sodelovanju na
Maja.ACC AUX Peter.NOM invited.3SG.PST to join on
projektu, preden je srečal _____₁ (PG).
project before AUX met.3SG.PST

‘Peter invited Maja₁ to join the project before he met (her₁).’ (Mišmaš 2015: 212)

c. **Russian**

[Eë/ego otkrytku]₁ Lena ne vzjala s soboj _____₁, ne
her/his card.ACC Lena.NOM NEG took.3SG.PST with self NEG
obnarūživ _____₁ (PG) v komnate.
discover.CNV in room

‘Lena did not take [her/his card]₁ with her, not having found (it₁) in the room.’
(Bondarenko and Davis 2023: 16)

(51) **Local wh-movement licenses parasitic gaps**

a. **Polish**

Jaki₁ owoc musiałeś obrać _____₁ zanim ugotowałeś
which fruit.ACC had.to.2SG.PST peel.INF before cook.2SG.PST
_____₁ (PG)?

‘[Which fruit]₁ did you have to peel before you cooked (it₁)?’ (Bondaruk 1996: 113)

b. **Slovenian**

Koga₁ je Peter _____₁ povabil k sodelovanju na
who.ACC AUX Peter.NOM invited.3SG.PST to join on
projektu, preden je srečal _____₁ (PG)?
project before AUX met.3SG.PST

‘Who₁ did Peter invite to join the project before he met (them₁)?’ (Mišmaš 2015: 211)

c. **Russian**

[Č'ë plat'e]₁ Vera ne nadela _____₁, ne obnaruživ
 whose dress.ACC Vera.NOM NEG put.on NEG discover.CNV
 _____₁ (PG) v škafu?
 in wardrobe

‘[Whose dress]₁ did Vera not put on, not having found (it₁) in the wardrobe?’
 (Bondarenko and Davis 2023: 7)

The second A'-property is obligatory reconstruction. Standardly, A'-movement obligatorily reconstructs at LF, whereas A-movement cannot (or does not obligatorily) reconstruct (e.g. Lebeaux 1988). In at least Russian (Nossalik 2005) and Bosnian-Serbian-Croatian (Bošković and Takahashi 1998) local scrambling obligatorily reconstructs for Condition C. In the Russian example (52a), internal argument *noyx znakomyx Ivana* ‘acquaintances of Ivan’ scrambles over the external argument into clause-initial position. In its base-generated position, the internal argument is thus c-commanded by the external argument. This violates binding Condition C: the R-expression internal to the internal argument, *Ivana*, is bound by a pronoun in the external argument. However, scrambling removes the internal argument from the external argument’s c-command domain, resolving the Condition C violation. If scrambling did not obligatorily reconstruct, (52a) is thus expected to be grammatical. That it is ungrammatical indicates that reconstruction is obligatory. The Bosnian-Serbian-Croatian example (52b) is similar: internal argument *Marka i Petra* scrambles over an anaphor *jedan drugoga* ‘each other’. In its base-generated position, it is c-commanded and bound by the anaphor – violating Condition C (and A). If scrambling did not need to reconstruct, (52b) should be nonetheless grammatical because scrambling reverses the c-command relation, allowing the R-expression to bind the anaphor. It is ungrammatical; so reconstruction must be obligatory¹³.

(52) Local scrambling reconstructs for Condition C

a. Russian

*[Novyx znakomyx Ivana]_i predstavil on_i _____₁
 new acquaintances Ivan.GEN introduced.3SG.PST he.NOM
 predsedatelju.
 to.the.Chairman

Intended: ‘New acquaintances of Ivan₁, he₁ introduced to the Chairman.’ (Nossalik 2005: 302)

¹³Obligatory reconstruction for Condition C (and A) may seem incompatible with the claim that local scrambling also lacks WCO effects. This is nonetheless reported for various other languages: see below; and see §2.3.3 for several Austronesian languages where promotion-to-pivot lacks WCO effects and reconstructs for Condition A/C (Tagalog, Javanese; Katochoritis and Lohninger 2023).

b. **Bosnian-Serbian-Croatian**

*[Marka i Petra]₁ protivnici jedan drugoga₁ ____₁
 Marko.ACC and Peter.ACC opponents.NOM each other.GEN
 poštuju.
 respect.3PL

Intended: lit. '[Marko and Peter]₁, opponents of each other₁ respect.' (Bošković and Takahashi 1998: 361,fn.20)

The third A-property is information-structural restrictions on movement. A-movement is canonically not subject to discourse-related or information-structural restrictions like topicality, focus, specificity or givenness; these are properties encoded by A'-dependencies (i.e. A'-features) (van Urk 2015). To wit, it has been claimed that 'A-scrambling' is semantically and pragmatically vacuous movement, i.e. devoid of information-structural effects (e.g. Saito 1989; Fukui 1993). This is again false for at least a subset of the Slavic languages. In particular at least Russian, Czech, Bosnian-Serbian-Croatian and Ukrainian scrambling have been shown to exhibit some information-structural content. As above, wh-movement is necessarily information-structurally restricted since, e.g., wh-elements are obligatorily focused. The information-structural restrictions on scrambling in these languages are apparently consistent, albeit with varying terminology: scrambled elements must be specific/discourse-backgrounded/discourse-given (see below).

Bailyn (2003) demonstrates for Russian that scrambled elements are obligatorily 'discourse-given' on the basis of (53a-c). (53a) is a wide-focus context: the whole answer is focused, so necessarily non-discourse-given. The scrambled OSV order is infelicitous as a response (53a.i), unlike the unscrambled order (53a.ii). When the context changes so that the scrambled constituent (*novogo prezidenta* 'new president') is discourse-given, the felicity reverses: scrambling (53b.i), but not the unscrambled order (53b.ii), is felicitous. Note, Slioussar (2005, 2006) shows, *pace* Bailyn (2003), that the same restriction holds for scrambling in OVS orders: (53c) is another wide-focus context, and OVS scrambling is infelicitous.

(53) **Russian local scrambling is information-structurally restricted**a. **Čto novogo?**

('What's new?')¹⁴

- i. *Narod vybral novogo prezidenta.*
 people.NOM elect.3SG.PST new president.ACC

'The people elected a new president.'

¹⁴Bailyn (2003: 170) specifies that these answers are produced 'with neutral intonation'.

- ii. #*[Novogo prezidenta]₁ narod vybral _____₁.*
 new president.ACC people.NOM elect.3SG.PST

‘The people elected a new president.’ (Bailyn 2003: 170)

b. **Kakoe mnenie o novom prezidente?**

(‘What is the opinion about the new president?’)

- i. #*Narod ljubit novogo prezidenta.*
 people.NOM love.3SG new president.ACC

‘The people love the new president.’

- ii. *[Novogo prezidenta] narod ljubit _____₁.*
 new president.ACC people.NOM love.3SG

‘The people love the new president.’ (Bailyn 2003: 170)

c. **Čto slučilos?**

(‘What happened?’)

- i. *Ivan čitaet etu knigu.*
 Ivan.NOM read.3SG this book.ACC

‘Ivan is reading this book.’

- ii. #*[Etu knigu]₁ čitaet Ivan _____₁.*
 this book.ACC read.3SG Ivan.NOM

‘Ivan is reading this book.’ (Slioussar 2006, cited in Witkoś 2008: 302)

Czech is similar: Biskup (2006) describes scrambled arguments as obligatorily specific and discourse-‘backgrounded’ (contrasted with ‘information-focus[ed]’; 2006: 3-4). Biskup demonstrates this using (54): the question places focus on the event which occurred to Marie; this is incompatible with a specific, backgrounded interpretation of *psa* ‘dog’, so scrambling *psa* yields infelicity.

(54) **Czech local scrambling is information-structurally restricted**

Co je Marii? (‘What is wrong with Marie?’)

- a. Marie odpoledne zajela psa.
 Marie.NOM in.the.afternoon ran.over.3SG.PST dog.ACC

‘Marie ran over a dog in the afternoon.’

- b. #Marie psa₁ odpoledne _____₁ zajela.
 Marie.NOM dog.ACC in.the.afternoon ran.over.3SG.PST

‘Marie ran over her/the dog in the afternoon.’ (Biskup 2006: 2-3)

Mykhaylyk (2010, 2011) argues that scrambled elements in Ukrainian are also obligatorily specific. In (55a) the object is not scrambled and, absent prosodic effects ('prosodic (re)contouring'; Mykhaylyk 2010: 59ff.), can be interpreted non-specifically; this is the reading where two balls are both thrown. In (55b), the object scrambles above the verb and is obligatorily interpreted as specific; the only interpretation is where there is one ball, which is thrown twice.

(55) **Ukrainian scrambling is information-structurally restricted**

- a. Divčynka dviči kynula m'jačyk.
 girl.NOM twice threw.3SG.PST ball.ACC
 'The girl threw a(ny) ball twice.'
- b. Divčynka m'jačyk₁ dviči kynula ____₁.
 girl.NOM ball.ACC twice threw.3SG.PST
 'The girl threw the/a certain ball twice.' (Mykhaylyk 2010: 39-40)

Finally Ilic and Deen (2004) report a specificity restriction on Bosnian-Serbian-Croatian (BSC) scrambling: the unscrambled (56a) allows both specific and non-specific interpretations; when the object *magarca* 'donkey' scrambles to medial (56b) or clause-initial (56c) position, only the specific interpretation obtains.

(56) **BSC scrambling is information-structurally restricted**

- a. Dete ye uzyahalo magarca.
 child.NOM AUX mount.3SG.PST donkey.ACC
 'The child mounted the/a donkey.'
- b. Dete ye magarca₁ uzyahalo ____₁.
 child.NOM AUX donkey.ACC mount.3SG.PST
 'The child mounted the/*a donkey.'
- c. Magarca₁ ye dete uzyahalo ____₁.
 donkey.ACC AUX child.NOM mount.3SG.PST
 'The child mounted the/*a donkey.' (Ilic and Deen 2004: 4)

Note that scrambling clearly lacks various other properties of A-dependencies, such as A-minimality (scrambling can move the lower of two nominals in a clause over the higher) or any relationship with case/agreement (Bošković 1997). I thus conclude that local scrambling in these languages is mixed, and that the availability of LBE is therefore MiLBEG-compliant. It is worth noting a caveat here, which will be relevant to each of the languages reviewed in this section: though I am interpreting the 'mixed' properties of scrambling as reflecting a single, mixed operation, there is also a tradition of interpreting these properties as reflecting

two distinct operations conflated by 'scrambling' - A-scrambling with A-properties, and A'-scrambling with A'-properties (e.g. Mahajan 1990, 1994; Saito 1989, 1992; for Slavic, see Bailyn 2003; Witkoś, 2007). I justify my assumption on conceptual and empirical grounds. Conceptually, the postulation of two operations instead of one is inconsistent with Ockhamian principles, and is potentially circular insofar as it is motivated only by the axiom that movement dependencies should not have mixed properties. Empirically, even where A- and A'-scrambling have been argued to be distinguishable, this has been contested. Thus, Slioussar (2005, Slioussar) and Witkoś (2008), for example, argue for Russian and Polish respectively that differences between OVS and OSV orders - treated as 'A-scrambling'-like ('inversion') and 'A'-scrambling'-like ('dislocation') respectively - have been overstated: both show WCO avoidance in at least some cases, and both obligatorily reconstruct for Condition C, for example. Similar analyses of other languages, such as Turkish, have been rejected on similar grounds (e.g. see Akan 2009).

That it is specifically the mixed nature of movement which licenses LBE in Slavic is suggested by the well-known contrast between LBE-permitting and non-LBE-permitting Slavic languages. The non-LBE-permitting languages – at least Bulgarian, Macedonian – are also those whose wh-movement/scrambling *do* show WCO effects, and which are thus analysed as pure A'-movement (e.g. Lohninger 2023b). (57) illustrates for Bulgarian¹⁵.

(57) **Bulgarian**

a. **WCO in local wh-movement**

*Kogo_i običa majka si_i _____i?
 who.ACC love.3SG mother.NOM his

Intended: 'Who_i does his_i mother love?'

(Richards 1997: 32)

b. **No local wh-LBE**

*Čija₁ xaresva Petko [____₁ kola]?
 whose like.3SG Petko.NOM car.ACC

¹⁵Note two complications for Bulgarian. First, Stojković (2019) shows that at least some Bulgarian speakers do allow (at least scrambling-)LBE, iff the extracted modifier is the only modifier in the nominal. Regarding this I note that (i) Stojković's data comes from a restricted geographical region (six speakers from 'eastern and north-eastern Bulgaria'; 2019: 347; and (ii) similar claims about Macedonian (i.e. that, *pace* prior work, it permits LBE from definite nominals) have already been shown to involve inter-speaker variation (LaTerza 2014). I thus consider it likely that the Bulgarian data involves inter-speaker variation. It then remains to be seen if MilBEG's predictions hold: speakers who permit some type of LBE should also show mixed properties in that dependency.

Second, Bulgarian also permits 'possessor-raising', where possessors extract and move to an argument position (Cinque and Krapova 2009). See §2.4 for more on this phenomenon. This is only problematic for MilBEG if this specific dependency – *not* wh-movement/scrambling – lacks mixed properties. This I defer to future work.

Intended: ‘Whose car does Petko like?’ (Bošković 2005b: 3)

c. **WCO in local scrambling**

*Vseki čovek_i običa majka mu_i _____i.
 every person.ACC love.3SG mother.NOM his

Intended: ‘His_i mother loves everyone_i.’ (Richards 1997: 29)

d. **No local scrambling-LBE**

*Novata₁ prodade Petko [____₁ kola].
 new sold.3SG.PST Petko.NOM car.ACC

Intended: ‘Petko sold the new car.’ (Bošković 2005b: 3)

This is important corroboration for MiLBEG: where the relevant dependencies show mixed properties, LBE is possible; but in closely related languages without the mixed properties, LBE via those dependencies is impossible.

2.3.1.2 Hungarian

I now move on to Hungarian. As above, Hungarian local wh-movement and local scrambling lack WCO effects and permit LBE. They also have A'-properties. Local scrambling obligatorily reconstructs for Condition C: thus (58) is grammatical because, though on the surface the anaphor *(on)magát* ‘himself’ precedes (and c-commands) the antecedent *János*, it reconstructs to its base-generation site below the antecedent. Indeed Surányi (2006) concludes on this basis that Hungarian scrambling cannot be categorised on the traditional A/A'-dichotomy.

(58) **Hungarian scrambling reconstructs for Condition C**

Látta (on)magát_i János_i _____i a tükörben.
 saw.3SG.PST (his.)himself.ACC John.NOM the mirror.in

lit. ‘Saw himself_i John_i in the mirror.’ (Surányi 2006: 424)

Local scrambling is also plausibly information-structurally restricted. Kiss (2003) describes at least a markedness preference for specific arguments to precede non-specific arguments in simple clauses, i.e. for specific arguments to scramble to initial position. Her earlier work (Kiss 1995) specifically describes the landing-site of this scrambling as a ‘Topic’ position, consistent with its receiving a specific interpretation.

Parasitic gap licensing is ‘notoriously difficult to test’ in Hungarian, though Surányi (2006: 425,fn.25) reports that there is preliminary reason to think scrambling cannot license

PGs. Nonetheless, insofar as Hungarian scrambling shows at least the A'-property of reconstructing for Condition C (and plausibly also information-structural restriction), it is nonetheless mixed; and its licensing LBE is thus MiLBEG-compliant.

2.3.1.3 Hindi-Urdu

Hindi-Urdu local scrambling (Nissenbaum 2000; Manetta 2016) and local wh-movement (Mahajan 1990: 52ff.) conversely *can* license parasitic gaps. In (59a), the object *koi kitab* 'some book' undergoes scrambling; this licenses the PG, as indicated by their coreference. In (59b) the wh-object *kaun-sii* 'which object' scrambles, again licensing a PG.

(59) Local scrambling and wh-movement license parasitic gaps

- a. John-ne [koi kitab]₁ [binaa _____₁ (PG) parhe] _____₁ phék-dii
 John-ERG some book without reading throw.3SG.PST
 'John filed some book without reading (it).'
- b. [Kaun-sii kitaab]₁ mohan-ko [bomaa _____₁ (PG) parhe] _____₁
 which book Mohan-ERG without reading
 pheNk dii
 throw.3SG.PST away
 '[Which book]₁ did Mohan throw away without reading (it₁)?' (Mahajan 1990: 53)

There is also evidence (Dayal 1994: 241; Mahajan 1994: 314) that local scrambling at least *can* reconstruct for variable binding: in (60), *ek-duusre-ke bhaaiyō-ko* 'each other's brothers' reconstructs in order to be bound by *unhō-ne* 'they'; if it did not reconstruct, this would yield a Condition A violation, because the anaphor would be unbound. Note that this does not indicate *obligatory* reconstruction; it appears that reconstruction is not *obligatory*, insofar as the reverse context – in which a binder scrambles to a position c-commanding the variable – is not ungrammatical (Keine 2018: 6). This is thus only evidence for an A'-property insofar as A-movement cannot reconstruct at all, which has been contested (e.g. Barss 1986, i.a.).

(60) Local scrambling can reconstruct for variable binding

- [ekduusre-ke_i bhaaiyō-ko]₁ unhō-ne_i _____₁ maaraa.
 each.other-GEN brothers-ACC they-ERG hit.3PL.PST
 'They_i hit each other_i's brothers.' (lit. 'Each other_i's brothers, they_i hit.') (Keine 2018: 6)

Nonetheless, insofar as local scrambling and wh-movement show at least one A'-property, they are mixed; and thus their licensing LBE is MiLBEG-compliant.

2.3.1.4 Turkish

Turkish local scrambling and wh-movement show the A'-properties of reconstruction (e.g. Kural 1992b; Kornfilt 2005; İşsever 2008; Akan 2009) and information-structural restrictions (Akan 2009; Toplar 2019). Reconstruction is illustrated in (61a): *birbirlerini* 'each other' scrambles to clause-initial position, over the coindexed subject; if reconstruction were impossible, this would violate Condition A/C, with the anaphor unbound binding the R-expression subject. That it is grammatical shows that *birbirlerini* must reconstruct. Note, like Hindi-Urdu above, this is evidence only for *optional* reconstruction. (61b) evidences *obligatory* reconstruction, via scope (İşsever 2008). Turkish is standardly scope-rigid, i.e. its scope interactions reflect surface structure (e.g. Keleşir 1996, 2001). In (61b), the quantified object *bütün soruları* 'all questions' scrambles to initial position over the subject. Insofar as Turkish is scope-rigid, one expects the quantified object to scope over the subject and, crucially, the negated verb, yielding an 'all»not' interpretation. However this is unavailable; both the subject *herkes* 'all' and the object *bütün soruları* 'all (the) questions' must scope under negation ('not»all'). İşsever (2008) concludes that scrambling of the quantified object must obligatorily reconstruct to its base-position below negation.

(61) Turkish scrambling obligatorily reconstructs

- a. *Birbirlerini*_{1,i} *adamlar*_i _____₁ *dün* *görmüş*.
 each.other.ACC men.NOM yesterday saw.3PL.PST
 'The men_i saw each other_i yesterday.' (lit. 'Each other_i, the men_i saw yesterday.')
- (Kural 1992b: 267)
- b. [*Bütün soruları*]₁ *herkes* _____₁ *çabuk* *yanıtlamadı*.
 all question.PL.ACC all.NOM quickly answer.NEG.PST.3PL
 'All questions, all did not answer quickly.' (not»all; *all»not) (İşsever 2008: 32)

Various analyses also invoke an information-structural restriction on Turkish scrambling: Özsoy (2005) and Toplar (2019) claim that scrambling is triggered by a '[Topic]' feature; Akan (2009) analyses rightward scrambling, moreover, as targeting a 'BackgroundP' and being motivated by information-structural properties related to backgrounding. In (62), we have a wide-focus context: like in Slavic (§2.3.1.1), this is compatible with unscrambled SOV order (62a); but any scrambling induces infelicity. (62b) involves OSV order; but Toplar (2019) shows that *all* non-SOV orders are infelicitous.

(62) **Scrambling is information-structurally restricted***Ne oldu?* ('What happened?')

- a. Köpek kadın-a saldırdı.
 dog.NOM woman-DAT attack.3SG.PST
 'The dog attacked the woman.'
- b. #Kadın-a₁ köpek _____₁ saldırdı.
 woman-DAT dog.NOM attack.3SG.PST
 'The dog attacked the woman.'

(Toplar 2019: 16)

The parasitic gap evidence is less robust. Although it has been claimed that scrambling licenses PGs (Kural 1992a), Meral (2014) argues that Turkish lacks real PGs altogether, with apparent examples involving just object pro-drop. Regardless, again insofar as Turkish local scrambling and wh-movement exhibit a non-zero set of A'-properties in addition to lacking WCO, they are mixed and their licensing LBE is MiLBEG-compliant.

2.3.1.5 **Japanese**

Consider finally Japanese scrambling¹⁶. The parasitic gap test cannot be applied because Japanese lacks PGs (Saito 1992). Local scrambling obligatorily reconstructs for Condition C: in (63), the object *John-no hahaoya-o* 'John's mother' contains an R-expression which is coindexed with the pronoun subject *kare-ga* 'he'. Because the object scrambles over the subject, the surface structure obeys Condition C: the R-expression is unbound. That it is nonetheless ungrammatical indicates that the object obligatorily reconstructs below the subject, where the R-expression is bound, violating Condition A.

(63) **Scrambling obligatorily reconstructs for Condition C**

*[John-no_i hahaoya-o]₁ kare-ga_i _____₁ semeta.
 John-GEN mother-ACC he-NOM blamed

'He_i blamed John_i's mother.' (lit. 'John_i's mother he_i blamed.') (Surányi 2006: 425)

Japanese local scrambling is also information-structurally restricted. Ishihara (2000) and Ishii (2001) report that scrambling an object over the subject yields a non-focused

¹⁶I set aside Japanese wh-movement because judgements are contested in the literature, and I have been unable to resolve this. Takahashi and Funakoshi (2013) report that wh-LBE of left-branch prepositional phrases, e.g. 'from who', is possible. Subsequent work is then contradictory regarding whether this induces WCO: Takahashi and Funakoshi (2013) report that it does; Tsutsumi (2021) reports that it does not. This may reflect a difference between WCO effects involving variable-binding, which occur; and WCO effects involving coreference, which are apparently voided (Mamoru Saito, p.c.). I leave this open; MiLBEG nonetheless clearly predicts that, if wh-LBE is possible, wh-movement should be mixed.

object interpretation: (64a) with ‘unmarked’/unscrambled SOV order yields focus on the object; scrambling the object in (64b) blocks this, so only the subject can be focused. This is analogous to the other languages above: scrambling induces a non-focused/backgrounded interpretation. van Gelderen (2003) argues in fact that this information-structural property *motivates* scrambling.

(64) **Local scrambling is information-structurally restricted**

- a. Taroo-ga sono hono-o katta.
 Taroo-NOM that book-ACC bought
 ‘Taro bought that book.’
- b. [Sono hono-o]₁ Taroo-ga _____₁ katta.
 that book-ACC Taroo-NOM bought
 ‘Taro bought that book.’ (Ishii 2001, cited in van Gelderen 2003: 105)

I thus conclude that Japanese local scrambling is mixed; so its licensing of LBE is MiLBEG-compliant.

This concludes the section on local no-WCO dependencies. This section has demonstrated for a sample of ten languages that (i) their local scrambling/wh-movement license LBE, and (ii) that they also show both the A-property of lacking WCO effects and some non-zero set of A’-properties. Moreover, at least within Slavic, closely related languages *without* these mixed properties conspicuously lack wh-LBE/scrambling-LBE.

2.3.2 Long-distance no-WCO movement

I now turn to long-distance – i.e. cross-clausal – movement in these languages. In languages with no-WCO local dependencies, it is standardly assumed that long-distance dependencies are different in that they do not show mixed A/A’-properties. They are instead pure A’-dependencies (see Gong 2022: sec.3.2.3). This is reflected in the re-surfacing of WCO effects. This appears problematic for MiLBEG given that long-distance wh-LBE and scrambling-LBE is still available – implying that a non-mixed dependency can license LBE.

In this section, I show that this is incorrect: far from falsifying MiLBEG, the long-distance scrambling and wh-movement data provide important corroboration for MiLBEG. Specifically, when long-distance wh-movement and scrambling license LBE, there is independent evidence that there is a first step of movement inside the embedded clause which shows mixed properties. This suggests that the actual extraction of the left-branch element from within the nominal is still performed by a mixed dependency. Moreover, where this evidence is absent, LBE disappears.

This is a new observation. I support it with both data from prior literature, in addition to novel fieldwork data. This reveals both cross-linguistic and inter-speaker variation in the behaviour of long-distance scrambling, which consistently obeys MiLBEG.

2.3.2.1 Varieties with ‘mixed’ long-distance movement

I separate the data into (i) varieties which show the evidence for ‘mixed’ long-distance scrambling and (ii) varieties which do not. Consider first the first type. The evidence that long-distance scrambling/wh-movement in the LBE-permitting varieties is mixed comes from the contrast illustrated in the examples below, (65-70). In weak crossover configurations where the pronoun which is ‘crossed-over’ is in the matrix clause, the result is ungrammatical; WCO effects obtain. Where the pronoun which is ‘crossed-over’ is in the embedded clause, however, the result is grammatical; WCO effects are voided, like in local wh-movement/scrambling. I illustrate for all those varieties for which I have data below¹⁷; where I indicate ‘Variety 1’, this is because fieldwork has identified a different variety with different judgements on these sentences (see §2.3.2.2). The Russian (Nossalik 2005) and Hindi-Urdu (Safir 2017) data are as reported in the literature; the Bosnian-Serbian-Croatian, Ukrainian and Hungarian data were elicited for this thesis.

(65) Russian

a. Wh-movement: crossover in the matrix clause

*[Kakuju iz etix sobak]_i ee_i xozjajka xočet čtoby Maša
 which of these dogs her owner.NOM want.3SG that Masha.NOM
 strigla ______i raz v mesjac?
 groomed.3SG.PST once a month

Intended: ‘Which of these dogs_i does its_i owner want that Masha grooms once a month?’ (Nossalik 2005: 96)

b. Wh-movement: crossover in the embedded clause

[Kakuyu iz etix sobak]_i ty xočes čtoby ee_i xozjajka
 which of these dogs you.NOM want.2SG that its owner.NOM
 strigla ______i raz v mesjac?
 groom.3SG once a month

¹⁷Polish is excluded on the basis that its scrambling is clause-bound (Wiland 2010). Note that according to Wiland (2010) long-distance wh-LBE is possible for some speakers, though he says such questions ‘receive a slightly forced reading and their acceptability varies among speakers’. I do not have data on this, but MiLBEG makes a clear prediction: speakers who permit long-distance wh-LBE should also show a WCO contrast of the type described here (absent evidence of any other type of mixed dependency).

‘Which of these dogs_i do you want that its_i owner grooms once a month?’
(Nossalik 2005: 96)

c. **Scrambling: crossover in the matrix clause**

*[Kazduju iz etix sobak]_i ee_i xozjajka xočet čtoby Maša
which of these dogs her owner.NOM want.3SG that Masha.NOM
strigla ______i raz v mesjac?
groom.3SG once a month

Intended: ‘Each of these dogs_i its_i owner wants that Masha grooms (it_i) once a month.’
(Nossalik 2005: 95)

d. **Scrambling: crossover in the embedded clause**

[Kazduju iz etix sobak]_i ja xoču čtoby ee_i xozjajka strigla
each of these dogs I.NOM want.1SG that its owner.NOM groom.3SG
______i raz v mesjac.
once a month

‘Each of these dogs_i I want that its_i owner grooms (it_i) once a month.’ (Nossalik 2005: 96)

(66) **Bosnian-Serbian-Croatian, Variety 1 (Željko Bošković, p.c)**

a. **Scrambling: crossover in the matrix clause**

*[Svakog od ovih pasa]_i njegov_i vlasnik želi da Ivan
each of these dogs its owner.NOM want.3SG that John.NOM
okupa ______i jednom mesečno.
groom.3SG once a.month

Intended: ‘Each of these dogs_i its_i owner wants that John grooms (it_i) once a month.’
(Željko Bošković, p.c)

b. **Scrambling: crossover in the embedded clause**

*[Svakog od ovih pasa]_i želim da njegov_i vlasnik okupa
each of these dogs want.1SG that its owner.NOM groom.3SG
______i jednom mesečno.
once a.month

‘Each of these dogs_i I want that its_i owner grooms (it_i) once a month.’ (Željko Bošković, p.c)

(67) **Czech, Variety 1 (Pavel Caha, p.c.; Radek Šimík, p.c.)**a. **Wh-movement: crossover in the matrix clause**

*Koho_i si jeho_i matka myslí, že miluješ _____i?
 who AUX his mother.NOM think.3SG that love.2SG

Intended: 'Who_i does his_i mother think that you love?' (Pavel Caha, p.c.; Radek Šimík, p.c.)

b. **Wh-movement: crossover in the embedded clause**

Koho_i si myslíš, že jeho_i matka miluje _____i?
 who.ACC AUX think.2SG that his mother.NOM love.3SG

'Who_i do you think that his_i mother loves?' (Pavel Caha, p.c.; Radek Šimík, p.c.)

c. **Scrambling: crossover in the matrix clause**

?*[Každého zločince]_i jeho_i oběti chtějí, aby policie
 every criminal.ACC his victims.NOM want.3PL that police
 zatkla _____i.
 arrest.3SG.PST

Intended: 'Every criminal_i his_i victims want that the police arrest (him_i).' (Pavel Caha, p.c.; Radek Šimík, p.c.)

d. **Scrambling: crossover in the embedded clause**

[Každou hočičku]_i chci aby miloval její pes _____i.
 every girl.ACC want.1SG that love.3SG her_i dog.NOM

'Every girl_i I want that her_i dog loves (her_i).' (Pavel Caha, p.c.; Radek Šimík, p.c.)

(68) **Ukrainian**a. **Wh-movement: Crossover in the matrix clause**

*Kogo_i iuro_i mama zkazala, čo ti ljubiš _____i?
 who.ACC his mother.NOM said.3SG that you.NOM love.2SG

Intended: 'Who_i did his_i mother say that you love?' (Zlata Odribets, p.c.)

b. **Wh-movement: Crossover in the embedded clause**

Kogo_i ti zkazav, čo ljubit iuro_i mama _____i?
 who.ACC you.NOM said.2SG that love.3SG his_i mother.NOM

'Who_i did you say that his_i mother loves?' (Zlata Odribets, p.c.)

(69) **Hindi-Urdu**¹⁸a. **Scrambling: Crossover in the matrix clause**

*Sab-ko_i us-kii_i bahin-ne socaa ki raam-ne _____i dekhaa.
 everyone-ABS s/he-GEN sister-ERG thought that Ram-ERG saw

Intended: ‘Everyone_i his_i sister thought that Ram saw.’ (Safir 2017: 22)

b. **Scrambling: Crossover in the embedded clause** (ibid)

Sab-ko_i raam-ne socaa ki us-kii_i bahin-ne _____i dekhaa
 everyone-ABS Ram-ERG thought that s/he-GEN sister-ERG seen
 thaa.
 be.PST

‘Everyone_i Ram thought that his_i sister has seen.’ (Safir 2017: 22)

(70) **Hungarian, Variety 1 (Balazs Surányi, p.c.; András Bárány, p.c.)**¹⁹a. **Scrambling: crossover in the matrix clause**

?*[Mindegyik kutyába]_i azt szeretné a (pro_i)
 each dog.into that.ACC would.like.3SG the (its)
 gazdája, hogy tegyek csipet _____i.
 owner.POSS.NOM that put.SBJV.1SG chip.ACC

Intended: ‘Each dog_i its_i owner would like me to put a chip into.’ (Balazs Surányi, p.c.)

b. **Scrambling: crossover in the embedded clause**

[Mindegyik kutyába]_i azt szeretném hogy tegyen a (pro_i)
 each dog.into that.ACC would.like.1SG that put.SBJV.3SG the (its)
 gazdája csipet _____i.
 owner.POSS.NOM that

¹⁸My Hindi-Urdu informant (Aayush Bagchi, p.c.) shows the same contrast.

¹⁹The data here were provided by and reflect the judgements of Balazs Surányi. I also include András Bárány as a Variety 1 speaker because he accepts WCO in the embedded clause as well; he provides the example in (i). However, he differs from Surányi in that WCO configurations in the matrix clause are similarly (marginally) acceptable, e.g. (ii). The important point is that both speakers show ‘mixed’ properties of long-distance scrambling, though, so are predicted by MiLBEG to license long-distance scrambling-LBE.

a. [Mindegyik diákot]_i akartam, hogy látogassa meg az (pro_i) anyja _____i.
 each student want.1SG.PST that visit.3SG PRF the (pro) mother.POSS.NOM
 ‘Each student_i I wanted that her_i mother visit (her_i).’ (András Bárány, p.c.)

a. [Mindegyik diákot]_i akarta az (pro_i) anyja, hogy dicsérje meg a tanár _____i.
 each student want.3SG.PST the (pro) mother.POSS that praise.3SG PRF the teacher
 ‘Each student_i her_i mother wanted that the teacher praise (her_i).’ (András Bárány, p.c.)

‘Each dog_i I would like that its_i owner put a chip into.’ (Balazs Surányi, p.c.)

This contrast is important because it suggests that, even in the case of long-distance scrambling, scrambling in the embedded clause still shows an A-property: insensitivity to WCO. Insofar as this movement step also shows A'-properties, as standardly claimed for long-distance scrambling, then it can be categorised as mixed. Crucially, insofar as this lower movement step is mixed, MiLBEG predicts that these languages *could* in principle permit long-distance scrambling-/wh-LBE: the left-branch element can be extracted by a ‘mixed’ dependency in the lower clause which moves it to a landing-site at the edge of the embedded clause; it is only the subsequent movement step to the edge of the matrix clause which shows pure A'-properties. In other words, long-distance scrambling is mediated by an initial step of mixed movement, followed by a step of A'-movement. Sequences of mixed movement followed by pure A'-movement have been independently proposed in other work, for example in Mandarin (Chen 2023a). As a consequence, MiLBEG predicts that LBE could be possible in long-distance scrambling/wh-movement (though need not necessarily be; recall, MiLBEG is a one-way implication). This is borne out: at least a subset of these languages permit long-distance wh-/scrambling-LBE, as in (71-76)²⁰.

(71) **Russian**

a. **Long-distance wh-LBE**

Čej₁ Vasja xotel, ne obnaruživ ______{PG} pod ělkoj
 whose Vasya.NOM want.3SG.PST not discover.CNV under pine.tree
 čtoby Maša vernula [_____₁ podarok]?
 that Masha.NOM return.3SG.PST present

‘Whose present did Vasya want that Masha would return not having found (it) under the New Year tree?’ (Bondarenko and Davis 2023: 10)

b. **Long-distance scrambling-LBE**

Novuju₁ ja xoću čtoby on kupil [_____₁ mašinu].
 new I.NOM want.1SG that he.NOM buy.3SG.PST car

‘I want that he bought a new car.’ (Pereltsvaig 2008: 23)

(72) **Bosnian-Serbian-Croatian: long-distance wh-LBE**

²⁰Note that for Bosnian-Serbian-Croatian I have been unable to confirm the acceptability of long-distance scrambling-LBE for my informant (Željko Bošković, p.c.). However there is evidence in the literature that this is possible for at least some BSC speakers; I provide a long-distance wh-LBE example from Marelj (2004) in (72), who describes LBE as generally available from postverbal embedded objects (thus, plausibly including scrambling-LBE). Testing this is a goal for future work.

Koju₁ Maks misli da je Kafka napisao [____₁
 which Max.NOM think.3SG that be.3SG Kafka.NOM wrote.3SG.PST
 knjigu]?
 book

‘Which book does Maks think that Kafka wrote?’ (Marelj 2004: 258)

(73) **Czech; Variety 1**

a. **Long-distance wh-LBE**

Jakou₁ si myslíte, že Petr čte [____₁ knihu]?
 what AUX think.2SG that Peter.NOM read.3SG book.ACC

‘What book do you think that Peter is reading? (Pavel Caha, p.c.; Radek Šimík, p.c.)

b. **Long-distance scrambling-LBE**

Johnovo₁ sis myslél, že jsem koupil [____₁ auto].
 John.GEN AUX think.2SG.PST that be.1SG bought car.ACC

‘You thought that I bought John’s car.’ (Pavel Caha, p.c.; Radek Šimík, p.c.)

(74) **Ukrainian: long-distance wh-LBE**²¹

Čju John dymav vi kylili [____₁ mašiny]?
 whose John.NOM think.3SG.PST you.NOM buy.2SG.PST car.ACC

‘Whose car did John think that you bought?’ (Zlata Odribets, p.c.)

(75) **Hungarian, Variety 1: long-distance scrambling-LBE**

Péternek₁ gondoltam, hogy Mari mondta, hogy elvették
 Peter.DAT think.1SG.PST that Mari.NOM say.3SG.PST that take.3PL.PST
 [____₁ a könyvet].
 the book.ACC

‘I thought that Mari said that they took Peter’s book.’ (András Bárány, p.c.)

(76) **Hindi-Urdu: long-distance scrambling-LBE**²²

Ram-kii₁ mujhe yeh lagtaa hai ki tumheN [____₁ pehlii kitaab]
 Ram-GEN 1SG.DAT EXPL seem.3SG AUX that 2SG.DAT first book
 pasand aegii.
 like come.FUT

²¹The romanisation of the original Cyrillic example presented to my informant is mine; JM.

²²See Polinsky (2018) for further examples.

‘I think that you will like Ram’s first book.’ (Aayush Bagchi, p.c.)

A slightly different paradigm is reported by my informants for Turkish (Ömer Demirok, p.c.; Faruk Akkuş, p.c.; Uktu Turk, p.c.) and Japanese (Kazune Sato, p.c.). For these speakers both the context where weak crossover is violated in the matrix clause and the context where it is violated in the embedded clause are grammatical: thus both the (a)- and (b)-examples below permit the indicated coindexed reading. For Turkish I illustrate with only wh-movement, absent scrambling data.

(77) **Japanese**

a. **Scrambling: crossover in the matrix clause**

[Kokera-no inu sorezore-o]_i sono kainusiga kimi-ni _____i aratte hosii.
these-GEN dog each-ACC that owner-NOM you-DAT wash want

‘Each of these dogs_i its_i owner wants that you wash (it_i).’ (Kazune Sato, p.c.)

b. **Scrambling: crossover in the embedded clause**

[Kokera-no inu sorezore-o]_i boku-ga sono kainusi-ni _____i aratte hosii.
these-GEN dog each-ACC I-NOM that owner-DAT wash want

‘Each of these dogs_i I want that its_i owner washes (it_i).’ (Kazune Sato, p.c.)

(78) **Turkish**

(judgements shared by Ömer Demirok, p.c.; Faruk Akkuş, p.c.; Uktu Turk, p.c.)

a. **Wh-movement: crossover in the matrix clause**

Kimi_i (pro_i) annesi _____i sevdiğimi düşünüyor?
who (pro) mother.NOM.3SG.POSS love.1SG think.3SG

‘Who_i does his_i mother think that I love?’

b. **Wh-movement: crossover in the embedded clause**

Kimi_i (pro_i) annesinin _____i sevdiğini söyledin?
who (pro) mother.GEN.3SG.POSS love.3SG say.2SG

‘Who_i did you say that his_i mother loved?’

Long-distance scrambling is standardly understood as pure A’-movement on the basis of a range of other A’-properties (e.g. Saito 1992; Kural 1992b); I thus conclude on this basis that long-distance scrambling is mixed in these languages. Both of these languages also permit long-distance LBE with scrambling and/or wh-movement. In light of the above, this is consistent with MiLBEG: these dependencies are apparently mixed.

(79) **Japanese: long-distance scrambling-LBE**

[Tanaka-sensei-no]₁, tabun kore-ga [____₁ saigo-no chosho-ni] naru
 Tanaka-Prof.-GEN probably this-NOM last-GEN book-DAT become
 daroo.
 seen

‘It seems that this will probably become Prof. Tanaka’s last book.’ (Tsutsumi 2021: 43)

(80) **Turkish: long-distance wh-LBE**

a. Kimin₁ sen [____₁ arabasını satın aldım] dedin?
 whose you.NOM car.3SG.POSS buy.2SG.PST say.2SG.PST

‘Whose car did you say you bought?’ (Ömer Demirok, p.c.; Faruk Akkuş, p.c.)

b. Kimin₁ John [____₁ sandviçini çaldım] sandı?
 whose John.NOM sandwich.ACC.SG steal.1SG.PST think.3SG.PST

‘Whose sandwich did John think I stole?’ (Ömer Demirok, p.c.; Faruk Akkuş, p.c.)

2.3.2.2 **Varieties without ‘mixed’ long-distance movement**

I now turn to varieties which do not show this evidence for mixed long-distance movement: that is, varieties in which both weak crossover violations involving the pronoun being crossed-over in the matrix clause *and* involving the pronoun being crossed-over in the embedded clause are ungrammatical. This yields a strong prediction in light of MiLBEG: insofar as long-distance movement is thus not a mixed dependency – absent any evidence of other A-properties – it should not be able to permit long-distance LBE. I show that this is borne out: the availability of LBE tracks the presence of the WCO contrast, i.e. tracks evidence for a mixed dependency. This holds both for cross-linguistic and inter-speaker variation.

First consider Slovenian. This is the variety for which the data is least clear; but what data is available is suggestively consistent with MiLBEG. Mišmaš (2015: 212,fn.118) reports that (81a) is ungrammatical in Slovenian, because it induces a WCO effect. This is a case of wh-movement in which the wh-element crosses-over the bound pronoun *njegov (prijatelji)* inside the embedded clause. She does not report an example of crossover in the matrix clause. However, Marušič (2005: 108ff.) does report that at least long-distance *scrambling* induces weak crossover effects when the pronoun is in the matrix clause, insofar as he provides examples like (81b). Insofar as long-distance wh-movement thus does not show evidence for the exceptional A-property of no-WCO, we can conclude with prior literature

(e.g. Mišmaš 2015) that it is in fact pure A'-movement. MiLBEG predicts that long-distance wh-LBE should therefore be impossible. Lanko Marušić (p.c.) reports that long-distance wh-LBE of possessors is at least highly degraded in his variety, e.g. (82)²³. Note too that Stepanov et al.'s 2016 acceptability judgement test of Slovenian LBE found a significant interaction between the variables 'LBE-hood' and 'LENGTH' (used to differentiate between LBE inside a matrix clause – i.e. local LBE – and LBE which crosses from an embedded clause into a matrix clause – i.e. long-distance LBE). The authors take this to indicate that 'the length of a dependency affects acceptability of the LBE structures' (2016: 263), with longer-distance LBE structures more degraded. This would corroborate Marušić's judgement, and thus be consistent with MiLBEG.

(81) **Slovenian: WCO effects in long-distance movement**

a. **Wh-movement: crossover in the embedded clause**

*Koga_i hočeš da bi njegov_i prijatelji občudovali? _____i?
 who.ACC want.2SG that SBJV his friends.NOM admire.3PL

Intended: 'Who₁ do you want his₁ friends to admire?' (Mišmaš 2015: 212,fn.118)

b. **Scrambling: crossover in the matrix clause**

*Janeza_i je njegov_i oče reku, da se boji _____i.
 John.GEN AUX his father.NOM say.3SG.PST that REFL fear.3SG

Intended: 'John₁, his₁ father said that he fears.' (Marušić 2005: 109)

(82) **Slovenian: No long-distance wh-LBE**

Čigav₁ si rekel, da si kupil [____₁ avto]?
 whose AUX say.2SG.PST that AUX bought.2SG.PST car.ACC

'Whose car did you say you bought?' (Lanko Marušić, p.c.)

I now discuss three other languages: Czech, Hungarian and Bosnian-Serbian-Croatian. Above I reported data from varieties of each of these languages in which there is a contrast between WCO in the embedded clause versus the matrix clause. This data was drawn from informants (Pavel Caha, Radek Šimík for Czech; Balazs Surányi, András Bárány for Hungarian; and Željko Bošković for Bosnian-Serbian-Croatian). I refer to these speakers'

²³Marušić does report that wh-LBE of quantity expressions, e.g. 'how many', is more acceptable in his variety. I do not provide an explanation for this asymmetry; but I note at least that this particular kind of putative LBE, involving extraction of a quantity expression, has been argued not to bely true subextraction in other languages (e.g. French *combien*-splits; Kayne 2002).

varieties as ‘Variety 1’ of these languages. For Czech and Hungarian, we saw that long-distance wh-/scrambling LBE was correspondingly available for these speakers; for Bosnian-Serbian-Croatian, we saw that at least one type of long-distance LBE is available for some speakers. Here I report on data from different informants who report having a different system with respect to the WCO contrast; crucially, this consistently tracks the availability of LBE as predicted by MiLBEG. This implies that there is dialectal variation with respect to each of these properties in these languages. This is ‘Variety 2’. I do not offer a sociolinguistic account of this variation in any depth, but I do note preliminarily that the informants for whom the WCO contrast obtains and long-distance LBE is available are consistently older than the informants for whom neither holds; this may thus reflect an age-related point of variation.

Consider first Hungarian and Bosnian-Serbian-Croatian together. The following data was provided by Stefan Ivanović (p.c.) for Bosnian-Serbian-Croatian and Szilvi Daczó (p.c.) and Luca Gál (p.c.) for Hungarian. Both sets of informants reject both weak crossover contexts reported above for long-distance scrambling: they consider (66a-b) and (70a-b) respectively to both be ungrammatical on the intended coindexed reading. MiLBEG therefore makes a clear prediction: these speakers should disallow long-distance LBE, in contrast to the other informants for these languages. As I demonstrate in (83) for Bosnian-Serbian-Croatian and (84) for Hungarian, this is borne out. The Bosnian-Serbian-Croatian informant judges (83) as straightforwardly ungrammatical; the Hungarian informants express less categorical judgements about (84), but consider it to be at least highly marked without a ‘very strong’ biasing context.

(83) **Bosnian-Serbian-Croatian, Variety 2 (Stefan Ivanović, p.c.):**

No long-distance LBE

*Ivanov₁ sam mislio da Sara želi [____₁ auto].
John.GEN himself think.1SG.PST that Sarah.NOM want.3SG car.ACC

Intended: ‘I thought that Sarah wants John’s car.’ (Stefan Ivanović, p.c.)

(84) **Hungarian, Variety 2 (Szilvi Daczó, p.c.; Luca Gál, p.c.):**

No long-distance scrambling-LBE

??János-nak₁ azt hittem, hogy megvetted [az ____₁ autóját].
John-DAT DET think.1SG.PST that buy.2SG.PST DET car.ACC

Intended: ‘I thought that you bought John’s car.’ (Szilvi Daczó, p.c.; Luca Gál, p.c.)

Note that both sets of informants nonetheless do not have WCO effects in local scrambling; and correspondingly do allow local scrambling-LBE. For at least²⁴ the Bosnian-Serbian-Croatian informant these facts are replicated for *wh*-movement too. The informant reports no contrast between WCO effects where the *wh*-element crosses-over a bound pronoun in the matrix vs. embedded clause; and concomitantly they reject long-distance *wh*-LBE of possessors. Local *wh*-movement on the other hand (marginally) shows the no-WCO property and does permit *wh*-LBE of possessors. This data is thus consistent with MiLBEG.

(85) **Bosnian-Serbian-Croatian, Variety 2 (Stefan Ivanović, p.c.)**

a. **Wh-movement: crossover in the matrix clause**

*[Koji od ovih auta]₁ njegov₁ vlasnik kaže da ga _____₁
 which of these cars its owner.NOM say.3SG that he.NOM
 pere?
 wash.3SG

Intended: ‘Which of these cars₁ does its₁ owner say that he washes?’ (Stefan Ivanović, p.c.)

b. **Wh-movement: crossover in the embedded clause**

*[Koji od ovih auta]₁ si rekao da njegov₁ vlasnik _____₁
 which of these cars be.2SG said that its owner.NOM
 pere?
 wash.3SG

Intended: ‘Which of these cars₁ did you say that its₁ owner washes?’ (Stefan Ivanović, p.c.)

(86) **Bosnian-Serbian-Croatian, Variety 2 (Stefan Ivanović, p.c.):**

No long-distance wh-LBE

Čije₁ je Ivan rekao da si kupio [_____₁ auto]?
 whose be.3SG Ivan.NOM say.3SG.PST that be.2SG bought car.ACC

Intended: ‘Whose car did John say that you bought?’ (Stefan Ivanović, p.c.)

Consider finally Czech. Above I reported the Czech variety shared by two informants (Pavel Caha, p.c.; Radek Šimík, p.c.) in which both long-distance scrambling and *wh*-movement exhibit the WCO contrast, and correspondingly long-distance scrambling- and *wh*-LBE are available. My third informant (Matěj Kunderát, p.c.) exhibits a different system.

²⁴I have not obtained data with respect to Hungarian *wh*-movement.

For wh-movement, the informant reports that both WCO violations in the embedded clause and in the matrix clause are grammatical; thus he accepts both (67a) and (67b). This is unlike Variety 1, where there is a contrast. However, insofar as both varieties thus provide evidence that long-distance wh-movement has A-properties, I take it that both reflect mixed dependencies. MiLBEG therefore predicts that Variety 2 could also permit long-distance wh-LBE. This is borne out: the informant judges (87) as grammatical.

(87) **Czech, Variety 2 (Matěj Kunderát, p.c.): long-distance wh-LBE**

Jakou₁ si myslíte, že Petr čte [____₁ knihu]?
 what you.NOM say.2SG.PST that Peter.NOM read.3SG book.ACC

‘What book did you say that Peter is reading?’ (lit. ‘What did you say that Peter is reading book?’) (Matěj Kunderát, p.c.)

In long-distance scrambling, on the other hand, this informant treats both matrix and embedded clause WCO violations (67c-d) as ungrammatical. This is unlike the Variety 1 speakers. Insofar as this leaves us with no evidence for A-properties in long-distance scrambling, MiLBEG predicts that this speaker – unlike the Variety 1 speakers – should disallow long-distance scrambling-LBE. Crucially, this is borne out: the Variety 2 speaker rejects (88).

(88) **Czech, Variety 2 (Matěj Kunderát, p.c.): long-distance scrambling-LBE**

*Johno₁ myslel sis, že jsem koupil [____₁ auto].
 John.GEN thought be.2SG that bought be.1SG car.ACC

Intended: ‘You thought that I bought John’s car.’

This speaker nonetheless also does not have WCO effects in local scrambling or local wh-movement, as indicated by their acceptance of sentences like (43a-c); and correspondingly does allow local scrambling-LBE and wh-LBE, as in (89a-b). This is thus consistent with MiLBEG.

(89) **Czech, Variety 2 (Matěj Kunderát, p.c.)**

a. **Local scrambling-LBE**

Johno₁ koupil jsem [____₁ auto].
 John.GEN bought be.1sg car.ACC

‘I bought John’s car.’

(Matěj Kunderát, p.c.)

b. **Local wh-LBE**

Jakou₁ Petr čte [____₁ knihu]?
 what Peter.NOM read.3SG book.ACC

‘What book is Peter reading?’ (Matěj Kunderát, p.c.)

In review, then, this section has provided two sorts of support for MiLBEG. First, I have shown that a not insignificant portion of languages discussed in prior literature as showing LBE also consistently belongs to a class of languages for which the relevant LBE-permitting dependencies – wh-movement and scrambling – have mixed properties. Specifically they have a particular type of mixed dependency, which I have defined here by the fact that it consistently lacks WCO effects (an A-property), in addition to various (potentially varying) A'-properties. Second, I have shown that they vary with respect to how far this mixed profile holds of long-distance movement more specifically; and that this variation is tightly aligned with the (un)availability of long-distance LBE in exactly the manner predicted by the Mixed LBE Generalisation.

2.3.3 Is no-WCO universal?

So far I have cast the two types of mixed dependencies – A-minimality LBE and No-WCO LBE – as disjoint sets of dependencies: LBE is possible in, say, Tagalog wh-movement because it shows mixed properties, specifically A-minimality LBE; and it is possible in, say, BSC because it shows No-WCO LBE instead. Here I present preliminary evidence that these sets are not disjoint. Instead, I tentatively suggest that whenever at least wh-movement can license LBE in a language, it does not show WCO effects. It could also show A-properties like A-minimality, meaning it belongs to Type 1.

This is only tentative because of the general lack of weak crossover data available for many languages. However, for those languages for which data is available, WCO appears to be consistently absent. For instance it has been observed that various Austronesian languages do not show WCO effects in wh-movement (Chung 1989; Georgopoulos 1991; Bresnan 1998; van Urk 2015: ch.4.5.1). Of LBE-permitting languages, this includes at least

Chamorro (90a), Palauan (90b) and Tagalog (90c)²⁵. Ershova (2019) reports the same for West Circassian (90d).

(90) **No WCO in other languages**

Chamorro

- a. Hay_i pära u in-agradesi _____i i inangokkun Maria nu guiya_i?
 who will 3SG PASS-appreciate the trust.LNK Maria OBL him

‘Who_i is Maria’s trust in him_i going to be appreciated by?’ (Chung 1989: 162,n.9)

b. **Palauan**²⁶

- nge-te’a_i a lilsa _____i a rtonari er ngii_i?
 who 3.OBJ.saw.3SG.SUBJ neighbours DET her

‘Who_i did her_i neighbours see?’ (Georgopoulos 1991: 14)

c. **Tagalog**

- Sino_i ang sinampal _____i nang asawa niya_i?
 who NOM slap.OV GEN spouse s/he-GEN

‘Who_i did his_i/her_i spouse slap?’ (Kaufman 2009: 37)

²⁵Davies and Kurniawan (2013: 138) report that Sundanese wh-movement also does not induce WCO effects:

- (1) Saha_i nu di-sangka ku Ali nu di-pikaresep ku indung-na (pro_i)?
 who REL PASS-suspect by Ali REL PV.like by mother-DEF (pro)

‘Who_i did Ali suspect his_i mother liked?’ (lit. ‘Who was suspected by Ali to be liked by his mother?’)

I omit Sundanese from the list in (90) because it is not clear that this is the only interpretation of the data. Both verbs in this example are passivised, with the wh-element *saha* ‘who’ corresponding to the passivised subject. *ex hypothesi*, *saha* thus originates as the internal argument of the embedded clause verb. Although this *does* place *saha* below the antecedent-containing oblique subject (*ku indung-na (pro)* ‘(by) his mother’, meaning that there *is* a WCO configuration, it is not clear that the movement responsible for crossover is actually wh-movement. The internal argument must first undergo passivisation to subject position in the embedded clause; this is what actually crosses-over the oblique external argument. On this view the lack of WCO in this example follows straightforwardly from the fact that passivisation, being a canonical A-movement, does not induce WCO effects. Davies and Kurniawan (and subsequently Katochoritis 2023) nonetheless treat this as evidence for wh-movement voiding WCO on a representational view: the wh-element occupies an A’-position in the surface structure, and is nonetheless able to bind a pronoun internal to a crossed-over nominal. This would predict that a similar configuration for English would disallow co-reference, e.g. ‘Who_i was said to have been betrayed by his friends?’. However, the present author judges co-reference here to be grammatical.

²⁶I follow Georgopoulos (1991) in not glossing the particle *a*. In any case, this is not relevant to the point at hand, that (90b) is a weak crossover configuration.

d. **West Circassian**²⁷

Marə p̄s̄āš-ew_i č'elejaβaʒe-r _____i Ø-qə-z-e-cece-n-ew
 here girl-ADV teacher-ABS 3ABS-DIR-WH.IO-DAT-scold-MOD-ADV
 (pro_i) z-jane Ø-fe-mə-je-r
 (pro) WH-mother 3ABS-BEN-NEG-want-ABS

'Here is the girl whom_i her_i mother doesn't want the teacher to scold.' (Ershova 2019: 180)

Other languages which have been described as showing wh-LBE and lacking WCO in wh-movement include Georgian (Wier 2014) and Mohawk (Baker 2001).

I leave it to future research to determine how far this tentative generalisation holds – and its significance, insofar as it does. This thesis claims to neither.

2.3.4 Interim summary

To recap, the previous two sections have argued from an inexhaustive but suggestively large subset of LBE-permitting languages that LBE is only ever possible where the dependency which performs LBE has 'mixed' properties. I have further claimed that the languages presented here fall into one of two 'mixed' dependency types: the A-minimality type, in which the LBE-permitting dependency shows A'-properties in addition to the A-property of A-minimality; and the no-WCO type, in which the LBE-permitting dependency shows A'-properties in addition to the A-property of lacking WCO effects.

These two sections have focused only on phenomena which have traditionally been described as 'left-branch extraction' – that is, putative A'-extraction of left-branch elements. I have argued that this is in fact not pure A'-extraction, but mixed extraction. In the next section I consider a phenomenon which has traditionally been described instead as A-movement of left-branch elements. This is so-called 'external possession' or 'possessor-raising'. I will argue that at least a subset of external possession phenomena can be unified with the traditional 'LBE' on the basis that it too obeys MiLBEG: it is not 'pure' A- (or A'-)movement, but mixed.

²⁷This example demonstrates that relativisation does not show WCO effects in West Circassian. Ershova (2019:181-182) analyses this as an artefact of prior scrambling of the relativised object above the subject, before being relativised.

2.4 ‘A-movement’ of left-branch elements is mixed too: External possession

The existence of constructions in which left-branch elements – specifically, possessors – occupy argument positions is a relatively common trait cross-linguistically (e.g. Payne and Barshi 1999). I refer to this as ‘external possession’, EP, following Deal (2017). Since Keenan (1972), Aissen (1987), various of these constructions have been analysed as involving A-movement of possessors from a nominal-internal position into a nominal-external argument position. This is A-movement of left-branch elements. Deal (2017) more recently proposes the typology of ‘external possession’ constructions in Table 2.

Type	Description	Example languages
A	(A.i) EP-as-raising: A-movement to an athematic position	Nez Perce
	(A.ii) EP-as-control: A-movement to a thematic position	German, Brazilian Portuguese
	(A.iii) EP-as-base-generated-anaphora	English
	(A.iv) EP-as-ECM	(potentially unattested)
B	EP ‘combines ingredients of A- and A’-dependencies’	Japanese, Chickasaw, Tz’utujil, Nuu-chah-nulth

Table 2 Deal’s (2017) typology of external possession

In this section I focus on those types of external possession which Deal describes as movement-derived: this is external possession via raising (Ai), external possession via control (Aii) and ‘Type B’ external possession. I will argue that these dependencies consistently show mixed A/A’-properties. In particular, I show that a subset of external possession constructions – Deal’s ‘Type B’ – are dependencies of the A-minimality type (Type 1) discussed above. I then argue that Deal’s ‘Type A’ external possession languages are also mixed but belong to a third type of mixed dependency, which I call the Case/agreement type, Type 3. These dependencies show some set of A’-properties in addition to the A-property of causing the moving left-branch element to receive a new structural case and/or control predicate agreement.

In this way the traditional distinction between “A’-extraction” of left-branch elements *qua* LBE and “A-extraction” of left-branch elements *qua* external possession can be unified: both types of dependencies are actually ‘mixed’. This is why the Mixed LBE Generalisation

refers to extraction of a left-branch element in general: it is intended to subsume all types of extraction of left-branch elements, not just the traditional understanding of ‘LBE’.

2.4.1 ‘Type B’ external possession

I address first Deal’s ‘Type B’ external possession constructions. Deal already notes that these constructions ‘combine ingredients of A- and A’-dependencies’; she considers their analysis therefore an ‘unsolved theoretical puzzle’. I propose to resolve this ‘puzzle’ by showing that these ‘Type B’ constructions are really just A-minimality type mixed dependencies of the same sort that we saw above for LBE.

In particular ‘Type B’ external possession constructions have at least two A-properties: case/agreement effects, i.e. the external possessor receives a structural case and/or controls agreement on the predicate which an internal possessor does not; and A-minimality, i.e. the external possessor can only raise from the highest nominal. They crucially also have the A’-property of ‘discourse conditioning’ (Deal’s term): movement of the possessor to argument position is possible only where the possessor has some special discourse properties. I show this first for Deal’s examples: Japanese, Chickasaw, Tz’utujil and Nuu-chah-nulth.

2.4.1.1 Deal’s examples: Japanese, Chickasaw, Tz’utujil, Nuu-chah-nulth

Take Japanese first. In internal possession constructions with the possessor in nominal-internal position, possessors in Japanese bear genitive case and immediately precede the (unmodified) possessum, (91a). In (91b) the possessor is external to the nominal; this is indicated by the fact that fact an adverb can intervene between possessor and possessum in (91b) but not (91a). In this case the possessor instead bears nominative case, the case of subjects. This is an A-property shared with canonical raising-to-subject: the moved element acquires nominative case.

(91) Japanese: external possession

- a. [Mary-no (*totemo) kami-ga] naga-i.
 Mary-GEN (extremely) hair-NOM long-be
 ‘Mary’s hair is (*extremely) long.’ (Ura 1996: 101)
- b. Mary-ga₁ (totemo) [____₁ kami-ga] naga-i.
 Mary-NOM extremely hair-NOM long-be
 ‘Mary’s hair is extremely long.’ (Ura 1996: 101)

The external possession construction is only possible where the possessor is associated with intransitive (specifically unergative) and transitive subjects (Ura 1996); it is thus

impossible from objects, as in (92). Following Deal (2017), I take this to be an A-minimality-like property: external possession can only target (possessors internal to) the highest nominal in the clause.

(92) **Japanese: subject-only restriction**

*John-ga Mary-o₁ [____₁ atama-o] nagut-ta.
John-NOM Mary-ACC head-ACC hit-PST

Intended: ‘John hit Mary’s head.’ (Ura 1996: 110)

External possession is also subject to a type of discourse conditioning. Kuno (1973) describes external possession as requiring a ‘[+exhaustive]’ interpretation of the possessor; in internal possession this is required for the whole possessive nominal, not the possessor. This yields interpretive contrasts like (93a) vs. (93b). That the subject position in Japanese is more generally a type of ‘mixed’ A/A’-position has been suggested more widely (Miyagawa 2010, 2017; Bošković 2024): Bošković in fact argues that Japanese subjects occupy a “spec-A/A’P”.

(93) **Japanese: discourse conditioning**

- a. [Kono class-no dansei-ga]^[+exhaustive] yoku dekiru.
this class-GEN male-NOM well are.able

‘It is the boys of this class that do well.’

- b. [Kono class-ga]₁^[+exhaustive] [____₁] dansei-ga yoku dekiru.
this class-NOM male-NOM well are.able

‘It is this class that the boys do well in.’

(Kuno 1973: 72)

Japanese external possession thus has a mixture of A- and A’-properties. Insofar as one of these A-properties is A-minimality, this can be subsumed under A-minimality type mixed dependencies. I now show that the same holds of Chickasaw, Tz’utujil and Nuuchahnulth, starting with A-properties. Chickasaw assigns nominative case to external possessors (94b), like Japanese; compare this to (94a) with an internal possessor, which does not bear nominative. The external possessor also partly controls predicate-agreement: thus in (94b) plural *hoo-* occurs on the verb to indicate the plurality of the possessor (*ihoo-at* ‘women’) despite the singular possessum (*foshi-at* ‘bird’) (Munro 1999). In Nuuchahnulth it is agreement which is affected: with internal possessors, it is the whole possessive nominal which controls predicate agreement, (95a); with external possessors, the possessor controls predicate agreement on its own, hence second-person agreement in (95b) (Ravinski 2005, 2007). Tz’utujil apparently lacks the case/agreement property: there is no case distinction

between internal and external possessors (no overt case-marking), and even with external possession the possessum controls predicate agreement (Aissen 1999).

(94) **Chickasaw: external possession**

- a. Jan imo-ofi'-at illi-tok.
 Jan DAT-dog-NOM die-PRF
 'Jan's dog died.' (Munro 1999: 255)
- b. Ihoo-at₁ [____₁ foshi'-at] hoo-in-taloowa.
 woman-NOM bird-NOM PL-DAT-sing
 'The women's bird is singing.' (*The woman's birds are singing.) (Munro 1999: 259)

(95) **Nuu-chah-nulth: external possession**

- a. hinin-ʔax-ʔis haawilax-uk-ʔitk.
 arrive-TEMP-3IND son-POSS-2SG
 'Your son arrived.' (Ravinski 2007: 167)
- b. hinin-ʔax-uk-ʔick haawilax.
 arrive-TEMP-POSS-2SG.IND son
 'Your son arrived.' (Ravinski 2007: 167)

All three languages show the subject-only restriction. Munro (1999) describes Chickasaw external possession as targeting only the subjects of 'primarily intransitive verbs'. Nuuchah-nulth also only allows external possession out of (transitive and intransitive) subjects; Ravinski (2007) takes this explicitly to be an effect of the Minimal Link Condition (Chomsky 1995), i.e. A-minimality. Tz'utujil external possession can also only target subjects, with EP out of unaccusative subjects more widely accepted than from unergative and transitive subjects, which is more marginal (Aissen 1999). Again, I take this to reflect an A-minimality restriction on external possession (though see footnote 42 for a caveat).

Finally all three languages also show some form of discourse-conditioning of EP. Aissen (1999) equates the external possessor position ('logical subject') in Tz'utujil to 'topic' or 'theme', such that the external possessor is subject to a topicality restriction. It is also subject to a definiteness restriction, as expected of a topic. Munro (1999: 254) mentions that Chickasaw external possession entails that 'the possessor, which is usually human, or at least animate, is more salient in the discourse than the possessum'; this is similar to what has been said about the related language Choctaw (e.g. Munro and Gordon 1982: 95), which Tyler (2021) takes to reflect a topicality restriction. Finally Nakayama (2001: 130ff.) reports that Nuuchah-nulth external possession again entails that the possessor is 'more discourse-salient (i.e. more likely to be traced in discourse) than the possessed'; Nakayama

later equates this to topicality (2001: 133). In each case, then, external possession exhibits a set of mixed A/A’-properties, where one of the A-properties is an A-minimality restriction. These are thus unifiable with Type 1 mixed dependencies in LBE.

Note that I am also crucially assuming that external possession in each of these languages is movement-derived. In this I follow prior work: on Chickasaw (and related Choctaw), Munro (1999) and Tyler (2021); on Nuu-chah-nulth, Ravinski (2007); and on Tz’utujil, Aissen (1987).

2.4.1.2 Other examples

I discuss three other languages with similar properties: Choctaw, West Flemish and Malagasy. In Choctaw, external possessors receive nominative case: compare the unmarked internal possessor in (96a) with the nominative-marked possessor in (96b) (Tyler 2021).

(96) Choctaw: external possession

- a. [John im-ófi-yat] abiika-h.
 John III-dog-NOM be.sick-TNS
 ‘John’s dog is sick.’ (Tyler 2021: 79)
- b. John-at₁ [____₁ im-ófi] abiika-h.
 John-NOM III-dog be.sick-TNS
 ‘John’s dog is sick.’ (Tyler 2021: 79)

Similarly, for at least some speakers of West Flemish external possessors like *zie* ‘she’ in (97b) receive nominative case, unlike internal possessors which bear genitive (97a). Note that external possessors obligatorily co-occur with a possessive pronoun in the possessive DP – e.g. *eur* ‘her’ in (97b). (I return to the implications of this for a movement-based analysis below.) External possessors in West Flemish also control agreement on the complementiser, which is a typical subjecthood property – though it is the possessum, not possessor, which controls predicate agreement (Haegeman and Danckaert 2013). This is illustrated in (97c): the complementiser *omda* must agree with the plural external possessor *André en Valère*, yielding plural agreement in *omda-n*; it cannot agree with the singular possessum *computer*. Conversely the finite verb does agree with the possessum so takes singular agreement.

(97) West Flemish: external possession

- a. dat toen juste [eur sheerapparaat] kapot was
 that then just her.GEN razor.NOM broken was
 ‘that her razor broke just then’ (Haegeman and Danckaert 2013: 11)
- b. dat [zie ier] toen juste [eur scheerapparaat] kapot was
 that she.NOM here then just her.GEN razor.NOM broken was

‘that her razor broke just then’ (Haegeman and Danckaert 2013: 11)

- c. omda-n/*omdat [André en Valère] toen juste [underen computer]
 because.PL/because.SG André and Valere then just their computer
 kapot was/*woaren
 broken was.SG/were.PL

‘because André and Valere’s computer broke down just then’ (Haegeman and Danckaert 2013: 14)

In Malagasy internal possessors follow the possessum and bear genitive case, (98a). In external possession (98b), the possessor occurs in the clause-final pivot position and the possessum surfaces as a bare noun; and the possessor is analysed by, e.g., Paul (2009: 224-226) as bearing nominative case.

(98) **Malagasy: external possession**

- a. Nantsoin -dRakoto ny anaran’ ny olona
 called Rakoto DET names.of DET people
 ‘Rakoto called the people’s names.’ (Deal 2017: 1)
- b. Nantsoin -dRakoto [anarana ____₁] [ny olona]₁
 called Rakoto name the people
 ‘The people were name-called by Rakoto (i.e. called by name).’ (Deal 2017: 1)

External possession in all three languages shows A-minimality. In Choctaw, EP is only possible from subjects, specifically intransitive subjects (Tyler 2021). In West Flemish and Malagasy external possession is also only possible from subjects (Haegeman and Danckaert 2013 do not comment on any transitivity restriction in West Flemish, though they do note that it is only possible in embedded clauses; Paul 2000, 2009 notes a subject-only restriction, and Keenan and Ralalaoherivony: 176 (2000) suggests it is only possible from intransitive subjects).

Finally, in all three languages there is also independent evidence that this movement has A’-properties. For Choctaw, Tyler (2021) suggests that external possessor plausibly targets a topic position given Munro and Gordon’s (1982: 95) description of the external possessor as being “far more salient, both semantically and syntactically” than an internal possessor. It also appears that the position targeted by external possession is not the same as the canonical subject position, insofar as there are subjecthood diagnostics which the possessor fails: it cannot associate with the ‘extrinsic plural marker *okl(ah)*’ unlike canonical subjects; in EP constructions, the possessum has this property.

There is also a precedent in West Flemish for treating the subject position – and by extension, movement-to-subject – as having some ‘mixed’ A/A’-status. Haerberli (1999, 2002),

for example, shows that West Flemish subjects are unlike other West Germanic languages in two respects: they cannot be separated from the ‘C-position’ (i.e. locus of complementisers, etc.) by an adjunct; and there is no evidence for null expletives. Haerberli concludes that West Flemish subjects occupy a projection higher than subjects in other West Germanic languages, his AgrsP, in order to explain these properties. This is similar to Haegeman and Danckaert’s 2013 analysis where external possessors occupy spec- α P, a projection between traditional spec-CP and spec-TP. Note too that EP involves two nominatives – the possessum *and* possessor. These facts suggest that West Flemish subject position may be in some sense unusual, and in fact that there may be multiple subject positions; this is at least suggestive that movement-to-subject (and so, EP) may not be in a canonical ‘pure’ A-dependency.

In Malagasy, various works have argued that pivots have the properties of topics, including a definiteness restriction (Pearson 2005). Katochoritis and Lohninger (2023) also show that movement-to-pivot in Malagasy reconstructs for quantifier-variable binding: thus the quantificational phrase *mpianatra tsirairay* ‘each student’ can bind into the object *ny rainy* ‘his father’ both in (99a), where it is the clause-final pivot; but also in (99b), where the object is instead the clause-final pivot. This is taken by Katochoritis and Lohninger (2023) to indicate that the object must reconstruct in (99b) into a lower position where it is c-commanded by the quantifier.

(99) **Malagasy: promotion-to-pivot reconstructs for quantifier-variable binding**

- a. Namangy ny rainy_i [ny mpianatra tsirairay]_i omaly.
 PST.visit.AV DET father DET student each yesterday
 ‘Each student_i visited his_i father yesterday.’ (Katochoritis and Lohninger 2023: 19)
- b. Novangian’ ____₁ [ny mpianatra tsirairay]_i [ny rainy_i]₁ omaly.
 PST.visit.PV DET student each DET father yesterday
 ‘His father_i each student_i visited yesterday.’ (Katochoritis and Lohninger 2023: 20)

I thus take this as preliminary evidence that Choctaw, West Flemish and Malagasy EP involve a mixed A/A’-dependency too. Insofar as they observe A-minimality, they are specifically A-minimal (Type 1) mixed dependencies.

Note again that I have not explicitly argued here for a movement analysis of EP in Choctaw and West Flemish. With respect to Choctaw I simply follow Tyler (2021) who argues that this type of EP is movement-derived. Haegeman and Danckaert (2013) leave open whether West Flemish EP involves movement; I too leave this for future work. One

(not necessarily insurmountable) challenge for a movement analysis would be accounting for the presence of a possessive pronoun inside the possessive nominal. Nonetheless, the crucial observation for present purposes is just that West Flemish's EP is apparently consistent with MiLBEG – so, insofar as it is movement-derived, it further corroborates this generalisation. For Malagasy, Keenan (1972) and Keenan and Ralalaoherivony (2000) propose movement analyses.

2.4.2 'Type A' external possession

I now turn to external possession constructions which do not show A-minimality. This is Deal's 'Type A', which she treats as pure A-dependencies. I present preliminary evidence that these constructions are actually mixed dependencies too. Since this does not easily reduce to either Type 1 or Type 2 mixed dependencies discussed so far, I will treat them as a third type of mix: the Case/agreement Type mixed dependency, (100).

(100) **Type 3 mixed dependency: Case/agreement LBE**

Dependency causes the moved element to trigger predicate agreement and/or be assigned structural C/case in addition to some set of A'-properties.

Note that this partly overlaps with the A-minimality type (Type 1): the languages we have just characterised as Type 1 also showed case/agreement effects, with the exception of Tz'utujil.

I take the languages one by one.

2.4.2.1 Brazilian Portuguese

Brazilian Portuguese has several phenomena which have been described as external possession; I focus on one, the 'nominative-possessor' construction, (101b). This has been analysed by Rodrigues (2010, 2023) as involving movement of the possessor from a nominal-internal position to the subject position. In (101b), the possessor *esse relógio* 'the watch' is external to the object of which it is semantically the possessor, *os ponteiros* 'the hands'. The possessor bears nominative case and controls agreement on the finite predicate: the finite verb is in the singular form *quebrou*, agreeing with the singular possessor *esse relógio* 'this watch' and not the plural possessum *os ponteiros* 'the hands'. Thus Brazilian Portuguese EP shows the A-property of inducing structural case assignment to the possessor and allowing it to control agreement²⁸.

²⁸Like Deal (2017) I do not treat Brazilian Portuguese as showing A-minimality. It does restrict EP to subjects, *stricto sensu*; but only to subjects of a subset of unaccusative and inchoative verbs. This seems more

(101) **Brazilian Portuguese: external possession**

- a. as coisa-s da Maria
the-PL thing-PL of Mary
‘Mary’s things’ (Rodrigues 2010: 2)
- b. Esse relógio quebrou o-s ponteiro-s
this watch broke.3SG the-PL hand-PL
‘This watch its hands broke.’ (Rodrigues 2010: 6)

Deal (2017) thus categorises Brazilian Portuguese EP as being analogous to control, i.e. an A-dependency. But it also shows A’-properties. Movement-to-subject in Brazilian Portuguese more generally shows various A’-properties, which have led to it being described as a topic-prominent language (e.g. Kiss 1995) where the subject position is a topic position (e.g. Ángel L. Jiménez-Fernández and Miyagawa 2014; Dias 2024). Brazilian Portuguese is also a language which permits hyper-raising, i.e. movement-to-subject which crosses a finite clause boundary. Hyper-raising more generally (e.g. Lohninger et al. 2022) and in Brazilian Portuguese specifically (e.g. Prado 2022) has been analysed as belying the fact that movement-to-subject involves a mixed movement dependency; this explains its apparent A’-property of being long-distance. Regarding the external possession construction, an analysis whereby the possessor raises to a hybrid ‘topic-subject’ position is in fact proposed by Munhoz and Naves (2012): they claim that the possessor targets spec- α P, a head which bears both ϕ -features and a δ -feature (‘topic-focus feature’). This explains, for example, the definiteness restriction on external possessors, insofar as topics are obligatorily definite too.

It is thus plausible that Brazilian Portuguese external possession – Deal’s 2017 main example of a putative EP-as-control construction – does not involve a pure A-dependency, but a mixed A/A’-dependency. This is again consistent with MiLBEG.

2.4.2.2 Austronesian

I now turn to external possession in two Austronesian languages: Tagalog and Cebuano.

In Tagalog, internal possessors follow the possessum and bear genitive case, like *ni Tina* in (102a); external possessors can be separated from the possessum and bear the ‘nominative’ case of pivots, as with *si Tina* in (102b). They also control voice morphology on the verb: in (102a) the verb bears the null patient voice because the internal argument (*ang buhok ni Tina* ‘Tina’s hair’) is the pivot; in (102b) it bears the locative voice suffix *-an*,

akin to the theme-only restriction of, e.g., Cebuano and Tagalog (see below; Nie 2019). In a sense this is a moot point, however: my broader claim remains that all EP constructions are ultimately mixed in some way – whether BP shows A-minimality or some other A-properties, it is still mixed.

and the possessor is the pivot (Nie 2019). Note that external possession is only possible from pivots in patient voice, i.e. only from internal arguments; and only with a subset of transitive verbal predicates which share certain event properties.

(102) **Tagalog: external possession**

- a. <In>ayos niya [ang buhok ni Tina].
 <PRF>arrange.PV she.GEN NOM hair GEN Tina
 ‘She arranged Tina’s hair.’ (Schachter and Otones 1972: 393)
- b. <In>ayos-an niya [ng buhok ____₁] [si Tina]₁.
 <PRF>arrange-LOCV she.GEN GEN hair NOM Tina
 ‘She arranged Tina’s hair.’ (Schachter and Otones 1972: 393)

Nie (2019) analyses this as involving possessor-raising: i.e. a pure A-movement dependency from a nominal-internal position to the pivot (‘subject’) position. This again overlooks the fact that this dependency also has A’-properties. It is a long-standing observation that the pivot position in Tagalog has discourse-related restrictions. Pivots are obligatorily specific and definite (Rackowski 2002). Katochoritis and Lohninger (2023) show that promotion-to-pivot in Tagalog has a series of other A’-properties, too. They argue, for example, that movement-to-pivot must reconstruct for Condition A and C effects on the basis of (103a-b), where the anaphor *kanyang sarili* is coindexed with subject *Juan*. In (103a) this is straightforward: *Juan* is the pivot and so c-commands and binds the anaphor. Katochoritis and Lohninger argue that the anaphor must reconstruct in (103b), conversely, because it has been promoted-to-pivot (hence Patient Voice) and yet can still be bound by *Juan*²⁹.

(103) **Tagalog: promotion-to-pivot reconstructs for Condition A/C**

- a. Nagmamahal si Juan_i sa kanyang_i sarili.
 loves.AV NOM Juan ACC his self
 ‘Juan loves himself.’ (Katochoritis and Lohninger 2023: 14)
- b. Minamahal ni Juan_i ang kanyang_i sarili.
 loves.PV GEN Juan NOM his self
 ‘Juan loves himself.’ (Katochoritis and Lohninger 2023: 14)

Cebuano also shows external possession. In Cebuano, internal possessors follow the possessum and bear genitive case, like *sa sakop ni Iyo’ Bruno* in (104a). External possessors

²⁹I thus assume that promotion-to-pivot involves movement again, following Katochoritis and Lohninger (2023). I do not indicate this in example (103b), though, because Katochoritis and Lohninger do not do so either; and because, unlike Malagasy where the pivot has a dedicated (clause-initial) position, there is no dedicated pivot position in Tagalog, making the movement dependency less straightforward.

bear the ‘nominative’ case of the pivot and are obligatorily preverbal, (104b). Like Tagalog, this is subject to a theme-only restriction: specifically only theme pivots of intransitive predicates, including subjects of passives like (104b) (Bell 1983; Nie 2019).

(104) **Cebuano: external possession**

- a. Nagkadugo’ ang mga ba’ba’ sa sakop ni Iyo’ Bruno.
 AV.be.bloody NOM PL mouth GEN group GEN Iyo’ Bruno
 ‘The mouths of Iyo’s Bruno’s groups were bloody.’ (Bell 1983: 191)
- b. Ang sakop ni Iyo’ Bruno nagkadugo’ ang mga ba’ba’.
 NOM group GEN Iyo’ Bruno AV.be.bloody NOM PL mouth
 ‘Iyo’ Bruno’s group, (their) mouths were bloody.’ (Bell 1983: 191)

Cebuano promotion-to-pivot shows A’-properties too. Bell (1983: 193) describes external possession as obeying a topicality restriction; this would also explain the external possessor’s preverbal position, which is the topic position in Cebuano. Katochoritis and Lohninger (2023) additionally show that Cebuano pivots, like Tagalog, are subject to a definiteness restriction, and undergo reconstruction for Condition A and C effects: hence the antecedent *si Rosa* can bind the anaphor *iyang ka’ugalingon* ‘herself’ in (105a) where it is the pivot and in (105b) where the anaphor is the pivot, entailing that the anaphor must reconstruct to its first-Merge site below the antecedent.

(105) **Cebuano: promotion-to-pivot reconstructs for Condition C**

- a. Motan’aw si Rosa sa iyang ka’ugalingon sa salamin.
 look.at.AV NOM Rosa OBL her.LNK self OBL mirror
 ‘Rosa will look at herself in the mirror.’ (Bell 1976: 35)
- b. Tan’awon ni Rosa ang iyang ka’ugalingon sa salamin.
 look.at.PV GEN Rosa NOM her.LNK self OBL mirror
 ‘Rosa will look at herself in the mirror.’ (Bell 1976: 35)

I thus conclude that EP in Tagalog and Cebuano involves mixed dependencies – not pure A-dependencies, as has been maintained elsewhere (e.g. Nie 2019). I again do not argue explicitly for a movement analysis, but this has been proposed independently for Tagalog (Nie 2019) and Cebuano (Bell 1983; Deal 2017).

2.4.2.3 Bantu

Next, a number of Bantu languages have phenomena which have been characterised as external possession (van de Velde 2020). Here I give some preliminary evidence that this reflects a mixed dependency again, focusing on Swahili, Zulu and Chimwiini.

First consider Swahili and Zulu. In both languages internal possessors follow the possessum; in Swahili, they are preceded by the adposition *Ca* ‘of’; in Zulu by the associative prefix *Ca-*. This is illustrated in (106a,107a). External possessors precede the possessum and lack this additional structure, (106b, 107b). External possessors can only raise out of an internal argument; they raise to the position of the direct object, creating a derived double-object construction whereby the possessum behaves as the indirect-object (Keach and Rochemont 1992). The status of the external possessor as a derived direct object is reflected in the fact that it controls the object marker in (106b, 107b); it can also be passivised (Keach and Rochemont 1992; Baker 1988; Zeller 2024).

(106) **Swahili: external possession**

- a. Juma a-li-(ki)-ata kidole cha Asha
 1Juma 1.SUBJ-PST-(7.OBJ)-cut 7finger 7of 1Asha
 ‘Juma cut Asha’s finger.’ (Keach and Rochemont 1992: 83)
- b. Juma a-li-m-kata Asha kidole
 1Juma 1.SUBJ-PST-1.OBJ-cut 1Asha 7finger
 ‘Juma cut Asha’s finger.’ (Keach and Rochemont 1992: 83)

(107) **Zulu: external possession**

- a. umkhovu wo-mthakathi
 AUG.3zombie 3ASSOC.AUG-1wizard
 ‘the wizard’s zombie’ (Halpert 2021: 7)
- b. ngi-phil-e umfana ingalo
 1SG-break-PFV AUG.1boy AUG.9arm
 ‘I broke the boy’s arm.’ (Halpert 2021: 7)

I nonetheless contend that this once again involves a mixed dependency. For Zulu, there is independent evidence that the object position is associated with A’-properties. van der Wal (2022) proposes that there is a topicality restriction on Case-licensing for objects in Zulu: formally, v^0 bears a combination of ‘Case+ δ ’ features, where in the case of Zulu δ encodes ‘topic’. Insofar as this holds, movement to object position is thus plausibly a mixed dependency, requiring an information-structural property of the raising possessor. This dovetails well with Halpert’s (2021) independent suggestion that the external possessor in Zulu raises to receive Case.

In Swahili, object marking is sensitive to information-structural factors: Mursell (2018) characterises it as topic agreement, arguing that only topical objects control agreement; van der Wal (2022) argues that the restriction involves animacy and discourse-givenness. In this respect it is highly suggestive that, unlike in other transitive constructions in Swahili, in

the external possessor construction object marking is obligatory (Dzahene-Quarshie 2013: 135; see also the lack of optionality with the object marker in 106a vs. 106b). This entails that external possessors must always bear whatever information-structural properties are necessary for object marking. This would follow straightforwardly insofar as the movement dependency which raises the possessor out of the nominal and into object position itself were subject to information-structural restrictions. This would suggest that Swahili external possession is thus a mixed dependency. This also seems to hold for one type of external possession in Chimwiini: where the external possessor becomes the direct object, Henderson (2014: 300) states that the possessor ‘controls verbal object agreement’ with no mention of optionality, and in all the available examples in the literature the object controls agreement. Insofar as Chimwiini object agreement is also subject to information-structural restrictions, we have the same evidence for a mixed dependency as Swahili.

Consider finally the other external possession construction in Chimwiini, where the possessor is the subject³⁰. External possessors can become subjects where the verb is unaccusative or stative, leaving the possessum to behave as the direct object. External possessors control predicate agreement and lack, e.g., the associative marker found in (one type of) internal possession – compare (108a) and (108b).

(108) **Chimwiini: external possession**

- a. Omari \emptyset -vunz-ile kulu y-a maana.
 Omar 3SG-break-PST 9leg 9-ASSOC 1child
 ‘Omar broke the child’s leg.’ (Henderson 2014: 299)
- b. Manaa \emptyset -vund-ish-ile kuulu.
 1child 3SG-break-STAT-PST 9leg
 ‘The child’s leg is broken.’ (Henderson 2014: 302)

This is again plausibly a mixed A/A’-dependency (*pace* Henderson 2014, for whom EP involves A-movement). The subject position in Chimwiini exhibits a topicality restriction. Demuth (1995) suggests that the inability of subjects to be wh-questioned in situ is a diagnostic for topicality restrictions in Bantu: if subjects are obligatorily topics, they will resist wh-questioning in situ, insofar as topics are incompatible with the focus interpretation entailed by questioning. Henderson (2014) shows that this restriction holds in Chimwiini. This suggests that the subject position is associated with information-structural effects, and thus that the dependency in external possession is mixed – again, compliant with MiLBEG.

³⁰I set aside more detailed study of Chimwiini’s other EP construction involving movement to direct object to future work.

2.4.2.4 Dinka

Dinka has a similar type of construction, which I also treat as external possession. In internal possession, (109a), possessors bear genitive case and follow their possessum. In the external possession construction in (109b), the possessor occurs in preverbal position, bears unmarked absolutive case and controls voice morphology on the verb – i.e the verb bears Oblique Voice morphology, indicating an oblique pivot. On this basis, I treat this as promotion of the possessor to ‘pivot’ (e.g. Chen 2023b). Since the possessor undergoes case-assignment and controls voice morphology as a function of this dependency, I assume that this dependency has A-properties.

(109) Dinka

- a. Wôok cé tíŋ è Bôl tíŋ.
 1PL PRF.SV woman.CS PREP Bol.GEN see.INF
 ‘We have seen Bol’s wife.’ (van Urk 2015: 75)
- b. Bòl₁ à-eé-nè wôok [tiik ____₁] tíŋ.
 Bol 3SG-PRF.OBLV 1PL.GEN woman see.INF
 ‘Bol, we have seen his wife.’ (van Urk 2015: 75)

Van Urk (2015) argues that the movement which triggers these ‘pivot’ properties – in his terms, ‘topicalisation’ – has a *mix* of A-/A’-properties. Specifically, with respect to binding diagnostics, it consistently shows A-properties. It creates new antecedents for anaphors, for example: in (110), the object *Bôl* – promoted to pivot, whence Object Voice – can bind the anaphor embedded in the subject, despite being base-generated below the anaphor, because the landing-site of movement is in a position c-commanding the anaphor, *ex hypothesi*. It also lacks WCO effects (van Urk 2015: 110).

(110) Dinka: promotion-to-pivot creates new antecedents for anaphors

Bòl_i à-cíi thùrá è rôt-dè_i nyôoth kè cùukù _____i tíŋ.
 Bol 3SG-PRF.OV picture PREP self-SG.3SG show.INF C PRF.1PL see.INF

‘Bol₁, a picture of himself₁ has shown that we have seen.’ (van Urk 2015: 111)

However, this movement also has information-structural properties which van Urk (2015) takes to indicate A’-properties. Specifically, ‘when a non-subject nominal moves to spec-CP [in my terms, is promoted to pivot; JM], it functions as a topic or focus’. Thus in a wide-focus context like (111), the external argument must act as the pivot (*qua* occupy spec-CP); if any other element is promoted to pivot, infelicity results, because the

information-structural effect is incompatible with wide-focus (van Urk 2015: 95). Promotion-to-pivot/topicalisation also has the A'-property of being long-distance: in (110), for example, we see promotion of the object of an embedded clause to pivot position, across a finite clause boundary.

(111) **Dinka promotion-to-pivot has information-structural effects**

Yè ñó piàth? ('What's new?')

a. Àyén à-cé ɸ̀òot ɸ̀ɔ̀c.

Ayen 3SG-PRF.SV house buy.INF

'Ayen bought a house.'

(van Urk 2015: 95)

b. #ɸ̀òot à-cé Àyén ɸ̀ɔ̀c.

house 3SG-PRF.OV Ayen.GEN buy.INF

'A house, Ayen bought.'

(van Urk 2015: 95)

Insofar as EP involves the possessor undergoing promotion-to-pivot/topicalisation, then, Dinka provides another example of 'mixed' EP. This further corroborates MiLBEG.

2.5 Interim summary

To summarise, this chapter has argued that, cross-linguistically, dependencies which can extract left-branch elements always exhibit a 'mix' of properties of A- and A'-dependencies. This is the Mixed LBE Generalisation. Specifically, for a sample of thirty-five languages, it was claimed that their LBE-permitting dependencies can be grouped into three broad types of 'mixed' profiles, defined in terms of an A-property: the A-minimal type ('Type 1'), the No-WCO type ('Type 2') and the Case/agreement type ('Type 3'). It was also shown that, where the relevant mixed properties are absent in a given dependency in a closely related language or variety, there is always concomitant variation in the availability of LBE of the type predicted by the Mixed LBE Generalisation. The data also included both phenomena traditionally treated as 'A'-extraction' of left-branch elements – i.e. what is traditionally meant by 'LBE' – as well as a phenomenon which is traditionally treated as 'A-extraction' of left-branch elements, external possession. These are unified under MiLBEG: both are dependencies which target left-branch elements, and both are consequently mixed.

The data is summarised in Table 3.

Table 3 Summary of data from Chapter 2

Language	Dependency	Properties	Sources
Kaqchikel	Wh-movement	A-minimality type (ergative extraction constraint)	Imanishi (2014)
	Relativisation	(Potentially) no mixed properties; does not license LBE	Yusuke Imanishi, p.c.
Q'anjob'al	Wh-movement	A-minimality type (ergative extraction constraint)	Coon (2009)
K'iche	Wh-movement	A-minimality type (ergative extraction constraint)	Aissen (2011); Pixabaj (2004); Broadwell (2005)
Chamorro	Wh-movement	A-minimality type (ergative extraction constraint)	Chung (2020); Sheehan (2017); Coon et al. (2021)
Palauan	Wh-movement	A-minimality type (ergative extraction constraint)	Georgopoulos (1985)
Halkomelem	Relativisation	A-minimality type (ergative extraction constraint)	Gerds (1988); Thompson (2012); Wiltschko (2003)
Tagalog	Wh-movement	A-minimality type (pivot-only extraction constraint)	Branan (2018)
	External possession	Case and agreement type	Nie (2019); Katochoritis and Lohninger (2023)
Indonesian	Wh-movement	A-minimality type (pivot-only extraction constraint)	Jeoung (2018a, 2018b); Keine and Zeijlstra (2023)
Javanese	Wh-movement	A-minimality type (pivot-only extraction constraint)	Cole et al. (2002); Jeoung (2018b)
Balinese	Relativisation	A-minimality type (pivot-only extraction constraint)	Wechsler and Arka (1998); Arka (2003)
Sundanese	Wh-movement	A-minimality type (pivot-only extraction constraint)	Davies and Kurniawan (2013)
Madurese	Wh-movement	A-minimality type (subject-only extraction)	Jeoung (2017, 2018b)

Language	Dependency	Properties	Sources
Rejang	Wh-movement	A-minimality type (subject-only extraction)	Branan and Erlewine (2024b)
Turkish	Relativisation	A-minimality type (subject-only extraction)	Branan and Erlewine (2024b)
	Local scrambling	No-WCO type	Kural (1992a); Uktu Turk, p.c.
	Local wh-movement	No-WCO type	Özsoy (2009); Uktu Turk, p.c.
	Long-distance scrambling	No-WCO type (no WCO effects at all)	Ömer Demirok, p.c.; Faruk Akkuş, p.c.; Uktu Turk, p.c.
	Long-distance movement	wh- No-WCO type (no WCO effects at all)	Ömer Demirok, p.c.; Faruk Akkuş, p.c.; Uktu Turk, p.c.
Bosnian-Serbian-Croatian, Variety 1	Local scrambling	No-WCO type	Bošković (1997); Bašić (2004)
	Local wh-movement	No-WCO type	Richards (1997); Bošković (2005b)
	Long-distance scrambling	No-WCO type	Željko Bošković, p.c.
Bosnian-Serbian-Croatian, Variety 2	Long-distance movement scrambling	wh- No-WCO type	Željko Bošković, p.c.
	Local scrambling	No-WCO type	Stefan Ivanović, p.c.
	Local wh-movement	No-WCO type	Stefan Ivanović, p.c.
Czech, Variety 1	Long-distance scrambling	Shows WCO; disallows LBE	Stefan Ivanović, p.c.
	Long-distance movement scrambling	wh- Shows WCO; disallows LBE	Stefan Ivanović, p.c.
	Local scrambling	No-WCO type	Corver (1992); Kučerová (2007)

Language	Dependency	Properties	Sources
Czech, Variety 2	Local wh-movement	No-WCO type	Corver (1990); Šimík (2009)
	Long-distance scrambling	No-WCO type	Pavel Caha, p.c.; Radek Šimík, p.c.
	Long-distance wh-movement	No-WCO type	Pavel Caha, p.c.; Radek Šimík, p.c.
	Local scrambling	No-WCO type	Matěj Kunderát, p.c.
	Local wh-movement	No-WCO type	Matěj Kunderát, p.c.
	Long-distance scrambling	Shows WCO; disallows LBE	Matěj Kunderát, p.c.
Russian	Long-distance wh-movement	No-WCO type	Matěj Kunderát, p.c.
	Local scrambling	No-WCO type	Nossalik (2005); Bondarenko and Davis (2023)
	Local wh-movement	No-WCO type	Nossalik (2005); Grebenyova (2012)
	Long-distance scrambling	No-WCO type	Nossalik (2005)
Polish	Long-distance wh-movement	No-WCO type	Nossalik (2005)
	Local scrambling	No-WCO type	Witkoś (2008); Lyskawa (2020)
	Local wh-movement	No-WCO type	Witkoś (2008); Borsley (1983)
Slovenian	Local scrambling	No-WCO type	Mišmaš (2015); Bošković (2009b)
	Local wh-movement	No-WCO type	Mišmaš (2015); Stepanov et al. (2016)
Ukrainian	Long-distance wh-movement	Shows WCO; disallows LBE	Mišmaš (2015); Lanko Marušić, p.c.
	Local scrambling	No-WCO type	Bashutski (2008); Teliga (2011)

Language	Dependency	Properties	Sources
	Local wh-movement	No-WCO type	Bashutski (2008); Fanselow and Féry (2013)
	Long-distance movement	wh- No-WCO type	Zlata Odribets, p.c.
Hungarian, Variety 1	Local scrambling	No-WCO type	Surányi (2006); Balazs Surányi, p.c.; András Bárány, p.c.
	Local wh-movement	Szabolcsi (1983); Surányi (2006); Balazs Surányi, p.c.; András Bárány, p.c.	
	Long-distance scrambling	No-WCO type	Balazs Surányi, p.c.; András Bárány, p.c.
Hungarian, Variety 2	Local scrambling	No-WCO type	Szilvi Daczó, p.c.; Luca Gál, p.c.
	Long-distance scrambling	Shows WCO effects; disallows LBE	Szilvi Daczó, p.c.; Luca Gál, p.c.
Hindi-Urdu	Local scrambling	No-WCO type	Beshears (2017); Keine (2018)
	Local wh-movement	No-WCO type	Mahajan (1994); Aayush Bagchi, p.c.
	Long-distance scrambling	No-WCO type	Safir (2017); Aayush Bagchi, p.c.
Japanese	Local scrambling	No-WCO type	Saito and Hoji (1983); Kazune Sato, p.c.
	Long-distance scrambling	No-WCO type	Kazune Sato, p.c.
	Movement-to-subject	Case and agreement type	Kuno (1973); Ura (1996)
Chickasaw	External possession	Case and agreement type	Munro (1999)
Tz'utujil	External possession	Case and agreement type	Aissen (1987); Aissen (1999)
Nuu-chah-nulth	External possession	Case and agreement type	Ravinski (2005); Ravinski (2007); Nakayama (2001)

Language	Dependency	Properties	Sources
Choctaw	External possession	Case and agreement type	Munro and Gordon (1982); Tyler (2021)
West Flemish	External possession	Case and agreement type	Haerberli (1999); Haerberli (2002); Haegeman and Danckaert (2013)
Malagasy	External possession	Case and agreement type	Keenan and Ralalaoherivony (2000); Paul (2000, 2009); Katochoritis and Lohninger (2023)
Brazilian Portuguese	External possession	Case and agreement type	Rodrigues (2010, 2023); Munhoz and Naves (2012)
Cebuano	External possession	Case and agreement type	Bell (1976, 1983); Katochoritis and Lohninger (2023)
Swahili	External possession	Case and agreement type	Keach and Rochemont (1992); Dzahene-Quarshie (2013)
Zulu	External possession	Case and agreement type	Halpert (2021); Zeller (2024)
Chimwiini	External possession	Case and agreement type	Henderson (2014)
Dinka	External possession	Case and agreement type	van Urk (2015)

In the next chapter I turn to the second generalisation of interest in this thesis, **Branan's Generalisation**.

Chapter 3

Branan's Generalisation

In this chapter, I turn to another cross-linguistic generalisation over LBE, **Branan's (2018) Generalisation**. I first outline its predictions and the evidence for it (§3.1) before arguing that current theories of LBE cannot derive it (§3.2). This is the thesis' second contribution, after MiLBEG. It also lays the groundwork for the third contribution, elaborated in the next chapter: Branan's Generalisation can be explained in light of the Mixed LBE Generalisation.

3.1 Motivation for Branan's Generalisation

I repeat Branan's Generalisation in (112).

- (112) **Branan's Generalisation** (adapted from Branan 2018: 410)
Extraction of nonarguments from DP [where I take LBE to be a sub-case of this; JM] cannot take place from a phrase that is not targeted for $(\phi\text{-})$ Agree.

Branan's Generalisation states that non-argument extraction – of which I take LBE to be a sub-case – is only possible where the nominal from which the element subextracts is accessible to ϕ -Agree. Accessibility to ϕ -Agree in turn depends on the case which the nominal is assigned: as per Bobaljik (2008), languages permit some subset of the case hierarchy, (113), to be accessible to ϕ -Agree; only these nominals may then potentially license non-argument subextraction.

- (113) **Accessibility Hierarchy** (Bobaljik 2008: 303)
Unmarked case (i.e. nominative, absolutive) > Dependent case (i.e. ergative, accusative) > Lexical case

Branan (2018) motivates this generalisation from a sample of twelve languages: Sidaama, Blackfoot, Tagalog, Niuean, Inuktitut, (English), Modern Greek, Nepali, Tzotzil, Kaqchikel,

Tsez and Northern Ostyak. It has since been corroborated for various other languages, including at least: Chichewa (Branan and Davis 2022), Xhosa (Carstens 2023), Ch'ol (Little 2020b, 2020a), San Martín Peras Mixtec (Hedding and Yuan 2023) and West Circassian (Ershova 2024).

Note that in the course of the previous chapter we have also seen a variety of other languages which permit LBE. I did not present evidence that these languages obeyed Branan's Generalisation; in practice, I am simply assuming BG's validity on the strength of prior work. However, see below for a table demonstrating that at least the languages surveyed in §2.4, i.e. those with external possession, do all obey Branan's Generalisation.

A particularly clear example of Branan's Generalisation at work is provided by contrasting Tzotzil, (114), and Inuktitut, (115). Both languages have ergative alignment. In Tzotzil verbs are only marked for agreement with nominals bearing absolutive case; that is, in Bobaljik's accessibility hierarchy, only unmarked case is ϕ -accessible. In Inuktitut, conversely, verbs are marked for agreement with both absolutive-marked and ergative-marked nominals; that is, both unmarked and dependent case is ϕ -accessible. Branan's Generalisation therefore predicts that Tzotzil can only license non-argument extraction (including LBE) from absolutive nominals; whereas Inuktitut could do some from both absolutive and ergative nominals (or some subset thereof). This is borne out: for Tzotzil, LBE of the wh-possessor *buch'u* 'whose' is possible from the absolutive intransitive subject in (114a), but not from the ergative transitive subject in (114b); whereas in Inuktitut, LBE – in this case of a quantifier *atuniit* 'each' – is possible both from absolutive transitive objects (115a) and ergative transitive subjects (115b).

(114) **Tzotzil LBE**

- a. *Buch'u*₁ *i-cham* [x-ch'amal ____₁]?
 who COMPL-die 3SG.POSS-child

'Whose child died?' (Aissen 1996: 456)

- b. **Buch'u*₁ *y-elk'an* *chij* [x-ch'amal ____₁]?
 who 3SG.ERG-steal sheep 3SG.POSS-child

intended: 'Whose child stole sheep?' (Aissen 1996: 460)

(115) **Inuktitut LBE**

- a. *Arnaa-up* [*anguti-it* ____₁] *taku-laur-ta-ngit* *atuunit*₁
 woman-ERG man-ABS.PL see-PST-IND-3SG.ERG:3PL.ABS each

'The woman saw each of the men.' (Beach 2003: 8)

- b. [Anguti-it ____₁] arnaq taku-laur-ta-ngat atuunit₁
 man-ERG.PL woman.ABS see-PST-IND-3PL.ERG:3SG.ABS each
 'The men each saw the woman.' (Beach 2003: 8)

Notice, though, that Branan's Generalisation would also be consistent with some language Inuktitut*, where both unmarked and dependent case are ϕ -accessible – like Inuktitut – but where LBE is only possible from absolutes, like Tzotzil. In this case, LBE is still only possible from some subset of ϕ -accessible nominals. What is precluded is a language Tzotzil*, where only unmarked case is ϕ -accessible and yet dependent case nominals can license LBE out of them. Branan's Generalisation is a one-way implication: if LBE is possible out of a nominal, it must be ϕ -accessible. It is not the case that, if a nominal is ϕ -accessible, LBE must be possible out of it.

Branan's Generalisation makes several other predictions. First, it has been independently observed that few languages permit nominals bearing 'lexical case' – in Bobaljik's system, nominals which are assigned case idiosyncratically by some set of adpositions, verbs and other functional heads – to control ϕ -agreement. Lexical case thus appears as most 'marked' on the Accessibility Hierarchy above. Branan's Generalisation thus predicts that LBE from nominals bearing lexical case should be cross-linguistically uncommon. This is borne out: Branan shows that none of the languages in his sample permit ϕ -agreement with lexical case nominals, and accordingly none permits non-argument extraction (and thus, LBE) from them. Note that there are languages which do permit agreement with nominals bearing lexical case, but Branan (and the present author) have not identified such a language which also permits LBE, and thus against which the predictions of BG – that such a language could, in principle, permit non-argument extraction from lexical case nominals – could be tested. Nonetheless, the consistent absence of subextraction from lexical case nominals in these languages is at least suggestive corroboration of BG.

A *prima facie* complication for Branan's Generalisation arises with respect to languages with accusative-alignment. Branan (2018) shows that, unlike ergative-alignment systems, accusative-aligned languages show a systematic lack of asymmetry between unmarked (i.e. nominative) and dependent (i.e. accusative) case nominals. Crucially this is true even where dependent case nominals are not ϕ -accessible: Slavic languages like Bosnian-Serbian-Croatian, for example, are well-known to permit LBE from objects despite accusative case nominals never controlling ϕ -agreement (e.g. Bošković 2005b; see above). Nonetheless Branan argues that this is predicted on independent grounds. Specifically, let us assume that the dependent case algorithm of Baker (2015), a.o., proceeds derivationally, with nominals assigned case during the derivation, as soon as possible. In accusative-alignment systems, the nominal which ends up bearing dependent case, the accusative, merges first. Since the

dependent case algorithm only assigns dependent case to a nominal under competition with another nominal in its domain, this nominal thus cannot get dependent case until the next highest nominal – the external argument – merges. Until that point, it thus bears unmarked case. Insofar as LBE targets the internal argument prior to the higher nominal merging, it is thus targeting a nominal which bears unmarked case – which is thus ϕ -accessible. The same is not true, crucially, of ergative-alignment languages: here the nominal which ends up getting dependent case, the ergative, merges second, i.e. when there is already another nominal in its domain. It can consequently be assigned dependent case immediately upon merging, and thus is at no point in the derivation assigned unmarked case. Thus no comparable ‘loophole’ exists in ergative-alignment systems.

Finally, note that Branan does not include external possession in his original formulation of BG. Given that he defines non-argument extraction explicitly as ‘A’-extraction’, we can take EP (traditionally, ‘A-extraction’, though I contested this above) to have been excluded (Branan 2018: 410). However I show in Table 3 that, at least for those languages whose EP constructions I discussed above, EP also only ever targets a subset of the types of nominals which are ϕ -accessible in a language³¹. I thus take it that Branan’s Generalisation is also an explanandum on my analysis of these languages. Determining whether BG holds generally of all EP is a goal for future work³².

Note that Branan’s Generalisation is in fact one case of a broader phenomenon of ‘conditional opacity’ (Branan’s 2022 term; this is also referred to as ‘unlocking’): besides nominals, other domains – especially putatively ‘phasal’ domains like CP, vP – have been shown to allow A’-extraction in at least some cases only where that domain is itself ϕ -accessible (see, e.g., Rackowski and Richards 2005; van Urk and Richards 2015; Halpert 2019; Thivierge 2021; Branan and Davis 2022).

3.2 Inadequacy of current theories of LBE

Branan’s Generalisation has attracted limited theoretical attention. In this section, I demonstrate that current theories of LBE in fact cannot account for it. I review in turn: the ‘standard’ theory of left-branch extraction in minimalist syntax, Bošković’s (2005b, 2014 *et*

³¹Here, a nominal is ‘targeted’ for EP insofar as it is that nominal to which the external possessor bears a semantic relation and from which it is, therefore, subextracted *ex hypothesi*.

³²Note the following about Table 3. The use of ‘...’ is not intended to indicate that there are necessarily other ϕ -accessible cases; it just indicates that there may be, but the listed cases are sufficient to show that BG holds. Moreover, in the absence of a morphological case system in Bantu (see, e.g., Diercks 2012; Halpert 2012) or Nuu-chah-nulth (Ravinski 2005) I use nominative/accusative simply to denote the case assigned, *ex hypothesi*, to transitive/intransitive subjects and transitive objects respectively.

Language	ϕ -accessible nominals	Nominals which license EP	Sources
Japanese	Nominative, ...	Nominative subjects	Ura (1996)
Chickasaw	Nominative, accusative, ...	Nominative ('primarily intransitive') subjects	Munro (1999: 255ff.)
Tz'utujil	Absolutive, ergative, ...	Absolutive (preferably unaccusative) subjects; more marginally ergative subjects	Aissen (1999: 185ff)
Nuu-chah-nulth	Nominative (subjects)	Nominative subjects	Ravinski (2007)
Choctaw	Nominative, accusative, oblique...	Nominative (intransitive) subjects	Tyler (2021: 87)
West Flemish	Nominative, ...	Nominative (embedded clause) subjects	Haegeman and Danckaert (2013: 5)
Malagasy	'Nominative' (i.e. pivots)	'Nominative' (intransitive) pivots	Keenan and Ralalaoherivony (2000)
Tagalog	'Nominative' (i.e. pivots)	'Nominative' (intransitive object) pivots	Nie (2019: 2)
Cebuano	'Nominative' (i.e. pivots)	'Nominative' (intransitive object) pivots	Bell (1983: 191-193)
Swahili	'Nominative', 'accusative', ...	'Accusative' objects	Keach and Rochemont (1992: 85)
Zulu	'Nominative', 'accusative', ...	'Accusative' objects	Zeller (2024: 171)
Chimwiini	'Nominative', 'accusative', ...	'Nominative' (intransitive) subjects; 'accusative' objects	Henderson (2014: 300-302)

Table 4 The distribution of external possession in the language sample obeys Branan's Generalisation

seq) phase-based theory; and two more recent approaches which explicitly engage with (aspects of) Branan's Generalisation – Davis and Branan (2019) and Branan (2022).

3.2.1 The standard theory

First, consider Bošković's phase-based theory of left-branch extraction. This relies on three basic assumptions: the existence of a nominal phase, which is accordingly subject to the phase impenetrability condition; the antilocality condition; and the NP/DP parameter.

Taken together, these assumptions derive the difference between LBE-permitting and -nonpermitting languages as follows. Given the PIC of Chomsky (2001)³³ and the assumption

³³Also referred to as 'PIC2' in the literature.

of nominal phasehood, A'-extraction of nominal subconstituents – whose landing-site is, standardly, above the next highest phase-head – must transit via the nominal edge. Left-branch elements are assumed to be first-Merged as adjoined to NP. Accordingly, in NP languages, LBE proceeds straightforwardly: the elements which undergo LBE are already first-Merged into the nominal edge, and need not move to escape Transfer inside the nominal; they may then proceed via successive-cyclic movement through higher phase-edges until reaching their landing-site, as standard. In DP languages, on the other hand, there is an additional functional projection above the first-Merge site of these nominal modifiers; they must therefore move to get to the nominal edge, spec-DP. However this movement is independently prohibited by antilocality, since it would fail to cross a full maximal projection. These elements are thus stranded inside the nominal, preventing subextraction. Only NP languages may therefore permit LBE; a generalisation which Bošković (e.g., 2005b, 2009a) argues to be independently motivated by a range of other properties which also distinguish NP languages from DP languages.

Consider why this cannot derive Branan's Generalisation. Neither ϕ -agreement nor ϕ -Agree has a formal role in Bošković's account of LBE: the permissibility of LBE follows only from the timing of phasal Transfer, variation in nominal functional structure and antilocality, as above. Unless ϕ -agreement/ ϕ -Agree can interact with any of these factors – e.g. by suspending antilocality, altering the timing of Transfer or deleting/inserting functional structure – the availability of ϕ -agreement/ ϕ -Agree should have no bearing on the permissibility of LBE, *contra fact*. Given that no such interaction is standardly assumed or, *ceteris paribus*, independently motivated, the theory thus cannot predict Branan's Generalisation.

Note that one could simply stipulate the requirement that nominals be accessible to ϕ -Agree to permit LBE. This is the strategy implicitly adopted by Branan (2018), for example: in addition to the PIC, movement across a phase boundary is also subject to a requirement that the phase-head first undergo ϕ -Agree – i.e. be 'unlocked'. This is unsatisfactory in several respects, however, because of properties shared by any theory of LBE based on phase theory. In the most serious case, this stipulation is formally incompatible with phase theory. This can be illustrated with the configuration in (116): v^0 bears the A'-probe; the A'-goal is a possessor (DP_{POSS}) inside the internal argument (DP).

(116) [_{vP} v^0 [_{A':} ___] [_{VP} V [_{DP} D⁰ [_{nP} DP_{POSS} [_{n'} n⁰ NP]]]]]]

Taking DP and _{vP} to be phasal (e.g., Chomsky 2001; Svenonius 2004; Bošković 2014), the PIC states that the complement of D⁰ undergoes Transfer as soon as v^0 merges, i.e. the next highest phase-head. This means, i.a., that DP_{POSS} becomes inaccessible as soon as v^0 merges; it should therefore not be able to be targeted for A'-extraction by v^0 , *contra fact* for those languages which permit possessor extraction (e.g. Gavrusseva 2000). It appears, then,

that the availability of ϕ -Agree with DP must ‘resurrect’ previously-Transferred syntactic objects from the interface, making them accessible to syntax again. Absent a mechanism for phase-resurrection, this should be impossible. Moreover, invoking such a mechanism is undesirable on independent grounds. Phase theory is putatively motivated partly on the grounds that it reduces computational complexity: iterative Transfer of syntactic objects out of the derivation limits the set of objects accessible at any point, reducing, e.g., the search space for syntactic operations (see, e.g., Chomsky 2005). Allowing for Transferred material to be resurrected, even if in limited contexts, undermines this justification considerably since it entails that ‘Transferred’ material must remain accessible to syntax in some form in order to be eligible for ‘resurrection’ (see also Keine: 161-165; Branan and Erlewine 2024a: 14-15; Branan 2022: 5-6 for similar discussion).

In sum, the standard phase-based theory of LBE cannot capture Branan’s Generalisation.

3.2.2 Davis & Branan (2019): Cyclic Linearisation

Davis and Branan (2019) propose an account of left-branch extraction based on an alternative conception of phasehood, Fox and Pesetsky’s (2005) Cyclic Linearisation. This explicitly seeks to explain why one language – Chichewa – obeys BG. This is more successful; but fails as a general account of BG.

Cyclic Linearisation is the theory that cyclic domains – ‘phases’ – correspond to linearisation domains. When a linearisation domain is completed, a linearisation statement is generated providing an ordering of all of the syntactic objects within that domain (Fox and Pesetsky 2005). This means that, when an element moves across phases, it must stop off in the lower phase-edge. If it didn’t, the derivation would produce contradictory linearisation statements: when the lower phase is completed, the moving element – call it XP – would still be inside of it, and so could be linearised as following other elements inside that phase; but then XP would move into the higher phase, and so be linearised as preceding everything in the lower phase. This contradiction yields a crash.

Insofar as nominals are phases, extraction out of nominals must therefore proceed via the edge of the nominal. So far this proposal affords no role for ϕ -agreement/-accessibility in constraining LBE. This is where Davis and Branan make two further assumptions. First, lower copies (in Fox and Pesetsky’s original formulation, ‘traces’) and everything dominated by them are ignored for linearisation. In other words, where some element XP moves, any information about the precedence relations of the lower copy of that XP or of any elements within XP is ‘thrown out’ by PF, becoming irrelevant. The second assumption is that LBE from a nominal co-occurs with clitic-doubling of that nominal. This is intended to capture Branan’s Generalisation as follows. Clitic-doubling, *ex hypothesi*, involves movement of DP

to the verb, say to some spec-InfP. This creates a copy chain; the lower copy of DP and any elements dominated by it are thus ignored for linearisation. Consequently, since PF will now not receive any linearisation information about material inside that DP when DP is completed, movement of DP-internal material cannot produce contradictory linearisation instructions. Thus an adjective which is base-generated as following NP, for example, can now undergo movement out of DP to some position in the next highest phase, say vP, and this will not produce a contradiction: the only linearisation information PF will receive upon spell-out is Adj>NP, the base-generated order having been ignored.

Thus ϕ -agreeing with, *qua* clitic-doubling, the nominal allows for LBE to proceed without passing through the phase-edge. Now, suppose we also assume, following some prior work (e.g. Bosque and Gallego 2014; Reeve 2019; Bondarenko and Davis 2024) that it is impossible to move via the nominal phase-edge for some reason. Then we can turn Davis and Branan's theory into a general account of BG. Now the *only* way to do LBE is where the nominal undergoes ϕ -agreement, *qua* clitic-doubling; this will only be possible where that nominal is accessible to ϕ -agreement; whence, Branan's Generalisation.

This has two major flaws. First, it is unclear why movement via the phase-edge should be impossible in nominals, as we have to assume. Clearly movement via the edge exists in other phases, like CP; excluding it for DP is thus undesirable, absent independent motivation. This is the same problem posed above for any phase-based theory of LBE: nominals do not show the same phasehood properties as CP, vP, and thus appear to require a separate treatment – disunifying the notion of 'phasehood'. One could assume some independent factor preventing this movement, for example that it would violate antilocality (e.g. Branan 2018). But then this requires assuming a structure for nominals whereby *all* left-branch elements – e.g. quantifiers, demonstratives, possessors, adjectives – are first-merged in positions too local to the nominal edge to subextract. As Syed and Simpson (2017) argue, this would be inconsistent with much cross-linguistic evidence for an articulated nominal functional structure. This is thus a major problem. Note, Davis and Branan simply do not make the assumption that movement via the phase-edge is unavailable at all. But this is still more problematic: we now have a way that LBE can proceed *without* needing to have ϕ -agreement with the nominal – whence, we no longer predict BG.

The second flaw is the assumption of clitic-doubling. Recall that LBE becomes available when the DP from which LBE occurs becomes the lower copy in a copy chain; this is why Davis and Branan must assume that the DP undergoes cliticisation, rather than pure ϕ -agreement, on the assumption that the former but not the latter involves movement. This may be true of the language they focus on, Chichewa (Bresnan and Mchombo 1987). It is plainly not true of all LBE-permitting languages: Slavic, various Mayan languages and

Uralic languages like Hungarian, among others, are all generally assumed to involve pure ϕ -agreement, not clitic-doubling. Davis and Branán's theory therefore cannot account for why these languages obey BG.

Note that there is an additional complication here. Branán's Generalisation is not about the presence of (overt) ϕ -agreement, *per se*; it says only that LBE is only possible from nominals which are *accessible* to ϕ -agreement. Given the absence of obvious ways for ϕ -accessibility to affect a derivation except by the relevant nominal undergoing ϕ -agreement, all attempts to capture Branán's Generalisation have assumed that it entails that LBE must only be possible where nominals undergo ϕ -agreement. However, crucially, this does not necessarily entail that ϕ -agreement is overt (*pace* Preminger 2019). The problem for Davis and Branán's approach is that it relies on copy chains. Insofar as agreement is overt in LBE contexts – as in Chichewa, for example – this assumption is unproblematic. However, once we assume that there is covert ϕ -agreement – in order to explain why only ϕ -accessible nominals are licensing LBE – an explanation relying on copy chains becomes much more suspicious. We must assume that the creation of a null higher copy renders the lower copy of DP irrelevant to linearisation. This is implausible insofar as linearisation is a PF operation, and PF standardly handles only PF-legible – i.e. phonologically overt – material.

I thus set aside this Davis and Branán-inspired approach as a means of capturing Branán's Generalisation.

3.2.3 Branán (2022): Contingent probing

The final approach I consider here is Branán's (2022). This is considered in some depth because it is the most successful extant approach, and it provides an essential component of the analysis advocated for in this thesis. It is nonetheless unable to capture Branán's Generalisation.

This proposal relies on the notion of contingent probing. Branán divides the Agree procedure into a set of smaller primitive operations, Table 4; this follows a large range of prior work on the decomposition of Agree (e.g. Arregi and Nevins 2012; Bhatt and Walkow 2013; Atlamaz and Baker 2018; Kalin 2020).

'Contingent probes' are a special type of probe whereby one Probe operation, Probe(F₂), has the start-point of its search determined by the end-point of another Probe operation, Probe(F₁). In other words, Probe(F₂) takes as its search domain the goal of Probe(F₁) (where the goal of Probe(F₁) means the element which triggered successful Match(F₁)). In this way Probe(F₂) is contingent on Probe(F₁). This is related to much recent work arguing that probes can consist of interactions between multiple features, typically under the alternative

Probe(F,START:)	search the tree for [feature] F [from starting point X^0], and then do something else if F is found
Match(X,F)	check to see if X bears F, and then do something else
Copy(F/FP)	copy a feature of phrase to be the root of the tree
End()	stop probing

Table 5 Primitive operations underlying Agree (Branan 2022)

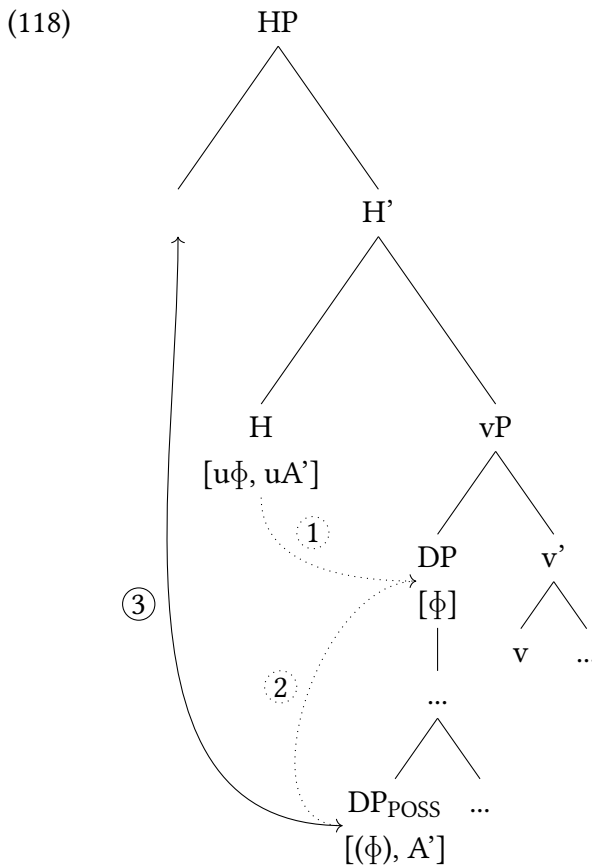
term ‘composite probes’ (see, e.g., Coon and Bale 2014; van Urk 2015; Scott 2021; Lohninger 2023a).

The specific type of contingent probe which Branan invokes to explain Branan's Generalisation is in (117) (adapted from Branan 2022: 11).

(117) **Branan's probe**

Probe(ϕ ,START:H) \rightarrow Match(ϕ) \rightarrow **Copy(Goal- $[\phi]$)** \rightarrow Probe(A',START:Goal) \rightarrow Match(A') \rightarrow Copy(Goal-[A'])

This corresponds to the derivation in (118) for a case of possessor extraction. The ϕ -probe must search for a goal first, starting from some head H (i.e. the operation Probe($[\phi]$,START:H) is ‘called’). Only once the ϕ -probe identifies and copies a goal (i.e. Copy(Goal- $[\phi]$) is called) can the A'-probe then search; in (118), this goal is the DP, bearing $[\phi]$. This is represented by the arrow labelled 1. The starting point for the A'-probe is then the ϕ -goal, as above. The A'-probe can therefore target either the ϕ -goal itself, should it bear [A'] features in addition to $[\phi]$; or an element inside the ϕ -goal which bears [A']. In (118), the latter obtains: Match(A') and Copy(Goal-[A']) target the embedded possessor (DP_{POSS}) (represented by the arrow labelled 2), leading to LBE (arrow 3).



Indeed, there is independent evidence for the presence of a probe of this type in some LBE-permitting languages. Specifically, this is the A-minimal LBE type we discussed above: languages in which a dependency is independently shown to exhibit A-minimality, i.e. can only target the closest nominal or elements within it. This restriction is predicted by Branan's proposal. A contingent probe of the sort in (117) has the effect that the $[A']$ -probe can only target the $[\Phi]$ -probe's goal or elements inside of it. The $[\Phi]$ -probe will always target the closest element bearing (valued) $[\Phi]$ -features; in other words, the closest nominal. Consequently, A'-extraction (of the relevant type) will only be able to target the closest nominal – whence A-minimality.

Crucially though, this model does not derive Branan's Generalisation, because of two problems. First, it is clearly empirically inadequate. As we have seen, not all LBE-permitting languages are of the A-minimal type. Note, these languages could still be reconciled with the contingent probe account, in principle, if we assume that for each nominal from which LBE is possible there is a separate contingent A'-probe for which that nominal is the closest Φ -goal; Φ -minimality would then still hold, as predicted, but only in a trivial sense. This should not be assumed *sans* independent motivation, however; otherwise, we are simply strong-arming the theory into outputting the desired empirical generalisation.

Note, below I will argue that Branan's broader insight here – that BG is a consequence of some kind of ϕ/A' probing interaction – is valuable, and can be made into a successful theory of LBE. The problem is that Branan has too restrictive a formulation of this, in terms of one specific type of ϕ/A' probing interaction (the probe in (117)).

Regardless, Branan's theory is conceptually flawed. Even if one granted that all LBE-permitting languages do exhibit contingent probes of the sort in (117), and thus that Branan's theory does output Branan's Generalisation, the theory will still fail to explain BG. Recall the explanandum: why does LBE always require that the nominal be ϕ -accessible? Branan's answer is that LBE-permitting languages must always have contingent probes like (119), such that A' -extraction (*qua* LBE) will always require ϕ -Agree to precede it. The problem is that this answer still rests on a stipulation: that all LBE-permitting languages have a contingent probe of this sort. There is no independent rationale for this. In principle, nothing in Branan's model prevents a language with a simple $[A']$ -probe – which is crucially not contingent on a $[\phi]$ -probe – from performing LBE. Such a language would not, absent independent assumptions, be predicted to obey BG – whence the stipulation that no such language may exist. In this sense Branan simply reifies the empirical generalisation of BG in formal terms, as the new generalisation that all LBE-permitting languages exhibit contingent probes.

Chapter 4

Towards an explanation for MiLBEG and BG

We thus have two generalisations – MiLBEG and BG – but no adequate theoretical account. The next two chapters seek to resolve this. In this chapter, I argue that we can construct a theory of LBE which generates both the generalisations provided we assume that LBE is consistently performed by (certain types of) composite probes; this builds on the insight of Branán’s (2022) account, discussed in Chapter 3. This requires exploiting previously unrecognised possibilities within Branán’s theory of ‘contingent probing’. The following chapter (Chapter 5) then more speculatively discusses what could explain, in turn, the requirement that LBE always be performed by composite probes.

This chapter proceeds as follows. First, in §4.1 I outline the desiderata on a theory of LBE, in light of everything we have seen so far. I note that this thesis attempts to resolve only a subset of these. In §4.2 I argue that the Mixed LBE Generalisation naturally suggests a theoretical postulate that I call the **Mixed LBE Thesis**, (119).

(119) **Mixed LBE Thesis**

LBE is always performed by *some type* of composite probe, and this explains Branán’s Generalisation.

This is the basis of my account of the generalisations. In §4.3 I then show that the Mixed LBE Thesis can explain Branán’s Generalisation, provided we combine it with a specific theory of composite probing. This ensures that LBE will always obey BG and MiLBEG. §4.4 then briefly returns to the desiderata which I had set aside in §4.1, reiterating that this thesis does not resolve them but arguing that it suggests potentially productive routes for future work.

4.1 Desiderata

The data we have seen so far in this thesis gives rise to (at least) the following three desiderata on a theory of left-branch extraction³⁴.

(120) Desiderata on a theory of LBE

- a. Explaining Branan’s Generalisation: why is LBE only possible from ϕ -accessible nominals?
- b. Explaining the Mixed LBE Generalisation: why is LBE only possible from mixed dependencies?
- c. Explaining variation in the mixed dependencies: why do the specific properties of the mixed dependencies which license LBE vary?

This thesis focuses primarily on the first two. I return to the third desideratum in §4.4. For now, note only that this is a general problem for theories of mixed dependencies: though there are proposals for generating different types of mixed dependencies, these are generally more coarse-grained than the variation we have seen so far (see, e.g., Lohninger 2023a).

4.2 MiLBEG entails the Mixed LBE Thesis

The first step towards explaining the two generalisations is to recognise the following: the Mixed LBE Generalisation entails the Mixed LBE Thesis, repeated in (121).

(121) Mixed LBE Thesis

LBE is always performed by *some type* of composite probe, and this explains Branan’s Generalisation.

As noted above, the distinction between A- and A’-dependencies has traditionally been understood positionally (e.g. Chomsky, 1972, a.o.): A-dependencies have A-properties by virtue of targeting “A-positions”; A’-dependencies have A’-properties by virtue of targeting “A’-positions”. This yields a dichotomy: positions are either A- or A’-positions, *ex hypothesi*, with no room for intermediate categories. More recently, the A/A’-distinction has been reconceptualised in featural terms: the properties of A- and A’-dependencies follow not from the positions they target, but from the features which motivate them (van Urk 2015).

³⁴Clearly these are not the only desiderata on a theory of LBE; I just take it that these are the desiderata which this thesis is unique in identifying.

Thus van Urk (2015) proposes that canonical A-properties arise from $[\Phi]$ -probes, and A'-properties from $[A']$ -probes (where $[A']$ is potentially a superordinate category subsuming, e.g., $[\text{Top}]$, $[\text{Foc}]$). This reconceptualization gives rise to a new possibility: movement dependencies which exhibit mixed properties, because they are motivated by a combination of $[\Phi]$ and $[A']$ features. That probes of this type exist itself builds on other recent theoretical work, illustrating that probes may have a complex structure belying an interaction between multiple probing features (e.g. Coon and Bale 2014).

A large body of subsequent work has argued that probes of this type, combining $[\Phi]$ and $[A']$ features and referred to as 'composite probes', can capture dependencies with 'mixed' A/A'-properties. In particular, each of the types of mixed dependencies that I have argued above to be instantiated in LBE – the A-minimality type, the No-WCO type and the Case/agreement type – have been independently argued to follow from some form of composite probing.

A-minimality type probes in various languages have been analysed using 'composite probes' in various works: Erlewine (2018) treats the pivot-only extraction restriction in Toba Batak as reflecting a composite probe, and Erlewine and Lim (2023) do so for Bikol; Coon et al. (2021) analyse the ergative extraction constraint in Mayan (and elsewhere) using a type of composite probe; and both Branan and Erlewine (2024b) and Lohninger (2023b) make more general use of composite probes to explain A-minimality effects in a range of languages, including Rejang, Turkish, Tagalog, Acehnese, Maori and Romanian.

Movement of the No-WCO type – i.e. which has A'-properties and the A-property of lacking weak crossover effects – has also been treated using composite probes. Lohninger (2022) analyses the absence of WCO effects in Slavic wh-movement as resulting from a composite probe on Foc^0 ; Lohninger and Katochoritis (2024) assume a composite probe involved in movement-to-pivot in Austronesian to explain the absence of WCO effects. The lack of WCO in scrambling is also explained using composite probes by Chen (2024) for Hindi-Urdu (and for a potentially similar phenomenon in Mandarin, *qua* 'clause-internal topicalisation', by Chen 2023a).

Finally, the presence of A'-properties in dependencies which trigger case-assignment and/or predicate agreement have been argued to reflect composite probing for various languages. Mursell (2018) treats the information-structural restriction on Swahili object agreement in terms of a composite probe; Mursell (2021) presents similar analyses for long-distance agreement in Tsez, Uyghur and Algonquian and subject marking in Tagalog. Chen (2023b) uses composite probes to model agreement control by pivots in Austronesian. Miyagawa (2010, 2017) and Ostrove (2018) also invoke A'-features in agreement dependencies in South-East Asian languages and San Martín Peras Mixtec, which Mursell (2021) treats

as submitting to a composite probe analysis too. Hyperraising – a mixed dependency of a similar type, involving movement which induces case-assignment/agreement-control but with the A'-property of being long-distance – has also received composite probe analyses in recent work by Wurmbrand (2019) and Lohninger et al. (2022).

Note, these accounts do not formalise 'composite probe' in the same way; this is a theme I return to in §4.3. The important assumption which all of these formalisations share, however, is that a dependency which shows both A- and A'-properties can be explained by postulating that it is triggered by a probe which involves both ϕ - and A'-features. Insofar as we retain this assumption, then MiLBEG yields the Mixed LBE Thesis. 'Mixed' A/A'-dependencies can be accounted for by assuming a probing interaction between ϕ - and A'-features of some type, which we can understand – following prior literature – as a composite $[\phi, A']$ probe. The notation here is intended to indicate only that the probe involves both ϕ - and A'-features; I only present my commitments about the structure of the probe in the following section. Insofar as MiLBEG shows us that LBE always involves mixed A/A'-dependencies, we can thus conclude that LBE is always mediated by composite probes of this type.

4.3 The Mixed LBE Thesis explains Branán's Generalisation

This leads to the second step in explaining the two generalisations: the Mixed LBE Thesis can in turn explain Branán's Generalisation. This requires a theory of the kinds of composite probes which perform LBE. In this section I argue that we can derive a theory of this type simply by exploiting the full range of possibilities in a pre-existing theory of composite probing: Branán's (2022). Note that Branán's theory is framed in terms of 'contingent probes'; in what follows, I use this term interchangeably with 'composite probes', following (e.g.) Lohninger (2023b).

4.3.1 A theory of composite probing

4.3.1.1 Three logical possibilities

Recall Branán's (2022) proposal for explaining why, for a small subset of LBE-permitting languages – Tagalog, Kaqchikel and Turkish – their LBE obeys Branán's Generalisation. Branán shows that the dependencies which license LBE in these languages have a certain profile of properties – i.e. A'-properties plus A-minimality – which he takes to reflect the

presence of a certain kind of 'contingent probe'. He then shows that the probe he sketches to capture this behaviour also has as a necessary consequence Branán's Generalisation. This is because this probe forces A'-probes to only ever target goals which either are or are contained in the closest ϕ -goal; hence LBE is only possible from nominals accessible to ϕ -Agree, whence Branán's Generalisation. Recall too that this cannot be a general explanation for BG, though: it only models languages with this specific type of mixed dependency, i.e. our 'Type 1', A-minimal LBE dependency.

The crucial observation, however, is that Branán's theory in fact generates other types of contingent probes too. Branán divides Agree into the series of primitive operations in Table 5 (repeated from Table 4).

Probe(F,START:)	search the tree for [feature] F [from starting point X^0], and then do something else if F is found
Match(X,F)	check to see if X bears F, and then do something else
Copy(F/FP)	copy a feature of phrase to be the root of the tree
End()	stop probing

Table 6 Primitive operations underlying Agree (Branán 2022) [repeated]

These operations are ordered. Branán specifically uses the metaphor of 'feeding' 'feeding' metaphor: Probe(ϕ ,START:X) 'feeds' Match(ϕ), which feeds Copy(ϕ), etc.. Note, there are certain intrinsic restrictions on this ordering. I list two in (122): Copy(F_1) must always be preceded by Match(F_1), which must be preceded by Probe(F_1); and in a contingent probe, since by definition Probe(F_2) has its START point determined by Match(F_1) – this is what makes a probe 'contingent' – then Probe(F_2) must be preceded by Match(F_1).

(122) **Intrinsic ordering restrictions in Branán's system**

- a. Probe > Match Copy
- b. *In a contingent probe*: Match(F_1) > Probe(F_2)

Just these two restrictions significantly reduce the set of possible orders for a simple contingent probe involving two features, like ϕ and A'. Specifically, there are four logical

possibilities, of which only three are relevant^{35,36}. I use ϕ and A' in place of F_1 and F_2 , respectively, since these are the relevant features here.

(123) **Logically possible contingent probes in Branan's system**

a. **Probe-1**

$$\text{Probe}(\phi, \text{START:H}) \rightarrow \text{Match}(\phi) \rightarrow \text{Copy}(\text{Goal-}[\phi]) \rightarrow \text{Probe}(A', \text{START:Goal}) \\ \rightarrow \text{Match}(A') \rightarrow \text{Copy}(\text{Goal-}[A'])$$

b. **Probe-2**

$$\text{Probe}(\phi, \text{START:H}) \rightarrow \text{Match}(\phi) \rightarrow \text{Probe}(A', \text{START:Goal}) \rightarrow \text{Match}(A') \rightarrow \\ \text{Copy}(\text{Goal-}[\phi]) \rightarrow \text{Copy}(\text{Goal-}[A'])$$

c. **Probe-3**

$$\text{Probe}(\phi, \text{START:H}) \rightarrow \text{Match}(\phi) \rightarrow \text{Probe}(A', \text{START:Goal}) \rightarrow \text{Match}(A') \rightarrow \\ \text{Copy}(\text{Goal-}[A']) \rightarrow \text{Copy}(\text{Goal-}[\phi])$$

I argue that these probes correspond to each of the three mixed dependency types above: Probe-1 (i.e. Branan's probe) is A-minimal LBE ('Type 1'); Probe-2 is No-WCO LBE ('Type 2'); Probe-3 is Case/agreement LBE ('Type 3').

4.3.1.2 How the probes capture the mixed dependencies

The three probes differ with respect to two properties; these, I show, are enough to individuate the three types of mixed dependencies³⁷. I also show that the No-WCO LBE probe and the Case/agreement LBE probe also guarantee Branan's Generalisation.

The two properties are A-minimality and the locus of case-assignment/agreement control. We have seen in §3.2.3 above that Branan's probe generates A-minimality and

³⁵The fourth logical possibility is as follows: $\text{Probe}(\phi, \text{START:H}) \rightarrow \text{Match}(\phi) \rightarrow \text{Probe}(A', \text{START:Goal}) \rightarrow \text{Copy}(\text{Goal-}[\phi]) \rightarrow \text{Match}(A') \rightarrow \text{Copy}(\text{Goal-}[A'])$. This is only trivially different from Branan's probe: although $\text{Probe}(A')$ now precedes $\text{Copy}(\phi)$, this still means that the ϕ -goal will be copied before the probe 'knows' if it will find an A' -goal. This will consequently still generate A-minimality insofar as the probe stops searching after successfully copying at least one feature – i.e. ϕ – regardless of whether it finds A' , as Branan assumes. I therefore set it aside.

³⁶This in fact overlooks at least two other potential loci of variation for contingent probes in Branan's system: one could reorder the features, such that $\text{Probe}(A')$ occurs before $\text{Probe}(\phi)$; and one could allow for operations to target multiple features conjunctively, e.g. $\text{Copy}(\phi+A')$. I set these aside here. Note though that for all of these, at least one of the possibilities they could generate has been argued to be independently required in Lohninger's (2023b) empirical typology of composite probing behaviours. 'Dependent' and 'conjunctive' probes require conjunctive $\text{Copy}(\phi+A')$; and conjunctive probes also require ordering $\text{Probe}(A')$ before $\text{Probe}(\phi)$ when stated in Branan's system. Thus even a theory of probing with this extra generative power may still be empirically motivated. Note, this clearly raises acquisitional problems; I return to this in §6.1.2.

³⁷Notice that I am consequently not claiming that these probes can capture all of the properties which individuate the different types of dependencies, only some; for example, I have no account for the origin of the presence/absence of Weak Crossover. I justify this and other omissions in §4.4 below.

causes the nominal out of which LBE occurs to control $\bar{\phi}$ -Agree. I now show first that the other two probes do not show A-minimality; and, second, that Probe-2 – the No-WCO LBE probe – causes the nominal out of which LBE occurs to control $\bar{\phi}$ -Agree, whereas crucially Probe-3 – the Case/agreement LBE probe – causes the left-branch element to control $\bar{\phi}$ -Agree.

Consider first A-minimality. That the No-WCO LBE probe and the Case/agreement LBE probe do not show A-minimality can be seen in the sample derivation in (125-126); I repeat the probes again in (124) for expositional convenience. For this derivation, it doesn't matter whether H^0 bears the No-WCO or Case/agreement probes; the outcome is the same in the relevant details. First, $\text{Probe}(\bar{\phi}, \text{START:H})$ applies; since the closest goal for this probe is DP_1 , it is DP_1 which triggers $\text{Match}(\bar{\phi})$. On Branán's probe, this would then be followed by $\text{Copy}(\bar{\phi})$. However, on the other two probes, this is not true. Instead $\text{Match}(\bar{\phi})$ is followed by $\text{Probe}(A', \text{START:DP}_1)$. This fails to find a matching goal in (126), since neither DP_1 nor any element within DP_1 bears $[A']$. In other words, $\text{Match}(A')$ fails. Crucially, I assume that the failure of $\text{Match}(A')$ counterfeeds the subsequent operations of this contingent probe: that is, it counterfeeds $\text{Copy}(\bar{\phi})$ and $\text{Copy}(A')$. Consequently DP_1 does not trigger the copying of $\bar{\phi}$ -features in spite of successful $\text{Match}(\bar{\phi})$.

(124) **Types of LBE-permitting probes**

a. **A-minimal LBE probe**

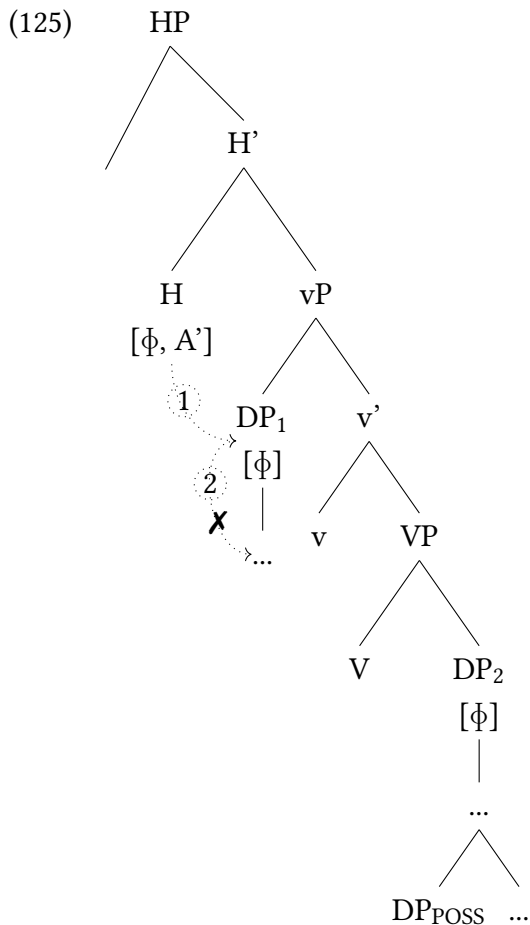
$\text{Probe}(\bar{\phi}, \text{START:H}) \rightarrow \text{Match}(\bar{\phi}) \rightarrow \text{Copy}(\text{Goal-}[\bar{\phi}]) \rightarrow \text{Probe}(A', \text{START:Goal})$
 $\rightarrow \text{Match}(A') \rightarrow \text{Copy}(\text{Goal-}[A'])$

b. **No-WCO LBE probe**

$\text{Probe}(\bar{\phi}, \text{START:H}) \rightarrow \text{Match}(\bar{\phi}) \rightarrow \text{Probe}(A', \text{START:Goal}) \rightarrow \text{Match}(A') \rightarrow$
 $\text{Copy}(\text{Goal-}[\bar{\phi}]) \rightarrow \text{Copy}(\text{Goal-}[A'])$

c. **Case/agreement LBE probe**

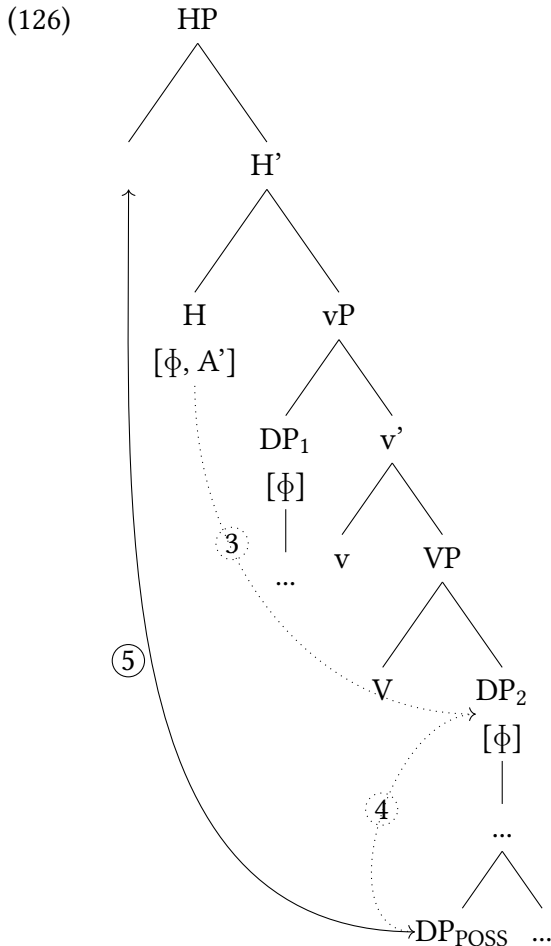
$\text{Probe}(\bar{\phi}, \text{START:H}) \rightarrow \text{Match}(\bar{\phi}) \rightarrow \text{Probe}(A', \text{START:Goal}) \rightarrow \text{Match}(A') \rightarrow$
 $\text{Copy}(\text{Goal-}[A']) \rightarrow \text{Copy}(\text{Goal-}[\bar{\phi}])$



This is crucial because, in Branan's system, copying ϕ -features is what causes the probe to cease³⁸. In Branan's probe, i.e. (124a), $\text{Copy}(\phi)$ cannot be counterfered by $\text{Match}(A')$ because it precedes it; consequently, $\text{Copy}(\phi)$ will always be satisfied at the first ϕ -goal, and hence the probe will never be able to see beyond the first ϕ -goal and its contents – regardless of whether there is an A' -goal. On the other hand, in the two probes I have proposed $\text{Copy}(\phi)$ can be counterfered by $\text{Match}(A')$, so ϕ -features won't be copied unless there's an A' -goal too. The probe will therefore not cease. The operations thus recommence in the same order. This is what is shown in (125). In (126), this means that $\text{Probe}(\phi)$ applies

³⁸Note that this assumption is also not accidental: if Branan (and I) do not make this assumption, the explanation of BG falls apart. Suppose $\text{Copy}(\phi)$ is satisfied by the closest ϕ -goal, say the external argument; but $\text{Match}(A')$ is not satisfied. If this does not cause search to cease, $\text{Probe}(A')$ could look again for a goal elsewhere; for example, inside the internal argument. This allows for non-A-minimal LBE. However, this no longer derives Branan's Generalisation, because the ϕ -probe did not have to Agree with the nominal that the A' -probe subextracted from. That nominal could thus in principle not be ϕ -accessible – pace Branan's Generalisation. Note, one could also assume that the whole contingent probe – not just the A' -probe – continues to search even if $\text{Copy}(\phi)$ is successful at the closest ϕ -goal. This would in principle derive Branan's Generalisation again, insofar as A' -probing inside any goal is necessarily preceded by ϕ -Agree. But it raises the additional problem that one must now assume covert ϕ -agreement with every ϕ -goal intervening between the probe and the ϕ -goal from which LBE actually occurs. This is clearly an undesirable stipulation.

again and identifies the next closest goal, DP_2 , triggering $Match(\phi)$. This time $Probe(A', START:DP_2)$ successfully identifies a matching $[A']$ -goal, namely some element within DP_2 ; here I assume a possessor, DP_{POSS} . This is then followed by $Copy(\phi)$ and $Copy(A')$, in some order; the result is successful A' -extraction of DP_{POSS} .



These probes thus do not show A-minimality. This derivation also shows that they generate Branan's Generalisation in the same way as Branan's probe did: the A' -probe is only able to apply after a ϕ -probe has successfully found a ϕ -goal (i.e. after $Match(\phi)$), hence the A' -probe can only target either a ϕ -goal or an element within one – as per BG.

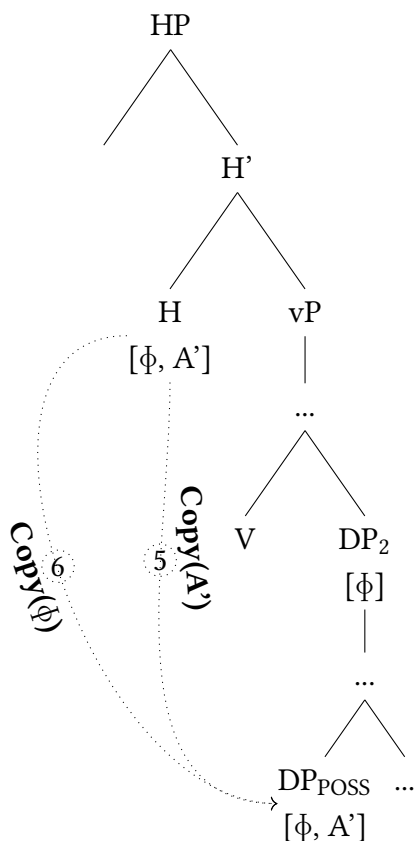
The second property which these probes capture is the difference in case/agreement properties. Recall that in the No-WCO type, LBE does not involve (overt) ϕ -agreement with the extracted element; but in the Case/agreement type, LBE does involve overt ϕ -agreement and/or Case-licensing of the extracted element *qua* possessor. I argue that this follows from the structure of the two probes.

We can see this by reconsidering the final step of the derivation in (126). $Probe(A', START:DP_2)$ has successfully identified a goal, DP_{POSS} ; this leads to $Match(A')$. This is the point where

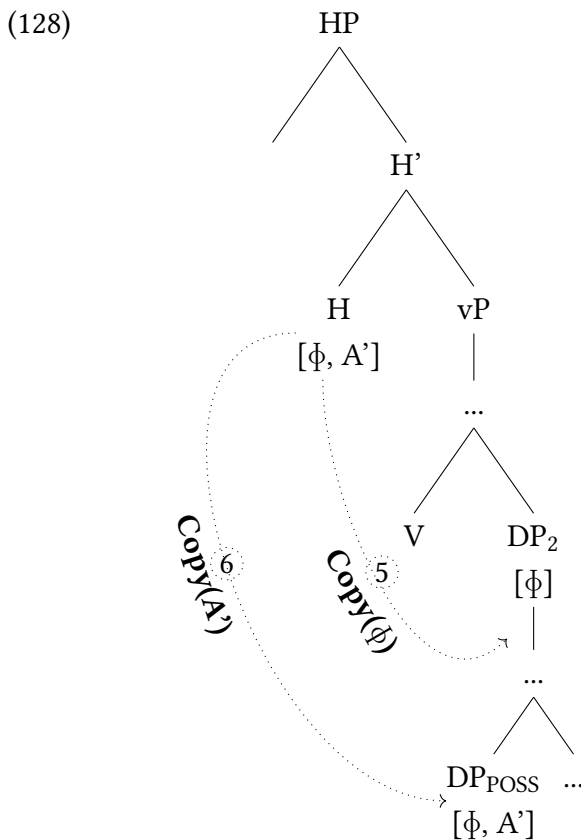
the No-WCO probe and the Case/agreement probe differ. On the Case/agreement probe, $\text{Copy}(A')$ precedes $\text{Copy}(\phi)$; on the No-WCO probe, $\text{Copy}(\phi)$ precedes $\text{Copy}(A')$. Now suppose that Agree is subject to cyclicity, in the sense that a probe cannot (or at least, disprefers to) ‘backtrack’ up the tree to some higher goal after first targeting a lower goal for a given operation; this could plausibly follow from computational efficiency, insofar as searching the same search space twice is inefficient. Indeed the assumption that Agree is cyclic in some sense is widespread (see, e.g., Rezac 2003; Béjar and Rezac 2009).

Given this assumption, we then predict a difference between the No-WCO probe and the Case/agreement probe. On the Case/agreement probe, $\text{Copy}(A')$ precedes $\text{Copy}(\phi)$, so the A' -features are first copied from the A' -goal – in the configuration above, this is DP_{POSS} . Agree will then disprefer having to ‘backtrack’ to the higher ϕ -goal (i.e. the nominal, DP_2) with which it matched earlier in the derivation. I propose therefore that, if the A' -goal also bears ϕ -features, the probe will not copy ϕ -features from the higher ϕ -goal, but instead get both its ϕ - and A' -features from the A' -goal. This still generates Branan’s Generalisation, insofar as the A' -goal was only accessible because it was embedded in a domain which first triggered $\text{Match}(\phi)$, and thus was ϕ -accessible. But it also captures the fact that in Case/agreement type mixed dependencies it is the moved element – i.e., possessor – which controls ϕ -agreement/undergoes Case-licensing. This is illustrated in (127).

(127)



On the No-WCO probe, by contrast, $\text{Copy}(\phi)$ precedes $\text{Copy}(A')$. In this case, to reach the ϕ -goal to copy it, the probe does not have to 'backtrack' in the same way³⁹ because it has not yet copied the A' -goal. One might thus conclude that the probe can copy the higher ϕ -goal; and will only therefore copy the A' -features from the A' -goal. This seems to be correct for the No-WCO type: here, we consistently find no evidence for ϕ -agreement with the moved element, and thus we would prefer to say that it is only the nominal from which it is extracted which triggers (covert) ϕ -agreement, given Branán's Generalisation. This is the derivation in (128).



I thus conclude that Branán's model of composite ('contingent') probing generates the necessary typology of probes to capture both the Mixed LBE Generalisation and Branán's Generalisation: we have three probes, corresponding to each of the three types of mixed dependencies we have seen attested above⁴⁰, and each of which guarantees Branán's

³⁹Clearly some backtracking is required, insofar as $\text{Copy}(\phi)$ is preceded by $\text{Match}(A')$, which targets the lower element DP_{POSS} . It is not the same kind of backtracking as was prohibited for the Case/agreement probe, though, because it is not the same operation which is 'backtracking': in the Case/agreement probe, it was a Copy operation which had to backtrack from another Copy operation; here, it is a Copy operation backtracking from a Match operation. If we assume that cyclicity holds here of each operation individually, not of Agree in general, we get the desired output.

⁴⁰A complication I am overlooking here is that, in §2.4.1, I claimed that a subset of external possession constructions are really Type 1 mixed dependencies because they show A-minimality. These dependencies

Generalisation. If LBE is only performed by these probes – i.e., MiLBET – we account for these generalisations.

4.3.2 Comparison with other theories

Note, Branau's is not the only model of composite probing. I now briefly justify my use of his model based on two factors.

First, Branau's model has been independently shown to capture a large range of variation in composite probing behaviour. Lohninger (2023b), for example, posits three types of composite probes – conjunctive; dependent; and independent – on the basis of an extensive cross-linguistic survey of mixed dependencies. She shows that each of these can be modelled in Branau's system; they cannot, conversely, be modelled in an interaction-and-satisfaction system (e.g. Scott 2021) or a feature hierarchy model (e.g. Coon et al. 2021), *modulo* additional assumptions.

Second, note that at least in the case of the interaction-and-satisfaction model, there is no obvious way in which to replicate the behaviour of the probes I postulated in (127). On such a model, [A']-features would have to be satisfaction conditions; hence why the probe only Agrees with a single A'-goal (*modulo* Slavic-style multiple wh-movement). Conversely $[\phi]$ has to be an interaction condition. It cannot be a satisfaction condition which is conjoined to [A'] (i.e. $[\phi \wedge A']$), because then only an A'-element which also bears $[\phi]$ could be extracted – excluding, e.g., adjectives. It cannot be a satisfaction condition in a disjunctive satisfaction probe (i.e. $[\phi \vee A']$) either, because then the A'-goal is not restricted in any way by ϕ : the A'-probe could target some A'-goal in principle which is embedded under a non- ϕ -accessible nominal, with the ϕ -probe targeting another nominal. Thus the only option, on standard assumptions, is [INT: ϕ , SAT:A']. But this makes the same incorrect prediction again. Specifically, the A'-probe can target any A'-goal in the derivation, regardless of whether it is embedded by a ϕ -accessible nominal – i.e. one which meets the interaction condition – or not. This does not derive Branau's Generalisation. Absent additional theoretical assumptions, then, the interaction-and-satisfaction model cannot derive Branau's Generalisation. This justifies my adoption of Branau's model: this can capture BG without any additional theoretical assumptions.

require a probe which shows A-minimality – i.e., in my system, in which Copy(ϕ) precedes Match(A') – and in which the moved element controls ϕ -Agree – i.e., Copy(ϕ) follows Copy(A'). This is not possible. I do not resolve this here, but I do note that in various of the languages of this type the 'A-minimality' restriction is in fact stronger than just A-minimality: thus Choctaw, Chickasaw, Malagasy and Tz'utujil all show at least a preference for external possession involving specifically intransitive subjects; and West Flemish only allows it from subjects in embedded clauses. This may suggest that the A-minimality effect should not be derived the same way as for the other A-minimal LBE examples – though I leave an alternative account for these languages to future work.

4.4 Desiderata in review

Consider again the desiderata, (120), from the start of this chapter. I have sketched a theory which meets the former two: it explains the Mixed LBE Generalisation and Branán's Generalisation, provided we assume that LBE always involves a specific kind of composite probe. Note that I have not applied the probes to specific languages, given space limitations. At least one complication in this respect is that, in accusative-alignment languages, we know the LBE-permitting probe must be below the first-Merge site of the external argument; this is how Branán explains their apparent violation of BG in allowing for LBE from accusatives which cannot control ϕ -agreement. This would entail that, e.g., No-WCO wh-movement and scrambling in Slavic and Hungarian, i.a., must first be motivated by a probe on, say, v^0 . I do not motivate this here; but note that there is prior work arguing that wh-movement in at least some of these languages (e.g. Woods 2012 on Czech) is mediated by 'scrambling' to the edge of vP.

The third desideratum, explaining where the variation in mixed properties comes from, was only partly tackled. The three types of probes I proposed explain two main points of variation: A-minimality vs. non-A-minimality; and among the non-A-minimal probes, whether the ϕ -probe Agrees with the left-branch element or with the nominal in which it is embedded. However, this leaves various other properties unexplained. For one, it doesn't explain why No-WCO LBE – and indeed some examples that I categorised as A-minimal LBE (see §2.3.3) – does not show weak crossover effects. Van Urk (2015) proposes that the absence of WCO effects follows from movement being triggered (at least in part) by a ϕ -probe; this is ultimately because ϕ -probes, *ex hypothesi*, are interpreted at LF as abstracting over individuals, whereas A'-features are interpreted as abstracting over choice functions. However, in No-WCO LBE, I have proposed that only the A'-probe targets the moved element; thus the lack of WCO effects is not expected on van Urk's account. My proposal also doesn't explain the variation in the ability to reconstruct or the ability to license parasitic gaps.

I will not resolve this here. However, I will make two points. First, this problem is hardly unique to the theory of composite probing sketched here. Even where theories of composite probing which are designed to capture variation have been proposed, like Lohninger's (2023b), they are still much too coarse-grained. Lohninger's theory involves three composite probes, which differ along two points of variation: A-minimality; and whether they can target two goals. These probes do not account for variation in the presence of weak crossover effects or the availability of reconstruction or parasitic gap licensing, much as my theory does not. One can make similar observations about interaction-and-satisfaction (e.g. Scott's 2021 model only predicts variation in A-minimality).

Second, the evidence of this thesis arguably has implications for how we should think of variation in mixed dependencies more generally. Although there are gaps in the data, it is clear that ‘mixed’ dependencies can vary with respect to a range of properties: we have seen variation with respect to A-minimality, weak crossover, the availability of reconstruction and the availability of parasitic gap licensing. Moreover, this variation does not pattern systematically: the different properties seem to vary more-or-less independently. In principle this yields a very large typology of ‘mixed’ dependencies. This leaves us with two options. Firstly, we can seek to account for this full range of variation in the syntax, by postulating (e.g.) a unique probe structure for each such type. This is clearly undesirable. It is unclear how fine-grained variation in composite probes could be acquired, insofar as their cues are unlikely to be frequent in the input, especially cues – such as weak crossover or parasitic gap licensing – which could differentiate the various types of probes we would have to postulate (see §6.1.2). And insofar as it is not acquired, we would have to resort to postulating innateness – which is independently undesirable on evolutionary grounds (e.g. Chomsky 2005). This leaves the second option: at least a subset of this variation between composite probes is not encoded by the probing architecture. They could either follow from other syntactic factors – for example, a finer-grained view of the featural distinction between ϕ - and A' -features – or from factors which are altogether non-syntactic. I do not offer a solution to this; but I take it to be a promising direction for future work. I also take it as partial justification for the explanatory debt inherent in the theory I have sketched above, insofar as the unaccounted-for variation may not reside in syntax at all.

Chapter 5

Deeper questions:

Phasehood-as- ϕ -intervention

This final chapter is the most speculative. Recall that the proposal I have sketched above for accounting for the two generalisations relied on a crucial assumption: that LBE should always be performed by (a type of) composite probes. I argued that this followed from the Mixed LBE Generalisation. In this chapter, I address the deeper theoretical question which arises from this: *why* is LBE always performed by composite probes?

I sketch a potential answer to this. This relies on supplementing a recent theory of locality, Thivierge's (2021) phasehood-as- ϕ -intervention, with one nonstandard – but, I argue, not wholly unprecedented – theoretical assumption: that ϕ -features can act as interveners for A'-probes in at least some contexts.

In §5.1-§5.2, I outline how this proposal is able to explain why the Mixed LBE Thesis holds; in §5.3 I then consider in more detail the implications of the assumption that ϕ can intervene for A', offering some speculative proposals for how to reconcile this with the standard theory.

5.1 Phasehood-as- ϕ -intervention

Phasehood-as- ϕ -intervention (Thivierge 2021) can be understood as a research programme which takes phenomena traditionally explained by postulating that a given head is 'phasal' and attempts to reduce it instead to the fact that the head bears ϕ -features, and thus is a ϕ -intervener. This has been used to analyse various locality effects (Thivierge 2021): e.g. agreement restrictions in Georgian vP; movement restrictions in Tagalog CP (Rackowski and Richards 2005), Dinka CP, vP (van Urk 2015; van Urk and Richards 2015) and Zulu CP (Halpert 2019), among others.

These proposals work as follows. A given putative ‘phase’-head bears ϕ -features; consequently, it intervenes for Agree relations between a higher probe and any potential goals which are lower than that head. The intervened-for Agree relation is typically ϕ -Agree; but it is also assumed at least implicitly in some prior work (e.g. Rackowski and Richards 2005) that a ϕ -bearer can intervene for Agree with A’-features too. It is then assumed that the intervened-for Agree relation can be rendered possible iff the ϕ -intervener is ‘removed’ by first Agreeing with it. This is possible because of the Principle of Minimal Compliance (PMC), (129). (Note that the PMC is independently motivated by, e.g., Richards 1997; Preminger 2019; Huang 2022.)

(129) **Principle of Minimal Compliance** (van Urk and Richards 2015: 142; see also Richards 1997)

Once a probe P Agrees with a goal G, P can ignore G for the rest of the derivation.

Given the PMC, ϕ -Agreeing with the ϕ -intervener allows it to be ignored for subsequent probing by the same probe; the probe can therefore target elements below the ϕ -intervener.

Prior work on phasehood-as- ϕ -intervention has focused primarily on vP and CP. I propose to extend the program to the nominal, i.e. DP. The main motivation is that phasehood-as- ϕ -intervention can provide an account of Branan’s Generalisation, as shown below. There are other motivations too, however. For one, the evidence for a phase-head in the nominal extended projection is less robust than other phases like CP. For example, van Urk (2020) found that, of a set of phasehood diagnostics attested in CP and vP, DP lacked evidence for extraction marking effects (i.e. morphological variation conditioned by the presence/absence of extraction), intermediate copy stranding, spell-out of multiple copies and agreement marking parasitic on extraction. This is reflected in various non-standard treatments of a nominal ‘phase’, such as treating DPs as phases with respect to only one interface (PF; Matushansky), or as phases which disallow any subextraction (e.g. Bosque and Gallego 2014, a.o.). It is thus an advantage of a phasehood-as- ϕ -intervention approach that it does not require invoking DP phasehood, naturally explaining discrepancies of this sort. Instead phasehood-as- ϕ -intervention relies only on the assumption that the highest projection in the nominal extended projection – *ex hypothesi*, D^0 – bears ϕ -features; this is standard (e.g., Danon 2011).

5.2 How phasehood-as- ϕ -intervention can explain MiLBET

Now, consider how phasehood-as- ϕ -intervention can derive the Mixed LBE Thesis. Recall that I have already shown that the Mixed LBE Thesis in turn derives both the Mixed LBE Generalisation and Branan's Generalisation; thus, insofar as phasehood-as- ϕ -intervention derives MiLBET, it also derives MiLBEG and BG. This requires the following three assumptions, (130).

(130) **Assumptions which derive the Mixed LBE Thesis**

- a. LBE involves an A'-probe which targets elements which are asymmetrically c-commanded by the highest head in the nominal extended projection (for simplicity, D^0).
- b. D^0 bears ϕ -features.
- c. In at least some contexts, ϕ -features intervene for probing A'-features.

Assumptions (130a) and (130b) are standard; (130c) is not. Note that it has some precedent. Previous work on 'unlocking' effects like Rackowski and Richards (2005) also assume (implicitly) that ϕ -features must be able to block A'-dependencies, as above. Baier (2018) also proposes independently on the basis of anti-agreement phenomena that A'-features and ϕ -features must form a featural natural-class (dominated by [F]).

Given these assumptions, D^0 must intervene for LBE. The only way that LBE can work, therefore, is if the ϕ -intervening D^0 is 'removed' via ϕ -Agree, consistent with the Principle of Minimal Compliance. Now recall that the PMC stated that Agreeing with a goal allows that goal to be ignored by *that same probe* only. This leads to the following conclusion: for LBE to be possible, the A'-feature which triggers LBE and the ϕ -feature which 'unlocks' D^0 must be on the same probe. If we understand the contingent [ϕ, A'] probes above as representing a single 'probe' in the relevant sense, then this naturally derives the fact that all LBE-permitting languages perform their LBE via a contingent probe. Only then are the ϕ - and A'-features on the same probe, permitting A'-extraction from across a ϕ -intervener (D^0).

This in turn derives Branan's Generalisation, as above: the types of contingent probes which I have argued LBE-permitting languages exhibit all necessarily entail behaviour consistent with Branan's Generalisation, because LBE is only possible following prior ϕ -Agree with the goal from which LBE proceeds – hence, LBE only ever targets elements inside ϕ -accessible nominals.

5.3 ϕ intervening for A': some speculation

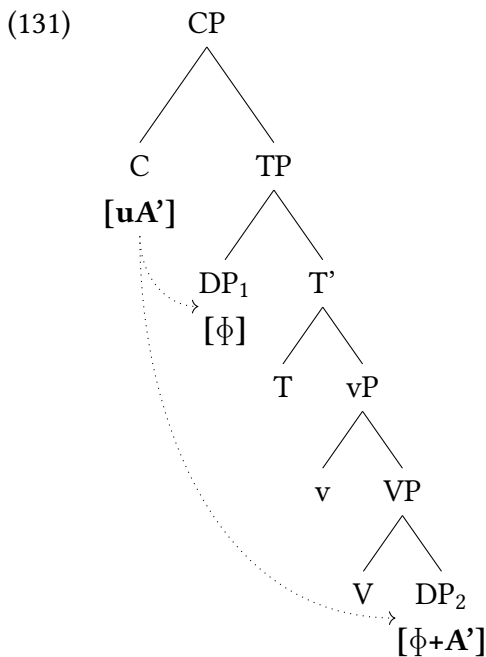
In sum, phasehood-as- ϕ -intervention yields a straightforward account of MiLBET – and by extension, BG – if we allow the assumption that ϕ -features can intervene for A'-probes in at least some contexts. This assumption is non-standard, and *prima facie* problematic in a number of respects. In this section, I argue that it is nonetheless not wholly unprecedented; and speculate regarding ways to reconcile it with standard assumptions.

First, there is a precedent for assuming that ϕ - and A'-features are at least more closely related than standardly assumed. An example of this is work on other 'unlocking' effects, i.e. phenomena whereby A'-extraction across a domain is preconditioned by the ability to ϕ -Agree with that domain. Besides the nominal domain, it has also been argued that, at least for some languages, this holds for extraction across the clausal domain (CP) and potentially across vP too: on CP-unlocking, see e.g. Rackowski and Richards (2005), Halpert (2019) and Thivierge (2021); on vP-unlocking, see e.g. van Urk and Richards (2015), Hedding and Yuan (2023), and Ershova (2024).

There are also less direct precedents. Recent work shows that ϕ - and A'-features can essentially overlap in their functions. This is reflected in much of the phenomena discussed in Chapter 2 as evidence for MiLBEG: phenomena where traditional "A'-dependencies" like wh-movement or relativisation can be triggered by probes containing ϕ -features; and, in the case of external possession, a phenomenon where a traditional "A'-dependency" – i.e. movement-to-subject – involves an A'-feature. A'-features may also be involved in nominal-licensing (e.g. Ostrove 2018 on [Topic] features licensing nominals in San Martín Peras Mixtec; van der Wal 2022 on the role of $[\delta]$ features in nominal licensing in various Bantu languages). There have also been recent proposals that A'- and ϕ -features should be related via a feature hierarchy. Baier (2018) proposes that ϕ - and A'-features form a natural class – immediately dominated by a superordinate feature [F] in a feature hierarchy – in his analysis of anti-agreement. On this basis, Thivierge (2021: 157) suggests that at least [wh] might be characterised as simply 'a kind of [ϕ]-feature'.

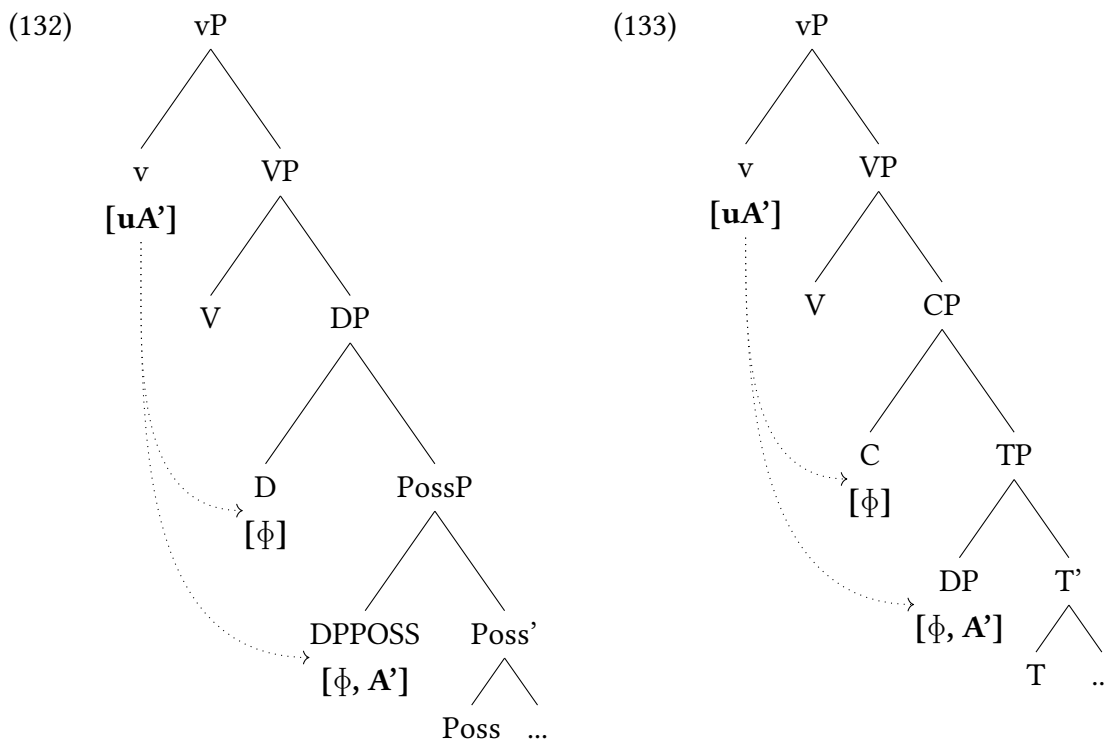
More broadly, the development of neo-emergentist approaches to featural acquisition, especially Biberauer's (2019), makes the possibility that ϕ - and A'-features are more closely related than standardly assumed considerably more feasible. On the traditional picture where formal features are innately encoded in Universal Grammar, a ϕ /A' dichotomy is unavoidable. However, insofar as features are emergent on the acquisition process, as on Biberauer's (2019) Maximise Minimal Means model, there is no *a priori* reason to preclude that speakers could construct grammars where the ϕ /A' dichotomy is not realised, or not realised in full. This is speculative but important, because it provides a theoretical architecture in which ϕ intervening for A' is possible.

This is only a partial precedent, however; it is still not *prima facie* clear how the assumption that ϕ -features can intervene for A'-probes in some contexts can be reconciled with standard thinking. I offer some speculations about how this can be achieved. I assume that a feature F can only intervene for a feature *qua* probe G insofar as F and G are nondistinct (this follows, e.g., Chomsky 2001). ϕ and A' must be nondistinct in at least some contexts therefore. Note, they cannot be nondistinct in all contexts. There is one context particularly in which they must be distinct. This is (131). Here, we have a DP which intervenes between an A'-probe and another DP, lower in the structure and not contained within the higher DP. Here, the higher DP's ϕ -features should not intervene for A'-probing of the lower DP. If it did, then we would predict either that all types of movement – ϕ -driven and A'-driven – should only be able to target the closest ϕ -bearer, *contra fact*; or, insofar as we allow that the intervening ϕ -features can be removed under Agree and the probe can then probe a second time (e.g. Rackowski and Richards 2005), then we predict that long-distance movement should always co-occur with ϕ -Agree targeting every intervening ϕ -bearer – again, an unsubstantiated assumption.



There are two contexts in which ϕ and A' could be nondistinct, however. These are in (132) and (133). The first is the LBE situation we have been evaluating throughout this thesis: a DP intervenes between an A'-probe and an A'-goal, where the goal is dominated by the intervening DP – i.e. subextraction from DP. This is (132); I label this the 'DP-unlocking' context. The second context, (133), is the same except that the intervening element out of which we are subextracting is a CP, not a DP. This is the 'CP-unlocking' context. In both

of these contexts it has been argued that ϕ -Agree with the intervening DP/CP is always necessary for A'-extraction to proceed. We have seen the evidence for this in DP in the form of Branan's Generalisation; a similar generalisation is proposed for CP by, e.g., Thivierge (2021; and see also van Urk and Richards 2015).



Thus, both of these are plausibly contexts where ϕ -features are intervening for A'-probes, inducing ϕ -Agree to unlock them – and thus, are plausibly contexts in which ϕ and A' must be nondistinct. The speculation I offer is that these two contexts – CP-unlocking and DP-unlocking – constitute a formal natural class in some respect; and that, consequently, we can model ϕ /A' nondistinctness in these contexts as being contextually-conditioned 'conflation' of two features which are distinct elsewhere.

One respect in which these two contexts form a natural class, in opposition to the context in (130), is that in these contexts the A'-bearing element is dominated by the intervening ϕ -bearing element – i.e. DP, CP. In (130), the A'-bearing element is not dominated by the intervening ϕ -bearer. As it stands, it is difficult to motivate how a context like this could lead to a change in the properties of ϕ -features on D^0 : we would have to assume that the presence of an A'-bearing element somewhere inside a DP can affect the representation of D^0 's features.

Note that this becomes easier to operationalise on an alternative conception of locality: path-based locality. I now sketch informally how such a view could, in principle, allow

us to describe a difference between the scenarios in (131-133). This is not intended as a formal account, and the terms below are not intended to have any theoretical status. It is just intended to illustrate that there are ways to at least get the natural class (132-133) to have some formal status. Fleshing out a theory is left to future work.

On this view, a 'probe' and 'goal' are sufficiently local to each other only where there is a possible 'path' between them. In recent proposals (e.g. McFadden and Sundaresan 2019; Newman and Branagan 2022), 'paths' have been defined in terms of projecting features: there is a path between a probe A and a goal B insofar as at least one feature of B 'projects'/'percolates' up to a position local to A. Consider how this could allow us to formalise the contextually-specific ϕ -intervention effect for A'-features. In the DP-unlocking and CP-unlocking contexts, we have an A'-bearing element inside a ϕ -bearer (DP). To be visible to the probe, the A'-bearing element must, *ex hypothesi*, have its A'-feature project, to a position at least as high as the DP/CP which dominates it. This is unlike (131), where the A'-bearing element is not embedded inside a ϕ -bearer so its A'-features do not need to project (at least, do not need to project to a higher DP/CP). Now suppose that, when A'-features project to a head which bears (valued) ϕ -features, the ϕ - and A'-features are forced to undergo some kind of 'conflation'⁴¹. As a consequence, when an A'-probe seeks to target an element inside of a DP/CP, the ϕ -features on the DP/CP act as an intervener: they have undergone conflation, such that the A'- and ϕ -features have become nondistinct on D^0/C^0 , and thus as far as the probe is concerned it is an intervener. Consequently, the only way to get past D^0/C^0 and target the embedded A'-goal is to first ϕ -Agree with it, removing it as an intervener by the Principle of Minimal Compliance – and, as we have seen, the only way to do this is with a composite probe.

This system would derive the effect of ϕ -intervening for A'-features. This is clearly highly speculative; I do not provide any detailed motivation for the assumption that ϕ/A' should be conflated whenever A'-features project to a (valued) ϕ -feature-bearing element, for example. The important insight is that such a system provides a way of operationalising a difference between the contexts in (132) and (133) versus the context in (131); and thus a way of deriving the ϕ -intervening-for-A' effect. I leave future work to establish how far such a system can be productively fleshed out.

⁴¹I use 'conflation' informally; it is unrelated to, e.g., Hale and Keyser's (2002) use of the term.

Chapter 6

Implications and conclusions

This final section of the thesis briefly considers two kinds of the implications of the proposals advanced here – implications for diachrony (§6.1.1) and for acquisition (§6.1.2) – before concluding.

6.1 Selected implications

6.1.1 Diachrony

The proposals in this thesis make strong predictions about diachronic change. The Mixed LBE Thesis predicts a correlation between the loss of mixed dependencies and the loss of LBE performed by that dependency: if a language at some diachronic stage- α exhibits LBE in a given type of dependency, that dependency should have mixed properties; if these mixed properties are then lost at some diachronic stage- β , LBE should also be impossible. MiLBET is also compatible with, though does not predict *stricto sensu*, a correlation between the emergence of mixed dependencies and the emergence of LBE: a language at some stage- α where it has a dependency without mixed properties should not permit LBE involving that dependency; if that dependency then acquires mixed properties at stage- β , that language then could acquire LBE involving that dependency, but not need not. This is because MiLBEG/MiLBET are one-way implications, as above.

Evaluating these predictions is not straightforward, insofar as the data necessary to diagnose the ‘mixed’ properties under discussion – especially, e.g., the presence/absence of weak crossover, reconstruction for binding conditions – is not necessarily attested in the diachronic corpus for a given language. Nonetheless, I offer two tentative case studies; I leave pursuing these and other case studies as a direction for future research.

The case studies involve the development of Latin into Modern Romance and of (European) Portuguese into Brazilian Portuguese. In the Latin case, we have the loss of LBE: Latin exhibited structures with left-branch elements discontinuous with the nominal they are semantically associated with, which has been treated as LBE (e.g. Bošković 2005a; Ledgeway 2018); Modern Romance has lost this. In light of MiLBET, we predict that the LBE-permitting dependency in Latin should thus have had mixed properties; and that the loss of LBE potentially – though not necessarily – coincided with the loss of these mixed properties. Suggestive evidence for this is in Ledgeway’s (2018) argument that the loss of LBE correlated not with the emergence of articles/DP, *pace* prior work (e.g. Bošković 2005a), but with the loss of scrambling; Ledgeway takes as a proxy for this the loss of variation between head-initial (i.e. SVO) and head-final (i.e. SOV) orders, in favour of rigidified head-initial order. This could be consonant with the Mixed LBE Thesis insofar as two assumptions are borne out: (i) Latin scrambling had mixed properties – this is difficult to assess from the corpus data, but certainly not implausible; and (ii) LBE could be performed by scrambling – an assumption which has been made elsewhere (e.g. by Ledgeway). Insofar as this holds, MiLBET predicts this diachronic development directly: loss of scrambling, *qua* mixed movement, should yield loss of LBE insofar as there is no longer a mixed dependency available to perform it.

The other potential example involves Brazilian Portuguese. As above, Brazilian Portuguese exhibits a type of movement-derived external possession construction (with nominative possessors); I proposed that this is possible because Brazilian Portuguese movement-to-subject has mixed properties, including A’-properties such as a topicality restriction. Notably European Portuguese does not have this type of external possession construction (Rodrigues 2023). Suggestive evidence for MiLBET would be if the emergence of this construction in Brazilian Portuguese correlated with the development of some mixed dependency which is absent in the European Portuguese varieties from which it developed diachronically. In this vein two developments are potentially relevant: the emergence of hyperraising and the emergence of ‘topic-prominence’, i.e. the topicality restriction on subjects. Both of these phenomena have been treated as indicating composite probing behaviour in prior literature, as discussed above. Both are also phenomena which have emerged in Brazilian Portuguese and not European Portuguese. Insofar as this correlates with the emergence of external possession, we thus have a potential additional diachronic case study providing suggestive corroboration for MiLBET.

As above, more detailed investigation of the diachronic predictions of MiLBET is left to future work. The important point is that it does make clear, in principle verifiable predictions.

6.1.2 Acquisition

Finally, consider the acquisitional implications. The conclusions I have reached in this thesis pose several problems for theories of acquisition.

The first problem is how learners can acquire the composite probes I have postulated. To explain MiLBEG and BG, I have proposed that LBE is always performed by a composite probe, and particularly the three types of composite probes discussed in §4.3. Insofar as these probes cannot be innate, learners must be able to postulate them in the course of acquisition. This raises an issue, though. The types of evidence which I have used to justify postulating composite probes – such as the presence/absence of weak crossover effects, A-minimality effects, reconstruction for binding principles, parasitic gap licensing – are highly unlikely to be sufficiently frequent in the primary linguistic data for learners to reliably use them to diagnose a composite probe (Pearl and Sprouse 2013). They must rely on some other type of evidence to postulate composite probes, therefore. It is presently unclear what kind of evidence this could be. I leave resolving this to future work.

A second, broader problem is to determine why learners only ever postulate grammars of this type: that is, not only must they acquire the composite probes I have postulated, they must also be subject to constraints in such a way that they never postulate grammars which use other types of probes to perform LBE – else, we can no longer explain MiLBEG and BG, *ex hypothesi*. This ultimately reduces to the challenge discussed in Chapter 5.

It is worth noting two caveats. First, insofar as MiLBEG and BG are empirical facts – as I and Branagan have argued – then clearly something must explain why learners acquire grammars which obey them. That is, this is a genuine explanandum on any theory of acquisition. Second, this problem holds independent of the formal analysis in terms of composite probes that I have proposed. MiLBEG tells us that LBE dependencies always show mixed properties; thus, even if we do not formalise this as the acquisition of composite probes *per se*, or as the acquisition of the specific type of composite probes I have postulated, something still has to explain why learners acquire grammars where LBE dependencies are always mixed. I leave resolving this to future work.

6.2 Conclusions

To conclude, this thesis makes four main contributions to the model of left-branch extraction in minimalist syntax. The first contribution is the proposal of a new empirical generalisation, the **Mixed LBE Generalisation** (MiLBEG), (134).

(134) **Mixed LBE Generalisation**

If a movement dependency can extract a left-branch element in a given language [including both traditional ‘LBE’ and traditional ‘external possession’], it will show ‘mixed’ A/A’-properties in that language.

This was motivated by a survey of LBE-permitting dependencies in a genetically diverse thirty-five language sample. In each case it was argued that the availability of LBE with a given dependency correlated with that dependency showing a mix of properties of A- and A’-dependencies. In particular, the sampled languages were shown to instantiate three ‘mixed’ profiles, defined in each case by an A-property which they exhibit in addition to some set of A’-properties: the A-minimality type, No-WCO type and Case/agreement type. The evidence presented also included novel fieldwork on a number of languages of the No-WCO type, illustrating – contra prior work – that long-distance scrambling in some of these languages is mediated by an intermediate step of ‘mixed’ movement; and that the presence/absence of this evidence correlates systematically with the (un)availability of long-distance scrambling-LBE, including in inter-speaker variation.

An additional contribution is that external possession, which has traditionally been treated as pure “A-movement” of a left-branch element, may be unified with LBE (i.e. traditional “A’-movement” of left-branch elements): both types of movement are in fact mixed. This includes both languages for which external possession had previously been noted to show unexpected A’-properties (Deal’s 2017 ‘Type-B’) but also languages for which it has been treated as a canonical A-dependency (Deal’s ‘Type-A’).

The second main contribution is the demonstration that a different cross-linguistic generalisation on LBE, **Branan’s (2018) Generalisation**, (135), is not properly accounted for by any extant work on LBE. This includes both the standard phase-based theory, but also alternatives which have explicitly grappled with BG such as Davis and Branan’s (2019) Cyclic Linearisation account and Branan’s (2022) contingent probing account. The former is at least conceptually undermined by the notion, encoded in BG, that the transparency of a domain can be contingent on its accessibility to ϕ -Agree – and at worst, formally incompatible with it. The latter proposals provide a means of formulating this but do so in a manner which is empirically inadequate and reliant on stipulation.

(135) **Branan’s Generalisation** (adapted from Branan 2018: 410)

Extraction of nonarguments from DP [where I take LBE to be a sub-case of this; JM] cannot take place from a phrase that is not targeted for (ϕ -)Agree.

This leads to the thesis' third contribution: both the Mixed LBE Generalisation and Branán's Generalisation can be explained on the basis of a theoretical assumption which I term the Mixed LBE Thesis, (136).

(136) **Mixed LBE Thesis**

LBE is always performed by *some type* of composite probe, and this explains Branán's Generalisation.

MiLBEG follows from the Mixed LBE Thesis on the basis that, following a large body of other recent work (e.g. van Urk 2015; Chen 2023a, 2024; Lohninger 2023b), dependencies with mixed A/A'-properties can be modelled by probes in which ϕ - and A'-features interact. Branán's Generalisation also follows, insofar as we postulate composite probes on which the availability of the A'-probe targeting a left-branch element is contingent on the ability to ϕ -Agree with the nominal it extracts from. I argued that this was possible on the basis of an expansion of a model of composite probing proposed by Branán (2022). Specifically, Branán's model allows for three types of probes which can capture the mixed nature of LBE, and which ensure Branán's Generalisation: one of these is the A-minimal LBE probe previously postulated by Branán; the other two are non-A-minimal, and used to model No-WCO LBE and Case/agreement LBE, respectively. These probes are repeated in (137).

(137) **Types of LBE-permitting probes**

a. **A-minimal LBE probe**

Probe(ϕ ,START:H) \rightarrow Match(ϕ) \rightarrow Copy(Goal- $[\phi]$) \rightarrow Probe(A',START:Goal)
 \rightarrow Match(A') \rightarrow Copy(Goal-[A'])

b. **No-WCO LBE probe**

Probe(ϕ ,START:H) \rightarrow Match(ϕ) \rightarrow Probe(A',START:Goal) \rightarrow Match(A') \rightarrow Copy(Goal- $[\phi]$)
 \rightarrow Copy(Goal-[A'])

c. **Case/agreement LBE probe**

Probe(ϕ ,START:H) \rightarrow Match(ϕ) \rightarrow Probe(A',START:Goal) \rightarrow Match(A') \rightarrow Copy(Goal- $[\phi]$)
 \rightarrow Copy(Goal-[A'])

I show that this variation is independently predicted by the architecture sketched by Branán, *modulo* additional assumptions.

This model raised a further question, however: why LBE should always be performed by composite probes at all – i.e. why the Mixed LBE Thesis should hold. This led to the fourth and most speculative contribution of the thesis. Specifically, I suggested that this fact could in turn be explained on the basis of two assumptions: (i) a phasehood-as- ϕ -intervention model of syntax, on which putative 'phasehood' effects arise from ϕ -features

on putative ‘phase’-heads, which may be removed as interveners only by ϕ -Agree, in line with the Principle of Minimal Compliance; and (ii) the assumption that ϕ -features can, in at least some contexts, intervene for A’-features. I then offered some tentative directions for reconciling the latter assumption with the standard theory of syntax, leaving this largely to future research.

This work leaves numerous avenues for future research. Expanding the database on which the Mixed LBE Generalisation is based is essential, in order to determine how far this is indeed a universal. Determining the precise sets of mixed profiles which LBE-permitting dependencies show is also important: insofar as these can be categorised into a finite set of profiles, as suggested above, this may tell us something about the constraints on types of ‘mixed’ dependencies, and consequently about the nature of the composite probes which generate them. Note too that this thesis has argued for the mixed nature of LBE-permitting dependencies based on their behaviour *outside of LBE contexts*. It is as such in principle unclear if LBE itself shows mixed behaviour (though the assumption, on Ockhamian grounds, might be taken to be that it should). This would have significant ramifications for the analysis proposed in Chapters 4 and 5, insofar as whether or not LBE-dependencies show mixed properties has ramifications for whether the probe which actually triggers movement of the left-branch element must be mixed.

It is also clear that several of the theoretical points presented here are partly unresolved. A particularly important one is that this thesis has dealt only with one subtype of subextraction from nominals, LBE; it has not dealt with subextraction of complements of nominals, which does not appear to show the same properties, such as Branan’s Generalisation (Branan 2018). The theory proposed in Chapters 4 and 5 in principle requires composite probes for *any* type of nominal subextraction. Carving out a complement exception - insofar as this is necessary on empirical grounds - is a task for future work.

Another question is how the different types of mixed profiles can be made to follow from variation in the structure of the composite probes. This is a more general problem for work on composite probing: the current typology of composite probing is too coarse-grained, insofar as it can only generate a small set of loci of variation between types of mixed dependencies (see, e.g., Lohninger, 2023a). Insofar as variation in mixed dependencies is traced to the syntax of the probes, this suggests we need a more fine-grained model. One might assume alternatively that the variation follows from a non-syntactic source; this is clearly a subject for future research. Another particularly pressing theoretical concern is to flesh out the notion that ϕ -features intervene for A’-features. Insofar as this offers a route toward explaining unlocking phenomena more generally, it is in principle a profitable path for future study.

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The important point, however, is that insofar as the Mixed LBE Generalisation and Branen's Generalisation do hold, they must be explananda on any theory of syntax. This thesis has demonstrated that this is not something which the current theory achieves; and has such sketched an alternative architecture which can achieve it, though with its own flaws. Future work should seek to accommodate these explananda – either by expanding the proposals here, or by constructing alternatives.

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