



universität
wien

MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

„Approaches to optional case marking“

verfasst von / submitted by

James Gray, BA

angestrebter akademischer Grad / in partial fulfilment of the requirements for the degree of

Master of Arts (MA)

Wien, 2018 / Vienna, 2018

Studienkennzahl lt. Studienblatt/
degree programme code as it appears on
the student record sheet:

A 066 867

Studienrichtung lt. Studienblatt/
degree programme as it appears on the
student record sheet:

Masterstudium Allgemeine Linguistik:
Grammatiktheorie und Kognitive
Sprachwissenschaft

Betreut von / Supervisor:

Univ.-Prof. Dr. Daniel Buring

Contents

Acknowledgements	v
Abstract	vii
Zusammenfassung	ix
Abbreviations	xi
1 Introduction	1
1.1 Theoretical assumptions	2
1.1.1 Case	3
1.1.2 Morphology on the PF branch	7
1.1.3 Information Structure	8
2 Optional case marking	11
2.1 The phenomenon cross-linguistically	11
2.2 Case studies	15
2.2.1 Gurindji Kriol	15
2.2.2 Jaminjung	20
2.2.3 Kuuk Thaayorre	22
2.2.4 Ma Manda	23
2.2.5 Nungon	25
2.3 Summary	26
3 Differential marking systems	29
3.1 Uniform inconsistency - DOM/DSM	30
3.2 Approaches to differential marking	32
3.2.1 Appeal to functional considerations	32
3.2.2 Aissen's (1999; 2003) OT approach	34
3.3 Minimalist approaches	39
3.3.1 Syntactic accounts	41
3.3.2 Morphological accounts	48
3.3.3 Anywhere down the line	53
3.3.4 Discussion	56

3.4	Returning to case studies	58
4	The role of Information Structure	65
4.1	Information structure and core cases	67
4.1.1	IS and subject cases	67
4.1.2	IS and DOM	70
4.1.3	IS in multi-dimensional marking	74
4.2	Diachronic connections	76
4.3	Implementing IS into conditions on DOM/DSM	80
4.3.1	Conclusions and discussion	82
5	Deriving optionality	87
5.1	Variation and optionality of exponence	88
5.1.1	Probability and stochasticity in grammar	89
5.1.2	Variable rule application	91
5.1.3	Combinatorial variability	93
5.2	A threshold function for variable output	97
5.2.1	Benefits of such an approach	102
5.2.2	Similar analyses	105
5.2.3	Integrating a threshold	106
5.2.4	Some open questions	108
6	Conclusions	111
	References	115

Acknowledgements

I was very lucky to have received a lot of help and support writing this thesis. Firstly I'd like to thank my supervisor Daniel Buring, for his sharp eye, and for comments and discussion which greatly helped improve many aspects of this thesis.

Both Susi Wurmbrand and András Bárány were especially generous with their time in discussing various aspects of this thesis with me at various stages. Enrico Flor was an enormous help with getting me on my L^AT_EX feet. Many other people were very helpful with comments, clarifications, discussion, literature recommendations, and encouragement, particularly (alphabetically) Barry Alpher, Muriel Assmann, Kübra Atasoy-Özoğlu, Emily Clem, Flóra Lili Donáti, Enrico Flor, Katie Fraser, Nina Haslinger, Isabella Jordanoska, Dalina Kallulli, Felicity Meakins, David Nash, Martin Prinzhorn, Max Prüller, Marcin Wągiel, Jenneke van der Wal, and Stanislao Zompì. However it goes of course without saying that I alone am responsible for any and all mistakes or mischaracterisations. Thanks also more generally to all at the linguistics department in Vienna for making it such a nice and interesting place to be these last few years.

Away from the linguistic side I'd also like to take the chance to thank the extended Blazek family for taking me in as part of your family from the very beginning. *Danke für alles!* I am so grateful to have Maggie by my side, for all of your love, and for making sure I forget about linguistics sometimes too.

Finally I'd like to express my gratitude to my family at home: particularly my parents Mark and Helen, and brother Hugh. Without your incredible and continuing love and support my life would look very different.

Thank you!

Abstract

This thesis investigates issues surrounding the apparent optionality of ergative/nominative case markers as described in the literature, in particular in relation to a number of languages of Australia and Papua New Guinea. Although described as optional, these markers display several unexpected characteristics. The most salient of these is the fact that the actual frequency of occurrence of case morphology correlates with a number of morpho-syntactic, semantic, pragmatic, and information structural features. The distribution of case marking therefore seems to track these features. Although this phenomenon has been quite thoroughly described in many languages over the last decade or so, there is very little work investigating it from a generative perspective. Following a description of the phenomenon and several short case studies, this thesis explores a range of issues encountered when attempting to integrate the phenomenon into a current understanding of case marking in Minimalism. These include the relation of optional case marking to differential and split case marking systems, and whether analyses of these phenomena are applicable to optional case marking; what role information structure plays in determining the distribution of case and the likely nature of this involvement; and finally, how optionality itself can be derived in a theory of grammar which does not assume that probability or stochasticity are built into the grammar.

I argue here that it is a reasonable assumption that the distribution of case marking in these languages is determined by the grammar itself, and that a post-syntactic morphology is likely the locus of the marking alternation. In regards to the problem of optionality, I suggest there are several ways that a discrete system can produce variable output, and describe such a system based on the integration of a threshold. Although still in early stages, I argue that such a system captures many characteristics of optional case marking which are otherwise difficult or cumbersome to account for.

Key words: *optional case marking, ergativity, morpho-syntax, information structure, optionality*

Zusammenfassung

Diese Arbeit untersucht Aspekte der Optionalität ergativen und nominativen Kasusmarkierungen, wie in diversen Sprachen, unter anderem in Australien und Papua Neu Guinea beschrieben sind. Diese Kasusmarkierungen sind als optional beschrieben, weisen aber dafür etliche unerwartete Eigenschaften auf. Insbesondere, dass die Wahrscheinlichkeit des Vorhandenseins des Kasus mit bestimmten morpho-syntaktischen, semantischen, pragmatischen, und informationsstrukturellen Merkmalen zusammenhängt. Obwohl über dieses Phänomen vor allem im letzten Jahrzehnt relativ viel geforscht wurde, gibt es immer noch wenig Forschung aus einer generativen Sicht. Daher beschäftigt sich diese Arbeit vor allem mit Aspekten optionaler Kasusmarkierung, die schwierig in ein theoretisches Framework wie Minimalismus zu integrieren scheinen. Nach einem Überblick, zusammen mit einigen näheren Kurzbeschreibungen einzelner Sprachen, wird optionale Kasusmarkierung mit differenziellen Kasusmarkierung und Split-Ergativität verglichen. Ob diese Kasussysteme als passende Basis für Vergleiche sind wird diskutiert. Weiterhin wird untersucht wie Informationsstruktur mit Kasus zusammenspielt, und wie diese Wirkung auf Morphologie dargestellt werden sollte. Schließlich wird das Problem der Optionalität untersucht; sowohl probabilistische und stochastische syntaktische Herangehensweisen werden diskutiert, als auch die Frage, wie ein Model der Grammatik scheinbare Optionalität ohne probabilistisches/stochastisches Mittel erzeugen könnte.

In dieser Arbeit wird behauptet, dass es eine plausible Annahme ist, dieses Phänomen als Output des Grammatiksystems zu verstehen, und dass es mit Wahrscheinlichkeit in einer postsyntaktischen Morphologie zu lokalisieren ist. Bezüglich des Problems der Optionalität wird argumentiert, dass ein diskretes System scheinbare Optionalität auf verschiedenen Weisen erzeugen kann. In diesem Zusammenhang wird solch ein System vorgeschlagen und beschrieben. Obwohl diese Analyse sich noch in der Frühphase befindet, erfasst sie einige Aspekte von optionaler Kasusmarkierung, die in vielen anderen Analysen besonders schwierig zu erfassen sind.

Schlagwörter: *Optionale Kasusmarkierung, Ergativität, Morphosyntax, Informationsstruktur, Optionalität*

Abbreviations

φ	Person, number, gender features	DSM	Differential Subject Marking
1	First person	DU	Dual
2	Second person	ERG	Ergative case
3	Third person	FOC	Focus
A	Transitive subject	FUT	Future tense
ABS	Absolutive case	GB	Lectures in Government and Binding
ACC	Accusative case	GK	Gurindji Kriol
ADJ	Adjective	HG	Harmonic Grammar
ALL	Allative case	IMNT	Imminent aspect
COLL	Collective	IMPERF	Imperfective tense
CONT	Continuative	INC	Inclusive
D&N	Dalrymple and Nikolaeva (2011)	INCL	Inclusive
DAT	Dative case	INSTR	Instrumental case
DEP	Dependent verb	IS	Information Structure
DM	Distributed Morphology	LF	Logical Form
DO	Direct object	LFG	Lexical Functional Grammar
DOM	Differential Object Marking	LOC	Locative
DS	Different Subject	LV	Light verb
		MASC	Masculine
		MOD	Modal

MP	The Minimalist Program	PP	Present progressive
MV	Medial verb form	PRES	Present tense
NC	Noun class	PRO	(Null) personal pronoun
NEG	Negation	PROB	Probable
NFUT	Non-future tense	PROG	Progressive
NML	Nominaliser	PROP	Propriative
NMZ	Nominaliser	PROX	Proximal Demonstrative
NOM	Nominative case	PRS	Present tense
NPST	Non-past tense	PRT	Particle
NSG	Non-singular	PST	Past tense
O	Transitive object	REDUP	Reduplication
OBJ	Object	REL	Relativiser
OBL	Oblique	REP	Reported
OCM	Optional case marking	RP	Remote past tense
OEM	Optional ergative marking	S	Intransitive subject
OT	Optimality Theory	S	Subject
P.PFV	Past perfective tense/aspect	SG	Singular
PF	Phonological Form	StOT	Stochastic Optimality Theory
PL	Plural	TOP	Topic
PN	Proper name	TR	Transitive
POSS	Possessive		

Chapter 1

Introduction

It is well known that languages often exhibit a degree of optionality in certain parts of their grammar. English for example shows optionality in whether the complementiser *that* is overt or not:

(1.1) I know (that) you left town this morning.

The existence of optionality in language presents somewhat of a puzzle when viewed through a generative framework such as the Minimalist Programme (Chomsky 1995 *et seq.*), an approach to the architecture of language in which grammatical processes are in theory strictly regulated- if the conditions are met for a process to take place, then it must take place; if conditions are not met, then not. Much explanatory power is usually therefore delegated to the presence of certain grammatical features, which regulate various linguistic processes such as movement, or agreement. A tension of economy, by which a process must happen if conditions are met, and cannot happen if conditions are not met, is difficult to reconcile with cases of apparent optionality, where it does not seem to matter whether a process is undergone or not. This difficulty is present across all domains of grammar where optionality exists.

This thesis investigates the phenomenon of optionality in case marking, in particular optional ergativity, and considers the problems of integrating the phenomenon into a formalised theory of grammar. Optional ergative marking has garnered increasing interest in more functional/typological literature over the last decade or so (see particularly e.g. McGregor 2010), however there has been very little work considering it from a generative perspective. What is striking in languages with optional ergativity is that certain grammatical features correlate to different degrees with the presence/absence of case morphology. These frequency effects prevent us from describing the presence/absence of case marking in terms of free variation, as simply labelling a case marker as [optional] does not make reference to the actual distribution of the marker. Even in the realm of morphology, where one could imagine cases of free variation between two distinct morphological forms (e.g. as

briefly discussed in Bonet and Harbour 2012), there is no obvious way of linking the presence of particular features with the effect they have on the likelihood of occurrence. Whether this distribution is in part determined by the rules of the grammar itself is therefore a main question- I will argue here that there are reasons to think that it may be.

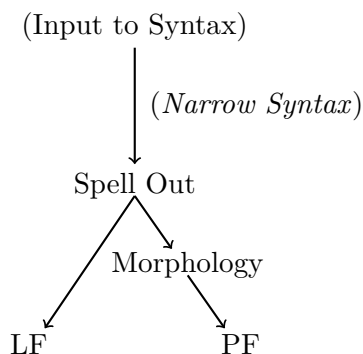
Optionality is only a problem insofar as it is difficult to model in a specific grammatical framework. Often the problem is sidestepped, e.g: "[w]e leave open the questions of whether there is true optionality within the grammar of an individual speaker and of what the formal treatment of optionality should be" (Halle and Marantz 1993: 126); or is just assumed to be part of the grammar without discussion. By approaching such optionality through the lens of a particular framework, a major question that arises is where the locus of the (apparent) optionality is- whether it is built into the grammatical system itself, or whether it is a result of grammar-external factors. In this case it is also important to note that although optionality of case markers may sometimes be seen as a general trend signalling long-term diachronic change, the focus here is strictly synchronic; as the learner receives linguistic input that signals optionality of a marker, we may ask: what is the representation of optional ergative marking in the mind of a speaker; where is this information encoded; how is it encoded; how could we tell? These are overarching questions in this discussion.

The rest of this chapter briefly sketches the theoretical background assumed in the following discussion. The rest of the thesis continues as follows: Chapter 2 provides the empirical basis for the discussion, comparing the distribution of optional ergative/nominative cases in several languages; Chapter 3 links the phenomenon to differential and split case marking systems, which bear many similarities to optional marking, and which have received much more attention from a generative perspective; Chapter 4 argues that the information structural notions discussed in earlier chapters should be considered as grammar-internal features for the purpose of case marking, and are not restricted to cases of optional marking; Chapter 5 considers how optionality/variability can or should be derived in a minimalist framework, and ends with a modest proposal of a novel way for the grammar to derive variable output; Chapter 6 concludes.

1.1 Theoretical assumptions

As stated, I will more or less assume an approach to the architecture of language as advocated for in the Minimalist Programme (Chomsky 1995, *et seq.*). This approach to language advocates an "inverted Y" architecture of grammar:

(1.2)



According to this, syntax constructs hierarchical, binary-branching structures, which, once a certain amount of structure has been built, are (intermittently) sent to be interpreted by the interfaces LF (logical form), which is responsible for meaning, and PF (phonological form), *via* a morphological component which assigns sounds to the structure for externalisation. I assume this morphological component on the PF branch in line with the theory of Distributed Morphology (Halle and Marantz 1993). This is a theory of late insertion, in which the information and structures created by the syntactic component is assigned phonological content only after it has reached spell-out. This means that no phonological detail is available to syntax.

Most finer details are not of concern here, but there are a few areas which should be explored a little further. These include a view of case, the morphological component of the grammar, as well as a general view of the information structural notions discussed here.

1.1.1 Case

Case has proven a particularly fertile area of research for a long time in generative grammar. There are two main approaches to case assignment which are currently prominent in the literature; the first is case assignment *via* the operation Agree, and the second is known as the dependent case approach. Although they differ in many respects, both of these approaches assume that case assignment is strictly regulated by syntactic position. I will briefly outline these approaches.

The assignment of case *via* Agree is the descendent of earlier approaches in Minimalism's predecessor theory, Government and Binding theory (Chomsky 1981). Beginning with a letter from Vergnaud to Chomsky and Lasnik in 1977 (published Vergnaud 2006), the basic idea is that a distinction must be drawn between morphological case, which obviously does not appear in every language, and what was called abstract Case¹, which is presumed to be

¹Traditionally, the distinction is marked by lower case 'c' for morphological case, and upper case 'C' for abstract Case.

consistent for all languages. The ultimate purpose of Case was NP licensing—an NP could only appear in those positions where it was able to receive Case from Case assigners. This was formalised by the introduction of a Case Filter, which ruled out any sentences which contained NPs lacking Case:

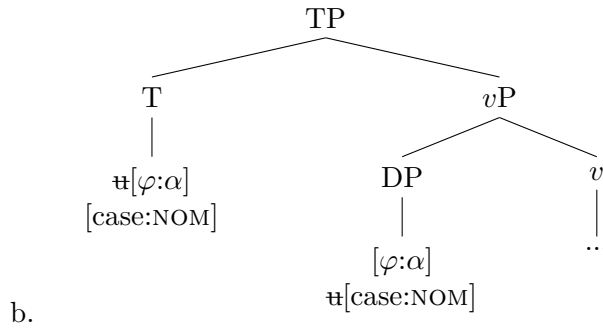
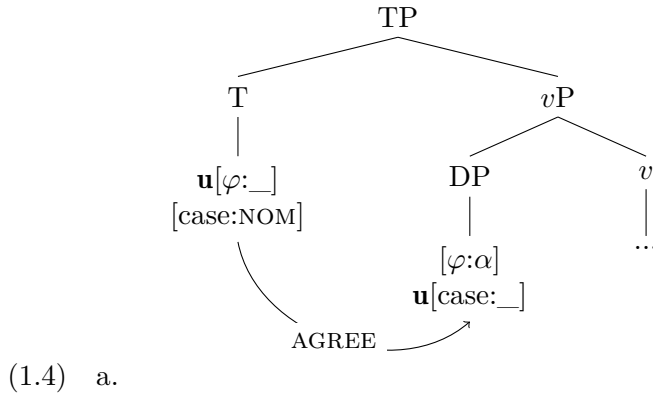
(1.3) Case Filter: *[NP -case]

The introduction of the Case filter furthermore appeared to account for various types of movement, including passives and the single argument of unaccusative verbs, as a lack of Case in these situations required movement to a Case position.

Although the finer details have changed over time, the essential insight of Agree-based approaches has been maintained from this approach, namely that Case is assigned by virtue of its position in a syntactic structure relative to particular functional heads, and this is directly related to NP-licensing. These functional heads relate to different cases; a (finite) T head assigns nominative case, and a little *v* head assigns accusative case. Morphological case is thus the overt realisation of abstract Case. In MP, it is taken that the relationship between case assigner and the NP in question is one of closest c-command, such that the case assigner c-commands the NP. The relation between the two heads is made possible by the operation AGREE. Agree is taken to be driven by the existence of uninterpretable features (stylised as [uF], following Pesetsky and Torrego 2001), which reside on various heads upon entering the derivation. "Uninterpretability" refers to their being semantically uninterpretable, and as such they must be deleted/checked to ensure that the derivation is able to converge. This need to address uninterpretable features essentially ensures that all NPs in a clause are licensed, and all cases are assigned.

Under this view, a typical case may unfold as follows: a functional head like T would enter the derivation with uninterpretable phi (φ) features², as well as a valued case feature, which is marked as nominative. The phi features on T must be valued in order for the structure to be licit. The T head then "probes" downward into its c-command domain searching for the appropriate features on a nominal (the NP then being the "goal"), which it is subsequently able to copy back to value its uninterpretable phi features. In contrast to a functional head like T, phi features are inherently present on a nominal. Conversely, NPs enter the derivation with an uninterpretable/unvalued feature for case. When this Agree relation holds between a T head and an NP, then the NPs uninterpretable case feature is valued as nominative. Finally, when all uninterpretable features have been valued, the derivation is able to be sent to the interfaces.

²I.e. person, number, and gender.



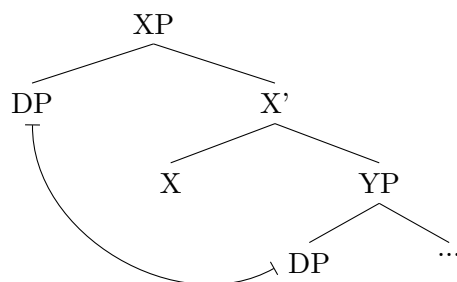
Under this system, case and agreement phenomena are like two faces of the same coin; the phi features of the NP turn up on the T head as agreement, and the case feature inherent on the T head turn up on the NP as case. Languages differ in how or whether this information is realised morphologically.

However, this is not the only way that case is assigned under Agree-based systems; case assignment as described here is known as structural case, but there are at least two other types that are necessary for adequate cross-linguistic description³. The first of these is lexical case, whereby a particular case is associated with a lexical item; these are not predicable and must be learned. The second is known as inherent case, and describes a situation where case is assigned in combination with a thematic role, rather than *via* Agree (see. e.g. Woolford 2006). There are several qualities associated with case being tied to thematic roles, including the lack of case alternations (cf. structural case, e.g. the accusative/nominative alternation in passive sentences). This distinction is relevant here largely because ergative case (i.e. the case marking the subject of a transitive verb, but not the subject of an intransitive verb) is often taken to be an inherent case (e.g. Legate 2008, 2012; Woolford 1997, 2006; Aldridge 2008; Anand and Nevins 2006, among many others), assigned from transitive *v* to the subject where it is merged, in *SpecvP*.

³This is also true for dependent case based approaches; see below.

However, even in the late days of GB and early days of Minimalism, doubts were raised as to whether abstract case really was involved in NP licensing. Marantz (1991) argued for completely disassociating case from licensing, arguing that cross-linguistic patterns of case would be better accounted for under a system known as dependent case. This approach assumes that case assignment does not involve a DP and its relation to a functional head in the clause, but rather its relation to another DP in the clause (or more accurately, case assigning domain). That is, case assignment is *dependent* on the presence of another DP. In a transitive clause for example, there are two DPs, one of which asymmetrically c-commands the other. In a nominative-accusative language, the dependent case (accusative) will be assigned downwards to the lower DP, leaving the upper DP unmarked (nominative). In an intransitive clause, there is only one DP. As dependent case requires the presence of another DP in the domain in order to be assigned, this single DP is left unmarked (nominative). By hypothesis, in an ergative-absolutive language, the dependent case (ergative) is assigned upwards to the c-commanding DP, instead of downwards. The lower DP is unmarked (absolutive); intransitive subjects are in these languages likewise unmarked.

(1.5) Two DPs in one case-assigning domain: dependent case assigned



This approach has been adopted as a major contender to theories of case *via* Agree in the literature, e.g. McFadden (2004), Baker and Vinokurova (2010), Baker (2015), Coon and Preminger (2017) and Baker and Bobaljik (2017), among many others.

The two approaches sketched out here do not cover all approaches to case assignment in the literature, but most diverging accounts do still involve the basic intuition that case assignment is related either to a relationship with particular functional heads (Agree), or is based on some form of case competition (dependent case). These are also not necessarily mutually exclusive approaches; it has also been argued that both are needed, even within a single language (Baker 2015). I will refer to both approaches over the course of this thesis, but the adoption of neither approach will be crucial.

1.1.2 Morphology on the PF branch

As stated, I assume that syntax operates on features (and roots) to create syntactic structures, which are devoid of phonological material; only after spell out are these feature bundles assigned a phonological representation. Forms compete with each other for insertion into a particular context, and the most specific form wins. This therefore basically follows a Distributed Morphology (DM) approach (e.g. Halle and Marantz 1993; Harley and Noyer 1999; Bobaljik 2017). In terms of case then, I assume that case is assigned to a nominal sometime before vocabulary insertion (either by way of an Agree operation, or *via* case competition- nothing really hinges on which is adopted as far as I can tell). When the nominal and case are to be assigned a phonological representation, the case feature is cross-referenced with a list of the possible forms which could be inserted, and the form which is most specified (most closely fits the context) is inserted.

The other important aspect of morphology is the existence of a small number of post-syntactic operations that are able to manipulate the information received from the syntactic component *before* it reaches the point of vocabulary insertion; these have the effect of changing the insertion contexts, resulting in different forms being able to be inserted. The most important one here is Impoverishment (Bonet 1991), which targets features for deletion. By deleting particular features, the insertion context is less specified, and a correspondingly less specified form must be inserted. Thus impoverishment can be responsible for less specified forms being inserted than one would expect based on the output of syntax. Take the following example, which says that X must be assigned the phonological form α in the context of β ; and X must be assigned the phonological form δ otherwise:

$$(1.6) \quad \begin{array}{lcl} X & \Leftrightarrow & / \alpha / _ [\beta] \\ X & \Leftrightarrow & / \delta / \end{array}$$

Therefore, if an item $X[\beta, \gamma]$ is to be assigned a phonological form, according to the list in example 6 above, $X[\beta, \gamma]$ will have the form α . The fact that X is also associated with a feature γ does not impact on which form is inserted, as the list does not make any reference to it. That is, the vocabulary item is underspecified in regards to the contexts in which it can be inserted. However, imagine an impoverishment rule such as the following, which states that β is deleted in the context of γ :

$$(1.7) \quad \beta \rightarrow \emptyset / _ \gamma$$

As $X[\beta, \gamma]$ fits the context outlined by the impoverishment rule, β will be deleted:

$$(1.8) \quad X[\beta, \gamma] \rightarrow \textit{impoverishment} \rightarrow X_\gamma$$

As a result, the form α can no longer be inserted, as the item no longer matches the context for insertion. Instead, δ is inserted. In this way, post-syntactic (but pre-vocabulary insertion) operations such as impoverishment can account for syntax-morphology mismatches.

1.1.3 Information Structure

Exact definitions of information structural notions in the literature are notoriously varied, and sometimes conflicting. While it is of course not the goal of this work to conclusively clear these terms up, as I will make reference to them I will clarify exactly what is meant when the terms are used here. Generally, information structure (IS) relates to how information is packaged and exchanged over the course of a discourse, making reference to what speakers know about the discussion and the world, and likewise what they assume their addressee knows. This includes adding new information into the discussion, as well as handling information which has already been introduced, and is known to both participants. However IS does not reduce to only old and new information- most discussions of IS involve the notions of Topic and Focus, which I will discuss.

Topic is generally defined as being the part of a sentence which conveys what the sentence is generally about; the general thing about which something is being said. Although topic is often related to old information, it is not necessary that a topic must already have been mentioned in the discourse; a new topic can also be uttered out of the blue and still be felicitous:

$$(1.9) \quad [\textit{My neighbour}]_{\text{TOPIC}} \textit{ left home suspiciously early today.}$$

In English, a common test for determining the topic of the sentence is by beginning with the phrase *as for (X)....* Movement to the beginning of the sentence can also indicate topicalisation (although topic is not the only notion connected with movement to a sentence initial position):

$$(1.10) \quad \begin{array}{ll} \text{a.} & \textit{As for the books, they've disappeared.} \qquad \qquad \qquad \textit{As for...} \\ \text{b.} & \textit{This book I never understood } \textit{this book}. \qquad \qquad \qquad \textit{Topicalisation} \end{array}$$

The notion of Focus plays an important role in optional ergative case marking. I understand focus as indicating "...the presence of alternatives that are relevant for the interpretation of linguistic expressions" (Krifka 2008)⁴. I assume this at least for the purposes of identifying what is focused in the following material, so no fine theoretical details are crucial. Broadly, and descriptively speaking, contexts in which focus are found include contexts

⁴cf. especially Alternative Semantics (Rooth 1992, 1985).

such as responses to *wh*- questions, contrastive/corrective environments, and singling out one of several explicit alternatives:

- (1.11) a. (Who saw the butler leaving last night?)
 GEORGE_F.
 b. (Mary's holidaying in Paris)
 No, LISA_F is holidaying in Paris.
 No, Mary's holidaying in COPENHAGEN_F.
 c. (Would you like a beer or a glass of wine?)
 I'd like a BEER_F.

Focus is often diagnosed by virtue of being new material, or the element(s) which are the most prominent or important in a sentence, however while these are intuitive characterisations of focus, they are imprecise and difficult to conclusively identify. I do not have much to say here about many of the surrounding issues discussed in the vast literature on focus, such as focus-sensitive elements, exhaustivity, influence on the truth conditional semantics, syntactic positions dedicated to hosting focused elements, or the like; nor will I discuss various subtypes of focus, or the sizes of focus domains in any great detail.

A distinction I assume must however be made between focus and focus realisation; while focus has common distributions cross-linguistically, the way that it is realised differs- through prosody, syntactic configurations, morphologically, or a mixture of these (see e.g. Büring 2010). I represent focus associated with a nominal here as a (syntactic) feature (Jackendoff 1972) that is present on the nominal, and is later realised by language-particular means. This will be important because of the way I represent how the presence of focus interacts with the realisation of case morphology in the languages discussed.

Chapter 2

Optional case marking

Some languages allow a certain degree of optionality in whether an argument is case-marked or not. In these languages, this alternation between the presence and absence of case suffixes does not: (a) change the grammaticality of the utterance; (b) change the thematic/semantic roles of the arguments; and (c) is not (completely) predictable. Optional case marking (OCM) is an interesting phenomenon largely due to that final point: the distribution of case marking is not predictable, but neither is it completely random—the likelihood that a case marker will appear tends to vary significantly, correlating with particular factors. In many languages, these factors are not related to either sociolinguistic factors (i.e. OCM is not a type of Labovian variation), nor to a range of factors typically attributed to processing effects (size/length of argument, priming effects, etc.). Instead, OCM tends to track semantic and discourse-related factors, particularly animacy of the argument, information structural factors such as focus and topic, as well as pragmatic factors such as mirativity (i.e. surprise, unexpectedness). These attributes very commonly positively influence the likelihood of an overt marker to occur to different degrees.

This chapter will serve to give an empirical basis to the discussion, firstly through a broad typological characterisation of the phenomenon and other general remarks, and then demonstrated more thoroughly through a series of case studies on languages described as having OCM in the literature. Partly to reduce the scope of the study, and partly due to the relative abundance of available literature on the topic, I will limit the study to only subject cases (i.e. ergative and nominative).

2.1 The phenomenon cross-linguistically

Within studies of optional case, optional ergative marking (OEM) in particular has garnered increasing interest in the literature over the last decade or so, both on a language-particular basis (e.g. McGregor 2006, 2007; Gaby

2008, 2010; Meakins 2009, 2011; Verstraete 2010; Suter 2010; Aiton 2014; Sarvasy 2014; Schultze-Berndt 2017; i.a.), as well as a general phenomenon (McGregor 2010, 2013; McGregor and Verstraete 2010; Kittilä 2005). It is found largely, but not exclusively, in languages of New Guinea, Australia, as well as in many Tibeto-Burman languages; a non-comprehensive, but nonetheless extensive list of over 100 languages shown to exhibit optional ergativity is given in McGregor (2010). OEM is not a rare occurrence, with McGregor estimating that it exists in roughly 10 percent of morphologically ergative languages, and that in some areas (particularly New Guinea and the Tibeto-Burman language area) it is even typical for ergative to be optional (*ibid* 2010: 1616; Foley 2000: 374f; DeLancey 2011).

One reason why optional case marking is interesting is because it is unclear whether/to what extent the presence/absence of the marker contributes to meaning, and if so, what sort of meaning. This is largely due to the fact that it is widely acknowledged (at least in generative circles) that core cases do not really encode meaning themselves- an accusative case marker for example does not encode the meaning *patient*, or *object*, or anything of the sort. Although ergative is sometimes cast as an inherent case, and thereby linked to thematic roles such as agent, instigator, or effector, this alternation does not (necessarily) correlate with agency in OEM languages. This is made clear when compared to other types of conceivable optional elements- the idea of an optional *plural* marker for example is clearly different, as a plural marker really does encode a semantic meaning of plurality¹. Case on the other hand, does not encode meaning in the same way; its distribution is regulated by structural (i.e. syntactic) considerations, and can be further (morphologically) constrained by the presence of other factors, such as animacy, or belonging to a particular noun class. What is clear is that optional case does not contribute to truth-conditional meaning; what is less clear is whether case appearing in the presence of a particular feature (e.g. focus) is expressing the meaning of that feature, or is only triggered by it.

I stated above that I will focus (mostly) on optional ergative and nominative cases; there is a slight terminological quibble to be noted here. By definition, ergative is marking on the transitive subject only (the A argument); nominative is marking on both intransitive and transitive subjects (both S and A arguments)². It is reasonably common in these languages for an optional ergative case marking to begin to expand into marking intransitive subjects as well. Technically, this makes it a nominative marking,

¹Although this distinction is not as clear-cut as I am suggesting here; Corbett (2000) discusses the existence of optional plural marking in a range of languages. The example of optional number marking should show the distinction between meaning-encoding elements and case, the distribution of which is not regulated by or expresses meaning *per se*.

²Or more confusingly, sometimes: ergative is the transitive subject; nominative is the intransitive subject *only*; when a case covers both S and A arguments, it is ergative/nominative syncretism (see e.g. Goddard 1982 for arguments for such an approach).

however much of the time this nominative case is still referred to as optional ergativity- probably partly due to the fact that it is the "ergative marker" which in those cases is found on intransitive subjects, which have no other overt forms (there is no separate nominative case; intransitive subjects also bear the ergative marker; therefore, this is ergative marking). Even when the ergative/nominative confusion is acknowledged in discussion, commonly the phenomenon is still (knowingly) packaged together under the label "optional ergativity". Dixon (1994: 63f) also discusses the terminological difficulties, noting the use of terms like marked nominative, and extended ergative systems. Following his lead, I would also tend to use (marked) nominative in these cases, but the careful reader will encounter some inconsistency. We will see some differences between conditions on ergative and nominative cases in some languages in the case studies to follow, but the fact that there are often blurred lines between them may suggest that the distinction has more to do with subjects, rather than ergative/nominative cases *per se*³.

In all examples encountered, case is expressed as a suffix, and the alternation is between the presence versus absence of this suffix (a *privative* alternation). Furthermore, in these languages nominative case has no overt expression. This means that it is impossible to tell whether the absence of a case suffix is the deletion/non-overtness of the ergative case, or a "retreat" to nominative case⁴. However on a purely typological note, the fact that all examples discussed here are suffixal and privative is noticeable.

Implicit in the discussion so far is the assumption that the optional status of ergative marking in these languages shares enough similarities between them that the study of this optionality as a phenomenon itself is warranted. This basically translates to an assumption that the same underlying process or mechanism is responsible for the patterns seen here. However this does not necessarily mean that every instance of optional case marking in every language is the same. Ochs (1982, 1988) for example discusses Samoan as a language in which the variable distribution of ergative case is sociolinguistically determined, based on factors such as gender of the speaker,

³Although there could be a range of ways nominative/ergative pattern together that cause this effect that doesn't take subject as the defining characteristic, e.g. syntactically highest argument.

⁴This may seem like an unnecessary distinction, but could in theory enlighten a variety of questions, for example: is the alternation always between presence/absence of case, or are there non-privative alternations as well (see e.g. Keine and Müller (2010, 2015) for a similar phenomenon in differential object marking)? If it is always privative, does this suggest case is deleted? If non-privative, could this bring light to the structure of cases (a long strand of research, e.g. Calabrese 2008; Caha 2009), by deletion of internal structure of case? These types of questions will have to remain largely unanswered in the absence of data. The data here however does suggest that optional case marking always involves presence versus absence of marking, although some markers in Warrwa (McGregor 2006) and Jaminjung (Schultze-Berndt 2017) may suggest otherwise. I leave any non-privative alternations for further study.

and social distance between the speaker and the addressed. This is clearly a different phenomenon to the optional ergativity discussed here. However this is not the only distinction to be made. One could also imagine optionality in which no grammatical factors at all can be identified to affect token frequency. In such a system the distribution would presumably be affected (but not determined) by extra-grammatical factors relating to processing (such an approach may also for example be applicable to other cases of "optionality", such as the presence/absence of the English complementiser *that*). As such, there is a need to distinguish between different types of optional case marking, based on what affects distribution. A tentative preliminary typology may look something like this⁵:

Type 1: Correlated optionality

The phenomenon under discussion here. The likelihood of marking is affected by a range of semantic and information structural factors, which have status as morpho-syntactic units/features.
E.g. all languages discussed below.

Type 2: Labovian variation/optionality

The likelihood of marking is affected by sociolinguistic factors.
E.g. Samoan.

Type 3: Free variation (true optionality) within the grammar

No discernible grammatical factors affect the likelihood of marking; instead, frequency is affected (but not determined) by processing factors, such as utterance length, priming effects, etc.
E.g. perhaps Japanese (e.g. Heffernan et al. 2018).

When discussing optional ergativity in this thesis, it is what I have labelled *correlated optionality* that we are concerned with. Its main characteristic is that although distribution is not entirely predictable, the frequency of marking does track particular grammar-internal features to varying degrees. These features are generally involved in grammatical processes, and their presence can contribute to determining form more generally. Both animacy and the information structural notions of topic and focus, for example, are features which are often involved in determining case marking in differential marking systems (see Chapter 4). They are the sorts of units or features that syntax operates on, and which morphology interprets. This stands in opposition to other types of optionality, in which the significant factors are either extra-grammatical (processing), or perhaps outputs of different grammars (as has been proposed for some sociolinguistic variation, e.g. Kroch 1994; see also Embick 2008).

It is also furthermore likely that some forms of optionality represent a mix of the types. So it is possible that for example the distribution of a marker is

⁵This typology is meant as a general typology of optional case, not just of OEM.

regulated by sociolinguistic factors in a language, but that processing factors additionally affect distribution. However this begins to stray further from the data and scope of this thesis, so instead let us proceed to the case studies.

2.2 Case studies

Following are a series of case studies, designed to show the phenomenon in more tangible detail. The number of languages shown here should hopefully suffice to show both variation and similarities in what affects marking. In choosing languages, I have had to neglect and omit some thorough investigations of OEM in languages which would deserve more attention, including Warrwa (McGregor 2006, 2007), Umpithamu (Verstraete 2010), Kâte (Suter 2010), Light Warlpiri (O’Shannessy 2005; Meakins and O’Shannessy 2010), Kurtöp (Hyslop 2010), Yali (Riesberg 2018), Eibela (Aiton 2014, 2016), and many others.

I have grouped the languages roughly geographically, taking a whirlwind tour of two major OEM hotspots: Australia (Gurindji Kriol, Jaminjung, Kuuk Thaayorre), and New Guinea (Ma Manda, Nungon). These languages show individual differences in what affects the frequency of marking, but there is nonetheless a clear thread running between them. I’ve neglected a third major linguistic area with typically optional ergative marking, namely the Tibeto-Burman languages. However an overview of the typical features in these languages found in LaPolla (1995), DeLancey (2011) and Chelliah (2017) similarly highlight (contrastive) focus, emphasis, agentivity, and sometimes inanimacy and topichood as important conditioning factors in these languages.

2.2.1 Gurindji Kriol

Gurindji Kriol is a language spoken in a small number of communities in northern Australia. It is a mixed language, the result of several generations of intensive code-switching between the Ngumpin-Yapa (Pama-Nyungan) language Gurindji, and the English-lexified creole Kriol, spoken widely across northern Australia⁶⁷. Gurindji Kriol (GK) provides an excellent case study for OEM, thanks to the extensive work on the subject, in particular Meakins (2009, 2011, 2015), Meakins and O’Shannessy (2010) and Meakins and

⁶It must however be stated that Gurindji Kriol is not merely code-switched Gurindji and Kriol; Meakins (2011:41ff) gives four criteria to establish its status as an ‘autonomous language system’: (i) acquisition by children; (ii) inter-speaker consistency; (iii) the emergence of unique structures; and (iv) the development of structures in the mixed language independent of the source languages.

⁷cf. also Light Warlpiri (e.g. O’Shannessy 2005), another mixed language descended from Kriol and a Ngumpin-Yapa language, Warlpiri, which similarly exhibits optional ergativity.

Wilmoth (2018), all of which focus directly on the distribution of ergative/nominative case. All descriptions here are based on those works.

The linguistic history behind GK has resulted in several interesting characteristics. The two languages which gave rise to GK are typologically very different to one another. Gurindji exhibits many properties typical of "non-configurational" languages: relatively free (i.e. discourse based) word order, and the ability to freely drop many nominals, which are cross-referenced by pronominal clitics. Gurindji also exhibits NP type split ergativity such that ergative case appears on nouns, but not pronouns. Kriol on the other hand is a nominative-accusative, predominantly SVO word order language. Like Kriol, GK has a nominative-accusative alignment, and is essentially an SVO language. However, it has retained Gurindji's ergative case morphology (*-ngku/-tu*), which in GK is used in quite a different manner to how it is used in Gurindji. In GK, the ergative marker can appear on both transitive and intransitive subjects (i.e. is a type of marked nominative), including on the set of Gurindji-derived pronouns (which is not possible in Gurindji); Kriol derived pronouns cannot bear the ergative marker. Furthermore, the marker *-ngku*⁸ is not obligatory on subjects. The following examples, which are close to a minimal pair in terms of animacy, word order, etc., demonstrate this alternation:

- (2.1) a. kajirri-**ngku** i=m purlk-karra kengkaru.
 woman-**ERG** 3.SG.S=PP pull.guts.out-CONT kangaroo
The woman is pulling the guts out of the kangaroo.
- b. jat man i=m purlk-karra kengkaru.
 the man 3.SG.S=PP put.guts.out-CONT kangaroo
The man is pulling the guts out of the kangaroo.

Meakins (2011: 214)

The distribution of this marker has several interesting characteristics; Meakins (2015: 206) notes that there are no distributional differences between transitive and intransitive subjects, nor between unergative and unaccusative subjects⁹. The marker can appear on nouns, adverbs, as well as on Gurindji-derived pronouns; however as stated it may not appear on Kriol-derived pronouns.

There are a number of factors which influence the likelihood of the marker being present. Meakins (2011: Chap.9) undertakes a study of these, reporting data from a corpus of 1917 transitive sentences, and 116 intransitive sentences with overt nominals. Factors determines to influence the likelihood of the presence of *-ngku* include:

⁸From here I will mostly refer to the marker by this form, although note that the form *-tu* appears following consonant-final stems.

⁹Although see the results in Meakins and Wilmoth (2018) in the footnote below.

1. If the subject is inanimate, then it is more likely to bear *-ngku*. Meakins reports that 78.3% of inanimate A arguments are marked, as opposed to 65.4% of animate A arguments.
2. If the subject has a co-referential pronoun in the clause, then it is more likely to bear *-ngku*. Meakins reports 81.4% of A nominals related to a co-referential pronoun are marked.
3. If the subject is post verbal, it is more likely to bear *-ngku*. Meakins reports that 12.5% of A nominals are post-verbal; of these, 94.7% are marked.
4. Degree of transitivity (according to Hopper and Thompson's (1980) account of transitivity) does affect the likelihood of the subject bearing *-ngku*. A higher degree of transitivity correlates with a higher likelihood of the markers presence.

Importantly¹⁰, factors that have no influence on the likelihood of a subject bearing *-ngku* or not include sociolinguistic factors (the age of the speaker, the formality of the context of the utterance), the language from which the nominal was derived (i.e. whether it was originally a Kriol or a Gurindji word), as well as the animacy of the object. There were problems testing for relative animacy of A and O arguments, but initial tests showed no significant influence, suggesting that the decision to mark or not is entirely local- that is, dependent on the subject argument only. Furthermore, Meakins found two factors which decreased the likelihood of the ergative marker occurring, namely when the verb is marked with a continuative suffix, and in the presence of a potential modal verb; both signs that the event described has not occurred or been completed. A decrease/ban on ergative suffixes when the verb is progressive/continuative has been noted more generally cross-linguistically (2011: 222). Meakins notes that the combination of the factors which positively affect the likelihood of occurrence (in this study, inanimacy, post-verbal position, and a co-referential pronoun) further increases the likelihood of marking, but does not report the cumulative effect in percentages (2011: 228).

One striking point about two of the factors that positively influence marking is that they are directly related to information structure- namely,

¹⁰However note that a more recent and larger study (3575 transitive and intransitive subjects from adult speech; 2975 in child speech) undertaken in Meakins and Wilmoth (2018) suggests different results, namely that the important factors are (in order of most to least significant): transitivity, (SV order- adults), priming, a co-referential pronoun, and the actualisation of the event. These results differ significantly from earlier work, and it is difficult to know to what extent which differences are due to the methodology, or diachronic/generational differences. Animacy is no longer significant, but transitivity (i.e. the difference between ergative and nominative) is. Furthermore, priming (whether the previous subject was also marked) is shown to be significant, hinting at an interplay between grammatical and extra-grammatical factors.

post-verbal subjects and co-referential pronouns. This is because these constructions cover cases of left and right dislocation:

- (2.2) a. Left dislocation:
 an jat gel-**tu** i=m kombek garram pulastikbag
 and the girl-**ERG** 3SG.S=PP return with plastic.bag
And the girl is coming back with a plastic bag.
- b. warlaku-**ngku** i bin bait-im jat marluka wartan-ta.
 dog-**ERG** 3SG PST bite-TR the old.man hand-LOC
The dog, it bit the old man on the hand.
- c. Right dislocation:
 i=m put-im jumok tebul-ta igin jat kajirri-**ngku**
 3.SG=PP put-TR cigarette table-LOC again the woman-**ERG**
She puts the packet of cigarettes on the table, the old woman that is.
- d. Right/left dislocation:
 an kengkaru i bin kil-im kurrupartu-yawung jat
 and kangaroo 3SG.S PST hit-TR boomerang-PROP the
 karu-**ngku**.
 child-**ERG**
And the kid hit the kangaroo with a boomerang.

Meakins (2011: 223, 24, 234, 214)

In these examples, the subject appears on either the left or right of the clause proper (or both). This is shown by the presence of pronouns in the clause; compare similar constructions in English:

- (2.3) a. Peter, I can't stand.
 b. Peter, I can't stand him.

Generally, the construction without a pronoun is simply referred to as topicalisation, where it is assumed that the nominal moves from its initial position to a position in the left periphery as a result of its topical status (see in particular Rizzi (1997) and much following work). The second is a case of left-dislocation, the syntax of which is much less generally agreed upon, and either involves movement or base-generation outside the clause, depending on the analysis. Left dislocation constructions are widely attributed to information structural factors, particularly topic and focus. In Gurindji Kriol, this is seen very clearly. The status of right-dislocated arguments is generally less clear, but Meakins notes its role in GK as reasserting the identity of the argument in the main clause, avoiding ambiguity.

In addition to the discourse status of the left dislocated arguments most especially, focus generally plays a strong role in determining the distribution of *-ngku*. There are several good examples of this in the work on GK. Contrastive focus for instance can be determined in the following exchange, in which it is determined that we (i.e. the speakers) are now the ones who will pass on the stories, as opposed to their parents¹¹:

- (2.4) a. (*They (our parents) tell stories to us, recount stories they do.*)
 b. an ngantipa-**ngku** wi tok bo ngantipa-ny karu na.
 and 1PL.INC-**ERG** 1PL talk DAT 1PL.INC-DAT child FOC
And now it is us who tells these stories to our children.
 c. yeah ngantipa-**ngku** yurrk ngantipa-ny-ku karu-yu
 yeah 1PL.INC-**ERG** recount 1PL.INC-DAT-DAT child-DAT
 na-
 FOC
Yeah we tell the stories to our children now.

Meakins (2011: 231f)

Or in the following utterance, in which a mother urges their child to speak, who refuses, unlike another child who is present:

- (2.5) ma yu garra toktok na yu garra toktok
 DIS 2SG POT talk.REDUP DIS 2SG POT talk.REDUP
 nyantu-**ngku** toktok.
 3SG-**ERG** talk.REDUP
Come on, you have to talk, you have to talk, see he's talking.

Meakins (2011: 232)

The marking of *wh*- words and their answers are also commonly associated with focus; note that these are also marked in GK:

- (2.6) a. an wijan-**tu** makin nyila-ngka?
 and who-**ERG** sleep that-LOC
And who sleeps there?
 b. ngayu-**ngku**!
 1SG-**ERG**
Me!

ibid

¹¹The first sentence is only given in the English translation; in the source material it is of course in GK.

A look into the narrative texts supplied in the appendix in Meakins (2011: 278f) also provides an example of contrastive topics, in which both arguments are also marked:

- (2.7) det karu-**ngku** i bin luk but-ta, warlaku-**ngku** det
 the child-**ERG** 3SG PST look boot-LOC dog-**ERG** the
 botul-ta bat najing.
 bottle-LOC but nothing
*The kid looked in the boot, and the dog looked in the bottle, but they
 couldn't find it.*

All these examples show that the use of the ergative case marker is by far not tied to only one factor, but rather appears more commonly when the subject is focused, topicalised, and inanimate. Furthermore, the presence of *-ngku* is often used when the subject is somehow unexpected or surprising (e.g. Meakins 2015: 205), and as a part of topic chaining constructions. These point towards the ergative marker being used as a general marker of prominence, in a way that "cuts across the categories of topic and focus" (Meakins 2011: 230f).

Meakins sees language contact as being behind the marker's optionality in GK, suggesting that as the influence of Kriol solidified word order in GK to a greater degree, case marking, which has the role of identifying arguments in the free-word order Gurindji, became largely redundant in GK. As word order became the main way of identifying semantic roles, the functional load of ergative case morphology lessened, leading to it becoming optional and taking on discourse-related meanings and distribution.

2.2.2 Jaminjung

Schultze-Berndt (2016, 2017) describes the distribution of the ergative case marker in the Mirndi (non-Pama-Nyungan) language Jaminjung. Unlike many other OEM languages, the ergative marker really is restricted to appearing on transitive subjects only in Jaminjung. An initial discourse study shows that, as in the other languages under discussion here, several factors influence its appearance, both positively and negatively. Firstly, animacy plays a very clear role in affecting marking (2017: 1105):

- Only 17% of local pronouns (1st/2nd person) are marked.
- Human referents are marked 81% of the time.
- Non-human animate referents were marked 87% of the time.
- Inanimate referents are "almost invariably" marked.

This clearly shows how closely the frequency of marking tracks animacy, with highly animate subjects almost never marked, and non-animate subjects almost always marked. This connection is even stronger when the marked animates and unmarked inanimates are considered. Cases where inanimate subjects are not marked seem to be related to cases where the inanimate argument is used in conjunction with part-whole possession (Schultze-Berndt 2016: 27). On the other hand, every single case of ergative-marked personal pronouns in the study are focused, suggesting that generally, if pronouns are marked, it is not due to their status as pronouns, but rather due to other factors.

Focus generally plays a strong role in determining the distribution; note the marking on the *wh*- word and its answer in the following exchange¹²:

- (2.8) a. "nanggarni gan-uga=rrgu ngarrgina
 who:**ERG** 3SG>3SG-take.PST=1SG.OBL 1SG:POSS
 dubuluj?" *imin sei from dijan, dijan*
 bag 3SG:PST
"Who took my bag from me?" she said, this one (did, to) that one.
- b. aa majani jarlig=burlu=**ni** burr-uga
 ah maybe child=COLL=**ERG** 3PL>3SG-take.PST
Ah, maybe the children took it.

Schultze-Berndt (2017: 1107)

Schultze-Berndt (2017: 1108) notes that "well over 90%" of A arguments are marked when focused (including both broad and narrow focus), and that most exceptions are local pronouns, already established as generally resisting marking.

Tense is also a contributing factor; arguments in past perfective clauses are marked 94% of the time. The effect of past/perfective conditions are also well-known in split ergative languages, e.g. Dixon (1979: 95): "if a split is conditioned by tense or aspect, the ergative marking is *always* found either in past tense or in perfect aspect." As such, the effect on marking in Jaminjung mirrors established aspects of other ergative languages.

There are also several factors which are less likely to favour marking. One of these is the effect of particular predicates: in combination with the verb of possession, and verbs of speech with a quotation. In these contexts, the frequency of marking lies around 50%, as opposed to an otherwise general marking rate between 80-90%. Schultze-Berndt (2017: 1103) suggests that this discrepancy could be attributed to a lower degree of affectness of the object; however notes that such constructions also exhibit other less typical

¹²Text in italics is in Kriol.

properties as well. Besides these predicates, topichood also slightly lowers the frequency that arguments are marked, although not by much- roughly two thirds of topicalised A arguments still bear marking. This rate drops even slightly less when topics are left dislocated and detached from the clause, which is diagnosable by prosody.

Jaminjung provides several hints that there are cumulative effects in determining marking, both in inhibiting and positively conditioning the chance that a marker will occur. Local pronouns are very resistant to marking; in fact the only examples are local pronouns with marking is in combination with focus. When local pronouns are also topics however, they are not marked in any single case in the study (2017: 1109).

2.2.3 Kuuk Thaayorre

The Paman language Kuuk Thayorre, as described by Gaby (2008, 2010) has a highly irregular set of ergative allomorphs, with up to 15 distinct and non-phonologically conditioned forms. The distribution of the ergative suffix also sometimes covers intransitive subjects as well, as well as occasionally being absent altogether.

- (2.9) a. Ergative present:
 Pam-**al** minh patha-rr
 man-**ERG** animal.ACC bite-P.PFV
The man bit the meat.
- b. Ergative absent:
 Minh patp piinth.kat waawath
 animal hawk-Ø scrap.ACC RDP:search:NPST
Hawks fossick for scraps.
- c. Ergative on intransitive subject:
 Parr-**an** pul kuta-**ku** ngok-elñ wontr
 child-**ERG** 3du.NOM dog-**ERG** water-DAT fall:NPST
The child and the dog fall into the water [together].

Gaby (2008: 116f)

Gaby relates the use of the ergative marker with pragmatic markedness, which she defines in terms of unexpectedness. Importantly, unexpectedness refers not to the unexpectedness or surprise that a particular individual is in a particular role (which might be better subsumed under the label *mirativity*, e.g. DeLancey 1997; Aikhenvald 2012), but rather to the unexpected combination of semantic role and certain grammatical features, in the sense as widely discussed in much functionalist literature (cf. the discussion on prototypical coupling of certain features and roles to follow in Chapter 3). On

the other hand, an argument is pragmatically unmarked if "...the addressee can be expected to correctly map the referent of an unmarked NP to the subject function purely on the basis of the preceding discourse and/or world knowledge" (Gaby 2008: 112). It is therefore very closely tied to how easy arguments in the clause are to distinguish from one another, by way of how expected or typical it is for them to play the role they do. Importantly, this largely plays out by way of animacy. A strongly "expected" characteristic of agents is that they are highly animate; or, from the perspective that world knowledge contributes, at least more animate than the object¹³. According to Gaby, this is what is behind the non-ergative marking of *hawk* in the example above; we know that hawks fossick for scraps and not the other way around. Furthermore, in the discourse from which that sentence was taken, the hawk had already been introduced (2008: 122), suggesting that it may have topical status, which seems to allow the omission of the ergative case in two separate exchanges quoted by Gaby (*ibid*). Conversely, the first introduction of actors into the discourse seems to trigger ergative marking.

Gaby argues that the optionality of the ergative marker is not due to language contact or change (arguments made for Gurindji Kriol and Light Warlpiri), but rather seems to have a longer history of being grammatically encoded in the language, making this type of optional marking a real feature of the grammar of Kuuk Thaayorre (cf. similar arguments in Verstraete (2010) for another Paman language, Umpithamu).

2.2.4 Ma Manda

The Papuan¹⁴ language Ma Manda has a case system with an (optional) marked nominative case. Pennington (2013, 2016) discusses the influences that contribute to its distribution, and shows that topic and focus are very strong indicators of whether the case marker will be present or not. First of all, the case marker is banned on topicalised arguments; however if there is a co-referential pronoun in the clause, it must bear the nominative case:

- (2.10) *nə wə səŋaŋit wə=li kadip səŋ fe-lək*
 man that slowly that=**NOM** wood timber hew-PRES:3SG.S
 That man, he is slowly hewing timber.

Pennington (2013: 15)

¹³cf. "global" systems of case marking, in which the features of both subject and object influence marking of one of them (Silverstein 1976).

¹⁴Papuan is not a genetic affiliation, but rather is used for non-Austronesian languages spoken in New Guinea; Ma Manda belongs to the Finisterre-Huon family, part of the large Trans-New Guinea language family.

However, whereas topichood disallows marking, Pennington (2016: 228) provides a sentence showing that nominative does appear on contrastive topics:

- (2.11) na wa=**lû** beng se-ng nantaam wa=**lû**
 male that=**NOM** pandanus cook-DS people that=**NOM**
 kûda se-gû-ng.
 greens cook-RP-23PL
 (*While*) *the man cooked pandanus, the people cooked greens.*

This may be related to the fact that contrastive topics are related to focus via the presence of alternatives, albeit alternative questions rather than propositions (Büiring 2015); in the case above, the sentence could act as an answer to an implicit question asking ‘*who cooked what*’?

Focus forces the case marker to be overt. This is shown for example by case on *wh*- questions and their responses; on newly introduced arguments (assuming that newness corresponds to focus); and when contrastively focused (Pennington 2013: 10, 11, 18):

- (2.12) a. net=*(**tî**) ba-k?
 who=**NOM** come-PRES:3SG.S
 Who is coming?
 b. gələmbom=#(**tî**) ba-k.
 Garambon=**NOM** come-PRES:3SG.S
 Garambon is coming.
- (2.13) nai bən floŋ nənəksi=**lî** leməŋ ku-giŋ
 time a LOC children=**NOM** Lemang go-RPST:3SG.S
 One time (some) children went to Lemang.
- (2.14) a. (*Did Doyang go to the water?*)
 b. dom gələmbom=#(**tî**) mi floŋ ku-ŋək
 NEG Garambon=**NOM** water LOC go-NPST:3SG.S
 No, Garambon went to the water.

Pennington furthermore states that right-dislocated arguments "generally" are marked as well (2016: 489)- presumably also due to the information structural properties associated with that position.

2.2.5 Nungon

Optional marking and the interplay of case and information structure are discussed in the recent grammar of the Papuan¹⁵ language Nungon (Sarvasy 2014). The distribution of case is so intertwined with information structure in Nungon that Sarvasy hesitates to label cases as such at all, rather using the term "grammatical relation marking postpositions." The marker of interest to us, *=ho*¹⁶, marks transitive and intransitive subjects (as well as a few other uses, such as instrumental), but the pervasive influence of focus on its distribution has led Sarvasy to label it a focus postposition; however for our purposes it is essentially a nominative/ergative case with conditions on its appearance. Indeed other descriptions of the marker in the literature have variously labelled it as agentive/instrumental, ergative/emphasis/new actor, and new/contrasted actor (2014: 425f)- all clearly referencing the focusing nature of the marker. Nominal arguments are not always overt in Nungon, but even when they are overt, they are not always marked by *=ho*. Animacy plays a factor in how likely it is to occur; inanimate A arguments are always marked¹⁷:

- (2.15) Gowik=**ko** böörong na-ha-k.
 knife=**FOC** stone eat-PRES.SG-3SG
It is the knife that has eaten the rock.

Sarvasy (2014: 433)

Animate A arguments are optionally marked, as are animate and inanimate S arguments. Animate A arguments are (usually) marked when one or more of the following conditions hold: the subject is newly introduced; when differing from another potential/alternate subject; or in cases of switch reference.

Wh- words and their responses also seem to (almost always) require marking; Sarvasy (2014: 426) notes that the following sentence would be an appropriate response to the question "*what fell?*", whereas the unmarked version would instead serve as a "matter-of-fact statement":

- (2.16) Eep=**po** möng-go-k.
 tree=**FOC** fall-RP-3SG
(It was) the tree (that) fell.

Similarly, a text in the appendix provides an excellent example of a marked subject in contrastive focus (2014: 704):

¹⁵Like Ma Manda, Nungon is a Finisterre-Huon language.

¹⁶Including phonologically conditioned allomorphs.

¹⁷Note that I've kept Sarvasy's glossing of the marker as *foc(us)*.

- (2.17) a. *[Very fine schools], they have them in our village, in other villages near and far, very wonderful schools do they have.*
- b. Oro, non=**to** wo öö-ng=it-do-mong=ma,
 well 1NSG.PRO=**FOC** that ascend-DEP=be-RP-1PL=REL
 wo-i, muuno, otok-ni otok-ni to-ng-a
 that-TOP not pity-ADJ pity-ADJ do-DEP-MV
 ir-o motnaina, öö-ng=it-do-mong.
 be-MVII PERF.1PL ascend-DEP=be-RP-1PL
*Well, as for us there where we were going up (to school), that is,
 no, being in a state of pitifulness, were we going up (to school).*

Finally, when discussing intonation breaks and afterthoughts, Sarvasy (2014: 645) provides an example of right dislocation similar to those seen in the Gurindji Kriol data, marked by =*ho*¹⁸:

- (2.18) E-ng-a Bahat=dek hi-ng-a yo-go-k,
 come-DEP-MV Bahat=LOC put-DEP-MV say-RP-3SG
 nan-no=**ho**.
 father-3SG.POSS=**FOC**
Coming, from the Bahat (stream), he_i spoke. His_j father_i (did).

Thus the fact that the distribution of this marker is determined wholly by discourse related factors, most of which are related to common factors associated with focus¹⁹, has resulted in questioning the appropriateness of the label ‘case’ in Nungon at all.

2.3 Summary

Although the individual details differ, these case studies give clear examples of what types of factors influence marking across languages with OEM. Inanimate subjects and focus very often trigger marking, as does the new introduction of an argument into the discourse, as well as a notion of surprise or unexpectedness. Topichood has varying effects, and either triggers or inhibits case marking. Non-canonical word orders are often claimed to be important factors, however it is virtually impossible to know whether this is related to syntactic position (e.g. Pennington 2013), disambiguation (e.g. Gaby 2008), or the information structural conditions inherent in different word orders. That is to say, if an argument is, for example, left dislocated and

¹⁸Although in this case the use of the marker could also be related to the changing reference of the subject.

¹⁹Note that there is a discussion of =*ho* marking topic, and furthermore topic on an object; however in the construction cited is unclear exactly what role the constituent plays, and as this appears to be an uncommon construction, I will ignore it here.

case-marked, it is difficult to tell whether the marking on that argument is a result of its syntactic position in the left periphery; or because placing the argument clause-externally with marking serves to unambiguously identify the arguments role; or because the argument is topicalised, and topicalisation causes marking.

One recurring question in the data is to what extent OEM involves a real decision by the speaker to use of the marker or not. It seems clear that due to the discourse-based nature of the distribution that direct elicitation is not an appropriate way of accurately detecting the conditions that decide when a marker appears and when not- DeLancey (2011: 14) for example notes that "[u]nsurprisingly, it has proven extremely difficult to elicit consistent judgments from speakers about the semantic or pragmatic contrast in minimal pairs differing only by ergative marking." To argue that disambiguation is a main factor in determining distribution suggests that the use or non-use is inserted by the speaker when decided that the clause may be ambiguous. That is to say that distribution is not regulated by the grammar, but rather by the speaker's intentions and the pragmatic placement of the utterance in the discourse. However not all researchers would agree with an approach based on disambiguation; Suter (2010: 427f) in particular argues against this approach in the discussion of the Papuan language Kâte, asserting that:

"All these examples [demonstrating the disambiguating effect of marking], however, are clearly elicited and reflect the conscious manipulation of the ergative by informants when they are made aware of a problem... I do not doubt that the ergative can have a disambiguating effect in spontaneous discourse, too, but I very much doubt if this is its *raison d'être*. Speakers of a language with an optional ergative certainly do not monitor their speech and insert an ergative marker whenever a syntactically ambiguous structure threatens to surface and otherwise omit the marker. If this were so, there would never be any need to use the ergative in SOV clauses in Kâte, since here word order already signals the grammatical relations of the arguments. For all we know, speakers are generally unaware of syntactic ambiguity and do not worry about it."

Suter is not the only researcher to express misgivings about the value of citing ambiguity resolution as a major factor determining the distribution of optional case; McGregor (2013: 1172) for example notes that even when evoked, the argument is rarely even useful as a diagnostic, stating that "[t]here are many versions of this proposal, the majority with qualifications such as *usually used*, or *may be omitted* which immediately defeat the explanation, robbing it of real explanatory value." Moreover, it is very difficult to tease disambiguation apart from factors such as animacy and information structural roles, as it is usually

evoked to explain cases of less animate subjects acting on more animate (usually human) objects. It is furthermore unclear what role disambiguation can play in a minimalist framework, in which the distribution of case is strictly regulated; firstly syntactically, determining which arguments can *potentially* bear morphological case; and secondly morphologically, when the presence of certain features can inhibit the insertion of morphological material (see the following chapter for discussion). Disambiguation requires the direct comparison of the features on both arguments before a decision on marking can be made. While this is not impossible to derive, and mechanisms have been argued for in the literature to account for apparent cases of real "global" case marking (e.g. Georgi 2012; Bárány 2017), unambiguous occurrences of such systems do seem to be very rare.

Finally, despite essentially universal grievances expressed about the term, the label "optional" is used in these cases simply because the exact conditions which reliably trigger marking cannot be stated. If they could, it would simply be differential marking (indeed it is possible that some purported cases of OEM may well turn out to merely be differential subject marking triggered by information structure). Even in cases where a particular factor, say, focus, reliably triggers marking in every case, there are often other, non-focused environments in which the marking appears; for example when the subject is inanimate, or new, or unexpected, or left/right dislocated. Therefore if one could isolate and state all possible environments that result in marking, this would necessarily be a *set* of potential conditions, some of which would be very similar. However, the general intuition that arises from the literature is not that marking is distributed according to an exact list of conditions, but rather due to a broader notion of emphasis or *prominence*: only prominent arguments are marked. We might very well hope for a more precise definition of what it means to be prominent, which is a vague term. Furthermore, as sometimes hinted at in the literature (although actual careful descriptions are sparser), the cumulative effect of these factors results in greater prominence; i.e. being inanimate and focused is more prominent than only being inanimate or focused.

As mentioned, there is one well-recognised phenomenon which shares many features with the characterisation of OEM presented here, namely differential object/subject marking. The two phenomena share not only the fact that arguments are not consistently case-marked, but also exhibit a large overlap in the conditions that cause/contribute to the alternation. Furthermore, differential marking has been the subject of a large amount of theorising in more generative-minded literature- much more so than optional case marking. It is a serious question to what extent optional and differential marking represent the same phenomenon, and whether the same processes or mechanisms are behind both alternations. Examining approaches to differential marking potentially opens up possibilities for considering how optional marking can (or should) be derived in this framework.

Chapter 3

Differential marking systems

Similarly to optional case marking (OCM), differential object/subject marking¹ (DOM/DSM) exhibit non-uniformity in how a subset of arguments are marked. There is however a significant difference between OCM and DOM/DSM: in optionality, there is not a defined subset of arguments that are affected, and there does not seem to be a reliable diagnosable feature which can be shown to completely causally determine the alternation in the way that animacy/specificity/person etc. often can in DOM/DSM. Crucially however, although no single feature can be shown to determine whether a marker is present or not, optionality does seem to track the presence of certain features, reflected in the differing likelihoods that a marker will occur when they are present². OCM is therefore clearly not a case of free variation, and it does not apply arbitrarily; instead, it seems to behave similarly to differential marking systems, but without the provision that the making must be triggered by the presence of the feature. The extent to which differential marking systems and OCM represent shared origins in the derivation is a major question; to begin to approach it we need to look at what is known about DSM/DOM and how we propose such patterns arise.

In this section other types of non-uniform marking systems and approaches to analysing them are examined. An overarching question driving investigation into this area asks: in cases of OCM where the argument does not bear a marker, at what stage of the derivation is this fact established? Is the information that the argument will not bear a case marker decided in narrow syntax, or after spell-out to PF? Or is this alternation decided by some extra-grammatical means? Drawing on the parallel between differential marking systems and OCM, examining how DOM/DSM systems arise in the grammar would help inform any potential analysis of how apparent optional case systems surface. In particular, this includes discussion of the role various

¹I understand NP type split ergativity (Silverstein 1976; Dixon 1979, 1994; among many others) to be subsumed under differential subject marking for the purposes of this chapter.

²Cf. Bresnan et al. (2001)- a case of "soft constraints mirroring hard constraints"

prominence hierarchies play, and how marking systems interact with them. We will see that our understanding of differential marking systems suggests that it is not a uniform phenomenon, and that the cause for a marking split can likely have both a syntactic and morphological cause. Applying the same diagnostics to OCM, we will see that in the OCM languages discussed, it is likely to have a purely morphological source, and that marked/unmarked arguments do not seem to be syntactically differentiated in those languages.

3.1 Uniform inconsistency - DOM/DSM

It is not uncommon for languages to be inconsistent in how they mark their arguments. A well known example of this, starting with Bosson (1985), is Differential Object Marking (DOM), whereby a subset of direct objects have a distinct and contrasting morphological marking. Differential subject marking likewise targets a subset of subjects for being marked differently (e.g. De Hoop and De Swart 2009). Speaking pre-theoretically, this also subsumes cases of split-ergativity (e.g. Dixon 1979, 1994), whereby not all transitive subjects in an ergative language bear ergative case. What distinguishes differential marking from optional marking is that in cases of differential marking we are able to determine the conditions that trigger marking, which allows us to predict the distribution of marked and unmarked arguments. This trigger is lacking in optional marking, despite the likelihood of a marker's presence being somewhat predictable. In languages with DOM/DSM, determining whether an argument belongs in this subset of specially marked arguments is usually expressed in terms of the features associated with that argument. Exactly which (set of) features are responsible for the distribution of DOM/DSM is language-specific, however cross-linguistically there is a general trend for some factors to be involved in the marking alternation to a very high degree. These factors are different for subjects and objects; for DOM for example, animacy, definiteness, and specificity are particularly common, whereas for DSM person seems to play a greater role.

To give some examples: specificity is known to cause the alternation between an overt and covert accusative case in Turkish; animacy determines the presence of an object marker in Spanish; and definiteness determines the presence or absence of an object marker in modern Hebrew:

- (3.1) a. Ali bir kitab aldı.
 Ali one book bought
 Ali bought some book or other.
- b. Ali bir kitab-ı aldı.
 Ali one book-ACC bought
 A book is such that Ali bought it.

Enç (1991: 5)

- (3.2) a. Conozco *(a) este actor.
 know-1.SG DO this actor
I know this actor.
- b. Conozco (*a) esta película.
 know-1.SG DO this film
I know this film.

Von Heusinger and Kaiser (2011: 600f)

- (3.3) a. Ha-seret her'a *(et-) ha-milxama.
 the-movie showed (ACC) the-war
The movie showed the war.
- b. Ha-seret her'a (*et-) milxama.
 the-movie showed (ACC) the-war
The movie showed a war.

Aissen (2003: 453)

However DOM is not always a one-to-one correlation of feature to marking. Occasionally, a combination of features are required to co-occur together in order for DOM effects to be seen. Such cases demonstrate how the various features can interplay with each other, leading to specific combinations of (usually) animacy, specificity, and definiteness, which determine the environments for DOM. Apparent optionality of a marker is also sometimes encountered when a particular combination of features are present. Hindi for example³, has an object marker *-ko*, which is *obligatory* on (specific) human-referring pronouns and proper names, definite and indefinite human nouns, and (maybe) specific indefinites; *optional* for non-specific human nouns, and definite inanimates; and *impossible* on indefinite inanimates.

- (3.4) a. Ilaa-ne bacce-*(ko) uṭhaayaa.
 Ila-ERG child-OBJ lift.PST.MASC.SG
Ila lifted the/a child.
- b. Raavi-ne kaccaa kelaa/kele-ko kaaṭaa.
 Ravi-ERG unripe banana/banana-ACC cut
Without -ko: Ravi cut the/an unripe banana.
*With -ko: Ravi cut the/*an unripe banana.*

³However, a word of warning: the data does not seem to be uniform, and sources differ slightly on exactly where the boundaries are. The description and examples I lay out here are from descriptions in Aissen (2003: 465ff) and Dalrymple and Nikolaeva (2011: 11f), but may differ depending on the source material.

Differential marking is not always restricted to marking the argument; it can also arise in agreement systems, whereby only a subset of subjects/objects are able to control agreement (e.g. Dalrymple and Nikolaeva 2011). I will not address this type of DOM here, partly for reasons of space, but also because DOM marked on the argument itself is the closest analogy to OCM. Whether similar effects are seen in optional agreement systems will not be investigated here.

Similarly to DOM, Differential Subject Marking targets a particular subset of subjects for an alternation in marking⁴. The clearest example is perhaps NP type split-ergativity, a common pattern of which involves ergative marking being lost on local pronouns, and retained on all other nominals.

3.2 Approaches to differential marking

3.2.1 Appeal to functional considerations

The earliest investigations of differential and split marking systems (e.g. Silverstein 1976, 1981; Dixon 1979; Comrie 1979, 1986, 1989; Bossong 1985; Croft 1988; a.o.) were followed by functional explanations accounting for them. Essentially, functional explanations appeal to processing factors as being behind certain types of linguistic variation (see e.g. Haspelmath 2008). In the realm of differential marking, this is largely encapsulated in the idea that subjects and objects typically have particular features associated with them, i.e. subjects tend to be related to agency and therefore animate and definite, and objects are usually less animate/definite. Divergence from this natural, prototypical state of affairs requires extra marking to draw attention to it (e.g. Comrie 1989: 128, Silverstein 1976: 152). Marking thus serves to highlight particularly salient or prominent properties of arguments, defined in terms of the unnaturalness of their roles. Importantly however, salience/prominence is not defined absolutely (i.e. animacy is not a salient property by definition), but rather only in combination with a particular argument; marked objects are salient *as objects*- the features which make objects salient are not necessarily salient for a subject. In fact, many of these accounts suggest a mirror image effect of markedness between subjects and objects, manifested in scales/hierarchies. These list the properties along a scale, with one end representing more subject-like properties, and the other more object-like properties. This mirror-image representation of subject/object typical features is known as *markedness reversal*- the idea that that which is marked for a subject is unmarked for an object, and *vice versa*⁵.

⁴Note that ergative systems, in which transitive and intransitive subjects pattern differently, are not considered DSM *per se*; however splits within ergative systems are.

⁵Or to borrow Carnie's (2005: 5) characterisation: *what is good for the goose is bad for the gander* (and vice versa).

The motivation for marking is seen as being at least two-fold. On the one hand, it assumes a level of *iconicity*, i.e. a greater level of markedness/complexity demands a more marked realisation- more information requires more representation to encode it. Greater complexity here relates both to the inherent lexical features associated with an argument (Silverstein 1976), as well as to the pairing of subjects or objects with untypical features. A second motivation is related to the task of disambiguation (e.g. Dixon 1979); in a language in which grammatical relations are not deducible from word order, and context or world knowledge does not suffice to make the relations clear, case marking can serve to identify which argument is the subject and which the object. The identification of arguments in a transitive clause is sometimes assumed as "the ultimate basis for any system of case assignment" (Dixon 1979: 69). The relation to differential systems follows from a mixture between this need for identification, and economy; in contexts with very typical features associated with the arguments (e.g. an animate subject acting on an inanimate object), marking is superfluous. When certain uncharacteristic properties or situations make identification of subject and object difficult (e.g. two arguments with similar degrees of animacy, or an inanimate subject with an animate object), then in this case there will be pressure for marking to apply.

One oft-noted problem with adopting this approach as an explanation of marking patterns is the abundance of sentences exhibiting marking where no confusion could ever realistically arise between arguments- cases of vacuous disambiguation. This argument is not only restricted to differential/split systems, but is also found in optional case marking systems as well. This weakens the claim that a case is only present when needed to disambiguate; for example in the following Yuwaalaraay sentence, where a (generally optional) ergative is found on the subject, although world-knowledge tells us that the opposite roles in this sentence would be extremely unlikely:

- (3.5) Bulaarr-u rdayn-du rdinggaa rdaldarna.
 two-ERG man-ERG meat.ABS eat.PROG.PRS
Two men are eating meat.

Williams (1980: 36)
 via McGregor (2010: 1618)

In truth, an appeal to disambiguation as explaining (differential/optional) marking is almost never accepted *tout court* as an explanation; very often it is claimed to play some role, but not to determine case marking patterns itself.

In much functional/typological literature, it has been assumed that the features which affect marking are best represented in terms of an implicational hierarchy, for example the following, adapted from Silverstein (1976)⁶, which

⁶cf. Dixon (1994: 86); Coon and Preminger (2017: 26), and many others.

lays out the features such that a point can be made at a particular position in the hierarchy, with ergative marking available on every feature to the right, and on none to the left:

←	NOT ERGATIVE				ERGATIVE			→
local pronouns	«	3 pronouns & demonstratives	«	proper nouns	«	common nouns human animate inanimate		

Languages mark a point on the hierarchy, at which all positions to the left of that point are not marked ergative, and all positions to the right of that point are. That means for example that a language will not mark both local pronouns and proper nouns with an ergative case, to the exclusion of third person pronouns⁷. Both the sequence order and the directionality of the members of such hierarchies are presumably universal; so no languages mark (all) local pronouns with an ergative case, but common nouns not. Similar hierarchies for DOM are examined below.

3.2.2 Aissen’s (1999; 2003) OT approach

A very influential approach to split marking/DOM is outlined in Aissen (2003, 1999), in which scales or hierarchies of prominence as described in functional literature are formally encoded into grammar, and coupled with Optimality Theoretic (OT) tools to predict distributions of differential splits cross-linguistically. Aissen formalises the functionalist intuition that overt marking indicates non-typical features for a grammatical function, which translates into saliency of that argument. Inanimacy, for example, is a more typical feature of an object, and so deviancy from this pattern, i.e. an animate object, requires marking it as such- animacy and topicality are features more associated with the agency of typical subjects, rather than objects. The generalisation for DOM that she takes from the functional/typological literature is stated as follows (Aissen 2003: 436):

- (3.6) The higher in prominence a direct object, the more likely it is to be overtly case marked.

This is a weaker claim than disambiguation between subjects and objects, but shares the same underlying assumption that marking corresponds to deviancy from a prototype.

Aissen proposes that prominence is assessed along the following two scales:

⁷This is however not universally true; Silverstein (1976) also discusses exceptions to the hierarchy.

- (3.7) a. ANIMACY SCALE: Human > Animate > Inanimate
 b. DEFINITENESS SCALE: Personal pronoun > Proper name > Definite NP > Indefinite specific NP > Non-specific NP

Similarly to Silverstein's hierarchy described above, these scales represent implicational hierarchies, such that if marking occurs at one point of the scale, it will also apply to all points higher on the scale as well.

Aissen sees markedness reversal as being an integral part of DOM. As such, she takes advantage of the OT tool of *harmonic alignment* (Prince and Smolensky 1993), which allows a coupling of sets of scales, aligning the elements on them. Based on a relational scale in which subjects are more prominent than objects (Su > Oj), the prominence scales given by Aissen listed above can be linked via harmonic alignment. These produce two hierarchies each: one expresses the markedness scale for subjects, and one for objects. The first element of the first scale (subject) aligns with the first of the second, and continues along that scale; the second element of the first scale (object) does the same, beginning from the opposite end:

- (3.8) a. ANIMACY/RELATIONAL SCALES:
 Su/Hum > Su/Anim > Su/Inan
 Oj/Inan > Oj/Anim > Oj/Hum
 b. DEFINITENESS/RELATIONAL SCALES:
 Su/Pro > Su/PN > Su/Def > Su/Spec > Su/NSpec
 Oj/NSpec > Oj/Spec > Oj/Def > Oj/PN > Oj/Pro

Whereas $\alpha > \beta$ indicates α is more marked than β (as seen in the prominence scales), the notation $\alpha > \beta$ used in harmonic alignment indicates that α is *less* marked than β (and is thus more natural). What these show then, is that a human subject is less marked than an animate subject, which in turn is less marked than an inanimate subject. Markedness reversal shows this to be the opposite for objects: an inanimate object is less marked than an animate object, and so on, similarly applied to the definiteness scale.

Marked combinations can be interpreted in OT as constraints if the scales are reversed. This ensures that marked combinations are penalised/avoided generally. These are arranged so that if animacy/definiteness is a factor in avoiding certain types of arguments, the types of arguments it applies to references these constraints. If an inanimate subject is the most marked in the hierarchy, then a constraint can be implemented to avoid it over animate subjects, for example. Applying this to the whole scale gives the following constraint hierarchies:

- (3.9) a. *SU/INAN » *SU/ANIM » *SU/HUM
 *OJ/HUM » *OJ/ANIM » *OJ/INAN
- b. *SU/NSPEC » *SU/SPEC » *SU/DEF » *SU/PN » *SU/PRO
 *OJ/PRO » *OJ/PN » *OJ/DEF » *OJ/SPEC » *OJ/NSPEC

Aissen notes that these are independently motivated, with some languages known to disallow or disprefer inanimate/non specific subjects for example. However this alone is not enough to derive DOM, as it says nothing about case marking- these only state a pressure to avoid marked combinations of argument roles and features. Aissen notes that DOM is overwhelmingly exemplified by a marked versus unmarked nature- a zero/non zero alternation⁸, suggesting privativity of a feature CASE. For regulating the alternation, Aissen introduces two new constraints:

- (3.10) a. *Ø_C: Penalises the absence of a value for the feature CASE.
 b. *STRUC_C: penalises a value for the morphological category CASE.

These constraints interact with the constraint hierarchies in (3.9), via *constraint coordination*. Coordinating *Ø_C with the constraint hierarchies pushes for an overt expression of case, because a lack of case is penalised. Representing this for objects and animacy, we see an updated hierarchy with a form like this:

- (3.11) *OJ/HUM & *Ø_C » *OJ/ANIM & *Ø_C » *OJ/INAN & *Ø_C

To keep the discussion simple, I've only illustrated this with the object/animacy scale, but keep in mind this constraint coordination applies to all four scales listed in (3.9) above. This constraint hierarchy would penalise all objects without case, reflecting a general pressure to case mark arguments. In DOM of course, only some objects are marked, so we need to introduce *STRUC_C, which penalises the overt expression of case.

This is everything needed to derive DOM effects in this system. The placement of *STRUC_C into the hierarchy serves as a cut-off point, determining where on the hierarchy marking will stop occurring. Moreover, variation in DOM effects cross-linguistically are very easily derived, by the variable and language-specific placement of *STRUC_C. By hypothesis, the scales, and the constraints generated by application of harmonic alignment along with constraint coordination with *Ø_C are universally fixed; it is only the positioning of *STRUC_C which varies between languages. Aissen provides evidence of languages which mark objects according to every position where *STRUC_C could be placed (see figure 3.1).

⁸But cf. Keine and Müller (2010, 2015) for evidence that this is not always the case.

	\leftarrow *STRUC _C [Kalkatungu, no objects case-marked]
*OJ/PRO & *Ø _C	
	\leftarrow *STRUC _C [Catalan, only pronoun objects case-marked]
*OJ/PN & *Ø _C	
	\leftarrow *STRUC _C [Pitjantjatjara, only pronoun and PN objects case-marked]
*OJ/DEF & *Ø _C	
	\leftarrow *STRUC _C [Hebrew, only pronoun, PN, and def. objects case-marked]
*OJ/SPEC & *Ø _C	
	\leftarrow *STRUC _C [Turkish, all objects case-marked except non-specifics]
*OJ/NSPEC & *Ø _C	
	\leftarrow *STRUC _C [Written Japanese, all objects case-marked]

Figure 3.1: Variable placement of constraint *STRUC_C (Aissen 2003: 450).

To illustrate this with an example showing how this would choose the correct candidate, consider Hebrew, where a specific indefinite object will surface without case. In figure (3.2), we can see that in Hebrew *STRUC_C is by hypothesis ranked above *OJ/SPEC & *Ø_C. A candidate with a positive specification for CASE will therefore be eliminated by *STRUC_C, leaving the candidate without a CASE specification to win:

ARG: PATIENT DEF: SPECIFIC, INDEFINITE	*OJ/DEF & *Ø _C	*STRUC _C	*OJ/SPEC & *Ø	*OJ/NONSPEC & *Ø
GF: OJ DEF: SPECIFIC, INDEFINITE CASE: ACC		*!	*	
GF: OJ DEF: SPECIFIC, INDEFINITE CASE:				

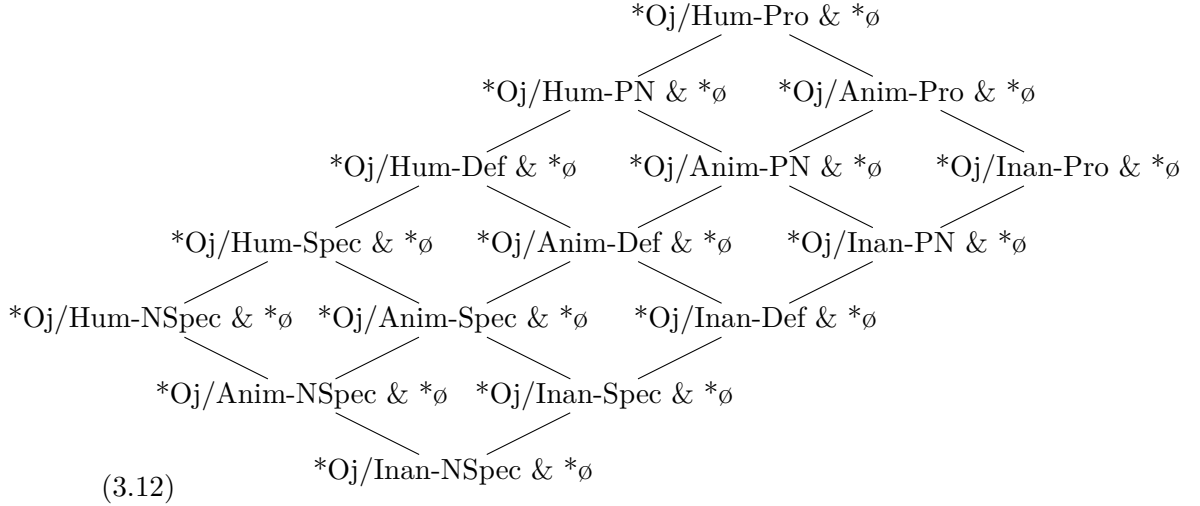
Figure 3.2: Hebrew (Aissen 2003: 455).

As a result, a specific indefinite object in Hebrew will surface without case. Again, the variable placement of *STRUC_C in the hierarchy results in cross-linguistic variation in regards to which objects surface with/without marking.

So far, this can only account for cases where DOM is conditioned by one factor only, however we have seen that DOM sometimes makes reference to several factors, which act together to create a differential marking pattern (Aissen calls this "two dimensional" DOM). This can be derived in this system by taking the cross-product of two scales (animacy and definiteness), so that e.g. human pronouns are more marked (for objects) than animate pronouns, which is more marked than inanimate pronouns; human proper names are more marked than animate proper names...; and so on. Aissen notes that this only produces a partial ranking between members- human pronouns and animate proper names for example won't be ranked absolutely in regards

to another. Human outranks animate on the animacy scale, but pronoun outranks proper name on the definiteness scale.

Similarly to the scales for one dimensional DOM described above, this cross-product scale of markedness can be translated into constraints, represented by Aissen as a constraint lattice (cf. Aissen 2003: 464):



This again is able to make relatively clear implicational predictions about the possible forms DOM can take in two dimensional DOM⁹. Aissen notes that optionality of marking is often seen in a particular subset of object types in two dimensional DOM, restricted to areas between obligatory and impossible marking. She lists the following rules describing this (2003: 459):

- (3.13) If α dominates β [in the two dimensional lattice], then:
- a. If an object of type β may be case-marked, then all objects of type α may be case-marked.
 - b. If an object of type β must be case-marked, then all objects of type α must be case-marked.
 - c. If no object of type α can be case-marked, then no object of type β can be case-marked.

This essentially states that there must be clear boundaries which separate domains in which case marking must occur, is optional, and cannot occur; and that these domains must occur in that order (must - may - must not). As it is tied to the constraint lattice, this means that optional case marking in DOM will always be restricted to an area between the most and least marked

⁹However Aissen stresses the "incomplete or contradictory" facts on two dimensional DOM in the relevant literature, and suspects that some aspects of this approach may be oversimplified (2003: 461).

objects. According to the generalisation driving DOM that Aissen takes from the functional/typological literature (*the higher in prominence a direct object, the more likely it is to be overtly case marked*), this is what would be expected; optional case here represents the border area between high and low prominent objects¹⁰. Because marking is totally determined by constraint ranking, Aissen characterises the domain of optionality as a stretch of the scale in which the constraint *STRUC_C may be reranked. Case marking is therefore still determined by the same means as in non-optional marking, but variable placement of *STRUC_C within one and the same language results in variable output, thus giving the appearance of optional case¹¹.

Aissen (1999, 2003) are important papers because they represent the first attempts at taking functional intuitions about differential marking patterns, as well as taking the relative explanatory success of implicational hierarchies, and implementing these formally into a theory of grammar. Rewiring these scales as constraints that interact with principles of iconicity and economy (*Ø_C and *STRUC_C respectively), Aissen's approach makes very clear predictions about the types of DOM patterns that should be possible. Largely, this is borne out by the variation seen in the world's languages (see e.g. Figure 3.1 above). There does not seem to be radical departures from the hierarchies—no language marks according to the reverse of the scale, for example. Multi-dimensional DOM, in which several factors conspire to produce DOM effects, is also easily represented in this system by essentially the same theoretical means.

3.3 Minimalist approaches

One of the challenges with deriving differential/split marking in minimalist approaches is that it is unclear what role hierarchies play, or how/whether they could/should be implemented. Are they built into grammar as objects which are made reference to themselves, or do their effects arise by independent means? Aissen's OT analysis allows the hierarchies to be built directly into the grammar in a universal fashion. Some have imported a similar idea into a minimalist approach, by reanalysing points on a hierarchy as their own phrasal projections, and deriving marking splits from locality restrictions imposed by phrasal syntax coupled with the mechanisms of case assignment (e.g. Merchant 2006). Others are less strict regarding the

¹⁰That optional marking is designated to an area on the hierarchy between obligatory and impossible is also supported by McGregor (2013: 1172).

¹¹Note that probability is not addressed in this analysis. Aissen suggests that deriving the probability of marking is probably best dealt with in a Stochastic OT approach, in which constraints are not discretely ranked, but on a continuous, probabilistic, and to some extent potentially overlapping fashion. See e.g. Boersma (1997) for general remarks on Stochastic OT; Chapter 5 will also briefly examine its application to optional case as well.

universal implementation of hierarchies as such, but similarly rely on different syntactic positions for marked and unmarked arguments to derive these effects (e.g. some ideas in Baker (2015); also Jelinek and Carnie (2003) and Coon and Preminger (2017), among others). In many cases, the idea of hard-wiring hierarchies into the grammar itself is met with suspicion, both on theoretical grounds (e.g. Carnie 2005; Legate 2014; M. Richards 2015, a.o.), as well as in some cases the empirical evidence for the validity of such scales cross-linguistically at all (Filimonova 2005; Brown et al. 2004; Wiltschko 2008; Bickel and Witzlack-Makarevich 2008; Bickel, Witzlack-Makarevich and Zakharko 2015). In these cases, other means of deriving and explaining the empirical facts as described in the typological/functional literature are needed. If hierarchies are "merely post-factum descriptive statements of grammatical tendencies", as Carnie (2005) describes them, then the grammatical forces which produce the patterns must naturally nonetheless be described. Following the motivation described by Harbour (2008), "...even if hierarchies can be rationalized on functional grounds, this still does not explain their syntactic function. If they have syntactic effects, then these must be expressible and derivable via the entities, *viz.*, features, in terms of which syntax operates." A synchronic account of how the grammatical system produces splits is needed even if one argues that they are they merely the end result of particular diachronic pathways, and therefore have little synchronic significance themselves (e.g. Garrett 1990; see also the discussion in Kiparsky 2008). Markedness still plays a strong role in most accounts, but with less emphasis on a cognitive perspective, focusing instead purely on the features involved, and their relations to one another. In order to specify a first person pronoun for example, a greater number of (positively specified) features are required compared to second person, which requires more than third person- perhaps a representation such as [+participant; +author] versus [+participant; -author] versus [-participant] for example. Representing person features as feature geometries (Harley and Ritter 2002; McGinnis 2005), or as sets of privative features (Béjar 2003; Béjar and Rezac 2009; Bárány 2017) allow entailment relations between person values, allowing markedness relations to emerge naturally. Further entailments between features have also been proposed, for example that local pronouns always entail animacy and definiteness, and that only third persons can be inanimate and indefinite (see e.g. M. Richards 2015). Such means are commonly (but not always) employed to derive effects described in hierarchies in minimalist approaches.

Broadly, there are two main approaches to deriving marking splits in the literature. One approach assumes that the marking alternation is determined in the syntax proper- for example, this may be due to marked and unmarked arguments being located in different syntactic positions respectively; or, it may be linked to differences between the case-assigning domains the

arguments find themselves in. However this is achieved (and whatever the motivation for it may be), the important point is that the marking pattern is ultimately determined at an earlier stage of the derivation, a stage in which the structure is still being built and manipulated.

The other approach assumes that split marking is a morphological phenomenon, meaning that the split is determined very late in the derivation. Under this assumption, marked and unmarked arguments should be treated identically as far as all syntactic processes are concerned, because the information that they are marked differently is not available at that stage, and thus cannot influence any syntactic processes.

3.3.1 Syntactic accounts

Syntactic accounts of split marking systems are united by the assumption that the reason a particular argument may not surface bearing the otherwise expected case is because it was either never assigned that case to begin with; or alternatively, subsequently assigned a different case which is spelled out. There are varying ways of achieving this; some accounts ensure that case-assignment to an argument is blocked because the argument is not in the appropriate case-assigning domain due to movement, or due to new case-assigning domains being created, or because the functional head responsible for assigning case is defective in certain contexts.

The most obvious clue that suggests that movement has taken place is naturally differences in word order; however this may only become visible when other factors are taken into account. For example Sakha (Turkic) exhibits DOM triggered by specificity/definiteness (Baker 2015; Baker and Vinokurova 2010). It is not immediately obvious that movement has taken place by comparing only examples with marked and unmarked objects:

- (3.14) a. Masha salamaat-y sie-te.
 Masha porridge-ACC eat-PAST.3Sg
 Masha ate the porridge.
- b. Masha salamaat sie-te.
 Masha porridge eat-PAST.3Sg
 Masha ate porridge.

Baker (2015: 125f)

The addition of adverbs into the sentences above however does demonstrate word order differences, making it likely that the sentences without adverbs do represent examples of movement, albeit string-vacuous movement:

- (3.15) a. Masha salamaat-y turgennik sie-te.
 Masha porridge-ACC quickly eat-PAST.3Sg
Masha ate the porridge quickly.
- b. Masha turgennik salamaat sie-te.
 Masha quickly porridge eat-PAST.3Sg
Masha ate porridge quickly.

*ibid*¹²

Assuming a theory of dependent case, Baker concludes that movement of the object out of the VP results in the object ending up in the same spell-out domain as the subject, therefore allowing accusative case to be assigned. This movement of the object out of the VP correlates with differences in interpretation (see e.g. Diesing 1992 for the relation between specificity and syntactic position in several languages¹³).

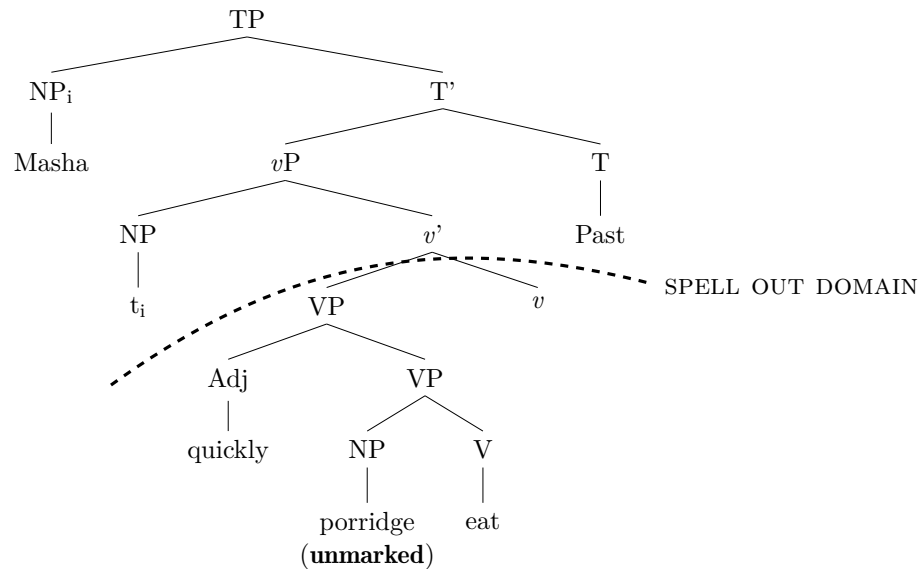
(3.17) DOM IN SAKHA

¹²Notes on these forms: the (a) sentence is ungrammatical without the accusative marker; the (b) sentence with the accusative marker would suggest the object was focused.

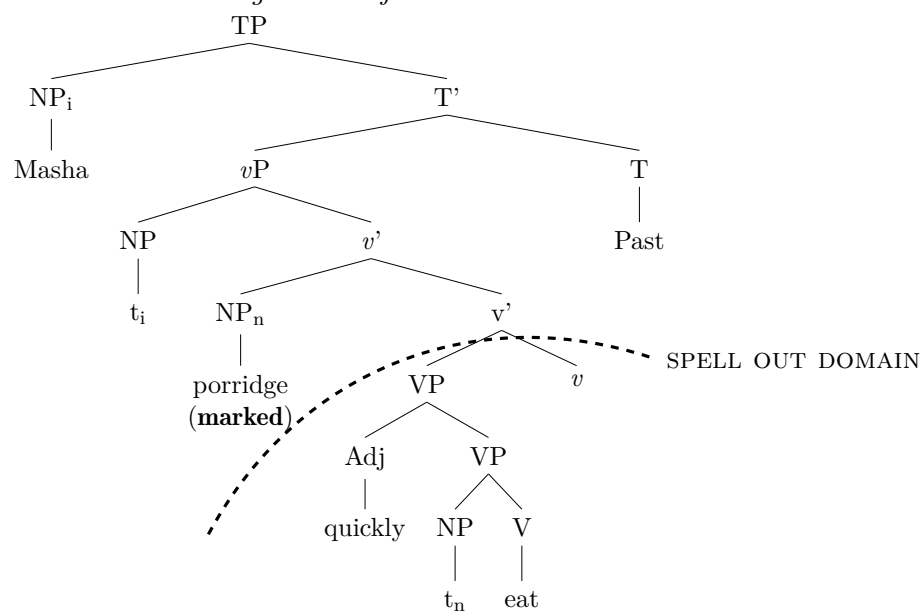
¹³Yiddish provides such an example of object movement correlating with differences in interpretation (Diesing 1997: 389):

- (3.16) a. Maks hot geleyent a bukh.
Max has read a book.
- b. Maks hot dos bukh geleyent.
Max has read the book.

- a. *One nominal in each spell out domain: no dependent case assigned.*



- b. *Movement of object into higher spell out domain: dependent accusative case assigned to object.*



Adapted from Baker (2015: 126)

These structures indicate the following: assuming that little v is a phase head, when it is introduced into the structure, it defines its complement VP as a spell out domain. Assuming that this correlates with the domains in

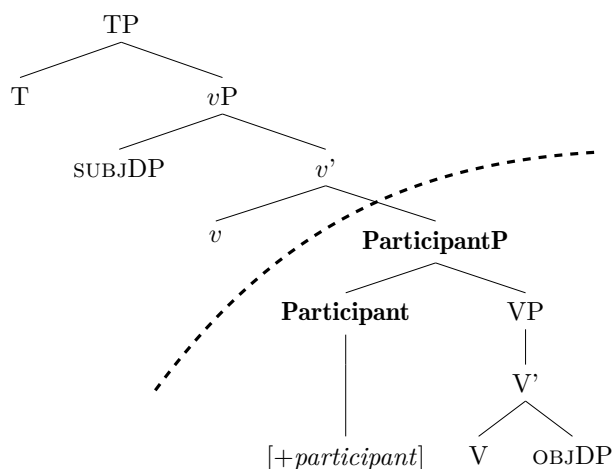
which dependent case assignment is evaluated¹⁴, if the object remains low *in situ* (the a. example), then it will be the only NP in that domain, and will therefore not be marked. Movement of the object to a higher position (the b. example) brings it into a new case-assigning domain. As subject and object are at this stage both in the same domain, the case assigning algorithm, seeing now two NPs, can target the c-commanded NP (the object) for dependent accusative case assignment. Thus DOM is related to whether the two arguments find themselves in the same case-assigning domain or not; whether this happens can depend on what the case-assigning domain is in that particular language, coupled with the question of whether the object moves out of the VP or not. This movement also derives the specific interpretation, as briefly discussed.

Similar arguments based on case assigning domains have been made for NP type split ergativity as well. Similarly couched in a theory of dependent case, Coon and Preminger (2017, 2012) argue that case-assigning domains can be disrupted by the introduction of certain heads, which result in different marking patterns. Like Baker's analysis, the split in marking then also follows from a change in the domain in which case is assigned. Expanding earlier work on aspect-based split ergativity¹⁵ to person-based splits, Coon and Preminger propose a bifurcation of the clause in the context of local pronouns, which ensures that local pronoun subjects are in a different case-assigning domain relative to other types of subject. Being alone in a case-assigning domain means that a dependent case (in this case, ergative) will not be assigned, as it does not fulfil the requirement that it c-commands another argument within its domain. According to their proposal, 1st/2nd person pronouns must be licensed by a separate functional projection, which they call *ParticipantP*:

(3.18)

¹⁴A claim not to be stated without further comment; after all, most languages do not take VP as marking a boundary for case-assigning purposes. If they did, then accusative case could generally only ever be assigned when objects move out of the VP. Baker sees this as a point of variation, and assumes that languages can differ in what the case evaluation domains are; in this case, whether *vP* is a "hard" or a "soft" phase head (Baker 2015: 146ff).

¹⁵Specifically Coon (2010), in which it is assumed to be *aspect* heads which split the clause.



ParticipantP presumably splits the clause into two separate domains for purposes of case assignment. Assuming a dependent case approach¹⁶, this means the following: in a derivation with a subject which is not a local pronoun, the subject and object are within the same case-assigning domain. Both arguments are visible to the case assigning algorithm, which, being specified for ergative case, assigns dependent ergative case to the c-commanding argument, the subject. The object is assigned absolutive case. However when the subject is a local pronoun, this process is disrupted; the ParticipantP phrase is required to license the local pronoun, and its presence disrupts the case-assigning domain¹⁷. When case is assigned, the algorithm treats both arguments as being in their own domain. Since neither argument is in a c-command relationship with another DP, both arguments are assigned absolutive case (as if they were intransitive clauses), thereby surfacing without ergative case.

Presumably the same situation holds for nominative-accusative languages as well, but since both intransitive and transitive subjects are marked similarly in these languages, the distinction between marked/unmarked subjects does not arise. However why this does not result in a disruption of accusative case in the context of a local pronominal subject is not clear to me under this proposal.

As evidenced by Coon and Preminger's ParticipantP, the licensing of arguments is a common theme in syntactic approaches, and particularly the

¹⁶ Although they claim that a Agree based, probe-goal approach is also possible.

¹⁷ One might question how ParticipantP can licence the subject, when it is merged *below* the subject. The phrase must be situated between subject and object in order to disrupt the case domain. Coon and Preminger discuss a few options (e.g. perhaps the subject is actually merged in a lower position than SpecvP), but ultimately leave the issue open.

differing licensing needs of different types of NPs. In relation to NP type split ergativity, Coon & Preminger stressed the fact that splits typically differentiate local pronouns from all other nominals, so ParticipantP targets local pronouns only. However not all splits are of this type; some accounts therefore try to refer to a greater degree to the variation laid out in Silverstein-type hierarchies. One such account is the cartographic approach taken in Merchant (2006), in which he similarly claims that in such split ergative languages, unmarked arguments are moved into a new case-assigning domain, ensuring that they bear nominative, rather than ergative case. However this analysis makes different assumptions about case assignment; firstly Merchant assumes that case can be assigned more than once to an argument, which he called polyvalent case. This has been claimed elsewhere in the literature, particularly in relation to case stacking/*Suffixaufnahme* phenomena, where more than one case is overtly realised on a single argument, e.g. Dench and Evans (1988), Plank (1995), Nordlinger (1998) and N. Richards (2013). Case can be assigned more than once, whether or not the morphology realises it as such; some languages may just realise the last case assigned. Merchant furthermore assumes a clause structure in which prominence hierarchies of the sort discussed by Silverstein (1976) and Aissen (1999, 2003) are directly built into the architecture of the clause. A set of functional heads, relating to various properties of the hierarchy, attract arguments bearing that property to their specifier positions. So the definiteness scale may be represented as such, each position on the hierarchy reflected as its own functional head (Merchant 2006: 13):

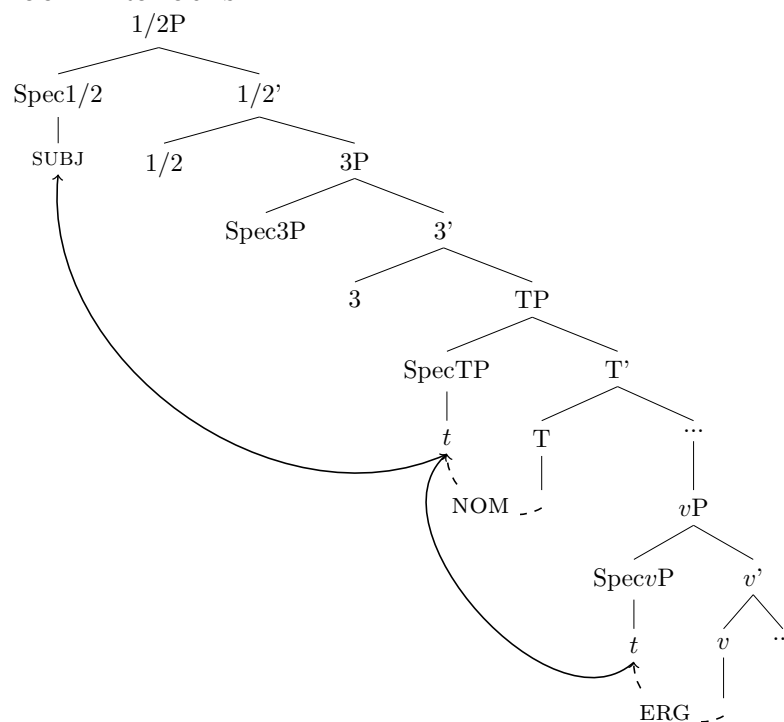
$$(3.19) \quad 1/2 \ [\ 3 \ [\ \text{PN} \ [\ \text{Def/Spec} \ [\ \text{Indef/Spec} \ [\ \text{Indef/Nonspec}$$

These functional heads exist for both subjects and objects (in cases of DOM); for subjects, they c-command the subject in *v*P. A local pronoun, for example, would move from its initial position in Spec*v*P to the specifier of the 1/2 head. Assuming that case is assigned in a Spec(ifier)-Head relation, a split in marking is determined by the case-marking domains an argument must pass through on its way to its specified functional head. When an argument passes through SpecTP on the way to its licensing destination, it is assigned nominative case. All arguments which must move to a position higher than TP will therefore bear nominative case. Therefore, the position on the scale where the split occurs, and cross-linguistic variation of this, can be modelled by exactly where in the clause these functional heads reside in relation to TP.

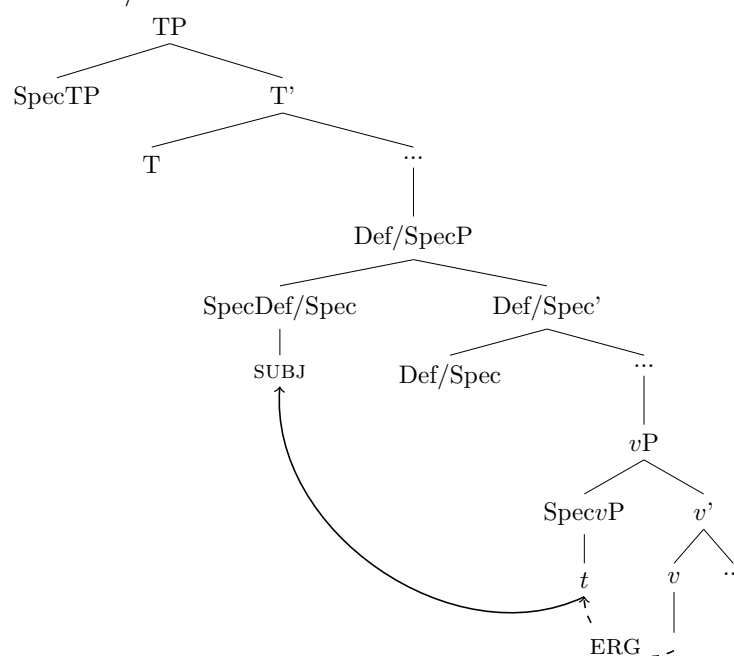
We can illustrate this through an example. In Dyirbal, all pronoun (1/2/3) subjects are unmarked (bear nominative), whereas nominal subjects bear ergative case. By hypothesis, the T head resides directly below the functional head which attracts third person pronouns:

- (3.20) a. Dyirbal case (based on analysis in Merchant 2006):¹⁸

LOCAL PRONOUNS



- b. DEFINITE/SPECIFIC NOMINAL SUBJECTS



¹⁸Dotted lines indicate case assignment; unbroken lines indicate movement.

Local and third person pronouns are routinely assigned ergative, exactly the same as nouns are, when merged in Spec v P. However, they are subsequently attracted to the specifier of their relevant functional heads higher in the clause. In order to reach these positions, they move through SpecTP, thus being assigned nominative case on the way. The nominative case is the only case to be spelled out.

Non-pronominal subjects however, are assigned ergative in Spec v P, just like pronouns, but the functional head to which they must move is situated lower than TP, unlike those for pronouns. Subsequently, they do not pass through SpecTP, and are therefore not assigned nominative case. They are then spelled out bearing ergative case. Cases of DOM follow by the same reasoning; functional heads are positioned relative to the v P, where accusative case is assigned. Objects may or may not reach Spec v P, and thus be marked, depending on that language's order of heads. Languages in which no split is detected, e.g. English, are also easily represented by this system. In English, all of the relevant functional heads are located above the TP, meaning that all subjects pass through SpecTP, and are marked nominative.

Merchant claims that although movement of this type should be detectable, as unmarked arguments are higher in the structure than marked arguments, languages that exhibit this type of split-marking system tend to have other characteristics that make this difficult, e.g. a freer word order making diagnosing movement by changes of linear order difficult.

These few short examples should be representative of the types of syntactic means available to explain the types of splits described in the functional/typological literature. These types of arguments usually rely on some form of locality issue to explain when a case isn't assigned- although this is achieved in differing ways, depending on assumptions about how case is assigned. The unifying point between them is that the status of case marking on the argument in question is determined in syntax.

3.3.2 Morphological accounts

Morphological approaches to marking splits stand in contrast to syntactic approaches as described above. These approaches assume that in syntax proper, all arguments, regardless of what marking they eventually will bear, are routinely and uniformly assigned the expected case, i.e. accusative on objects, ergative on transitive subjects. The reason why marking is inconsistent is reducible to situations or processes that apply after the syntactic structures have been formed. Several such morphological situations have been proposed; one involves a mismatch between syntactic and morphological specifications, another involves deletion of information before assignment of phonological material.

However it is derived, there is evidence that at least in some languages, a syntactic analysis is not appropriate. Legate (2014) discusses evidence that NP type split ergativity has a morphological rather than a syntactic basis. She lists three diagnostic tests to determine whether the syntactic status of an unmarked argument is different relative to that of marked arguments; two of which I will give examples for here¹⁹. The first of these is case agreement- the requirement that case marking occurs not only on the nominal itself but on other elements related to it: adjectives, other elements inside the DP, quantifiers, and the like. If a DP is not assigned a case, then other elements should not bear it either- if they do, we would have to wonder where that case marker came from. Many languages seem to suggest a morphological source for these splits in this respect:

(3.21) Dyirbal (Pama-Nyungan):

- a. ɲaɖa wuygi-ŋgu balan ɖugumbil balga-n.
 I.NOM old-**ERG** NCII.there.ABS woman.ABS hit.NFUT
 I, old, hit the woman.
- b. ɲaɖa wuygi bani-ŋu.
 I.NOM old.**ABS** come-NFUT
 I, old, came.

Mel'čuk (1979: 54)
 via Legate (2014: 188)

(3.22) Udi (Lezgian):

- a. zu k'ala-t'-in šum-ax aq'-sa-zu
 1.ABS big.SA.OBL-**ERG** bread-DAT2 eat-PRES-1SgA
 I - being the oldest one - eat the bread.
- b. zu kala-o damdam šähä-rä tağ-al-zu
 1.ABS big-SA.**ABS** tomorrow town-DAT1 go.FUT-FUT-1SgS
 I - being the oldest one - will go to town tomorrow.

Schulze (2001)
 via Legate (2014: 191)

¹⁹The third test, which I will not discuss due to the limited number of languages to which it applies, involves syntactic ergativity, i.e. restrictions on certain types of A-movement, or licensing/control of arguments in nonfinite clauses, which are sensitive to an SO/A distinction (see e.g. Dixon 1994; Deal 2016b). The test questions whether an unmarked A argument patterns with other A arguments in these processes, or whether it patterns with SO arguments.

(3.23) Marathi (Indo-Aryan):

- a. tya vedyaa-ne kay ke-la?
 he.OBL foolish-**ERG** what do-PERF.3sg
 What did he - a foolish man - do?
- b. mi bicharii-ne sagla kaam ke-la.
 I.NOM poor-**ERG** all work do-PERF.3Sg
 Poor little me did all the work.

Dhongde and Wali (2009)
 via Legate (2014: 194f)

These examples all demonstrate that although the pronoun fails to morphologically bear case (or bears nominative case), it nonetheless triggers ergative marking on related elements. This would be unexpected if the pronouns truly represented non-ergative case, but is elegantly explained if the lack of case morphology is purely morphological. Similar effects are seen in the second test: whether coordination between marked and unmarked arguments is banned or not²⁰. This follows from the assumption that syntactically distinct arguments cannot coordinate. The following examples show coordination where case is retained on both conjuncts, and coordination of marked and unmarked subjects are possible:

(3.24) Udi (Lezgetic):

- a. ġar-en-q'a xüyär-en-al sunsun-ax čal-x-al-t'un
 boy-**ERG**-and girl-**ERG**-FOC each.other-DAT2 know-LV-PastPart-3pl
 buq'-o
 want-Fut.Mod
 The boy and the girl will probably want to know each other.
- b. miple, vi baba-n va zu-al kala
 behold you.sg.Poss father-**ERG** and I.**ABS**-FOC great
 därd-en furu-yan-exa vax
 pain-INSTR search-1pl-LV.Pres you.sg.DAT2
 Behold, your father and I search you with great pain.

Schulze (2014)
 via Legate (2014: 191)

²⁰ Adjusting of course to language-particular patterns of how case behaves in coordinations, e.g. whether case is only present on the final conjunct or on all conjuncts, etc.

(3.25) Marathi (Indo-Aryan):

- a. lilil-ni mādhu-ni aṇi mini-ni jaḷa-la paṇ-y-at
 Lili-**ERG** Madhu-**ERG** and Mini-**ERG** Raja-DAT crib-OBL-P
 ṭhew-l-ə.
 put-PERF-Nsg
Lili, Madhu and Mini put Raja in the crib.
- b. liki-ne aṇi mi keḷi kha-ll-i.
 Liki-**ERG** and I.**NOM** banana.Npl.NOM eat-PERF-Npl
Liki and I ate bananas.

Dhongde and Wali (2009)
via Legate (2014: 194)

These again suggest that the difference between marked and unmarked subjects is one of morphology, rather than underlying syntactic differences. There are (at least) two ways of deriving such splits in the morphology: syncretism based on an elsewhere form; and (in DM) by way of the feature-deletion operation Impoverishment.

A mismatch between syntax and morphology can describe cases of syncretism: the specifications for case in syntax are *greater* (in number) than those available in morphology. In other words, there are not enough morphological specifications for case forms so that every case specified in syntax has its own unique form- some cases have to share. This is often realised by way of underspecification, via the elsewhere condition (Kiparsky 1973), whereby one form serves as a default to be inserted when no other specific conditions on insertion are met. One form can therefore serve as the exponent for several candidates, even when they do not share the same features, due to underspecification. Such an approach could account for differential/split marking in cases where, for example, local pronouns lack dedicated exponents for ergative and nominative cases. Legate (2014: 204) gives an example of such an analysis in Kugu Nganhcara (Middle Paman; data from I. Smith and Johnson 2000), in which all pronouns follow a nominative/accusative pattern, and all other nominals an ergative/absolutive pattern. The possible realisations of a 3rd singular pronoun could thus be listed in this fashion:

(3.26) *3Sg Pronoun*

[Accusative]	↔	nhunha
[Dative]	↔	nhingu
[Ablative]	↔	nhingurumu
[Comitative]	↔	nhilara
[Privative]	↔	nhilayi
[Locative]	↔	nhilang(a), nhilan
(elsewhere)	↔	nhila

With these specifications, a pronoun with a case feature for either ergative or nominative case will be assigned the elsewhere case, as they do not meet the requirements for the insertion of any other form. In this way, the elsewhere condition can in theory produce splits in morphological marking by way of syncretism, in cases where particular case values can only be realised with an elsewhere form. However this approach is not always appropriate, especially when a separate case suffix is easily segmentable. Additionally, by itself, this approach does not explain why the data tend to follow the patterns in the hierarchies discussed- why should an ergative and nominative exponence so commonly be missing in local pronouns?

In contrast to an approach motivated by syncretism in which two arguments which look the same are different in syntax (nominative and ergative are syntactically different; morphological exponence neutralises the difference), the motivation for the other morphological approach to be discussed here is centred around the *lack* of syntactic difference between marked and unmarked arguments. In other words, arguments which are morphologically marked differently are actually marked uniformly in syntax. In terms of split ergativity, this is the case of different morphological realisations of the ergative case. This is achieved by the deletion of features before they are realised; in a DM framework, the operation Impoverishment. This would take the form of something like:

$$(3.27) \quad [\text{CASE}] \rightarrow \emptyset / _ [\alpha]$$

I.e. a (particular) case feature is deleted in the context of $[\alpha]$ (to be discussed presently). If this happened very late in the derivation, after case has been spread to other elements but before it is assigned a phonological form, then the outcome would be the lack of case morphology on the argument to which it applies, but ergative case on associated elements, as discussed above.

The decision which approach is appropriate can also depend on whether or not a natural class is formed by the environments in which ergative appears, or in the environments in which it does not appear. Legate (2014: 204f) discusses this in Warlpiri, in which ergative is (optionally²¹) missing on singular local pronouns. The environments in which ergative is present (3rd person singular, all dual and plural pronouns) does not represent a natural class- [-participant] and/or [-singular]; so an analysis based on an elsewhere case is not easily applicable. However the elements on which ergative is missing (local singular pronouns) *does* form a natural class [+participant, +singular], allowing it to be targeted by a rule of impoverishment:

²¹Interestingly, I have not seen any claims or indication that the optionality of ergative case in Warlpiri is like other cases of optionality discussed here, i.e. is not influenced by features. Simpson (2012) briefly discusses the topic and notes that optionality can only occur in initial position, and that more work is needed. This may be further evidence that optionality can be achieved in different ways by different processes.

(3.28) [ERG] \rightarrow $-\emptyset$ / $__$ [+participant, +singular]

This approach severs the distribution of case marking from prominence hierarchies- i.e. the impoverishment operation does not make reference to the hierarchy, and could (in theory) target any case for deletion in the context of any feature. Legate argues that this is a benefit of the analysis as opposed to syntactic analyses, as she demonstrates with cross-linguistic evidence that the hierarchy is a tendency, rather than a universal²². There is therefore a tension between the separation of the distribution of case from prominence hierarchies, and the fact that there is a general tendency for case patterns to adhere to them. McGregor (2010: 1614) touches on this, noting that²³: "[m]ore generally this approach obscures the predictability of the distribution of the marking-systems across languages, which tends to be according to Silverstein's animacy hierarchy, and thus is grammatically conditioned by the NP type." In other words, this approach could also produce the exact opposite pattern; however this does not seem to occur.

In addressing this tension, Legate proposes that markedness is a factor in deciding which features are deleted by Impoverishment (cf. also Nevins 2011; Woolford 2009). As discussed, it is well-established that certain person and number combinations are morphologically more marked than others (e.g. Harley and Ritter 2002). Under this view, split ergativity is brought about by the reduction of a highly marked feature bundle. This perhaps indicates a pressure in the grammar to reduce the complexity of feature bundles which phonological realisations are assigned to.

3.3.3 Anywhere down the line

There is good evidence that the source of case marking splits are diverse, and that both syntax and morphology are possible culprits in creating splits, both in DSM and DOM. This is identifiable by the behaviour of the arguments in question. Legate (2008: 83) identifies the properties of differential marking in syntax and morphology respectively:

(3.29) SYNTACTIC SOURCE:

1. When a nominal fails to bear a marked case, there is typically a form of the marked case for that nominal in the language
2. Differential case marking may only be based on properties that project to the DP as a whole

²²That is to say, many languages exhibit exceptions to the hierarchy- a fact also noted and discussed extensively by Silverstein.

²³He is specifically referring to Goddard (1982), in which it is proposed that split systems are the result of syncretism, thus also severing (or at least making unclear) the role of prominence hierarchies from determining case marking patterns.

3. Differential case marking may be based on elements outside the DP (e.g., the choice of verb)
4. DP-internal mismatches in case morphology are not possible

(3.30) MORPHOLOGICAL SOURCE:

1. When a nominal fails to bear a marked case, there is no marked case form for that nominal in the language
2. Differential case marking may be based on properties of lexical items that do not project to the DP as a whole
3. Differential case marking may not be based on elements outside the DP
4. DP-internal mismatches in case morphology are possible

Although noting that both options seem to exist for DOM (see below), Legate claims that NP-type split ergativity seems to have an exclusively morphological source: "[a]dditional data on other languages may reveal the need to recognize a dichotomy between languages that pattern like those discussed here, in which the split has a morphological source, and languages that pattern differently, in which the split has a syntactic source. We would consider that an interesting result, but as of yet, we have found no such languages" (2014: 185). Deal (2016a) provides evidence of such a language, concluding that based on the diagnostics provided in Legate (2014), split-ergativity in Nez Perce (Sahaptian) must have a syntactic basis.

In Nez Perce, the split marking prohibits local pronouns from bearing ergative case. As pronominal modifiers (optionally) show case concord, the modification diagnostic is applicable. What we find is that ergative case can appear on third person subject modifiers, but crucially can not on modifiers of local pronouns:

- (3.31) a. Yú's-nim 'iceyéeye-nm, wéet'u minma'í 'itúu-ne
 poor-ERG coyote-ERG NEG PRT what-ACC
 péé-p-se-Ø.
 3OBJ-eat-IMPERF-PRES
Poor Coyote isn't eating anything.
- b. Yu'c /*yú's-nim pro, wéet'u q'o minma'í
 poor.NOM /*poor-ERG PRO.1SG NEG PRT PRT
 'itúu-ne 'ee-pí-se-Ø.
 what-ACC 3OBJ-eat-IMPERF-PRES
Poor me isn't eating anything.

- c. Yu'c / *yú's-nim *pro*, wéet'u q'o 'itúu-ne
 poor.NOM / *poor-ERG PRO.2SG NEG PRT what-ACC
 'ee 'ee-pí-se-Ø.
 2SG.CLITIC 3OBJ-eat-IMPERF-PRES
Poor you isn't eating anything.

Deal (2016a: 548)

Deal goes on to discuss coordination, remembering that marked and unmarked arguments should not be able to be coordinated if the marking is due to distinct syntax. In Nez Perce, case can appear on both coordinates, or just on the final one. Non-pronominal arguments can freely appear in coordination, as can two local pronominal arguments. However a coordination of a local pronominal subject with a non-local pronominal subject appears to be ungrammatical²⁴; speakers shift to a different construction entirely:

- (3.32) a. Kátie(-nim) kaa Hárold-nim pée-'pewi-six-Ø
 Katie(-ERG) and Harold-ERG 3/3-look.for-IMPERF.PL-PRES
 Múna-ne.
 Muna-ACC
Katie and Harold are looking for Muna.
- b. 'Iim 'íitq'o 'iin kíye 'e-pe-múu-no'qa
 2SG.NOM or 1SG.NOM 1PL.INCL.CLITIC 3OBJ-S.PL-call-MODAL
 Ángel-ne íiq'o Tátlo-ne.
 Angel-ACC or Tatlo-ACC
You or I should call Angel or Tatlo.
- c. *'Iin kaa Ángel-nim 'e-née-tecukwe-cix-Ø *pro*.
 1SG.NOM and Angel.ERG 3OBJ-O.PL-teach-IMPERF.PL-PRES *pro*
I and Angel are teaching them.
- d. Katie-nín *pro* 'eetx 'e-pe-'páw-yo'qa
 Katie-with PRO.2PL 2PL.CLITIC 3.OBJ-S.PL-look.for-MODAL
 Múna-ne.
 Muna-ACC
You (sg) and Katie should look for Muna.
lit. You (pl) should look for Muna with Katie.

Deal (2016a: 550ff)

²⁴Although Deal discusses some complications with the data, which I won't go into here.

As discussed above, this state of affairs is completely unexpected under a morphological approach, but is exactly what would be expected if the split was the result of a distinct syntax for local subjects in Nez Perce. The range of behaviour cross-linguistically thus suggests that split case systems potentially only share a descriptive unity, and are products of very different processes.

A similar non-unity in how splits are derived seems to be found in DOM as well (cf. also discussion in Legate 2008). This can be seen by the different behaviour shown in languages with DOM with respect to coordination, similar to the diagnostic discussed from Legate (2014). Based on a study of eleven languages in Kalin and Weisser (to appear), there seems to be cross-linguistic variation in whether it is possible to coordinate a marked and an unmarked argument:

	Language	Allows asymmetric marking
(3.33)	Spanish	✓
	(Sth.) Italian	✓
	Romanian	✓
	Nepali	✓
	Hindi	✗
	Finnish	✓
	Turkish	✗
	Caucasian Urum	✓
	Hebrew	✓
	Amharic	✓
	Tamil	✓

Kalin and Weisser argue that if DOM were to involve movement as argued in many approaches, a ban on asymmetric marking (i.e. coordinated marked and unmarked arguments) should reflect an island violation, namely the Coordinate Structure Constraint (J. R. Ross 1967). If one conjunct is extracted from the coordination, reflected by case marking, then the resultant structure should be ungrammatical. If there has been no movement, then there can be no island violation, thus suggesting a morphological source. Thus it appears that the diversity of causes seen in DSM is mirrored in DOM as well.

3.3.4 Discussion

In the introduction for this chapter there was a question informing the discussion, namely whether the marked/unmarked status of an argument in a language with OCM is determined early or later in the derivation. The assumption was that examining differential marking systems would help us determine the range of possibilities for OCM. The analyses of other types of ‘inconsistent’ case marking systems examined here demonstrate that

there are a wide range of possible ways of accounting for such phenomena. Furthermore, these analyses indicate that the possibilities for the locus of case splits cannot be whittled down to a single part of the derivation, but rather cross-linguistically appear to be able to originate at basically any stage of the derivation, with diverse causes both pre- and post spell out. Plausibly, an inconsistent marking on a case may be the result of an argument unable to be in the right place at the right time during the syntactic derivation; or alternatively, even when appropriately case-marked in syntax, various situations relating to the language's morphology may conspire to alter the situation before a marking can surface. Such morphological situations include a syntax-morphology mismatch such that case distinctions in syntax are more fine-grained than they are in morphology, with fewer morphological exponents to assign than syntax dictates; or morphological processes, such as Impoverishment, that ensure that case features inherited from syntax are deleted before they are assigned a phonological realisation. The syntactic possibilities are less clear-cut, but analyses may involve several factors including the position/capacity of the case-assigner, the case-assignee, or the domain in which case assignment takes place. Comparing the arguments in Legate (2014) with Deal (2016a) regarding Nez Perce, it seems plausible that this potentially can happen 'anywhere down the line' over the course of the derivation. Thus, these sorts of case splits may only be united by a descriptive unity, rather than all being the result of a single underlying process.

The apparent lack of unity in split systems suggests that the same situation could potentially hold of optional case marking. Assuming that the decision to mark or not mark an argument is made by the grammar, we have no *a priori* reason to assume that all optionality of case morphology is produced by a single underlying process. The way to proceed would be to follow tests used for the syntactic status of arguments in differential/split marking systems, and assume that common syntactic behaviour hints at common underlying processes, or at least place of origin in the derivation: is optional case marking a syntactic or a morphological phenomenon? The initial question is whether there are any syntactic differences in the behaviour of marked and unmarked arguments- e.g. differences in linear order may suggest different syntactic positions; or, following the sorts of diagnostics we see in Legate (2014) for NP type split ergative languages, or Kalin and Weisser (to appear) for DOM, can a marked and unmarked argument be coordinated? If there is case concord in the language, are concord facts similar or different for unmarked/marked arguments? Are there other syntactic processes such as relativisation or control that target one of the two marking possibilities to the exclusion of the other? If we however find that marked and unmarked arguments behave similarly, then optionality in case marking is presumably a relatively surface phenomenon, and is likely to be morphological rather than syntactic.

3.4 Returning to case studies

Although a definitive answer would require more extensive language-specific testing for the types of diagnostics laid out above, a preliminary examination of the languages described in Chapter 2 suggest that optional case marking is determined not by syntax, but is instead a post-syntactic phenomenon. I suggest here that OEM is instead morphological in nature. As will be discussed, there are problems applying some of these tests to many of the languages; however all that this shows is unsuitability of applying that particular test to some particular language. One important point regarding the status of marked and unmarked arguments is that in no language examined (or in any that I know of) do marked and unmarked arguments behave differently in a range of syntactic contexts; there are no differences in linear ordering, nor are there differences in a range of other conceivable contexts, such as their ability to undergo relativisation, or appear in control clauses. This alone suggests that the difference between a marked and an unmarked argument is not due to differences in syntactic case assignment. In these respects it appears that as far as syntax is concerned, marked and unmarked arguments are treated identically.

Meakins (2011: 210, 223) provides two cases from Gurindji Kriol involving what looks like asymmetric coordination (involving a marked and an unmarked argument):

- (3.34) a. nyuntu an LD-**tu** jayijayi jat jurlaka
 you and NAME-**ERG** chase the bird
 So now you and LD chase the bird.
- b. warlaku an karu-**ngku** dei warlakap bo jat ngakparn.
 dog and child-**ERG** 3PL.S search DAT the frog
 The dog and the child search for the frog.

Recall that Gurindji-derived pronouns are capable of bearing the ergative/nominative marker, unlike Kriol-derived pronouns, so the lack of marking in the first sentence cannot be attributed to its status as a pronoun. However, these are not completely unambiguous examples of asymmetric coordination. GK allows the following marking patterns in coordinations (Meakins, personal communication): A-ERG & B-ERG; and A- \emptyset & B-ERG; however it does not allow the pattern A-ERG & B- \emptyset . If it did, this would unambiguously show asymmetric coordination is possible. Although the examples above may be genuine asymmetric coordination, it cannot be ruled out that coordinations can either receive marking on each conjunct, or alternatively the whole coordination receives one case marking, which appears at the end of the whole phrase.

Also noteworthy is the fact that the ergative case can appear on adverbs describing an action undertaken by the subject, even when the subject itself is unmarked.

- (3.35) a. yamak-**tu** yamak-**tu** yu gu yamak-**tu**.
 slow-**ERG** slow-**ERG** you go slow-**ERG**
Slowly, slowly, you go slowly.

Meakins (2011: 25)

- b. jirimarna-**ngku** yu tok.
 fast-**ERG** 2SG talk
You're talking (too) fast.

Meakins (2015: 206)

However note here that the subject pronouns are Kriol-derived, and thus cannot bear the marking in any case²⁵. However the following sentences provide further evidence. As example (36a) shows, case agreement is in principle possible between an argument and related elements; however case can also appear on just one of the elements, as seen in example (36b). Note that the case-bearing element does not necessarily need to be the nominal.

- (3.36) a. jintaku-**ngku** karu-**ngku** i=m jut-im kengkaru
 one-**ERG** child-**ERG** 3SG.S=NF shoot-TRN kangaroo
 kurrupartu-yawung.
 boomerang-PROP
One child, he shoots the kangaroo with a spear.

Meakins (2007: 428)

- b. karu jintaku-**ngku** im=in jak-im wumara hawuj-jirri.
 child one-**ERG** 3SG=PST throw-TR rock house-ALL
One kid threw a rock at the house.

Meakins (2011: 205)

Unfortunately, these examples suffer the same problem encountered for coordination. To be sure of the possibility of this type of case agreement we may wish to see examples where the first element is marked, and the

²⁵However these examples coincidentally suggest a morphological analysis for the impossibility of forms such as **yu-ngku*.

second not. However this is impossible; both **jintaku-ngku karu* and **karu-ngku jintaku* are ungrammatical in GK (Meakins, personal communication). Therefore although suggestive, these tests as applied to GK are not conclusive.

Although the articles on Kuuk Thaayorre do not yield the sorts of examples found in Gurindji Kriol²⁶, Gaby (2008: 132f) states that "...it is clear that the employment of case morphology is motivated not by syntax, but by pragmatics... Kuuk Thaayorre should be analysed as a language with a syntactic ergative case (alongside the nominative and accusative syntactic cases), but in which the distribution of case morphology is co-conditioned by pragmatics²⁷."

The description of Jaminjung in Schultze-Berndt (2017) also suggests a non-syntactic basis of the ergative markers distribution. Schulze-Berndt notes that "... the predicate licenses agent marking, but is not, on its own, sufficient for assigning case. Rather, the choice of construction in a particular context is also constrained by tense and aspect of the clause, person and animacy of the agent referent, and its discourse status" (2017: 1090). For our purposes, such a characterisation appears more consistent with the view that the distribution is morphological in the sense outlined earlier in this chapter. The predicate being necessary but not sufficient to determine case marking is equivalent to the notion that arguments are tagged for a particular case in syntax, but not guaranteed that they will necessarily surface bearing that case; the constraining effect of the factors listed corresponds to constraining exponence of that case feature. Furthermore, Jaminjung does provide some evidence of case agreement, suggesting a morphological source. In principle, case marking can appear on all elements in a phrase (38a), or just a subset of these; however unlike Gurindji Kriol, this is not restricted to appearing clause-finally:

²⁶It is also unclear to me whether conjunction in Kuuk Thayorre is a suitable test. Gaby (2008: 113) provides an example translated by a conjunction, but which is actually an inclusory construction, in which "a non-singular pronoun is apposed to a noun phrase denoting a subset of the participants represented by the pronoun":

(3.37) ngali I.C. ngali yat kuthirr
 1DU:EXCL I.C. 1DU:EXCL go:P.PFV two
 I.C. and I went, the two of us.

²⁷It is worth noting that the use of the term syntactic here is not used in the sense of case assignment to a syntactic position, but rather in the sense of ergative case identifying an argument in its syntactic function of subject. Nonetheless, noting that the distribution of case is regulated by pragmatics strongly suggests a lack of differing behaviour in the clause.

- (3.38) a. janyju mangarra gagawurli gan-ijja-ny ngarrgina=**ni**
 DEM plant.food long.yam 3SG>3SG-poke-PST 1SG.POSS=**ERG**
 jungurniny=**ni**
 husband=**ERG**
That long yam food, it was dug up by my husband.
- b. "... " gani-yu=nu yinju=**ni**
 3SG>3SG-say/do.PST=3SG.OBL PROX=**ERG**
 gurang
 older.man
 "... " *THIS man said to him*

Schultze-Berndt (2017: 1092)

Schultze-Berndt notes that "[t]he factors conditioning the variation in case position are not well understood at present". No other differences which may suggest are syntactic basis are listed.

Sarvasy (2014) similarly makes no mention of distributional differences or restrictions of marked and unmarked arguments in Nungon which would suggest that a syntactic difference as outlined in this chapter is at play. Furthermore, the fact that the marker attaches to the end of the nominal phrase in Nungon, rather than each member, makes the coordination test unsuitable; in the following example only the final coordinate is marked, but the marker "clearly has scope over the entire NP *Duruwai orin Bafic*" (Sarvasy 2014: 257):

- (3.39) Yo-go-moroc, [Duruwai orin Bafic]=**ko**, Emo-c morö
 say-RP-2/3DU Duruwai and Bafic=**FOC** fight-NMZ large
 öngko-wang-na ta-a-c, yo-go-moroc.
 emerge-PROB.SG-IMNT do-PRES-3SG say-RP-2/3DU
The two of them said, it was Duruwai and Bafic (who said), "Big fighting is about to emerge," the two of them said.

Sarvasy (2014: 189f)

One view that does differ from the overwhelmingly morphologically-spirited reviews above is that in Pennington (2013), in which it is argued that at least some of the marking alternations in Ma Manda are a direct result of the phrase structural configurations in which ergative/nominative case is assigned/can appear. The main motivation of this approach is the close association between left-dislocated/fronted topics with a strict lack of marking on one hand, and focus with overt marking on the other. Following the reasoning laid out in Donohue (2005), Pennington assumes that Ma Manda, like some other Papuan languages, has a more articulated phrase structure than is sometimes

assumed. This specifically includes a syntactic position in the left periphery of the clause, above the IP head, which hosts extra-clausal topics. Ergative case cannot be present on an argument in this position; however when the argument remains low, or is related to a co-referential pronoun in the clause proper, it receives marking while the clause-external NP remains unmarked. Compare the marking patterns in the following examples:

- (3.40) a. *nə, kadip səŋ fe-lək*
 man wood timber hew-PRES:3SG.S
 The man is hewing timber.
- b. *nə=li kadip səŋ fe-lək*
 man=NOM wood timber hew-PRES:3SG.S
 The man is hewing timber.
- c. *nə, wə=li kadip səŋ fe-lək*
 man that=NOM wood timber hew-PRES:3SG.S
 The man, he is hewing timber.

Pennington (2013: 9, 12)

For this reason, Pennington argues that when the argument remains low as a sister to the VP, it receives case marking; whereas a full NP in the supra-IP position cannot be case-marked. This approach very clearly fits into the syntactic family of approaches discussed in this chapter, with the additional influence of information structure on syntactic positions. This analysis certainly derives the facts in Ma Manda; when there is a left-dislocated argument with a co-referential pronoun, the full NP is not marked, whereas the pronoun is; when there is no left-dislocated argument, the clausal argument is either marked or unmarked, presumably reflecting its position either low, as a sister to the VP (marked), or high, in the position for topic (unmarked). However there are a few points which suggest that a morphological approach may also be a viable option. Firstly, as we have seen (and will explore in greater depth in the following chapter), it is difficult to tease apart whether case-marking here is related to the featural presence of topic/focus, or because of the syntactic position the NP is in as a result of its topical/focused status. It could also be possible that the NP must be in this left-peripheral position due to its status as topic, and topichood bans case-marking regardless of what syntactic position the argument is in. If movement to the left periphery is obligatory in these cases, it would be impossible to know what causes the marking. Thus, it is possible that it is the presence of topic *per se* that inhibits case marking. Secondly, case marking in the periphery is in any case a difficult subject, and it is by no means generally accepted that the usual rules of case marking apply there. This is

further complicated by the clause-external nature of the full NP arguments. Many analyses treat the clause-internal argument as the true argument of the predicate, leaving the status of the clause-external argument uncertain. Moreover, case generally exhibits peculiar behaviour in the periphery of the clause cross-linguistically (see the literature on "default case" e.g. Schütze 2001, McFadden 2007). Even in English, left-dislocated topics do not match the clause-internal pronouns in case:

(3.41) Me, I prefer snorkeling.

Schütze (2001) also gives similar examples of case mismatches between an argument in the left periphery and a clause-internal argument in diverse languages such as German, Russian, Greek, Arabic, Latin, Irish, and Icelandic. This suggests that case marking on a clause-external dislocated argument is not a reliable testing ground for diagnosing absolute correlations between syntactic position and case assignment more generally²⁸. Furthermore, it is possible that a combination of these factors ("default"/periphery marking, the role of information structure, and syntactic position) obscure the syntactic/morphological source of the marking. Finally, besides the behaviour of case in clause-external positions, no other behavioural differences are mentioned. As a result of these points, it is not entirely clear that optional case-marking in Ma Manda must be a purely syntactic phenomenon- it's possible that an account based on the effect that information structure (rather than the syntactic position associated with it) has on choosing the morphological exponence could also serve the basis of an analysis, although the matter must remain ultimately open here.

Beyond the case studies here, I know of no other descriptions of OEM in which differences in syntactic behaviour are ascribed to marked/unmarked arguments. Although we have no *a priori* reason to assume that OEM cannot have independent origins in various languages (based on analogous differences in differential and split marking systems), a preliminary survey of OEM suggests that in the absence of evidence otherwise, the decision whether an argument is marked or not is never decided in syntax; always post-syntactically. This may change if presented with new data suggesting otherwise, but the position I take in this thesis is that in cases of apparent optional marking, the argument is marked as such in syntax (independent of the actual theory of case assignment), and post-syntactic mechanisms decide whether or not a morphological case-marker is eventually realised.

²⁸Although I don't take a position here on what really is behind these marking patterns in the left-periphery. One could argue that null-marking is the default case marking in Ma Manda; but this wouldn't work for left and right-dislocated arguments in Gurindji Kriol, for example. Arguments against ergative being a default case there include the fact that objects do not bear ergative when left-dislocated; this clearly differs from these other "default" cases, where a case marker serves as default regardless of the arguments syntactic/semantic role, as in the English example above.

One last loose end concerning the morphological/syntactic locus of marking in languages with OEM are the properties of syntactic/morphological sources as laid out in Legate (2008) and repeated above. The diagnostics used here to suggest that OEM has a morphological source is based on a total lack of evidence for a syntactic basis of marking in terms of differing behaviour of marked and unmarked arguments. However OEM seems to not exhibit the properties of morphological marking suggested by Legate: (i) in OEM there *does* exist a case form for that nominal, it is just sometimes not present (suggesting a syntactic source); (ii/iii) most properties which determine/influence OEM are properties of the DP as a whole, and are not based on elements outside the DP (animacy is a property of the DP), and are thus local; however, the information structural status, and aspect (significant in at least Gurindji Kriol and Jaminjung) is *not* a local property of the DP (DP-external influences suggest a syntactic source); (iv) it is unclear whether DP-internal case mismatches are possible (no data), although there are Gurindji Kriol examples of mismatches on subject-related adverbs. Despite these differences between the data and the properties that Legate lists, this does not exclude a morphological analysis, but rather only excludes a morphological analysis based on underspecification (the elsewhere condition). There are at least two other possible morphological explanations for the lack of case: (i) the case feature is deleted before vocabulary insertion, so that there is simply no case present on the nominal to insert (i.e. impoverishment); or (ii) the conditions to insert the marker are specific enough that the nominal sometimes fails to meet the requirements for insertion (i.e. a kind of contextual allomorphy). These two possible analyses are not ruled out by Legate's description of syntactic/morphological properties. Based on the lack of evidence for any syntactic differences between marked and unmarked arguments in OEM, I will argue in Chapter 5 that one of these two analyses is favourable; namely, despite a general intuition that cases are deleted, I will argue that an analysis based on the inability to fulfil all requirements better captures the data.

However, before exploring these possibilities, it is important to establish how focus and topic interact in determining case marking patterns. Although their presence is determined in the course of the discourse, rather than being inherent features of the nominal in question itself, there are good reasons to believe that they behave in exactly the same way as more inherent features do, at least in terms of deciding the distribution of case. As such, the presence of focus and/or topic should be seen as a feature freely available to condition the contexts for the insertion of case morphology.

Chapter 4

The role of Information Structure

In discussing differential/split marking systems, we examined the environments that can trigger the alternation in case marking, and saw that there are a variety of features that are capable of doing so. These include both features inherent on the argument itself (variously including person, number, and animacy), as well as features which are associated with the argument by virtue of its place in the discourse (definiteness, specificity)¹. It is an important research question to outline the range of features involved in such case marking alternations.

There is growing consensus in the literature that there is a connection in some languages between information structure and case (Escandell-Vidal 2007; Kwon and Zribi-Hertz 2008; De Hoop and De Swart 2009; Dalrymple and Nikolaeva 2011; Iemmolo 2010; Valle 2011; Fauconnier and Verstraete 2014; Escandell-Vidal 2009) *i.a.*. As discussed in Chapter 2, essentially all literature on OCM notes the strong connection; focus in particular clearly seems to interact with optionality of subject case morphology in various unrelated languages. However, beyond being important in cases involving optionality, information structure seems to generally be capable of conditioning case allomorphy both in non-differential and differential marking systems. In some cases, it is one of several factors which together determine marking; in others, it is the only relevant factor. Moreover, there is an asymmetry between subjects and objects in how focus and topic interact with case marking. Recognising the role topic and focus can play is important for present purposes; clearly they play a crucial role in optional case marking

¹Further potentially conditioning environments which I've neglected in this discussion include what Seržant and Witzlack-Makarevich (2018) call *predicate triggered DAM* [Differential Argument Marking]- tense/aspect/mood (TAM) factors (particularly in aspect-based split-ergativity, e.g. Dixon 1994; Coon 2010), and factors relating to polarity and clause type. Based on the apparent non-unity of differential systems generally, I assume that these (potentially) have different causes, and largely leave them out of the discussion here.

systems, but the fact that they can play a role more generally in case systems as well suggests that their role in OCM is not tied to optionality *per se*, and therefore not necessarily reduceable to pragmatic or usage-based factors. Instead, it can easily be implemented as a conditioner for determining case morphology alongside more generally accepted features such as animacy, person, etc. Such an admission opens the possibility that the distribution of case in OCM languages is determined (at least in part) by familiar means of contextual allomorphy; the conditions being the featural presence of topic and/or focus.

In this chapter I examine the evidence that information structural notions are capable of determining, or at least contributing to, choice of case morphology. My aim is not to create an exhaustive list of languages where there is an influence, only to provide enough examples to hopefully convince the reader that there is enough substance to the claim to take the connection seriously. There is evidence for such a relation for all core cases (nominative, ergative, accusative), and is therefore not limited to only subjects or objects. Sometimes it can be the only factor relevant for determining this choice; Clem (to appear) argues that nominative case in Amahuaca only receives an overt phonological form when the intransitive subject is focused. However the role information structure can play in determining morphology can also be referenced alongside other features; Valle (2011) argues that focus and animacy/definiteness interact to produce a differential subject marking system in Kashibo-Kakataibo. The role of information structure in determining case systems extends to objects as well; Dalrymple and Nikolaeva (2011) argue that topicality can play an important role in determining case (and agreement) marking patterns in various languages with DOM. They furthermore argue that some cases of apparent optionality are able to be explained if information structural notions are acknowledged as part of the specifications that condition the marking alternation. Similar facts have been noted in a wide variety of languages with DOM.

In the framework followed here, the role of topic and focus in case morphology can easily be accounted for if information structural information is visible for morphological operations and/or allomorphy choice. Thus it can be referenced as a condition on assigning phonological form to a case feature, in the same way as φ , animacy, and other such features typically do, as discussed in the previous chapter.

4.1 Information structure and core cases

4.1.1 IS and subject cases

Several languages show patterns in which nominative or ergative case marking is dependent on information structure to occur. Clem (to appear) demonstrates this in the Panoan language Amahuaca. Amahuaca case is marked in a tripartite pattern: ergative on transitive subjects (A), nominative on intransitive subjects (S), and accusative on transitive objects (O). Ergative and nominative have overt forms; accusative is not morphologically overt. The distribution of ergative case is partly determined by its structural position, but is not dependent on the information structural status of the A argument. The nominative case, however, can only surface when the argument is focused. Amahuaca has a syntactic position in the left periphery (identified by Clem as SpecCP), which must always be filled in declarative sentences; the position can be identified by way of the placement of a second-position clitic =*mun*, which presumably resides in C. One constituent must precede this clitic. Exactly which constituent it is is flexible, but the position does correlate with information structure. If an argument is focused, it must appear in this initial position; however being in this position does not necessarily mean the argument is focused. Clem shows two diagnostic tests demonstrating arguments which are (narrowly) focused appear in this position, namely as response to a *wh*- question, and in corrective contexts. Movement to SpecCP is obligatory for all arguments in focus: both transitive and intransitive subjects, and objects. Only when intransitive subjects are focused do they bear the nominative suffix =*x*; otherwise they are not marked. Unlike intransitive subjects, transitive subjects and objects do not bear any different or additional markers when focused:

(4.1) Focus on different constituents in Amahuaca (Clem to appear)

a. Transitive Subjects (A)

Reply to sentence: *The woman is washing manioc.*

maki, joni=n=mun hatza choka=hi=ki=nu.

no man=ERG=C manioc wash=IPFV=3.PRES=DECL

No, the MAN is washing manioc.

b. Objects (O)

Reply to question: *What is the woman washing?*

kari=mun choka=hi jan=ki=nu.

yam=C wash=IPFV 3.SG=3.PRES=DECL

She is washing YAMS.

c. Intransitive Subjects (S)

Reply to question: *Who is sleeping?*xano-**vaux**=mun hoxa=hax=ki=nu.woman-**PL.NOM**=C sleep=PERF=3.PRES=DECL*The WOMAN are sleeping.*

Crucially, it really is focus that determines the marker; the initial position itself is not sufficient to trigger the marker, so it cannot be a *structural* difference which is responsible for the difference in marking:

(4.2) *Context: You see a group of people gathered around a tree and you ask, ‘What happened?’. Someone responds:*

joni(**#=x**)=mun pakuu=xo=nu.

man=NOM=C fall=3PST=DECL

A man fell.

Cross-linguistically, some morphological focus markers are restricted to only appearing on subjects, particularly in languages in West Africa (e.g. Fiedler et al. 2010); indeed one could make the case that it is actually focus that $=x$ encodes on intransitive subjects, rather than being a case marker with a restriction on it surfacing. However this is unlikely to be the case in Amahuaca; to be a focus marker, and not a case suffix, $=x$ would have to be a focus marker which is restricted only to attaching to intransitive subjects, and no other types of arguments. Furthermore, focused intransitive subjects would be the only arguments in the language with their own dedicated focus morpheme, as transitive subjects and objects surface bearing only their respective cases, not focus morphemes. As a consequence, Clem argues that it is unlikely that $=x$ is a focus marker, and is instead better analysed as nominative case, which requires focus in order for an overt form to surface. As such, she lists the possible exponents for case as follows:

(4.3) AMAHUACA CASE EXPONENCE²

Ergative:	[D],[<i>v</i> , ϕ],[T]	\leftrightarrow	/n/
Nominative:	[D],[T],[Foc]	\leftrightarrow	/x/
default:	[D]	\leftrightarrow	/-Ø/
(=accusative)			

²Clem (to appear: 33). A note on how the rules of exponence are represented here: Clem follows Deal (2010) in representing cases as exponents of the heads the argument has agreed with. Nominative is the argument which has only agreed with T. Ergative has agreed with a *v*, which *itself* has been in an agreement relation with another DP (indicated by the object’s ϕ features; this also derives the condition that ergative only arises in transitive contexts), and additionally with T. The [D] distinguishes case markers (on nominals) from agreement markers (on verbs); cf. McFadden’s (2004) [+case] feature (Deal 2010: 110). Accusative, being unrealised, is analysed as a default case. I have additionally stated the cases on the left side, purely for readability.

An important point here is that in this account, $=x$ is not realising focus *per se*- the case does not (only) express the meaning of focus. Instead, focus acts as a formal trigger for determining the morphological form of case. If focus is not present, then the conditions in the case exponence rules are not met, and a default exponence ($-\emptyset$) is inserted.

Valle (2011, 2014, 2018) describes a similar restriction in another Panoan language, Kashibo-Kakataibo, in which both ergative and nominative cases interact with focus. These interactions are represented in the following table adapted from Valle (2011: 11). Brackets indicate optionality.

	FOCUSED		NON-FOCUSED	
	Pronouns	Nouns	Pronouns	Nouns
A	-n	-n	(-n)	(-n)
S	-n	$-\emptyset$	(-n)	$-\emptyset$
O	$-\emptyset$	$-\emptyset$	$-\emptyset$	$-\emptyset$

Figure 4.1: Case in Kashibo-Kakataibo

Valle suggests this is a combination of focus with animacy/definiteness, represented by the split between pronouns and nouns³. Compare the presence of the ergative case on the (fronted) subject when focused, with its absence when the object is focused:

- (4.4) a. Solis-nan= ka nuká- \emptyset apa-dza.
 Solis-ERG= cl.3 cacao-ABS plant-PAST-NLS
SOLIS planted cacao.
- b. Nuká= ka solis- \emptyset apa-dza.
 cacao= cl.3 Solis-ABS plant-PAST-NLS
Solis planted CACAO.

Valle (2011: 10)

When the argument is focused, the case marker cannot be absent. Otherwise, case morphology shows apparent optionality- "[t]he factors motivating the retention of case in non-focused subject[s] have not yet been identified",

³Although it is difficult to tell whether it really is the animacy and/or definiteness of the pronouns which is the trigger in this case. Note that the only area where this is important is nominative case- ergative does not make a pronoun/noun distinction. Although it is certainly generally accepted that local pronouns are animate and definite, third pronouns are not necessarily so. Valle notes that it is the pronoun/noun distinction which is relevant, and not human/non-human, or any other animacy based metric (indeed Valle includes a sentence of the form *the rain-ERG broke the engine*, showing that inanimate and non-agentive subjects can also bear the suffix).

as Valle notes (2011: 11). Nominative case ($-n^4$) requires a pronoun (or perhaps the definiteness/specificity of a pronoun) to be realised at all, but focus makes it obligatory. Ergative case ($-n$) does not differentiate between pronouns/nouns, but focus likewise makes it obligatory. Valle (2014) shows that aside from the pronoun/noun distinction, other common factors in differential split systems do not have any effect in Kashibo-Kakataibo DSM, such as definiteness or animacy, nor do factors such as TAM or degree of transitivity (after the distinctions in Hopper and Thompson 1980).

Fauconnier and Verstraete (2014) further investigate the role of focus in subject marking, and note its attestation in a wide variety of languages, including Beria (Eastern Saharan), Kâte (Trans New Guinea), Jaminjung (non-Pama Nyungan), Kaluli (Trans New Guinea), Waskia (Trans New Guinea), Fore (Trans New Guinea), Umpithamu (Pama-Nyungan), Shiwilu (Cahuapanan), Ika (Niger-Congo), Tariana (Arawak), and Yongning Na (Tibeto-Burman). An example from Beria illustrates this, in which ergative case is only overt when focused:

- (4.5) a. Sàgór-Ø ténē tètì-è-r-í.
 jackal-Ø girl grab-PFV-3.A-PFV
 The jackal grabbed the girl.
- b. Jàá bòrū=gū sàì Ø-gí-n-Ø-í.
 child man=ERG hit 3.O-PFV-AUX-3.A-PFV
 It's the man who hit the child.

Jakobi and Crass (2004: 147)

Jakobi (2006: 136)

via Fauconnier and Verstraete (2014: 12f)

4.1.2 IS and DOM

There is a longer history in the literature connecting information structure (specifically topic) with DOM. Aissen (2003) notes its relevance in a footnote, particularly in relation to optionality, but ultimately leaves the connection for further study. Since then, there has been a growing amount of research investigating the connection more closely in a wide variety of languages.

Dalrymple and Nikolaeva (2011) probably represents the most comprehensive account, in which it is argued extensively that topicality plays a strong role cross-linguistically in DOM, and that some apparent optionality in cases of DOM can be resolved if topicality is acknowledged as a potential conditioning force. They argue that the inability to determine a markers distribution (and therefore the subsequent label as "optional") is sometimes

⁴And phonologically conditioned allomorphs.

only due to too few features being considered as contributing to the conditions that determine the marking pattern. By assuming that topicality is a contributing feature to DOM, some previously inexplicable patterns become transparent. The authors see the connection between DOM and topicality as fundamental; they argue that even when DOM does not make reference to topicality in a particular language *per se*, the features that do typically condition DOM (definiteness, specificity, animacy) are features which more generally are associated with topichood. This view therefore places the role of topic as front and centre as a conditioning factor for DOM. This connection may suggest that general patterns of what factors condition DOM arise from diachronic changes in which the conditions determining DOM spread or narrow from topicality as such, to being associated with topic-worthy features. This would explain why topicality is not (always) the only relevant property in determining marking.

The authors present many examples of the connection, both from case-marking and agreement-based DOM. One example comes from the Semitic language Tigre. In this language, the preposition ?igil marks DOM on objects. It is described as optional on definite objects, but impossible on indefinite objects⁵:

- (4.6) a. ɣasāmā ?ittā (?igil) la ɣis'an nadʔayu
 Hasama to.her Prep the boy sent.3Masc.3Masc
 Hasama sent the boy to her.
- b. Lilat (*?igil) waraqat katbat
 Lilat Prep letter wrote.3Fem
 Lilet wrote a letter.

Dalrymple and Nikolaeva (henceforth: D&N) show that describing the distribution of ?igil amongst definite objects as optional is actually not entirely accurate; instead, the pattern can be accurately described if we accept that the object must be topical in order to be marked. We can see this in the following sentences, taken from a narrative. Narrative texts are a better source to discover the role of topicality, as topicality is grounded in discourse, and is not an inherent feature of a nominal in of itself. Thus the role of IS generally tends to be obscured in examples out of context.

Before examining and discussing these sentences, a word on the authors' understanding of topic is in order. For D&N, topic is a relational notion: "it involves an "aboutness" relation between a referent and proposition" (2011: 49). The authors assume that more than one topic can potentially appear in a single sentence, and thus assume the existence of primary and secondary

⁵I'll abstract away from the details of how these interact with agreement in Tigre. For those interested, the authors discuss this in (2011: 133ff). All Tigre examples here are from that source; originally from Jake (1980) and Raz (1983).

topics (cf. also Nikolaeva 2001)- that is to say, they deny that a topic role must be unique; a sentence is able to update the information about more than one referent at the same time. They define a secondary topic as following Nikolaeva (2001: 26), being: "...an entity such that the utterance is construed to be ABOUT the relationship between it and the primary topic." For an example from Nikolaeva (2001: 10), the answer to the question posed updates information about both John and Mary, and about the relationship between the primary topic (he) and the secondary topic (her):

- (4.7) a. What is the relationship between John and Mary?
 b. He LOVES her.

This distinction based on the relation between referents is important, as it is usually secondary topics which occur marked. This is seen in the examples taken from a Tigre narrative. In the first example sentence, the object (*the reed chest*) is definite- it has been introduced previously in the discourse, and is known to the listener- but it is not marked with [?]əgəl⁶. This sentence is the first time that she (*the Pharaoh's daughter*) sees the chest; therefore there is no presupposed relationship between the primary topic and subject (*the Pharaoh's daughter*) and the object (*the reed chest*):

- (4.8) wa [?]əttu mən rayim lasanduqat salsala [?]ətta māy kərit
 and there from afar the.chest reed in.the water placed
 rə[?]etta
 saw.3Fem.it

And there she saw, from afar, the reed chest placed in the water.

After this, the Pharaoh's daughter sends her maids to retrieve the chest. This event changes the situation and the relations between the arguments; by having been sent to retrieve the chest, a relation between the maids and the chest has now been established. The following sentence, involving a now marked object, reflects the establishing of the chest as a secondary topic:

- (4.9) wa lawašāyfa [?]əgəl lasanduqat kfət-kəmsal[?]abalaya
 and her.maid servants Prep the.chest when-opened.Pl.it
 gəna bakka rakbaya
 a.child crying found.3Pl

And when her maidservants opened the chest, they found [in it] a child crying.

D&N suggest the paraphrase 'what the maidservants then did to the chest is: they opened it' (2011: 135). Unfortunately they found no examples of

⁶Note that D&N have retained the different transcription conventions from various texts; the form [?]igil represents the same marker as [?]əgəl.

definite primary topics in Tigre- this would require a focused subject- so the data only references secondary topics.

The effects of topicality have been described in other varied works as well. Escandell-Vidal (2009, 2007) and Iemmolo (2010) describe the effect of topicality on DOM in left dislocated structures across Romance languages. This is discussed for a range of languages including Northern Italian and Gallo-Italian dialects, Catalan, Brussels and *Languedoc* French varieties, and Old Sicilian. To give just one example from Catalan, compare the following sentences; DOM marking (*a*) is compulsory with a topicalised, dislocated argument, but impossible when left *in situ*:

- (4.10) a. A ta mare, la vaig vore ahir.
 ACC your mother CLIT.3SG.FEM AUX.1SG see:INF yesterday
- b. Vaig vore *a ta mare.
 AUX.1SG see:INF ACC your mother
Your mother, I saw her yesterday.

Escandell-Vidal (2007: 31)

The relevance of topichood for DOM in the form of clitic doubling in Albanian has likewise been argued for extensively in Kallulli (1999, 2008, 2016). Focus associated with the direct object disallows clitic doubling, and the apparent optionality disappears once topic is included as a factor.

Coghill (2014) likewise notes that DOM⁷ correlates with topichood in the Neo-Aramaic dialect Telkepe. She states that in order for DOM marking to occur, the object must be (a) definite, (b) not semantically integrated with the verb; generally if specific rather than generic more likely to take marking, and (c) should have primary/secondary topic status, and not be focused (2014: 353).

Interestingly, the influence of topic and focus can apply to both subject and object cases within one and the same language, as shown for the Arawak language Tariana (Aikhenvald 2003, 2010). There exists a non-subject marker⁸ -*nuku/naku*, which has the following requirements to occur: (a) the constituent is (or will be) the topic of the narrative; (b) the constituent is referential,

⁷Including both differential agreement and differential flagging, i.e. marked with a preposition/case.

⁸Aikhenvald stresses that it is a case marker, and not a topic marker (2003: 148). Whether such markers represent case often becomes a little unclear; but this is a problem generally, especially with differential marking systems- arguments are often marked by prepositions, for example. I take the liberty here of not always addressing this uncertainty, concentrating instead on the environments marking occurs, rather than focusing exclusively on the identity of the marker in uncertain situations.

specific and/or definite; (c) the constituent is important (but not necessarily contrastive) (2003: 145). Subjects, on the other hand (A/S), receive a marker *-nhe/ne* when: (a) the constituent is contrastively focused; (b) is presented as a main participant in the discourse, or is newly introduced but already known, and will be important for future discourse; (c) when disambiguating the subject from other constituents (2003: 142). Compare the distribution of case in the following examples:

(4.11) a. SUBJECT NOT FOCUSED - OBJECT NOT TOPICALISED:

Hema hinipuku di-hña-pidana.
 tapir garden 3sgnf-eat-REM.P.REP
A tapir (reportedly) ate (fruits of) a garden.

b. SUBJECT FOCUSED - OBJECT NOT TOPICALISED:

Hema-ne hinipuku di-hña-pidana.
 tapir-FOC.A/S garden 3sgnf-eat-REM.P.REP
A/the tapir (not anyone else) (reportedly) ate (the fruits of) a garden.

c. SUBJECT NOT FOCUSED - OBJECT TOPICALISED:

Hema hĩ hinipu-naku di-hña-pidana.
 tapir this garden-TOP.NON.A/S 3sgnf-eat-REM.P.REP
A tapir (reportedly) ate (fruits of) this garden (we are talking about).

d. SUBJECT FOCUSED - OBJECT TOPICALISED:

Hema-ne hĩ hinipu-naku di-hña-pidana.
 tapir-FOC.A/S this garden-TOP.NON.A/S 3sgnf-eat-REM.P.REP
A/the tapir (not anyone else) (reportedly) ate (fruits of) this garden (we are talking about).

Aikhenvald (2010: 20f)

The effect that topic can have on object marking is thus cross-linguistically well substantiated.

4.1.3 IS in multi-dimensional marking

Similarly to Aissen (2003)'s discussion of two dimensional DOM, in which several factors are together relevant for determining marking, topic and focus can similarly be one of several factors which together conspire to determine marking. Alternatively, they can be one of several *possible* triggers for marking. Fauconnier and Verstraete (2014) note three languages in their

sample in which marking is triggered by either focus, or (in)animacy. For example in Waskia (Trans New Guinea), both/either inanimacy and/or focus trigger ergative marking:

- (4.12) a. Animate, not focused subject: no ergative marking

Gagi-Ø arak mait se batagam.
 Gagi-Ø net knife INS tear.PST
Gagi tore the net with a knife.

- b. Inanimate, not focused subject: ergative marking

Yugar ke kawam kodang kagagam.
 wind ERG house door open.PST
The wind opened the house-door.

- c. Animate, focused subject: ergative marking

Mela, Gagi ke Madang urat biteso.
 no, Gagi ERG Madang work do.3SG
No, it is Gagi who works in Madang.

- d. Aweri ke bamban tagiram? Gagi ke.
 who ERG fish catch.PST Gagi ERG
Who caught the fish? Gagi (did).

M. Ross and Paol (1978: 30, 37)
 via Fauconnier and Verstraete (2014: 15f)

Dalrymple and Nikolaeva (2011) propose a typology of possible DOM languages in regard to how marking interacts with information structure and other factors:

- (4.13) A typology of DOM/IS interactions⁹

Type 1: DOM is regulated solely by information structure.

E.g. Ostyak, Vogul.

Type 2: DOM is regulated solely by semantic features.

E.g. Hebrew, Yidiny, Komi-Zyrjan.

Type 3: DOM is regulated by both information structure and semantic features.

E.g. Hindi, Tundra Nenets, Dolakha Newar, Tigre.

We might likewise consider a (tentative) typology of how IS interacts with subject cases as well, adapting the above table for the interaction between focus and ergative/nominative in the languages discussed. As we can see,

⁹Adapted from Dalrymple and Nikolaeva (2011: 215f). Some of the languages listed here exhibit DOM in agreement patterns- not all are based on case marking.

even the small number of languages considered here, we find examples of all types:

- (4.14) A typology of DSM/IS interactions
- Type 1:** DSM is regulated solely by information structure.
E.g. Amahuaca, Tariana, Beria.
 - Type 2:** DSM is regulated solely by semantic features.
E.g. Dyirbal, other Pama-Nyungan split-ergative languages.
 - Type 3:** DSM is regulated by both information structure and semantic features.
E.g. Kashibo-Kakataibo, Waskia.

All together, these examples provide strong evidence that both topicality and focus can determine, or act as additional conditioning factors in determining case marking patterns cross-linguistically.

4.2 Diachronic connections

We might expect that such a connection between IS and case may sometimes result in diachronic changes where particular case markers are reanalysed as topic or focus markers, or *vice versa*. Dalrymple and Nikolaeva (2011) argue the conditions on DOM are often likely to be the result of diachronic changes, where DOM was once conditioned only by topichood; however, this is not exactly equivalent to saying that DOM originates as a *topic marker*, which should, in theory, be able to mark all topics. There is however some tentative evidence that such a change is likely to have happened in some languages.

Pensalfini (1999) for example claims that ergative (and dative) case markers in the Mirndi (non-Pama-Nyungan) language Jingulu have (recently) expanded into marking discourse prominence. This is not a complete reanalysis, as the markers still function as case suffixes as well, but appears to be a change in this direction. The ergative case marker *-rni/-rna/-rlu* is obligatory for A arguments, but is optionally present on a wide range of constituents when focused or higher in prominence, including verbal roots, inflected verbs, and adverbs- a distribution much more in line with a general focus marker, rather than a case constrained by focus.

- (4.15) Obligative ergative marking on A arguments in Jingulu
- a. Wawa jarrkaja-ardu.
child run-go
The child is running.

- b. Wawa-rni warlaku ngaja-ju.
child-ERG dog see-do
The child sees the dog.
- c. *Wawa warlaku ngaja-ju.
child dog see-do

(4.16) The same marking occurring on other constituents

- a. OBJECTS
Miringmi-**rni** darra-nga-yi bardakurri-mi.
gum-FOC/ERG eat-1Sg-FUT good-v
I'll eat the sweet gum.
- b. INTRANSITIVE SUBJECTS
Nyamina-**rni** nayuni ya-jiyimi.
DEM(f)-FOC/ERG woman 3Sg-come
Here comes that woman.
- c. USE AS BOTH ERGATIVE AND FOCUS
Nganya-marri marlaluka-**rni** kujika-**rni**.
sing-did(dist) old.man.PL-ERG song-FOC
The old men sang songs.
- d. VERBAL ROOTS
Ardjuwa-**rna** ya-ju.
throw.away-FOC 3Sg-do
He's failing, stuffing it up.

Pensalfini however remarks that the distribution does not always cover what is understood under focus, but considers the label focus marker suitable as it does cover both new information and sometimes contrastive focus. He further notes that as intonation remains the main way of realising prominence in Jingulu, the exact nature of these markers remains somewhat uncertain. Furthermore, this distribution seems to be a very recent development, apparently developed after Ken Hale took field notes on the language in 1960. Pensalfini therefore connects this change in usage with the reduction and obsolescence of everyday usage of the language, and the increasing dominance of English and Kriol, leading to a subsequent reanalysis of the ergative case.

A different pattern of potential reanalysis comes from another Pama-Nyungan language, Warlpiri¹⁰. Warlpiri is somewhat typologically unusual amongst Australian languages, as it does not have an overt accusative case at all.

¹⁰Thanks to David Nash and Barry Alpher for discussion of this section. As far as I know the connection I make here has not been made elsewhere in the literature, so this section should be understood as a tentative exploration of the idea.

Many Australian languages have an accusative suffix variably of the form *-nya*, *-nha*, *-na* (Dixon 1980), which usually marks (at least some) pronouns, and sometimes proper names as well (cf. the distribution on Silverstein type hierarchies). Compare the following examples from the Western Desert languages Pitjantjatjara and Yankunytjatjara¹¹, in which the pronouns with the accusative case suffixes are in bold:

- (4.17) a. Pitjantjatjara:
 Tjitji-ngku **ngayu-nya** nya-ngu.
 child-ERG 1SG-ACC see-PAST
The child saw me.

Bowe (1990: 11)

- b. Yankunytjatjara:
 Tjinguru witi-payi-ngku **nyuntu-nya** nyaku-ku.
 maybe catch-NML-ERG you-ACC see-FUT
Maybe the policeman will see you.

Goddard (1985: 77)

There is a complete absence of any such suffix on Warlpiri object pronouns:

- (4.18) Warlpiri:
- a. Kurdu-ngku ka-ju nya-nyi **ngaju**.
 child-ERG PRES-1SG see-NPAST 1.SG-ABS
The child sees me.
- b. Ngajulu-rlu ka-rna-ngku **nyuntu** nya-nyi.
 I-ERG PRES-1SG-2SG you.SG-ABS see-NPAST
I see you.

Simpson (1983: 140, 199)

However, there is a suffix of the expected form *-nya* in Warlpiri, which seems to be some kind of focus marker. The Warlpiri Dictionary (Laughren et al. 2007: 864) calls it a focus clitic; Nash (1980: 56, 129, 197) labels it as an emphatic/focus/interrogative enclitic, and variously glosses it as *Quest[ion]* and *Top?*; Simpson (1983: 10) calls it an emphatic/interrogative clitic; Legate (2002: 197f) includes a brief description of its distribution. It does not appear in all typical environments in which we would expect a focus marker to

¹¹I've slightly adapted Goddard's gloss here.

appear- answers to *wh*- questions do not bear *-nyu*; however it is used in cases of contrastive focus, and in yes/no questions. Legate notes that the most common use is exhaustive focus, observing its use in dictionary entries of the form: *X is when Y... That-nya is X*.

- (4.19) Jalya, ngula-ji yangka kurdu wawarda-wangu manu
 bare, that-TOP like child clothes-without or
 tirawuju-wanga manu wirripakarnu-wangu. Ngula-**nya**
 trousers-without or hair.string.belt-without that-**foc**
 jalya-ji.
 bare-TOP

Jalya is like a child who has no clothes on, or no trousers or no hair-string belt. That is jalya.

Warlpiri Dictionary Project
 via Legate (2002: 198)

Unlike the markers in Jingulu, there is no evidence for Warlpiri that this change is recent, or due to language attrition- other Ngumpin-Yapa languages such as Bilinarra and Wanyjirra also lack an overt accusative case (Meakins and Nordlinger 2013; Senge 2015)¹², suggesting that the loss of the marker happened at an earlier stage.

However despite evidence that a reanalysis from case marker to discourse marker in Warlpiri took place sometime in the past, the exact nature and origin of this suffix remain uncertain. Furthermore, it is difficult to explain why an accusative suffix came to be associated with focus; in the vast majority of cases we've seen, marked objects are overwhelmingly associated with topic, rather than focus. Perhaps it is exactly the lesser-marked status of focused objects, coupled with the accusative markers generally limited distribution, which could have led to a reanalysis. However at this stage, any proposal would be little more than speculation, so the (presumed) path of grammaticalisation from accusative to focus marker remains unclear.

Diachronic connections between case morphology and information structural morphology is an area in need of further study. The actual diachrony of differential marking systems has been the subject of much study (see e.g.

¹²An interesting side-note: Bilinarra also has two markers which seem (at least in form) similar to Warlpiri *-nya*: the focus clitic *=na*, which Meakins and Nordlinger assert is an established borrowing from Kriol (2013: 403), derived from English *now*; and the single word utterance *nya* (2013: 181f), which they class as an identifier demonstrative, which is "used to draw attention to something in the physical context and is usually uttered when pointing at something or holding something". However they note that it is probably a shortened form of *nyawa* 'this'. Therefore, although they seem similar to Warlpiri *-nya*, they very plausibly have different origins.

Seržant and Witzlack-Makarevich (2018) for an overview), but the connection between case morphology and general topic/focus morphology has attracted less attention. It does not represent a major piece of the argumentation here, but does add more circumstantial evidence for a strong cross-linguistic information structure/case connection. The ideas presented here are at the moment still largely speculative, however since the existence of such diachronic changes are expected, any hints of it in the literature are valuable.

4.3 Implementing IS into conditions on DOM/DSM

Once established that IS notions are capable of contributing to or determining choice of case morphology, the next question is how this connection should be represented in the grammar. The consensus in the literature discussed seems to be simply that the information that an argument is associated with a focus/topic value is available when determining exponence. That is to say, when a feature bundle is compared against vocabulary items, topic/focus are features which can be referenced. This is easily seen in Clem's list of case exponents for Amahuaca, repeated here for clarity:

(4.20)

Ergative:	[D],[v,ϕ],[T]	↔	/n/
Nominative:	[D],[T],[Foc]	↔	/x/
default:	[D]	↔	/-Ø/
(=accusative)			

For Clem, nominative case must fill the requirement of being associated with focus in order for it to be assigned the phonological form *-x*. For clarity in further discussion, I take such a representation for nominative case to be notationally equivalent to the following¹³:

$$(4.21) \quad [\text{NOM}] \Leftrightarrow /x/ \text{ / } _ [+FOC] \\ (\textit{elsewhere} \Leftrightarrow \emptyset)$$

That is, the nominative feature is assigned the phonological form */x/* when associated with a focus feature. If the focus feature is not present, then the conditions are not met, and an elsewhere form (*-ø*) is inserted.

Dalrymple and Nikolaeva (2011) take a similar approach. Their argument is couched in an LFG framework, so the comparison is not identical, but it is very similar in the sense that information structure is just another condition that must be fulfilled in order for the argument to be marked, in exactly the same way as any other feature. The authors derive the conditions on

¹³The only real difference is listing nominative as a feature *per se*- it could as well be read as *the nominal element which has agreed with a T head*.

case marking in Tigre for example by simply listing topicality alongside definiteness (2011: 136):

- (4.22) Case marking of topical objects in Tigre:
 (OBJ \uparrow)
 (\uparrow DEF) = +
 (\uparrow_σ DF) = TOPIC

These lines lay out the restrictions that must be fulfilled in order for the object to be case marked. The first line states that the object must indeed be an object; the second states that it must be definite; and the third ensures that at the level of information structure it is specified as topic. Representing the requirements in this way can easily be extended and varied to describe conditions in other languages; compare for example the following constraints they propose for Dolakha Newar, in which topicality is the only trigger for marking (2011: 139):

- (4.23) Case marking of topical objects in Dolakha Newar:
 (OBJ \uparrow)
 (\uparrow_σ DF) = TOPIC

The slightly more complicated examples of what I've called multi-dimensional marking (in line with Aissen's two dimensional DOM) is able to be represented by essentially the same means. For example, in Umpithamu (Pama-Nyungan), ergative is triggered when the subject is either inanimate, or animate and focused (Verstraete 2010; cf. also the conditions for Waskia described above). We could imagine representing the conditions for ergative case occurring as follows:

- (4.24) $[\text{ERG}] \leftrightarrow \text{/mpal/} \text{ / } _ \left\{ \begin{array}{l} [\text{INAN}] \\ [\text{FOC}] \end{array} \right\}$
 (*elsewhere* $\leftrightarrow \emptyset$)

That is, in order to fulfil the conditions for the insertion of phonological content for the ergative case, the subject must be either inanimate, or focused; fulfilling one of these conditions is sufficient¹⁴. This ensures that all inanimates bear an ergative case, but that animate subjects do not unless also focused.

Such approaches can integrate the role IS plays in determining case forms very easily, as topic and focus are referenced in the same way as other features. The only necessary assumptions are that (i) topic and focus are represented as features early in the derivation/in the syntactic component,

¹⁴I use curly brackets here to indicate that either one, but not necessarily both conditions hold. If the condition were inanimate *and* focused, then I would represent them on the same line within the same square brackets: [INAN; FOC].

and furthermore (ii) that their presence is able to be referenced by the morphological component of the grammar. This is by far not the first attempt to argue for these positions in the literature.

4.3.1 Conclusions and discussion

The aim of this chapter has been to establish a cross-linguistically valid generalisation that topic and focus are sometimes referenced in case allomorphy. This has been shown to be true in a substantial number of widely varying languages. In some languages, focus/topic is the only conditioning factor that is required for overt case morphology to surface; in others, it is only one of several factors that come into play. As noted in Valle (2011: 13), and Fauconnier and Verstraete (2014), there is a general trend such that focus tends to be a conditioning feature for subjects (nominative/accusative cases), and topic seems to be a conditioning feature for objects (accusative case)¹⁵. This is somewhat reminiscent of the mirror-image markedness in hierarchies discussed by Silverstein, Aissen, etc.

SUBJECTS			OBJECTS	
←	more marked	less marked	→	
FOCUS			TOPIC	

Figure 4.2: Focus/topic as subject/object markedness reversal

However we should be wary of representing the focus-subject/topic-object markedness relation in this way, as it implies that topic and focus are related as opposite values, in the way that animacy/inanimacy or definite/indefinite are. Focus and topic, representing different and often unrelated discourse functions, cannot necessarily be construed as two sides of one coin; an argument not being topical does not mean it must be focused. There may be a correlation between new and old information, which are often associated with focus and topic respectively; however focus does not always target new information, and focus not always old. Furthermore, it seems that the relation really is between subjects and focus, and objects and topic; and not subjects and new information, and objects and old information. Instead, the

¹⁵In fact, Fauconnier and Verstraete present a stronger claim, namely that in their sample of 185 languages, topic never conditions A argument marking, and focus never conditions O argument marking (2014: 10f). I've worded the connection a little carefully, as we've seen in Chapter 2 how topicality seems to influence subject case marking in Gurindji Kriol, and it has also been claimed for Yali (Riesberg 2018); Seržant and Witzlack-Makarevich (2018: 11) also suggest that focus may be a trigger for O arguments in Yukaghir (isolate), so I don't want to completely rule the connection out.

connection between topic and objects on one hand, and focus and subjects on the other, must have a different source.

According to the Dalrymple and Nikolaeva (2011), the effect of topicality on object marking arises from a general tendency for languages to mark topics, either/both by means of agreement or case marking. As such, DOM serves to highlight the *similarities* between topical objects and subjects (2011: 15). Such a view is naturally at odds with most functional approaches, which assume that DOM serves to differentiate arguments, and highlight the non-typically object characteristics of marked objects. This fundamental connection between topicality and DOM seems then for Dalrymple and Nikolaeva to suggest a general pressure for languages to mark topics, either by agreement, case, or other means, regardless of their status as subjects/objects. In comparison, the subject/focus connection is less discussed in the literature, and I won't speculate on it here.

The empirical evidence cited in this chapter has also served to make several theoretical assumptions possible. The fact that information structure is not only relevant in cases of optional case morphology is important. If, for example, the role of focus was only ever a factor in languages in which cases were optional, then one could argue that the case marker in question is indeed optional but focus disallows its deletion, meaning that when focus is present the case marker is also always present. This is unlike the featural approach advocated for here, and instead relates an inability to elide focused case morphology to a more general ban on eliding focused material (for details see e.g. Büring 2016; Assmann et al. 2018). In a way, such a ban is obvious, as focus is generally the most informative part of a sentence, being the information requested in questions or contrasted against- it is of course unimaginable for example for any language to produce sentences such as:

- (4.25) a. *Did you see the dog or the cat?*
 I saw [~~THE-CAT~~]_F.
 b. *Who drank the goat's milk?*
 [~~MAX~~]_F drank it.

To assume that such a ban on eliding focused material extends to case morphology as well leaves us with a clear prediction: no case morphology should be able to be absent when that argument is focused. If this was the work of a general characteristic of focus, it should not matter whether the argument in question is a subject or an object, or which case it bears. However, it appears that this is not the case: the (tendency to) ban non-overtness of case morphology in the presence of focus seems to only apply to subjects, and does not extend to objects.

Unfortunately, in most of the languages examined, there is no corresponding overt-but-optional accusative case to test this prediction. However the

fact that focus only forces overt expression of case for nominative/ergative cases, but not necessarily for accusative, has been noticed and described in some languages. In the languages we have discussed, one of the two core cases is not overtly realised, so the effect that focus has on both cases cannot be seen. However some languages with two overt cases show interesting and potentially illuminating effects. Korean for example allows the non-overt expression of both nominative and accusative cases (i.e. they are "optional"). As discussed in e.g. Lee (2010), Lee and Choi (2010) and Sung (2016), there is a "strong preference" for focused subjects to occur with overt case markers, but there is no such preference for focused objects. In fact, "...in certain cases object case ellipsis is favored even though the object is contrastively focused" (Lee and Choi 2010: 214). If overt case marking is forced purely by the presence of focus, on the grounds that elision of focused material is generally disallowed, then such an asymmetry between subjects and objects remains a mystery. If focus impedes elision of focused arguments (and their cases), then why should it matter if that argument is a subject or an object?

If, on the other hand, the effect of focus is not purely due to how it regulates deletion, but rather how focus *qua* feature interacts with case as other features do, then the fact there is an asymmetry between subjects and objects is only as much of a mystery as general differences between what determines DSM and DOM are a mystery. In other words, the fact that, for example, definiteness never seems to be a conditioning factor for differential subject marking (Fauconnier and Verstraete 2014: 21)¹⁶ does not necessarily require an explanation analysing the asymmetry as a quality of definiteness *per se*, but rather how definiteness interacts with subjects. A more functionalist-minded approach might see this connection in terms of untypical pairings of grammatical roles and features/characteristics. Perhaps this could be extended to the present discussion as well. However as discussed in the last chapter, it is still largely uncertain what an appropriate explanation might be in minimalist terms. So perhaps the exact nature of such a (non-)connection may remain a mystery; but it is able to be described in the system outlined here- when focus as a feature meets subject cases (and their features), case tends to be preserved. When focus as a feature meets an object case (and its features), there is no such pressure to have an overt case. The same is true *mutatis mutandis* of topics. This points towards an analysis in which the role that information structural notions play in determining case morphology is regulated in exactly the same way as other features are. Therefore, the role that information structure plays in determining the distribution of case morphology in languages with OEM should be understood as the interaction of factors on a featural level, rather than representing general characteristics of topic and focus, such as general bans on elision.

¹⁶Or at least differential A argument marking.

A link has now been established between OEM and differential/split marking, in that they are both cases of inconsistent marking of an argument, determined by tracking particular features associated with that argument. Although some of these are related to discourse properties, there are good reasons to believe that they behave in the exact same way as more inherent features, at least in terms of determining the distribution of case. However a major difference between optional and differential/split marking is the fact that there is no absolute correlations in optional marking. How this factor could be integrated into an analysis is the topic of the following chapter.

Chapter 5

Deriving optionality

One major issue when working on the type of data examined here in a strictly derivational framework is explaining how the system can produce cases of apparent optionality. This is true for many theories, including also e.g. OT (Müller 1999). This chapter describes various ways of implementing optionality into a theory of grammar. This includes approaches available in the literature, and discussion of how they apply to OEM. The major difficulty in deriving the effects seen here is the fact that, at least in relation to the data examined for case marking, describing the morphological alternation as optional suggests a degree of arbitrariness which is not reflected in the data. Morphology here correlates to differing degrees with particular features, but crucially, there is no complete causal connection between feature and marker. This is difficult to account for under most approaches.

I then suggest and explore a new way to achieve apparent optionality, namely via some implementation of a threshold function, the output of which is deterministic but may appear optional depending on the input. Such an approach essentially groups optional case marking alongside differential/split marking systems as an ultimately deterministic form of case alternation. This approach assumes that the variable marking is an output of the grammar itself, specifically in a post-syntactic morphology, rather than being determined by extra-grammatical factors such as processing or sociolinguistic considerations, or as the product of competing grammars. Although still in very early stages, such an approach has several benefits and seems to capture several characteristics of OEM which are otherwise difficult or cumbersome to account for. However, the proposal should be understood as a plausibility argument, rather than a detailed analysis which derives all properties of OEM as discussed.

5.1 Variation and optionality of exponence

One common and obvious way of indicating that an element is optional is by simply marking it as such. Apparent optionality of an element is typically indicated by brackets:

(5.1) I heard (that) the new students want to run a goat farm.

Optionality between two morphological forms may also be represented as allomorphs in free variation. For example, the Catalan word for *nothing* may take one of two forms- there does not appear to be any conditioning factors determining which is used (Bonet and Harbour 2012: 210):

(5.2) a. No vol re/res més.
NEG want.3SG nothing else
(S)he doesn't want anything else.

b. [nothing] $\Leftrightarrow \begin{cases} re \\ res \end{cases}$

The English complementiser, alternating between an overt and null form, could likewise be represented in this way:

(5.3) [COMP] $\Leftrightarrow \begin{cases} that \\ \emptyset \end{cases}$

Note that by representing the alternation in this way, no conditioning factors are specified; either option is possible and is able to be inserted. By way of this representation, without any further stipulations, we would expect a rough distribution of the two forms to be half-half for either form¹. This is obviously inadequate to account for the correlated effects discussed related to case marking. A simple acknowledgement that an element is optional does not make reference to any conditioning factors as it stands.

When approaching an analysis of optionality there are several factors to take into consideration. Two important questions are: (i) to what extent should frequency effects/unequal distribution of the marker be accounted for by the analysis itself?; (ii) how, and to what extent, should the distribution of the case marker be tied to the factors that influence it? The answers to these questions guide and form the basis of any possible analysis. One major point of divergence is whether the grammar is in any way probabilistic/stochastic, or whether it is completely deterministic.

¹At least as output of the grammar, and ignoring possible extra-grammatical/processing factors, which can doubtless have a considerable effect on frequency- cf. work on English *that* (e.g. Tagliamonte and J. Smith 2005), showing to what extent frequency can be affected by these types of factors.

5.1.1 Probability and stochasticity in grammar

Since the earliest beginnings of classical generative grammar (Chomsky 1957 *et seq*), a strict separation between grammar and usage has been assumed. The grammar is taken to be a modular system which builds syntactic structures, undisturbed by any extra-grammatical considerations of usage. This distinction builds the basis of Chomsky's performance/competence contrast. This strict separation raises questions as to the locus of variation when it does occur- and variation/optionality obviously does exist in natural language; in Embick's (2008) words: "[w]hile it is not to be doubted that statistical or gradient concerns play a role somewhere in language in the broad sense, a further question is of course where in the cognitive system such effects are to be located: this is a modularity question."² In other words, where along the course of a derivation is the eventual form decided? Broadly, a line dividing the answer to that question is whether it is in the grammar itself, or is external to the grammar. If variation/optionality is taken to be grammar-internal, it could either be seen as reflecting either the following: (i) the variation in output is produced by the mechanisms of the grammar, i.e. is deterministic (but we may not yet understand exactly what those mechanisms are); or (ii) the grammar makes use of probabilities, or is stochastic, in which case the form produced is not determinable, but rather follows statistical likelihoods, borne out of usage patterns.

As part of a broader tendency to make usage and probability a fundamental part of linguistic analysis (e.g. Manning 2003), some approaches have taken the idea of grammar-internal but probabilistic variation seriously, and have worked to build stochasticity (i.e. an element of randomness) directly into the grammatical system. This includes work in Stochastic Optimality Theory (e.g. Boersma 1997; Boersma and Hayes 2001; Bresnan et al. 2001, among others), and stochastic/noisy strands of related theories such as Harmonic Grammar (e.g. Boersma and Pater 2008). Although I will ultimately not assume any of these theories, it is worth exploring how cases of apparent optionality are derived in such a system, and why this is attractive.

Like standard versions of Optimality Theory (Prince and Smolensky 1993), Stochastic OT (StOT) makes use of ranked and violable constraints, against which possible forms are compared in order to find the optimal candidate. In non-stochastic OT, constraints are ranked on an ordinal scale:

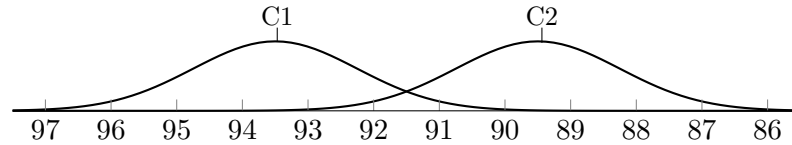
$$(5.4) \quad C_1 \gg C_2 \gg C_3 \gg C_4 \gg \dots$$

However in StOT, constraints are ranked with real number values along a continuous scale, with differing distances between them. A main characteristic

²See also Henry (2008) for a good overview of integrating variationalist work into syntactic theory.

of StOT is the introduction of noise in evaluation, which sometimes results in areas of the scale where more than one constraint overlap³:

(5.5)



This overlapping between the potential values of the constraints can lead to occasional changes in ranking, and therefore in output. This is driven by an element of stochasticity: at the time of evaluation, "...the position of each constraint is temporarily perturbed by a random positive or negative value. In this way, the constraints act as if they are associated with ranges of values, instead of single points" (Boersma and Hayes 2001: 47). The actual point chosen from this range of values is the selection point. Boersma and Hayes adopt a probability distribution with a peak in the centre representing the most likely selection point, with the probability diminishing as it gets further away from this point. If two constraints are close to each other and overlap, there is a chance that a lower valued selection point is taken from the higher ranking constraint than the selection point of the lower ranking constraint, in which case the lower ranking constraint outranks the higher constraint. If two constraints are far enough away from each other, then they will (practically) never overlap (i.e. potentially swap rankings), in which case they act as if they were ranked in a usual, non-stochastic OT fashion. The rest of the task of evaluating the optimal candidate proceeds as in standard OT.

The ability for such a grammar to produce variable output is immediately clear. Stochasticity drives the occasional outranking of higher ranked constraints by lower ranked constraints, which is constrained by probability; the selection point is more likely to be closer to the mean, and becomes less likely the further it departs from it. One could imagine applying such an approach to OEM, perhaps by using the privative alternation determined by Aissen's (2003) constraint *STRUC_C, which as discussed regulates the cut-off point for case morphology on a hierarchy. Aissen suggests that optionality is captured by constraint reranking, which is easily captured in a StOT approach; however the question of how to integrate the role of features which condition the optionality is less clear.

Despite much work on theories of grammar which integrate probability or stochasticity into the fundamental architecture of language, mainstream

³cf. Boersma and Hayes (2001: 5).

generative work still tends to reject approaches which blur the line between grammar and usage (for more recent arguments on the debate from a modular view of syntax, see e.g. Newmeyer 2003; Embick 2008; Adger 2017). It is important to note that arguments against accounts based on probability do not argue against them because they fail empirically, but rather they argue that succeeding at predicting/mirroring distribution does not necessarily further our understanding of how language works in the mind of the speaker. These approaches do not deny that variation exists- it obviously does- but rather argue that variation is not represented as a fundamental part of syntax. I similarly take the position that an account which keeps grammar and usage separate is preferable, keeping with general consensus, not because I doubt that OEM can be derived in frameworks such as StOT, but because this type of data should be able to be derived by more minimalist means as well, if we want to take linguistic optionality/variation seriously while at the same time maintaining it can have a grammatical source. This means that if there is reason to believe that particular cases of variation are products of the grammar itself, then it is necessary to state how the grammar is able to produce such variable output, and how it is regulated. With this in mind, let us turn to two approaches from the literature which use minimalist assumptions and machinery to derive variation/optionality, and how they might relate to OEM.

5.1.2 Variable rule application

Nevins and Parrott (2010) implement Labovian intra-speaker variation into a Distributed Morphology framework. In their approach, the lack of deterministic factors in variation is cast in terms of the variable application of a feature-deleting operation Impoverishment (Bonet 1991). Once the conditions for Impoverishment are met, there is variation in whether it is actually triggered or not. The authors centre in on paradigms with variation in forms, such as the following, from Monmouthshire, Wales. The % sign indicates variation in form:

(5.6) MONMOUTHSHIRE ENGLISH

	singular	plural
1st	I be(%am)	us be
2nd	thee beest	NO DATA
3rd	her is	they be

They therefore suggest the following vocabulary for $[be\ T_{[-PAST, \varphi]}]$:

(5.7)

$[+Auth, -Pl]$	\Leftrightarrow	/æm/
$[+Part, -Auth]$	\Leftrightarrow	/bɪst/
$[-Pl]$	\Leftrightarrow	/ɪz/
<i>elsewhere</i>	\Leftrightarrow	/bi/

The variation between the 1st person singular forms *be* and *am* is explained through a variable impoverishment rule that targets first persons, deleting φ from the feature bundle:

$$(5.8) \quad T_{[-\text{PAST}, \varphi]} \quad \% \rightarrow \quad T_{[-\text{PAST}, \emptyset]} \quad / \quad T_{[+\text{AUTH}]}$$

If this impoverishment rule applies, then the conditions for inserting *am* no longer apply; all φ features have been deleted, and thus the elsewhere form *be* is inserted. However if the impoverishment rule does not apply, then the relevant φ features are still available, and *am* is able to be inserted. The alternation between the forms *be/am* is determined by whether the impoverishment rule takes place or not.

One benefit of this is that it allows certain distributional predictions, based on the general assumption that impoverishment targets more highly marked feature bundles (e.g. Nevins 2011; Woolford 2009). Assuming past tense is more marked than present tense, for example, this approach predicts that no dialect should show paradigm leveling in the present tense, without also showing it in the past tense. They tentatively suggest that empirical studies seem to validate this claim.

What this approach does *not* do, however, is predict frequency patterns; that is, how often each form is actually expected to appear, as no reference is made to when the rule actually takes place. Nevins and Parrott address this, questioning whether predicting frequencies is actually necessary or desirable. Specifying the probability of the impoverishment rule occurring is of course possible⁴:

$$(5.9) \quad T_{[+\text{PAST}, \varphi]} \quad \% \rightarrow \quad T_{[+\text{PAST}, \emptyset]} \quad / \quad T_{[+\text{PART}]} \\ \langle \text{Ip}_a = .33 \rangle$$

To be read as: delete the feature (set) $[\varphi]$ from a T head bearing the feature $[+\text{past}]$, when that T head additionally bears a $[+\text{participant}]$ feature; and let the probability of this operation taking place (a = application) be 33%. The above rule should apply 33% of the time, with the frequency of occurrence mirroring this. The authors reject such an approach, based on its *post hoc* nature, but consider the possibility that the degree of markedness could interact with the application of impoverishment in such a way that frequency effects fall out of their interaction. However usage factors will of course affect frequencies that are actually observed.

The approach to variability suggested by Nevins and Parrott could potentially be extended to optional case marking as well. Such an analysis may look something like this:

⁴Adapted from several examples in Nevins and Parrott (2010); I've simplified the example somewhat to demonstrate the concept rather than a specific example.

$$(5.10) \quad \text{DP}_{[\text{CASE}]} \quad \% \rightarrow \quad \text{DP}[\emptyset] \quad / \quad \text{DP}/_ \left\{ \begin{array}{l} [+ \text{INAN}] \\ [- \text{FOC}] \\ \dots \end{array} \right\}$$

That is to say, a case feature is deleted from a DP whenever at least one of a series of features are also (not) present on that DP; and this rule may or may not apply. Does this suffice? We would firstly have to assume that the frequency effects seen are actually determined by extra-grammatical properties, and that any apparent correlation between grammatical feature and frequency is epiphenomenal. We could argue that the only necessary requirement in capturing optionality is describing how and under what contexts information is deleted, and not how often it actually occurs. Although this is a possible path of analysis, some other aspects of such an argument seem less applicable to optional case marking than they are to the variation in form discussed by Nevins and Parrott. In particular, this involves the environments in which the impoverishment rule should take place. As discussed, impoverishment is regarded as tendentially targeting more highly marked feature bundles. However in the case of OEM, one highly typical context in which case is deleted is when the DP is *not* associated with a focus feature. To say that deletion *via* impoverishment takes place when the DP is *not* focused is to suggest that being focused is somehow less marked than not being focused. Although there is in theory nothing prohibiting proposing such an analysis, it would seem to contradict the general consensus on the nature of impoverishment as an operation. For this reason, in addition to the lack of correlation between features and frequency, the variable application of an impoverishment rule seems less suitable for explaining OEM.

5.1.3 Combinatorial variability

Other work on Labovian type variation from a minimalist perspective has produced another approach to explaining apparent optionality (or, "non-deterministic variation") between two forms. The analysis, laid out in a series of papers (Adger 2006, 2007, 2013, 2016; Adger and J. Smith 2005, 2010), explains variation in morphological form by positing several separate vocabulary items which are potentially inserted in a particular context, some of which may happen to have the same phonological form and meaning, but differ in the presence of certain uninterpretable features, which serve only a formal purpose. As they do not affect semantic interpretation, these uninterpretable features are able to condition the form of the verb without affecting meaning. Forms are minimally specified, and are not in competition, meaning that there are several possible candidates for insertion when a feature bundle has several features associated with it. This approach therefore produces variable output deterministically. This approach therefore goes

against Aissen and Bresnan's (2002: 82) characterisation of the possibilities open to classical generative approaches to explain this type of phenomena:

"Classical generative theories of formal grammar are designed with mathematically discrete and logically deterministic formal architectures. In these theories, frequentistic processes (such as the conventionalization of usage preferences) must belong either to grammar-external 'performance' along with speech errors and memory limitations, or to external choices among competing dialect grammars."

This type of analysis shows that there are grammar-internal possibilities for explaining variable output deterministically, without making use of probability. To make the combinatorial variability approach clearer with an example, the authors centre on variation in past tense forms of *be* in Buckie Scots⁵:

- (5.11) a. He says 'I thocht **you were** a diver or somethin.'
 b. Aye, I thocht **you was** a scuba diver.
 c. There was one nicht **we were** lyin at anchor.
 d. We played on at beach til **we was** tired, sailin boaties, bilin whelks.
 e. So you were all- **you were** all just bairns.
 f. **You ones was** a wee bitty older and you treated her just a right.

Note however that *was/were* are not just interchangeable forms in Buckie Scots, as there are some person/number combinations which do not allow the alternation:

(5.12) BUCKIE SCOTS

	singular	plural
1st	was	was/were
2nd	was/were	was/were
3rd	was	were

Following common assumptions, the form of a verb hinges on the featural make-up of the pronoun it agrees with. We can assume something like the following set of features for personal pronouns in English:

- (5.13) English pronoun decomposition:

⁵ All examples from Adger (2006), based on J. Smith (2000).

$\begin{bmatrix} \textit{singular} : + \\ \textit{participant} : + \\ \textit{author} : + \end{bmatrix}$	I	$\begin{bmatrix} \textit{singular} : - \\ \textit{participant} : + \\ \textit{author} : + \end{bmatrix}$	we
$\begin{bmatrix} \textit{singular} : + \\ \textit{participant} : + \\ \textit{author} : - \end{bmatrix}$	you	$\begin{bmatrix} \textit{singular} : - \\ \textit{participant} : + \\ \textit{author} : - \end{bmatrix}$	you
$\begin{bmatrix} \textit{singular} : + \\ \textit{participant} : - \end{bmatrix}$	he/she/it	$\begin{bmatrix} \textit{singular} : - \\ \textit{participant} : - \end{bmatrix}$	they

Adger proposes that when learning the lexical items and when to use them, the learner is guided by principles of reducing optionality, synonymy, and the size of the lexicon; in other words, the learner attempts to create the most economic list mapping feature bundles to vocabulary items. This means that the learner of Buckie Scots minimally associates the following forms and features of the past tense auxiliary/copula⁶:

	$[usingular: +]$	was
	$[usingular: -]$	were
(5.14)	$[uparticipant: +]$	was
	$[uauthor: -]$	were
	$[uauthor: +]$	was

When the pronoun is second person singular *you* [singular: +, participant: +, author: -], for example, the following forms are possible to insert for the form of the verb *be*: [singular: +]=*was*, [participant: +]=*was*, [author: -]=*were*. Therefore, both *was* and *were* are able to be inserted, and there is variation in the verb form. The first person singular pronoun *I* [singular: +, participant: +, author: +] however, only appears with the form *was*. This similarly falls out of this system: [singular: +]=*was*, [participant: +]=*was*, [author: +]=*was*. Therefore, *was* is the only possible form that can be inserted.

One further point of interest regarding combinatorial variability is not just that it provides a method for explaining variation between two forms using standard minimalist assumptions, but also that the output of the process roughly mirrors the frequency effects seen. Adger (2013: 3) reports the following frequencies of the use of *was* with personal pronouns in Buckie Scots:

⁶A more detailed account of the process of arriving at these correspondences are given in Adger (2006).

	pronoun	percentage of <i>was</i>	N
(5.15)	first singular	100	691
	second singular	69	161
	third singular	100	2290
	first plural	67	368
	second plural	10	10
	third plural	0	762

Note that there is no variation with first and third singular pronouns (always *was*), and with third plural (never *was*). Note that in the example given above of second person singular *you*, two out the three possible forms it could take were *was*, and only one possible form was *were*. Assuming that the choice of which form is inserted is random⁷, we should expect *was* to be inserted roughly two thirds of the time. The same situation holds for the first person plural *we*. Indeed, this is what we find. Adger and Smith are careful not to overstate the predictive power of reflecting frequency effects (note the discussion of further influences discussed in the footnote below), but rather notes when several exponents in the pool of variants have the same form, the frequency roughly reflects this, subject to other influences.

The heart of this argument is analogous to variation in Mendelian genetics: variation in form, and variation in the frequencies of particular forms, can arise from the ways in which (discrete) elements combine- thus the name *combinatorial* variability. For Adger and Smith these discrete elements are the features that enter in agree relations.

Combinatorial variation provides a way of analysing "non-deterministic variation in form with no corresponding variation in meaning" (Adger 2006: 527), a description which sounds very similar to the description of OEM given in the beginning of Chapter 2. However, there are some factors which make an analysis based on combinatorial variability seem unsuitable for application to optional case marking: (i) although there are frequency effects, they are not tied to any grammatical factors, and are instead relatively stable uneven distributions. There is no obvious way to link grammar-internal features to frequencies; (ii) the examples given here alternate between two overt forms, depending on the features of the controlling pronoun. However, OEM overwhelmingly is represented by the presence versus absence of case

⁷Assuming a random distribution is essentially the null hypothesis, but Adger notes that it is almost definitely not the whole story, and that distribution is likely to also be influenced by extra-grammatical factors as well, e.g. Adger (2007: 696): "The function **U** [which decides which variant is chosen] is extremely complex, and is sensitive to all sorts of properties of the elements of PoV [pool of variants]: their phonology, their sociolinguistic connotations, whether they have been encountered recently, their frequency of occurrence in the life of the language user who is speaking, whether the language user likes that particular word, etc. It is also sensitive to many aspects of the context of utterance: the information structure of the discourse, pragmatic expectations about the interlocutor's knowledge, social expectations about appropriateness etc."

morphology. Although these are not necessarily at odds (lack of case morphology could be a form which happens to be zero), the fact that almost all cases⁸ of optional marking represent a presence/absence alternation suggests that optional case marking really suggests either case deletion or failure to insert, rather than being one of two variants. Finally, and most importantly, (iii) it is completely unclear to me how a combinatorial variation approach could be applied to optional case marking. It would have to require a list of correspondences between features of the ergative/nominative case and its alternative phonological realisations, one overt and one zero. However no real proposal of how to form such an analysis is obvious to me at this time.

Although combinational variability proves a very fitting way of explaining stable variation of forms in a community/speaker for some phenomena, its possible application to OEM is unclear. Furthermore, although it manages to produce output which roughly mirrors the unequal distribution of the two forms, frequency effects are divorced from any associated features. It is exactly this characteristic which we would like to model in OEM. In this vein, I would like to make a modest proposal on how we could derive the characteristics of OEM discussed, in a way that requires only a few extra assumptions of the grammatical system. This proposal is laid out in the following section.

5.2 A threshold function for variable output

To restate the problems of deriving OEM: there are features which contribute, to differing degrees, to the likelihood of overt case morphology. There are good reasons to believe that these features (most particularly focus, topic, and animacy, and perhaps also mirativity) are visible to the grammar and belong to the set of features on which syntax/morphology operate, as they influence various grammatical processes cross-linguistically, including choice of case morphology, and syntactic movement. However these features cannot be said to trigger the presence of morphology in OEM languages, as the correlation between feature and morphology is not perfect. An analysis based on probability is undesirable from a theoretical perspective (or at least from a minimalist perspective). Although more deterministic approaches are possible, it is difficult to make the link between feature and frequency of occurrence. Having established in Chapter 3 that optional case marking is likely to be a morphological rather than a syntactic phenomenon, there are three logically possibilities that could be behind the alternation:

1. *Allomorphy*: there are two case allomorphs, one of which is zero marker $-\emptyset$.

⁸Exceptions that I know of involving non-privative alternations in optional marking, namely McGregor (2006) and Schultze-Berndt (2017), are also not clear examples of optionality between three forms, but seem to involve further specifications.

2. *Deletion*: when the case morpheme does not appear, this is due to the case feature having been deleted from the noun before vocabulary insertion.
3. *Failure to insert*: when the case morpheme does not appear, this is due to it not having fulfilled all specified conditions for insertion.

The first option is possible, but we remain with the question of how the choice between the two forms is made. Furthermore, nothing dictates that one of the markers must be zero; there could be optionality between two overt forms. However, we do not seem to find this pattern. The deletion account could be represented in a Distributed Morphology framework by the operation impoverishment, however we have seen in discussing Nevins and Parrott (2010) that this would constitute unusual behaviour of impoverishment, which tends to target highly marked feature bundles, whereas it is the more marked arguments that retain case marking in OEM⁹. Therefore, I will follow a type of the third approach, in which lack of morphological case represents a context where it was unable to be inserted. In this section I would like to suggest a way which could logically produce variable output without relying on probability, and which furthermore tracks the influence that different features have on how likely they are to trigger marking.

One way of modelling this situation may be to assume that there does exist a singular feature, which, when present, consistently triggers overt morphology. For the moment, let's call this feature $[+\xi]$, without yet specifying what it is. We can assume that the spell-out conditions on the case morphology specify that $[+\xi]$ must be present in order to meet the requirements to be inserted as phonological material; the absence of a feature $[+\xi]$ associated with an argument means that the requirements for the insertion of case morphology are not met, and it is therefore not inserted:

$$(5.16) \quad \begin{aligned} [\text{Case:ERG}] &\Leftrightarrow -[\text{min}] / _ [+ \xi] \\ &\Leftrightarrow -[\emptyset] \end{aligned}$$

This is to be read as: assign the phonological string $[\text{min}]$ ¹⁰ to the case feature $[\text{ERG}]$ when it is associated with the feature $[+\xi]$; otherwise, assign it no phonetic content. What this does is place the computation of whether case morphology is overt or not back one step; optionality is reduced to whether the feature $[+\xi]$ is present or not. The questions are then how its presence on the DP is computed, and what this feature might actually represent. Let us first consider the first question.

⁹Another option could be the operation *Obliteration*, proposed in Arregi and Nevins (2007), which is deletion of the entire node, rather than only some of the features associated with it.

¹⁰This suffix is of course made up, representative of a hypothetical language.

I suggest that the presence of $[+\xi]$ is computed locally on the DP, at some stage in the derivation before vocabulary insertion, and is computed based on the presence of other features that are associated with the argument. Remember two characteristics of features relevant for marking that have become evident over the course of this thesis: (i) different features affect marking to different degrees; and (ii) there seems to be some kind of cumulative effect in triggering marking. As such, I propose that something akin to a threshold function is appropriate and able to compute the presence of $[+\xi]$:

(5.17)

$$f(x_1, x_2, \dots, x_n) = \begin{cases} 1, & \text{if } w_1x_1 + w_2x_2 + \dots + w_nx_n \geq t. \\ 0, & \text{otherwise.} \end{cases}$$

A threshold¹¹ has a pre-determined threshold value (t), and the inputs (x) likewise have their own pre-determined weights (w). The threshold is a function which takes the weights of all the input values, and returns a 1 if the combined weights of these inputs is equal to, or greater than, the threshold value; otherwise, it returns a 0. I propose that a returned value of 1 corresponds to, or is interpreted as, the feature $[+\xi]$; a returned value of 0 results in the absence of the feature $[+\xi]$. This approach thus assumes that there is a cumulative effect between the inputs and the output. In other words, by passing a certain threshold of features, a new feature $[+\xi]$ is called into existence on the argument; by now fulfilling the specified requirements on insertion, this feature is subsequently spelled out as case morphology.

The next question we may ask is what this feature may actually represent. As discussed, many linguists working on languages with OEM have characterised case-marked nominals as being especially prominent or emphasised arguments. As such, $[+\xi]$ could simply be thought of as marking prominence¹²¹³. However, prominence is not a binary notion- something is not either prominent or not prominent. Instead, prominence is better represented in terms of a continuous scale. However whether an argument is case-marked or not *is* a binary notion. This makes a threshold an advantageous mechanism to have in grammar, as

¹¹I describe this function in literal terms in this section to demonstrate the benefits that this type of system provides in determining seemingly variable output, but if the thought of bringing numbers into morphology makes the reader sceptical, I will discuss various other possible ways of implementing something like this later in this chapter.

¹²I have pulled short of naming this feature $[+\text{prom}]$ or something similar, largely not to be confused with the feature proposed in a range of other papers such as McGregor (2010). Although they are of course similar in nature, $[+\xi]$ is supposed to represent a formal trigger of marking, rather than being a marker of prominence itself, which may not need to be encoded as such in grammar.

¹³Note how this echoes Aissen (2003)'s claim that the more prominent an [argument] is, the more likely it is to be case-marked.

it plays an important role determining a cut-off point regulating between continuous and discrete systems. The fact that $[+\xi]$ may be best thought of as signalling prominence is further substantiated by the fact that different combinations of features can trigger its existence; the exact identity of the features involved are less important, but rather their "strength". This is more in line with an analysis whereby particular features contribute to prominence, which triggers marking, rather than marking being conditional on a strict set(s) of specifications to fulfil.

Evidence that furthermore suggests that prominence triggers marking comes from the discussion in Aissen (2003) from Chapter 3. In differential marking systems, optional marking is always found (when found) between impossible and obligatory case-marking, showing it to be the border area where this cut-off point is determined. If we were to analyse this in terms of a threshold approach as outlined here, this could represent a situation where a series of very similar sets of input values, which are very close to the threshold value, sometimes manage to cross it, and sometimes not quite. Impossible marking represents a set of inputs with such a low value that they never manage to cross the threshold; obligatory marking represents a set of inputs with a high enough value that they always cross the threshold. Therefore, it seems reasonable that $[+\xi]$ has the formal function of triggering marking, which correlates with a higher level of prominence of the argument.

The next question that follows from this is of course what the inputs to the threshold function are, and what values they have. The most obvious candidates are those features which we have seen increase the likelihood that case morphology is overt. Those features that affect the likelihood to a greater extent will have a relatively higher weight than those with a lesser effect. A higher weight of a feature will mean that its presence on the nominal will make it generally more likely to pass the necessary threshold to produce $[+\xi]$. Although this reasoning may be somewhat circular and cannot make predictions, it is at the moment difficult to imagine an alternative explanation which explains why exactly these features contribute to prominence. This system does not decide which features will contribute to prominence; there may indeed be functional reasons why exactly these features are relevant, but this system is not discerning in that sense.

There are a few predictions that follow from this characterisation. For example, if a feature's weight is near, but less than the threshold value, then that feature cannot cross the threshold itself; there could be cases where a feature which has a high weight will not be sufficient to ensure the threshold is reached by itself. This accounts for why we cannot say that any particular feature is a necessary condition for computing the presence of $[+\xi]$. An example to illustrate: imagine a language in which $[+\text{FOC}]$ strongly influences the likelihood of a case being overt, but does not always trigger it. We can assume that the feature $[+\text{FOC}]$ has a heavy weighting, but does not

quite reach the threshold- say, the threshold value¹⁴ is 1.0, and the [+FOC] feature has a weight of 0.8. A DP with a [+FOC] feature cannot pass the threshold itself; however the value is close enough to the threshold value that only a very low value is additionally required to pass the threshold. In this case, the presence of [+FOC] will almost always result in the presence of overt case morphology. A crucial point here is that the case marker does not encode focus, and focus does not trigger the marker; but focus does have an influence on whether the feature [+ξ] appears. It is not focus, but rather [+ξ] that is the prerequisite feature to trigger overt marking.

Another possibility to explore is the existence of inputs with negative weightings. To take the example from above, in which focus almost always triggers marking, it could also be possible that the feature [+FOC] has a weighting the same or greater than the threshold value. In this case, focus will consistently trigger case marking. However if another feature had a negative weight, say -0.4, it will therefore have an inhibitory effect which could potentially result in a focused argument being unmarked. This would represent a case in which the sum of the weights is less than the threshold value, purely due to the inclusion of a feature with a negative weighting. This may be an advantageous way to capture the inhibitory effect of some features described in some OEM languages.

In theory, any feature residing on the DP could be potentially relevant for computing [+ξ]. However as discussed in detail in previous chapters, there are some cross-linguistic tendencies as to which features are relevant. Based on the data reported in Chapter 2 for ergative/nominative cases, these include at least the following features: focus, inanimacy, newness, mirativity; topichood may also be relevant. The more a feature correlates with a case, the higher its weight. The closer it is to passing the threshold, the more likely it is to do so, as the presence of fewer additional features is required.

¹⁴There is the question of whether the ability to have a variable threshold value is necessary. In these cases having a single threshold value as a constant is sufficient to demonstrate the idea, but the function expressed above suggests that it can be a different value. The computation of [+ξ] is here taken to be completely local, in the sense that only features related to the DP in question can be relevant to the computation. However there may be other benefits of a moveable threshold; for example there could hypothetically be external factors, such as TAM considerations, that change the likelihood correlations between features and marking- e.g. in a particular tense/aspect, DPs are overall more likely to bear overt morphology (e.g. Jaminjung, Gurindji Kriol). This is difficult to incorporate into this analysis, as the computation of [+ξ] is entirely local. This could however be elegantly explained by a readjustment of the threshold value; in this hypothetical case, by lowering the threshold value so that it is generally more likely that the threshold will be reached. This would be a simpler solution than other imaginable analyses, e.g. suggesting that the feature values change their weights in the context of certain external factors. A flexible threshold allows an external source to have this effect, whereas the computation of [+ξ] remains entirely local. However at the moment this is pure speculation.

5.2.1 Benefits of such an approach

Adopting a threshold function has several benefits. The clearest is its ability to produce an output which appears optional, in the sense that it obscures the relation between feature and overt morphology. By relating optionality to the computation of a feature which does consistently trigger morphology, rather than optionality in the morphology itself, the problem of a non-perfect correlation between feature and morphology can be properly stated. Further benefits relate to: modelling variation; the absence of evidence that the identity of conditioning factors is the important factor; the apparent role of disambiguation; and the compatibility of this proposal with cases of non-optional alternations.

Variation: Under this proposal, cross-linguistic variation in the extent to which a feature affects marking is very easy to model: variation is reduced to differing weights of the various features. Thus, if animacy affects the chance of a marker occurring in one language, but not in another, we can assume that it has a (higher) weighting in the first language, and a lower/zero weighting in the second- i.e. it is not a relevant factor in the computation of $[+\xi]$. According to the definition of the threshold function above, there is indeed no reason to assume that feature value weightings should be in any way cross-linguistically consistent or universal; variation is actually expected. In a way this is both potentially a benefit and a disadvantage. On the one hand, the ability of any weighting to be associated with any feature allows the modelling of variation very easily. As seen, the ability to account for variation is crucial. However, the fact that there are clear (if not broad) cross-linguistic patterns is puzzling. Potentially, this could be an area where more general functional tendencies (or similarities in what makes an argument prominent) produce similar patterns in different languages over time. That is to say, these may be grammar-external factors at play. If this is so, then there need not be an explanation for them in the grammar itself- the system must only be able to produce the patterns. Recalling the discussion of the role of hierarchies in minimalism, this is not an area of great consensus generally. Nonetheless, the threshold account makes the patterns stateable, if not explaining why they are way they are, and not different.

Weight of contributing features is more important than their identity: Another benefit of this approach is that it explains how in a single language (such as Gurindji Kriol) both focus and topic positively increase the chance that a marker is present. Under these assumptions, an overt case marker in no way encodes the meaning of any of the features which contribute to its presence. It is neither a focus, nor topic marker, explaining why both can be relevant- the features only play a part in determining whether $[+\xi]$ is present or not.

The role of disambiguation: It is often implied in more functionally-motivated accounts of optional case marking that disambiguation of argu-

ments plays a factor in cases of optional marking- that a case marker may be left out if it is clear from the discourse context, or general world-knowledge, which argument is subject and which is object. This idea sits uncomfortably in more minimalist views of case, in which case assignment is strictly based on structural relationships, with (some cases of) contextual restrictions on insertion. However, disambiguation is rarely assumed to account for case-marking patterns *tout court* by linguists working on the languages themselves, one of the reasons being common cases of vacuous disambiguation- cases where there could be no confusion of the arguments roles, but which are nonetheless marked. It is often remarked that disambiguation may play a role in, but does not determine case marking patterns. A threshold is perhaps able to explain this distribution. Under this analysis, a drive to disambiguate arguments does not play a role at all; the morphological form that a case takes is completely locally computed. This is substantiated in the literature on optional case marking: "... [n]or am I aware of any optional ergative systems in which optionality is conditioned by relative animacy" (McGregor 2010: 1620)¹⁵. Perhaps the distribution of optionality merely gives the illusion that disambiguation is a factor, for reasons external to the grammar. For example, it is a non-linguistic fact that subjects in discourse are more likely to be animate than inanimate, and are over-represented as such. This has nothing to do with the *ability* to be a subject, as inanimates are not restricted from being subjects, but are only under-represented as such. As the feature [+animate] does not contribute towards the computation of [+ ξ], animate subjects are statistically less likely to reach the necessary threshold required to bear a [+ ξ] feature, and therefore less likely to have an overt case marker. Inanimate subjects however, bearing [+inanimate], are statistically more likely to cross the threshold value, and bear overt case morphology. Therefore, we can place the onus of this likelihood outside of the grammar itself, and see it as a non-linguistic fact: subjects are more often animate than inanimate. The linguistic fact at play is that the feature [+inanimate] contributes towards the computation of [+ ξ]¹⁶.

Compatibility with other approaches: In many cases, the existence of the threshold function can be glossed over and ignored, making its existence compatible with several theoretical assumptions. For example, there could conceivably be cases where an input to the function has itself a higher value than the value of the threshold. Imagine a hypothetical language with an ergative suffix *-min*, in which the threshold value for [+ ξ] is 1.0, and

¹⁵Note that this does not mean that there are no global case systems, i.e. systems of case assignment where relative values of subject and object are relevant. As I understand it, the claim here is that the relative (for example) animacy between subject and object does not seem to condition optionality or likelihood of marking.

¹⁶Note however that this does not explain cases whereby an inanimate or non-human subject is unmarked when the object is similarly inanimate/non-human, but marked when the object is animate/human.

the feature [+FOC] has a weight of 1.1. In this language, whenever a DP bears a focus feature, it will always cross the threshold, and therefore will always be case-marked¹⁷. This situation is not so fanciful; in fact it should be well-known to us. This is a situation where a single feature causally determines distribution of a case marker, the presence of the feature aligning with the presence of the case marker. In other words, this is differential subject/object marking. If a single feature has a weight that is greater than the threshold value, then this situation is usually represented as being a contextual restriction on inserting that morpheme:

$$(5.18) \quad [\text{Case:ERG}] \Leftrightarrow -[\text{min}] / _ [+ \text{FOC}] \\ \Leftrightarrow -[\emptyset]$$

However representing the situation in this way is really just shorthand for the following:

$$(5.19) \quad \begin{array}{ll} \text{a.} & \text{Threshold value: 1.0} \\ & [+ \text{FOC}] \text{ value: } \geq 1.0 \\ \text{b.} & [\text{Case:ERG}] \Leftrightarrow -[\text{min}] / _ [+ \xi] \\ & \Leftrightarrow -[\emptyset] \end{array}$$

This can be glossed over in almost all cases without losing any of the original descriptive power of the argument. However, when simple restrictions fail to determine the distribution of marking, such as in cases of correlated optionality, we can explain the distribution by making explicit what we have simplified.

Conversely, this approach assumes that particular features are in some sense not "strong enough" to be able to determine allomorphy themselves. However under this view they are still able to contribute to the context that determines allomorphy, if not actually determine it. There are some features which never seem to condition case marking themselves. For example we do not generally seem to find restrictions on morphology such as:

$$(5.20) \quad [\text{ERG}] \Leftrightarrow -[\text{min}] / _ [+ \text{NEW}]$$

Such a vocabulary item could only be used when used for the first time (in a discourse). But the fact that we do not seem to observe rules like this does not necessarily mean that features such as [+NEW] are not relevant. I have suggested here that such features potentially are able to be relevant for spell-out conditions, although cannot determine them themselves. This is understood here as such features having a value which is less than the

¹⁷In fact it doesn't matter what weight the [+FOC] value has, nor would it be possible to determine what the value is- all we would know is that it is higher than the threshold value.

threshold; the fact that e.g. [+NEW] never seems to determine case morphology cross-linguistically seems like a restriction that this feature never has a value equal to or more than the threshold value.

Finally, on a framework/theory related note, as this approach concerns morphology only, it can be applied regardless of the theory of case assignment used. All that is required is that a nominal is marked to potentially bear a particular case. In both Agree-based and dependent case theories, a case marker is still subject to further conditions. As [+ ξ] is a condition on vocabulary insertion, it can be applied to either theory.

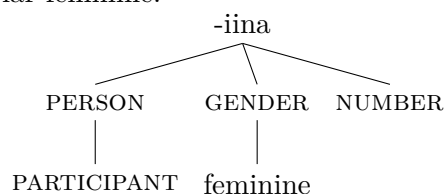
5.2.2 Similar analyses

To the best of my knowledge, a threshold function as described here has not been proposed elsewhere in the literature. However, there is some work which shares some elements of this analysis, at least in spirit. In some ways, the approach resembles some varieties of Harmonic Grammar; this comparison will be discussed in the following section.

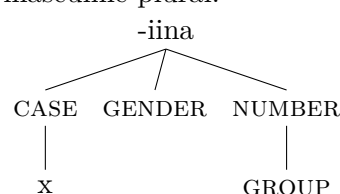
The first of these is Béjar and Hall (1999), in which it is argued that degree of markedness can be the crucial factor for the insertion of a vocabulary item, rather than the actual featural specification. They assume that markedness relates to the presence of structure in a feature-geometric representation. The authors claim that homophony between cells of a paradigm can be derived as a type of syncretism through reference to markedness. For example, they take the fact that in Arabic, two suffixes are represented by the form *-iina*: second person feminine singular, and genitive/accusative masculine plural. They give these two the following feature-geometric representations:

(5.21)

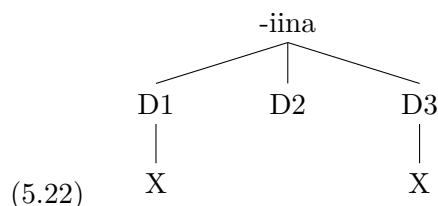
- a. Second person singular feminine:



- b. Genitive/accusative masculine plural:



They notice that both of these structures share the same amount of featural markedness, albeit across different dimensions. They therefore propose that the specifications for inserting the morpheme *-iina* looks like this, which is able to capture the syncretism between the two suffixes:



They therefore claim that it is the amount of markedness which regulates the insertion of *-iina*, rather than the exact identity of the features involved. Although obviously different in many respects, this does relate to the threshold approach insofar as both approaches care less about what the actual identity of the contributing features are, rather how they correspond to markedness, which ultimately determines whether a particular form can be inserted or not.

The second of these is based on ideas in De Hoop (1999, 2005), De Hoop and Narasimhan (2005) and De Hoop and Malchukov (2008), in which case marking in differential and split marking systems is based on a notion of strength, set in an OT framework. They label arguments that are marked *strong* and those that lack marking *weak*. Whether an argument is strong or weak depends on the properties associated with that argument- the authors note that strength (and therefore marking) largely corresponds to discourse prominence, and how typical an argument is as subject/object (recalling discussion from Chapter 3 on more functional approaches). To account for variation in marking between languages, different properties have different effects determining the weak/strong status in different languages. This approach differs in many respects from the threshold approach, yet in spirit they share many similarities; mainly the fact that an independent level/process determines whether an argument is strong/weak (or in my terms, whether $[\pm\xi]$ is present or not), which causally determines the distribution of case marking.

5.2.3 Integrating a threshold

There are potentially various other ways of integrating this into a grammar which work in basically the same way without actually having to propose that all features have pre-determined weights, and are cumulatively tested against a threshold value (although that is possible too). The base idea can remain, that there is a feature/element that consistently triggers case morphology when present (corresponding to the placeholder feature $[\pm\xi]$), and conditions on optionality are actually conditions on triggering the presence of this feature, rather than conditions on triggering the case morphology. There are likely several possible ways of achieving this, although none are fully formed at this stage. The important characteristic is the basic intuition that a certain amount of structure or information triggers marking.

With talk of weightings and cumulative effects, an approach that most obviously presents itself would be couched in a Harmonic Grammar framework (Legendre et al. 1990). Harmonic Grammar (HG) is a theory closely related to OT, in that it utilises constraints to evaluate the optimal candidate. However unlike classic OT, these constraints are associated with a numerical value (weight), rather than a ranking. Evaluation involves choosing the candidate based on the weighted sum of all of its constraint violations (a harmony score)-the candidate with the least cumulative constraint violations (represented numerically) will win. As such, like the threshold account proposed here, HG similarly assumes a cumulative aspect in the computation of output, albeit cumulation of constraint violations rather than values of the features themselves. A variety of HG and accompanying analysis which perhaps best mirrors the discussion here is found in Georgi (to appear). Georgi focuses on agreement patterns in the Kiranti language Hayu, and essentially argues that the controller of agreement is the argument with the highest harmony score, which Georgi argues quantifies that argument's prominence. This directly relates to its position on prominence scales, related to person and number (cf. the OT hierarchy scales in Aissen 2003). Unlike most HG approaches, Georgi utilises positive weightings to reward the presence of features, rather than avoid lower-ranked features. The presence of a feature higher on the scale is rewarded by a higher weighting, making it more likely to eventually have the highest harmony score, and subsequently be the controller of agreement.

Such an analysis clearly shares much with the current proposal. As far as I can tell, implementing a similar approach would need the following assumptions; firstly, as Georgi's argument is based on competition between two eventual forms, we could assume that in all OEM languages, there is competition between an overt ergative marker, and a second form, which happens to be null marking. All relevant features could be associated with a numerical weighting as discussed. The presence of ergative case morphology thus represents that form having the highest harmony score; the absence of case represents the null morpheme having a higher harmony score. However the fact that this is typically a privative alternation (i.e. between overt and null marking) is not necessarily expected under this approach; this fact would have to be explained by economy, i.e. a pressure for marking to distinguish between an overt and null marking, rather than two overt forms. Another potential problem is as this approach is similarly assumed to be completely deterministic in determining output, such an approach suffers many of the same shortcomings or problems associated with a threshold approach, discussed in the following section. Nonetheless, a HG approach (particularly one utilising positive weightings) resembles the approach laid out here in many ways.

Another possibility to consider is one that barely strays from the literal version of a threshold, which does not derive an answer *per se*, but rather lists all

possible combinations which are memorised. The literal version assumes that because evoking $[+\xi]$ is deterministic, taking all relevant features and their values into consideration, this ultimately must mean that there is a finite list of possible combinations that cross the threshold. Imagine a language where only the features [FOC], [INANIM.], and [NEW] have values that contributes to $[+\xi]$; and that they have the respective values of 0.8, 0.6, and 0.3. In this system we can list all possible combinations, and whether they cross the threshold:

	Features	Values	Threshold crossed
(5.23)	[FOC]	0.8	X
	[INANIM.]	0.6	X
	[NEW]	0.3	X
	[FOC,INANIM.]	$0.8 + 0.6 = \mathbf{1.4}$	✓
	[FOC,INANIM.,NEW]	$0.8 + 0.6 + 0.3 = \mathbf{1.7}$	✓
	[FOC,NEW]	$0.8 + 0.3 = \mathbf{1.1}$	✓
	[INANIM.,NEW]	$0.6 + 0.3 = \mathbf{0.9}$	X

In this hypothetical language, there are only three combinations of features that ultimately result in case morphology: [FOC,INANIM.], [FOC,INANIM.,NEW], and [FOC,NEW]. This could just as easily be represented as a list of which combinations restrict the spelling-out of morphology, in a way more familiar to us:

$$(5.24) \quad [\text{ERG}] \Leftrightarrow -[\text{min}] / _ \left\{ \begin{array}{l} \text{FOC,INANIM.} \\ \text{FOC,INANIM.,NEW} \\ \text{FOC,NEW} \end{array} \right\}$$

Representing the information in this way does not require any computation, but merely involves memorising the list of conditions.

In the absence of any immediately obvious benefits to any other possible approaches, I will not take preference for one or the other. As it stands, the literal threshold approach is the clearest description of the idea.

5.2.4 Some open questions

Despite the benefits that this approach captures, there are some questions that remain open. Firstly, as briefly mentioned in a footnote above, any non-local effects are difficult to model. We have seen that in some languages, when the verb is somehow continuative, or when the event has not come to completion, marking is less likely to occur. Also, the effect of less-transitive verbs (after Hopper and Thompson 1980) also decreases the likelihood of marking in some languages. These are often attributed to a lower affectedness of the object. I doubt that it is desirable to ascribe such properties to the

arguments of the verb themselves- i.e. these are probably best seen as non-local properties. I mentioned above that one possible way of modelling this is that some external factors can manipulate the threshold value itself, making it overall more/less likely to be reached. However the role non-local factors will ultimately have to remain an open question at the moment.

Next, adopting this approach as I have described it assumes that all relevant cases of optional case marking are in reality deterministic, i.e. not really optional at all. However in order to really mirror optionality, then there must be a greater number of relevant features involved than those currently assumed. I have suggested that features such as [+NEW] may be relevant, but a greater number of features, presumably all with quite low weights, must also contribute to the threshold function. If they are anything like [+NEW], then they will cross-linguistically have low enough weights that they are never strong enough to determine morphology by themselves, which obscures their identity to the researcher. They must furthermore all be information visible to morphological computation. It is crucial in this analysis that features can contribute to conditions on insertion without being "strong" enough to actually determine the forms themselves. However this would necessarily lead to an analysis built on a very fine-grained and ever less obvious layout of contributing features. This is not necessarily the most desirable approach. I doubt that even very careful analysis would uncover a complete list of contributing features such that one could confidently predict the distribution of marking. This means that although the contribution of certain features increases the chance that marking will occur by making it more likely that the threshold will be reached, actually mirroring frequency effects is at the moment not on the horizon. Moreover, the contributing effects of extra-grammatical factors no doubt furthermore obscure what the frequency of occurrence actually is as an output of the grammar, as opposed to actual occurrence. For example, the grammar may mark an argument something like 70% of the time, but processing factors etc. may mean that actual occurrence rates lay around 50%. So although I am not confident that this type of approach can capture these types of frequencies, I am also not convinced that it should. Instead, a threshold function could be seen as a plausibility argument for how a system can produce variable output without a stochastic or probabilistic component. To quote Adger (2006: 506), regarding the approach of combinatorial variability:

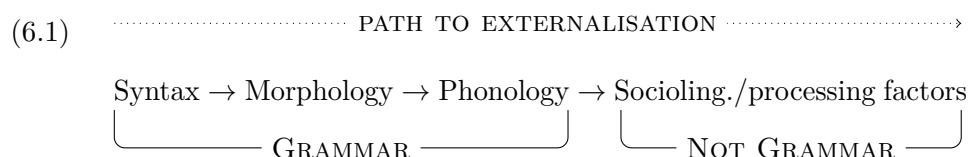
"Of course, the idea that the output of the grammar interacts with performance mechanisms has always been assumed by generativists from the earliest work, but what I hope to show here is that we can embed variability into the grammar itself, making predictions about frequency of occurrence of particular forms purely as a function of the architecture of the grammatical theory postulated."

What I hope to have shown is that there are potentially several ways of embedding variation/optionality into the grammar itself, in a way that links the presence of particular features with rough rates of occurrence.

Chapter 6

Conclusions

Theoretical frameworks such as Minimalism and Distributed Morphology make claims about how an utterance is formed. The derivation is assumed to unfold in a particular order, and certain types of information and behaviours are associated with the different stages. On the path to externalisation, the grammar presumably takes the eventual utterance through the structure-building processes of narrow syntax, perhaps some post-syntactic operations, the assignment of phonological material at vocabulary insertion, linearisation, and eventually phonological processes. This path is taken to constitute the grammar. However there are also grammar-external effects that have an influence on what the shape of the utterance really turns out being; particularly sociolinguistic considerations and processing pressures. These effects on actual speech are comfortably taken to be excluded by most generativists from the object of study, i.e. not part of the grammatical system itself (see e.g. Newmeyer 2003 for a more recent defence of maintaining a relatively strict competence/performance distinction). However the fact that they do have an influence means that the path from thought to utterance must include both the grammar itself, as well as post-grammatical effects on the output of grammar. This could be represented as such¹² :



¹I have left out the meaning component, which according to the inverted Y model splits off after syntax.

²Although the position of the sociolinguistic effects must not necessarily be grammatical- if following a type of multiple grammar approach to intra-speaker variation for example (e.g. Kroch 1994), it could also be a possibility that sociolinguistic factors feature before syntax, or before morphology.

The stretch labelled *Grammar* relates to the inverted Y architecture of grammar introduced in Chapter 1. Two of the main questions behind this thesis then has been:

- (6.2) a. How is the knowledge of the optional ergative/nominative case marker represented in the mind of a speaker?
- b. At what stage of the derivation is the decision made whether the ergative/nominative case marker is pronounced or not?

As we have seen, there are several logical possibilities one could imagine. The easiest step to eliminate is phonology, as there is no indication that phonology plays any role in influencing the absence/presence of case morphology in the languages discussed. As discussed in Chapter 3, an analogy to differential and split marking systems does not help us narrow the locus of case alternation down; it appears that these systems can have either a syntactic or a morphological source. However, as seen towards the end of that chapter, none of the languages discussed seemed to exhibit typical characteristics of languages in which the split is taken to be syntactic. Thus, we can narrow our search to the remaining post-syntactic possibilities. This means that the determination of case marking is either morphological, or post-grammatical. I have here suggested that the ultimate presence of case marking is decided in the morphological component.

There are several reasons why I have argued this to be the case, and against a post-grammatical explanation. The first argument is based on the types of factors that condition frequency effects, i.e. which factors influence the likelihood that a case marker will appear. As the comparison is between a stage of the grammar and post-grammatical stages, we might expect different conditioning factors to be relevant at different stages. In particular, we would expect grammar-internal features to be responsible for influencing at the morphological level, as that is the type of information available. Some relevant features are undoubtedly available to grammatical processes, such as animacy. Chapter 4 defended in greater detail the necessity to consider information structure as information available at the morphological component in a wide variety of languages, including many in which case is not optional. I also argued that the effect of focus should be seen as how it interacts with case on a featural level, rather than as part of a general ban on elision of focused material, due to the fact that it only seems to increase the presence of case morphology with subject cases, not with objects. This is unexpected under a view whereby focus generally bans non-occurrence of case morphology, but is completely analogous to other features involved in DSM/DOM systems, e.g. definiteness. Thus the main conditioning features are visible to the morphological component of the grammar. Further conditioning effects, for example mirativity, have also been argued for having

status as grammatical features in the literature as well (DeLancey 1997; Aikhenvald 2012).

Furthermore, as reported in discussions of the languages in Chapter 2, there do not seem to be sociolinguistic influences that condition likelihood of marking (e.g. social distance, status, or particular social meaning attached to use/non-use of the case marker); neither is the alternation a type of stable variation, such as the *was/were* alternation in Buckie Scots discussed by J. Smith (2000), Adger (2006), and others. Instead, the likelihood of marking is clearly linked to particular grammatical features. Any effects that could be attributable to processing were not mentioned; however even if they likely do have some influence on the overall frequency, they are clearly not the driving force behind the distribution of case morphology.

As all major conditioning factors appear to be grammatical factors, in the sense that they are the units that are involved in determining and influencing processes and operations in the grammar, it seems therefore reasonable to locate the locus of optionality in optional ergative languages in the grammar itself. As both narrow syntax and phonology have been excluded, this leaves the alternation to be determined in the morphological component of the grammar.

Having built an argument suggesting that the ultimate presence or absence of case marking is determined in the morphological component of the grammar, the following question is how it is determined. Although the distribution of markers was quite thoroughly described in the literature on optional ergative marking, there is currently no obvious way to translate this distribution into DM terms. One way would be to build an element of stochasticity or probability into the grammar in order to reflect frequency effects. Indeed, Aissen and Bresnan's (2002) claim that this is the only way for generative linguistics to deal with the data while maintaining that the distribution is determined by the grammar. However the approach laid out in Adger (2006) and related papers (combinatorial variability) shows that there are potentially deterministic ways in which a grammar can derive optional/variable output, without reference to probability or stochasticity.

I then proposed in Chapter 5 that the determination of case morphology in these optional ergative languages could be captured by way of a specific condition on the insertion of case morphology, coupled with a threshold function to determine whether the conditions are met, and proposed one way of implementing the idea. A threshold is essentially a method of determining a cut-off point for marking. This basically also follows Aissen's (2003: 436) intuition that "[t]he higher in prominence a direct object, the more likely it is to be overtly case marked.", but applied to subjects instead. The more relevant features associated with a subject, the more likely it is for case to be assigned. Indeed, the role of prominence in regulating case marking is explicitly stated in works on optional ergative languages, particularly Meakins (2011) and

Riesberg (2018). Prominence is here realised by associated features, and a threshold embodies its cumulative nature (the more members of a particular set of features that are present, the more likely a nominal is to be marked).

Although intuitively representing the empirical data, the idea presented here is still in early stages and is certainly too simplistic to account for the range of data. Further work is necessary to determine the best integration of some threshold function into the grammar, as well other associated factors, such as what the inputs are, how weighting is determined, what the relations between inputs are, finer notions of focus, and the ultimate source of the cross-linguistic patterns. Nonetheless, I hope to have shown that there are certainly ways to integrate the sort of morphological optionality investigated here into a more minimalist framework.

References

- Adger, David (2006): ‘Combinatorial variability’. In: *Journal of linguistics* 42.3, pp. 503–530. URL: [lingbuzz/000080](#) (cit. on pp. 93–96, 109, 113).
- (2007): ‘Variability and modularity: A response to Hudson’. In: *Journal of Linguistics* 43.3, pp. 695–700. DOI: [10.1017/S0022226707004811](#) (cit. on pp. 93, 96).
- (2013): ‘Variability and grammatical architecture’. URL: [lingbuzz/002012](#) (cit. on pp. 93, 95).
- (2016): Language variability in syntactic theory. In: *Rethinking Parameters*, ed. by Luis Eguren et al. Oxford University Press. DOI: [10.1093/acprof:oso/9780190461737.003.0002](#). URL: [lingbuzz/002476](#) (cit. on p. 93).
- (2017): ‘The autonomy of syntax’. URL: [lingbuzz/003442](#) (cit. on p. 91).
- Adger, David and Jennifer Smith (2005): Variation and the minimalist program. In: *Syntax and variation: Reconciling the biological and the social*, ed. by Leonie MEA Cornips et al. Amsterdam: John Benjamins, pp. 149–178 (cit. on p. 93).
- (2010): ‘Variation in agreement: A lexical feature-based approach’. In: *Lingua* 120.5, pp. 1109–1134 (cit. on p. 93).
- Aikhenvald, Alexandra (2003): *A grammar of Tariana, from northwest Amazonia*. Cambridge University Press (cit. on pp. 73, 74).
- (2010): Language contact and Pragmatic notions: Tariana in its multilingual context. In: *Information Structure in Indigenous Languages of the Americas*, ed. by José Camacho et al. Berlin: Mouton, pp. 17–38 (cit. on pp. 73, 74).
- (2012): ‘The essence of mirativity’. In: *Linguistic Typology* 16.3, pp. 435–485 (cit. on pp. 22, 113).
- Aissen, Judith (1999): ‘Markedness and subject choice in Optimality Theory’. In: *Natural Language and Linguistic Theory* 17.4, pp. 673–711 (cit. on pp. 34, 39, 46).

- Aissen, Judith (2003): ‘Differential object marking: Iconicity vs. economy’. In: *Natural Language & Linguistic Theory* 21.3, pp. 435–483 (cit. on pp. 31, 34, 37–39, 46, 70, 74, 81, 90, 99, 100, 107, 113).
- Aissen, Judith and Joan Bresnan (2002): ‘Optimality and functionality: Objections and refutations’. In: *Natural language & linguistic theory* 20.1, pp. 81–95 (cit. on pp. 94, 113).
- Aiton, Grant (2014): ‘Grammatical Relations and Information Structure in Eibela: A typological perspective’. In: *Language & Linguistics in Melanesia* 32.2, pp. 1–25 (cit. on pp. 12, 15).
- (2016): ‘A grammar of Eibela: a language of the Western Province, Papua New Guinea’. James Cook University PhD Thesis. URL: <http://researchonline.jcu.edu.au/49404/> (cit. on p. 15).
- Aldridge, Edith (2008): ‘Generative approaches to ergativity’. In: *Language and Linguistics Compass* 2.5, pp. 966–995 (cit. on p. 5).
- Anand, Pranav and Andrew Nevins (2006): The locus of ergative case assignment: Evidence from scope. In: *Ergativity*, ed. by Alana Johns et al. Dordrecht: Springer, pp. 3–25 (cit. on p. 5).
- Arregi, Karlos and Andrew Nevins (2007): ‘Obliteration vs. impoverishment in the Basque g-/z-constraint’. In: *University of Pennsylvania Working Papers in Linguistics* 13.1, p. 2 (cit. on p. 98).
- Assmann, Muriel, Daniel Büring, Izabela Jordanoska and Max Prüller (2018): Focus Constraints on Ellipsis — An Unalternatives Account. In: *Proceedings of Sinn & Bedeutung 2017* (cit. on p. 83).
- Baker, Mark (2015): *Case*. Cambridge University Press (cit. on pp. 6, 40, 41, 43, 44).
- Baker, Mark and Jonathan Bobaljik (2017): On inherent and dependent theories of ergative case. In: *The Oxford handbook of ergativity*, ed. by Jessica Coon et al. Oxford University Press, pp. 111–134 (cit. on p. 6).
- Baker, Mark and Nadya Vinokurova (2010): ‘Two modalities of case assignment: Case in Sakha’. In: *Natural Language & Linguistic Theory* 28.3, pp. 593–642 (cit. on pp. 6, 41).
- Bárány, András (2017): *Person, Case, and Agreement: The Morphosyntax of Inverse Agreement and Global Case Splits*. Oxford: Oxford University Press. DOI: 10.1093/oso/9780198804185.001.0001 (cit. on pp. 28, 40).
- Béjar, Susana (2003): ‘Phi-syntax: A theory of agreement’. University of Toronto Doctoral dissertation (cit. on p. 40).

- Béjar, Susana and Daniel Currie Hall (1999): 'Marking markedness: The underlying order of diagonal syncretisms'. In: *Proceedings of the 1999 Eastern States Conference on Linguistics*. Ithaca, NY: Cornell Linguistic Circle Publications (cit. on p. 105).
- Béjar, Susana and Milan Rezac (2009): 'Cyclic agree'. In: *Linguistic Inquiry* 40.1, pp. 35–73 (cit. on p. 40).
- Bickel, Balthasar and Alena Witzlack-Makarevich (2008): Referential scales and case alignment: reviewing the typological evidence. In: *Scales*, ed. by Marc Richards et al. Vol. 86. University of Leipzig, pp. 1–37 (cit. on p. 40).
- Bickel, Balthasar, Alena Witzlack-Makarevich and Taras Zakharko (2015): Typological evidence against universal effects of referential scales on case alignment. In: *Scales and hierarchies: A cross-disciplinary perspective*, ed. by Ina Bornkessel-Schlesewsky et al. Berlin: De Gruyter Mouton, pp. 7–43 (cit. on p. 40).
- Bobaljik, Jonathan (2017): Distributed Morphology. In: *Oxford Research Encyclopedia of Linguistics*. DOI: <http://dx.doi.org/10.1093/acrefore/9780199384655.013.131>. URL: http://bobaljik.uconn.edu/papers/DM_ORE.pdf (cit. on p. 7).
- Boersma, Paul (1997): 'How we learn variation, optionality, and probability'. In: *Proceedings of the Institute of Phonetic Sciences of the University of Amsterdam*. Vol. 21. Amsterdam, pp. 43–58 (cit. on pp. 39, 89).
- Boersma, Paul and Bruce Hayes (2001): 'Empirical tests of the gradual learning algorithm'. In: *Linguistic inquiry* 32.1, pp. 45–86 (cit. on pp. 89, 90).
- Boersma, Paul and Joe Pater (2008): 'Convergence properties of a gradual learning algorithm for Harmonic Grammar'. URL: <http://roa.rutgers.edu/files/970-0508/970-BOERSMA-0-0.PDF> (cit. on p. 89).
- Bonet, Eulàlia (1991): 'Morphology after syntax – pronominal clitics in romance'. PhD thesis. Massachusetts Institute of Technology (cit. on pp. 7, 91).
- Bonet, Eulàlia and Daniel Harbour (2012): Contextual allomorphy. In: *The morphology and phonology of exponence*, ed. by Jochen Trommer. Oxford University Press Oxford, pp. 195–235 (cit. on pp. 2, 88).
- Bossong, Georg (1985): *Empirische Universalienforschung. Differentielle Objektmarkierung in den neuiranischen Sprachen*. Tübingen: Narr (cit. on pp. 30, 32).

- Bowe, Heather (1990): *Categories, constituents and constituent order in Pitjantjatjara: an Aboriginal language of Australia*. London: Routledge (cit. on p. 78).
- Bresnan, Joan, Shipra Dingare and Christopher Manning (2001): ‘Soft constraints mirror hard constraints: Voice and person in English and Lummi’. In: *Proceedings of the LFG01 Conference*. CSLI Publications Stanford, CA, pp. 13–32 (cit. on pp. 29, 89).
- Brown, Jason, Karsten Koch and Martina Wiltschko (2004): ‘The Person Hierarchy: Primitive or Epiphenomenal? Evidence from Halkomelem Salish’. In: *Proceedings of the North East Linguistic Society, NELS 34*, pp. 147–161. DOI: <https://doi.org/doi:10.7282/T3RB76CF> (cit. on p. 40).
- Büring, Daniel (2010): Towards a typology of focus realization. In: *Information Structure. Theoretical, Typological, and Experimental Perspectives*, ed. by Malte Zimmermann et al. Oxford: Oxford University Press, pp. 177–205 (cit. on p. 9).
- (2015): (Contrastive) Topic. In: *The Oxford Handbook of Information Structure*, ed. by C. Féry et al. Oxford University Press. DOI: 10.1093/oxfordhb/9780199642670.013.002 (cit. on p. 24).
- (2016): *Intonation and Meaning*. Oxford Surveys in Semantics and Pragmatics. Oxford University Press. DOI: 10.1093/acprof:oso/9780199226269.001.0001 (cit. on p. 83).
- Caha, Pavel (2009): ‘The nanosyntax of case’. University of Tromsø PhD Thesis. URL: <http://hdl.handle.net/10037/2203> (cit. on p. 13).
- Calabrese, Andrea (2008): *On absolute and contextual syncretism: Remarks on the structure of case paradigms and on how to derive them*, ed. by Andrew Nevins et al. (cit. on p. 13).
- Carnie, Andrew (2005): ‘Some remarks on markedness hierarchies: A reply to Aissen 1999 and 2003’. In: *Coyote Papers: Working Papers in Linguistics, Linguistic Theory at the University of Arizona* (cit. on pp. 32, 40).
- Chelliah, Shobhana (2017): Ergativity in Tibeto-Burman. In: *The Oxford Handbook of Ergativity*, ed. by Jessica Coon et al. Oxford University Press, pp. 924–947. DOI: 10.1093/oxfordhb/9780198739371.013.38 (cit. on p. 15).
- Chomsky, Noam (1957): *Syntactic Structures*. The Hague: Mouton (cit. on p. 89).
- (1981): *Lectures on Government and Binding*. Dordrecht: Foris (cit. on p. 3).

- (1995): *The minimalist program*. MIT press (cit. on pp. 1, 2).
- Clem, Emily (to appear): ‘Amahuaca ergative as agreement with multiple heads’. In: *Natural Language & Linguistic Theory* (cit. on pp. 66–68, 80).
- Coghill, Eleanor (2014): ‘Differential object marking in Neo-Aramaic’. In: *Linguistics* 52.2, pp. 335–364 (cit. on p. 73).
- Comrie, Bernard (1979): ‘Definite and animate direct objects: a natural class’. In: *Linguistica silesiana* 3, pp. 13–21 (cit. on p. 32).
- (1986): Markedness, grammar, people, and the world. In: *Markedness*, ed. by E. Eckman et al. New York: Plenum Press, pp. 85–106 (cit. on p. 32).
- (1989): *Language universals and linguistic typology*. Chicago: University of Chicago Press (cit. on p. 32).
- Coon, Jessica (2010): ‘Complmentation in Chol (Mayan): A theory of split ergativity’. MIT PhD Thesis. Cambridge (cit. on pp. 44, 65).
- Coon, Jessica and Omer Preminger (2012): ‘Towards a unified account of person splits’. In: *Proceedings of the 29th West Coast Conference on Formal Linguistics (WCCFL 29)*, pp. 310–318 (cit. on p. 44).
- (2017): Split ergativity is not about ergativity. In: *The Oxford Handbook of Ergativity*, ed. by Jessica Coon et al. Oxford University Press. URL: lingbuzz/002509 (cit. on pp. 6, 33, 40, 44).
- Corbett, Greville (2000): *Number*. Cambridge Textbooks in linguistics. Cambridge: Cambridge University Press (cit. on p. 12).
- Croft, William (1988): Agreement vs. case marking and direct objects. In: *Agreement in natural language: Approaches, theories, descriptions*, ed. by M. Barlow et al. CSLI Stanford, CA, pp. 159–179 (cit. on p. 32).
- Dalrymple, Mary and Irina Nikolaeva (2011): *Objects and Information Structure*. Cambridge University Press (cit. on pp. xi, 31, 32, 65, 66, 70–72, 75, 76, 80, 81, 83).
- De Hoop, Helen (1999): ‘Optimal case assignment’. In: *Linguistics in the Netherlands 1999*, pp. 97–110 (cit. on p. 106).
- (2005): ‘Case and strength’. In: *Proceedings of the fifteenth Amsterdam Colloquium*, ed. by Paul Dekker et al. Amsterdam: ILLC, pp. 33–38. URL: <http://repository.ubn.ru.nl/handle/2066/41088> (cit. on p. 106).
- De Hoop, Helen and Peter De Swart (2009): Cross-linguistic variation in differential subject marking. In: *Differential subject marking*, ed. by H. De Hoop et al. Springer, pp. 1–16 (cit. on pp. 30, 65).

- De Hoop, Helen and Andrej L Malchukov (2008): 'Case-marking strategies'. In: *Linguistic Inquiry* 39.4, pp. 565–587 (cit. on p. 106).
- De Hoop, Helen and Bhuvana Narasimhan (2005): Differential case-marking in Hindi. In: *Competition and variation in natural languages: The case for case*, ed. by Mengistu Amberber et al. Elsevier Amsterdam, pp. 321–345 (cit. on p. 106).
- Deal, Amy Rose (2010): 'Ergative case and the transitive subject: a view from Nez Perce'. In: *Natural Language & Linguistic Theory* 28.1, pp. 73–120 (cit. on p. 68).
- (2016a): 'Person-based split ergativity in Nez Perce is syntactic'. In: *Journal of Linguistics* 52.3, pp. 533–564 (cit. on pp. 54, 55, 57).
- (2016b): 'Syntactic ergativity: analysis and identification'. In: *Annual Review of Linguistics* 2, pp. 165–185. DOI: 10.1146/annurev-linguistics-011415-040642 (cit. on p. 49).
- DeLancey, Scott (1997): 'Mirativity: The grammatical marking of unexpected information'. In: *Linguistic Typology* 1.1, pp. 33–52. DOI: 10.1515/lity.1997.1.1.33 (cit. on pp. 22, 113).
- (2011): '"Optional" "ergativity" in Tibeto-Burman languages'. In: *Linguistics of the Tibeto-Burman Area* 34.2, pp. 9–20 (cit. on pp. 12, 15, 27).
- Dench, Alan and Nicholas Evans (1988): 'Multiple case-marking in Australian languages'. In: *Australian journal of linguistics* 8.1, pp. 1–47 (cit. on p. 46).
- Dhongde, Ramesh Vaman and Kashi Wali (2009): *Marathi*. Amsterdam: John Benjamins Publishing (cit. on pp. 50, 51).
- Diesing, Molly (1992): *Indefinites*. Cambridge, Massachusetts: MIT Press (cit. on p. 42).
- (1997): 'Yiddish VP order and the typology of object movement in Germanic'. In: *Natural Language & Linguistic Theory* 15.2, pp. 369–427 (cit. on p. 42).
- Dixon, Robert MW (1979): 'Ergativity'. In: *Language*, pp. 59–138 (cit. on pp. 21, 29, 30, 32, 33).
- (1980): *The languages of Australia*. Cambridge University Press (cit. on p. 78).
- (1994): *Ergativity*. Cambridge University Press (cit. on pp. 13, 29, 30, 33, 49, 65).
- Donohue, Mark (2005): 'Configurationality in the languages of New Guinea'. In: *Australian Journal of Linguistics* 25.2, pp. 181–218 (cit. on p. 61).

- Embick, David (2008): 'Variation and morphosyntactic theory: Competition fractionated'. In: *Language and Linguistics Compass* 2.1, pp. 59–78 (cit. on pp. 14, 89, 91).
- Enç, Mürvet (1991): 'The semantics of specificity'. In: *Linguistic inquiry* 22, pp. 1–25 (cit. on p. 30).
- Escandell-Vidal, Victoria (2007): 'Topics from Ibiza: differential object marking and clitic-dislocation'. In: *Proceedings of the Workshop "Definiteness, Specificity and Animacy in Ibero-Romance Languages*, pp. 23–43 (cit. on pp. 65, 73).
- (2009): 'Differential Object Marking and topicality the case of Balearic Catalan'. In: *Studies in Language* 33, pp. 832–885 (cit. on pp. 65, 73).
- Fauconnier, Stefanie and Jean-Christophe Verstraete (2014): 'A and O as each other's mirror image? Problems with markedness reversal'. In: *Linguistic Typology* 18.1, pp. 3–49 (cit. on pp. 65, 70, 74, 75, 82, 84).
- Fiedler, Ines, Katharina Hartmann, Brigitte Reineke, Anne Schwarz and Malte Zimmermann (2010): Subject focus in West African languages. In: *Information structure from different perspectives*, ed. by Malte Zimmermann et al. Oxford University Press, pp. 234–257 (cit. on p. 68).
- Filimonova, Elena (2005): 'The noun phrase hierarchy and relational marking: Problems and counterevidence'. In: 9, pp. 77–113 (cit. on p. 40).
- Foley, William A. (2000): 'The Languages of New Guinea'. In: *Annual Review of Anthropology* 29.1, pp. 357–404. DOI: 10.1146/annurev.anthro.29.1.357 (cit. on p. 12).
- Gaby, Alice (2008): Pragmatically case-marked: Non-syntactic functions of the Kuuk Thaayorre ergative suffix. In: *Discourse and Grammar in Australian Languages*, ed. by Ilana Mushin et al. Studies in Language Companion 104. Amsterdam: John Benjamins, pp. 111–134. DOI: <https://doi.org/10.1075/slcs.104.08gab> (cit. on pp. 11, 22, 23, 26, 60).
- (2010): 'From discourse to syntax and back: The lifecycle of Kuuk Thaayorre ergative morphology'. In: *Lingua* 120.7. DOI: <https://doi.org/10.1016/j.lingua.2009.05.014> (cit. on pp. 12, 22).
- Garrett, Andrew (1990): 'The origin of NP split ergativity'. In: *Language* 66, pp. 261–296 (cit. on p. 40).
- Georgi, Doreen (to appear): 'On prominence scale interactions in Hayu: a Harmonic Grammar account'. In: *Nordlyd 43 (Glow 40 Short Report Proceedings)*. URL: lingbuzz/004213 (cit. on p. 107).

- Georgi, Doreen (2012): A local derivation of global case splits. In: *Local modelling of non-local dependencies in syntax*, ed. by Artemis Alexiadou et al. Linguistische Arbeiten 547. Berlin: DeGruyter, pp. 306–336. DOI: <https://doi.org/10.1515/9783110294774.305> (cit. on p. 28).
- Goddard, Cliff (1982): ‘Case systems and case marking in Australian languages: a new interpretation’. In: *Australian Journal of Linguistics* 2.2, pp. 167–196 (cit. on pp. 12, 53).
- (1985): *A grammar of Yankunytjatjara*. Alice Springs: Institute for Aboriginal Development (cit. on p. 78).
- Halle, Morris and Alec Marantz (1993): Distributed Morphology and the Pieces of Inflection. In: *The View from Building 20*, ed. by Kenneth Hale et al. Cambridge: MIT Press, pp. 111–176 (cit. on pp. 2, 3, 7).
- Harbour, Daniel (2008): *The syntactic basis of φ -Case interaction*. Handout. Queen Mary University of London. URL: <http://webpace.qmul.ac.uk/dharbour/Harbour%20Leipzig%20Silverstein.pdf> (cit. on p. 40).
- Harley, Heidi and Rolf Noyer (1999): ‘Distributed morphology’. In: *Glott international* 4.4, pp. 3–9 (cit. on p. 7).
- Harley, Heidi and Elizabeth Ritter (2002): ‘Person and number in pronouns: A feature-geometric analysis’. In: *Language* 78, pp. 482–526 (cit. on pp. 40, 53).
- Haspelmath, Martin (2008): Parametric versus functional explanations of syntactic universals. In: *The limits of syntactic variation*, ed. by T. Biberauer. Amsterdam: John Benjamins, pp. 75–107 (cit. on p. 32).
- Heffernan, Kevin, Yusuke Imanishi and Masaru Honda (2018): ‘Showcasing the interaction of generative and emergent linguistic knowledge with case marker omission in spoken Japanese.’ In: *Glossa: a journal of general linguistics* 3.1. DOI: <http://doi.org/10.5334/gjgl.500> (cit. on p. 14).
- Henry, Alison (2008): Variation and Syntactic Theory. In: *The handbook of language variation and change*, ed. by J. K. Chambers et al. Vol. 24. Oxford: Blackwell, pp. 267–282 (cit. on p. 89).
- Hopper, Paul J and Sandra A Thompson (1980): ‘Transitivity in grammar and discourse’. In: *Language*, pp. 251–299 (cit. on pp. 17, 70, 108).
- Hyslop, Gwendolyn (2010): ‘Kurtöp case: the pragmatic ergative and beyond’. In: *Linguistics of the Tibeto-Burman Area* 33.1, p. 1 (cit. on p. 15).
- Iemmolo, Giorgio (2010): ‘Topicality and differential object marking: Evidence from Romance and beyond’. In: *Studies in Language* 34.2, pp. 239–272 (cit. on pp. 65, 73).

- Jackendoff, Ray (1972): *Semantic Interpretation in Generative Grammar*. Cambridge: Mass.: MIT Press (cit. on p. 9).
- Jake, Janice L (1980): 'Object verb agreement in Tigre'. In: *Studies in the linguistic sciences* 10.1, pp. 71–84 (cit. on p. 71).
- Jakobi, Angelika (2006): Focus in an active/agentive alignment system: the case of Beria (Saharan). In: *Papers on information structure in African languages*, ed. by Ines Fiedler et al. ZAS papers in linguistics. Berlin: Zentrum für Allgemeine Sprachwissenschaft, pp. 129–142 (cit. on p. 70).
- Jakobi, Angelika and Joachim Crass (2004): *Grammaire du beria (langue saharienne), avec un glossaire français-beria*. Köln: Köppe (cit. on p. 70).
- Jelinek, Eloise and Andrew Carnie (2003): Argument hierarchies and the mapping principle. In: *Formal approaches to function in grammar*, ed. by Andrew Carnie et al. John Benjamins Amsterdam, pp. 265–296. DOI: <https://doi.org/10.1075/1a.62.20je1> (cit. on p. 40).
- Kalin, Laura and Philipp Weisser (to appear): 'Asymmetric differential object marking in coordination'. In: *Linguistic Inquiry*. DOI: 10.1162/ling_a_00298 (cit. on pp. 56, 57).
- Kallulli, Dalina (1999): 'The comparative syntax of Albanian: on the contribution of syntactic types to propositional interpretation'. PhD thesis. Durham University (cit. on p. 73).
- (2008): Clitic doubling, agreement and information structure: The case of Albanian. In: *Clitic doubling in the Balkan languages*, ed. by Dalina Kallulli et al. Amsterdam: John Benjamins Publishing, pp. 227–256 (cit. on p. 73).
- (2016): 'Clitic doubling as Differential Object Marking'. In: *Rivista di Grammatica Generativa* 38, pp. 156–166 (cit. on p. 73).
- Keine, Stefan and Gereon Müller (2010): Non-zero/non-zero alternations in differential object marking. In: *Transitivity. Form, Meaning, Acquisition, and Processing*, ed. by Patrick Brandt et al. Amsterdam/Philadelphia: John Benjamins, pp. 119–140 (cit. on pp. 13, 36).
- (2015): Differential argument encoding by impoverishment. In: *Scales and hierarchies: A cross-disciplinary perspective*, ed. by Ina Bornkessel-Schlesewsky et al. Walter de Gruyter, pp. 75–130 (cit. on pp. 13, 36).
- Kiparsky, Paul (1973): "Elsewhere" in Phonology. In: *A festschrift for Morris Halle*, ed. by Stephen R Anderson et al. New York: Holt, Rinehart and Winston (cit. on p. 51).

- Kiparsky, Paul (2008): Universals constrain change; change results in typological generalizations. In: *Linguistic universals and language change*, ed. by Jeff Good. Oxford: Oxford University Press, pp. 23–53 (cit. on p. 40).
- Kittilä, Seppo (2005): ‘Optional marking of arguments’. In: *Language Sciences* 27.5, pp. 483–514 (cit. on p. 12).
- Krifka, Manfred (2008): ‘Basic notions of Information Structure’. In: *Acta Linguistica Hungarica* 55, pp. 243–276. DOI: 10.1556/ALing.55.2008.3-4.2 (cit. on p. 8).
- Kroch, Anthony (1994): ‘Morphosyntactic variation’. In: *Proceedings of the thirtieth annual meeting of the Chicago Linguistics Society: Parasession on Variation and Linguistic Theory*, ed. by Katherine Beals. Vol. 2. Chicago: Chicago Linguistic Society, pp. 180–201 (cit. on pp. 14, 111).
- Kwon, Song-Nim and Anne Zribi-Hertz (2008): ‘Differential function marking, case, and information structure: evidence from Korean’. In: *Language*, pp. 258–299 (cit. on p. 65).
- LaPolla, Randy (1995): ‘Ergative’ marking in Tibeto-Burman. In: *New horizons in Tibeto-Burman morphosyntax (Senri Ethnological Studies 41)*, ed. by Nishi Yoshio et al., pp. 189–228 (cit. on p. 15).
- Laughren, Mary, Kenneth Hale and the Warlpiri Lexicography Group (2007): *Warlpiri-English Encyclopaedic Dictionary [draft version]*. University of Queensland (cit. on p. 78).
- Lee, Hanjung (2010): ‘Explaining variation in Korean case ellipsis: Economy versus iconicity’. In: *Journal of East Asian Linguistics* 19.4, pp. 291–318. DOI: <https://doi.org/10.1007/s10831-010-9064-x> (cit. on p. 84).
- Lee, Hanjung and Haejeong Choi (2010): ‘Focus types and subject-object asymmetry in Korean case ellipsis: A new look at focus effects’. In: *Proceedings of the 24th Pacific Asia Conference on Language, Information and Computation* (cit. on p. 84).
- Legate, Julie Anne (2002): ‘Warlpiri: Theoretical implications’. MIT PhD Thesis. URL: <http://hdl.handle.net/1721.1/8152> (cit. on pp. 78, 79).
- (2008): ‘Morphological and abstract case’. In: *Linguistic Inquiry* 39.1, pp. 55–101. DOI: <http://dx.doi.org/10.1162/ling.2008.39.1.55> (cit. on pp. 5, 53, 56, 64).
- (2012): ‘Types of ergativity’. In: *Lingua* 122.3, pp. 181–191 (cit. on p. 5).
- (2014): ‘Split ergativity based on nominal type’. In: *Lingua* 148, pp. 183–212 (cit. on pp. 40, 49–52, 54, 56, 57).

- Legendre, Geraldine, Yoshiro Miyata and Paul Smolensky (1990): ‘Can Connectionism Contribute to Syntax? Harmonic Grammar, with an Application’. Computer Science Department, University of Colorado at Boulder (cit. on p. 107).
- Manning, Christopher (2003): Probabilistic syntax. In: *Probabilistic Linguistics*, ed. by Rens Bod et al. Cambridge, Massachusetts: The MIT Press, pp. 289–341 (cit. on p. 89).
- Marantz, Alec (1991): ‘Case and licensing’. In: *ESCOL 91: Proceedings of the Eighth Eastern States Conference on Linguistics*. Ed. by Germàn F. Westphal et al., pp. 234–253 (cit. on p. 6).
- McFadden, Thomas (2004): ‘The position of morphological case in the derivation’. UPenn dissertation. Philadelphia, PA (cit. on pp. 6, 68).
- (2007): ‘Default case and the status of compound categories in Distributed Morphology’. In: *University of Pennsylvania Working Papers in Linguistics* 13.1, p. 18 (cit. on p. 63).
- McGinnis, Martha (2005): ‘On markedness asymmetries in person and number’. In: *Language* 81.3, pp. 699–718 (cit. on p. 40).
- McGregor, William B. (2006): ‘Focal and optional ergative marking in Warrwa (Kimberley, Western Australia)’. In: *Lingua* 116.4, pp. 393–423 (cit. on pp. 11, 13, 15, 97).
- (2007): ‘Ergative Marking of Intransitive Subjects in Warrwa’. In: *Australian Journal of Linguistics* 27.2, pp. 201–229. DOI: 10.1080/07268600701531351 (cit. on pp. 11, 15).
- (2010): ‘Optional ergative case marking systems in a typological-semiotic perspective’. In: *Lingua* 120.7, pp. 1610–1636 (cit. on pp. 1, 12, 33, 53, 99, 103).
- (2013): ‘Optionality in grammar and language use’. In: *Linguistics* 51.6, pp. 1147–1204. DOI: 10.1515/ling-2013-0047 (cit. on pp. 12, 27, 39).
- McGregor, William B. and Jean-Christophe Verstraete (2010): ‘Optional ergative marking and its implications for linguistic theory’. In: *Lingua* 120, pp. 1607–1609 (cit. on p. 12).
- Meakins, Felicity (2007): ‘Case-marking in contact: The development and function of case morphology in Gurindji Kriol, an Australian mixed language’. University of Melbourne PhD thesis (cit. on p. 59).
- (2009): The case of the shifty ergative marker: A pragmatic shift in the ergative marker in one Australian mixed language. In: *The Role of Semantics and Pragmatics in the Development of Case*, ed. by J Barddal et al. Amsterdam: John Benjamins, pp. 59–91 (cit. on pp. 12, 15).

- Meakins, Felicity (2011): *Case marking in contact: The development and function of case morphology in Gurindji Kriol*. Amsterdam: John Benjamins (cit. on pp. 12, 15–20, 58, 59, 113).
- (2015): From absolutely optional to only nominally ergative: The life cycle of the Gurindji Kriol ergative suffix. In: *Borrowed Morphology*, ed. by F. Gardani et al. Berlin: Mouton de Gruyter, pp. 189–218 (cit. on pp. 15, 16, 20, 59).
- Meakins, Felicity and Rachel Nordlinger (2013): *A Grammar of Bilinarra, an Australian Aboriginal Language of the Victoria River District (NT)*. Mouton de Gruyter (cit. on p. 79).
- Meakins, Felicity and Carmel O’Shannessy (2010): ‘Ordering arguments about: Word order and discourse motivations in the development and use of the ergative marker in two Australian mixed languages’. In: *Lingua* 120.3, pp. 1693–1713 (cit. on p. 15).
- Meakins, Felicity and Sasha Wilmoth (2018): Complex cell-mates: Overabundance resulting from language contact. In: *Morphological Complexity*, ed. by P. Arkadiev et al. Oxford: Oxford University Press (cit. on pp. 15–17).
- Mel’čuk, Igor’ Aleksandrovič (1979): The predication construction in Dyirbal. In: *Studies in Dependency Syntax*, ed. by Igor’ Aleksandrovič Mel’čuk. Ann Arbor: Karoma Publishers, pp. 23–90 (cit. on p. 49).
- Merchant, Jason (2006): ‘Polyvalent case, geometric hierarchies, and split ergativity’. In: *Proceedings from the annual meeting of the Chicago Linguistic Society*. Vol. 42. 2. Chicago Linguistic Society, pp. 57–76 (cit. on pp. 39, 46, 47).
- Müller, Gereon (1999): ‘Optionality in optimality-theoretic syntax’. In: *Glott International* 4.5, pp. 3–8 (cit. on p. 87).
- Nash, David (1980): ‘Topics in Warlpiri grammar.’ MIT PhD Thesis. URL: <http://hdl.handle.net/1721.1/15974> (cit. on p. 78).
- Nevins, Andrew (2011): ‘Marked targets versus marked triggers and impoverishment of the dual’. In: *Linguistic Inquiry* 42.3, pp. 413–444 (cit. on pp. 53, 92).
- Nevins, Andrew and Jeffrey K Parrott (2010): ‘Variable rules meet Impoverishment theory: Patterns of agreement leveling in English varieties’. In: *Lingua* 120.5, pp. 1135–1159 (cit. on pp. 91–93, 98).
- Newmeyer, Frederick J (2003): ‘Grammar is grammar and usage is usage’. In: *Language* 79.4, pp. 682–707 (cit. on pp. 91, 111).
- Nikolaeva, Irina (2001): ‘Secondary topic as a relation in information structure’. In: *Linguistics* 39.1, pp. 1–50 (cit. on p. 72).

- Nordlinger, Rachel (1998): *Constructive case: Evidence from Australian languages*. Stanford: Center for the Study of Language and Information Publications (cit. on p. 46).
- Ochs, Elinor (1982): ‘Ergativity and word order in Samoan child language’. In: *Language*, pp. 646–671 (cit. on p. 13).
- (1988): *Culture and Language Development: Language Acquisition and Language Socialization in a Samoan Village*. Studies in the Social and Cult. Cambridge University Press (cit. on p. 13).
- O’Shannessy, Carmel (2005): ‘Light Warlpiri: A New Language’. In: *Australian Journal of Linguistics* 25.1, pp. 31–57 (cit. on p. 15).
- Pennington, Ryan (2013): ‘Topic as evidence for nominative case in Ma Manda’. In: *Language and Linguistics in Melanesia* 31.2, pp. 1–26 (cit. on pp. 23, 24, 26, 61, 62).
- (2016): ‘A Grammar of Ma Manda’. James Cook University Cairns. URL: <http://researchonline.jcu.edu.au/48926/> (cit. on pp. 23, 24).
- Pensalfini, Rob (1999): ‘The rise of case suffixes as discourse markers in Jingulu— a case study of innovation in an obsolescent language’. In: *Australian Journal of Linguistics* 19.2, pp. 225–240 (cit. on p. 76).
- Pesetsky, David and Esther Torrego (2001): ‘T-to-C movement: Causes and consequences’. In: *Current Studies in Linguistics Series* 36, pp. 355–426 (cit. on p. 4).
- Plank, Frans (1995): *Double case: agreement by Suffixaufnahme*. Oxford University Press (cit. on p. 46).
- Prince, Alan and Paul Smolensky (1993): *Optimality Theory: Constraint interaction in generative grammar*. Piscataway, NJ: Rutgers University Center for Cognitive Science (cit. on pp. 35, 89).
- Raz, Shlomo (1983): *Tigre Grammar and Texts*. Malibu: Undena Publications (cit. on p. 71).
- Richards, Marc (2015): Defective agree, case alternations, and the prominence of person. In: *Scales and hierarchies. A cross-disciplinary perspective*, ed. by Ina Bornkessel-Schlesewsky et al., pp. 173–196 (cit. on p. 40).
- Richards, Norvin (2013): ‘Lardil “case stacking” and the timing of case assignment’. In: *Syntax* 16.1, pp. 42–76 (cit. on p. 46).
- Riesberg, Sonja (2018): ‘Optional ergative, agentivity and discourse prominence – Evidence from Yali (Trans-New Guinea)’. In: *Linguistic Typology* 22.1, pp. 17–50. DOI: 10.1515/lingty-2018-0002 (cit. on pp. 15, 82, 113).

- Rizzi, Luigi (1997): The Fine Structure of the Left Periphery. In: *Elements of Grammar: Handbook in Generative Syntax*, ed. by L. Haegeman. Springer Netherlands, pp. 281–337. DOI: 10.1007/978-94-011-5420-8_7 (cit. on p. 18).
- Rooth, Mats (1985): ‘Association with focus’. University of Massachusetts Dissertation. Amherst (cit. on p. 8).
- (1992): ‘A theory of focus interpretation’. In: *Natural language semantics* 1.1, pp. 75–116 (cit. on p. 8).
- Ross, John Robert (1967): ‘Constraints on variables in syntax’. MIT doctoral dissertation. Cambridge (cit. on p. 56).
- Ross, Malcolm and John Natu Paol (1978): *A Waskia grammar sketch and vocabulary*. Canberra: Australian National University (cit. on p. 75).
- Sarvasy, Hannah Sacha (2014): ‘A grammar of Nungon: a Papuan language of the Morobe Province, Papua New Guinea’. James Cook University PhD Thesis. URL: <http://researchonline.jcu.edu.au/40832/> (cit. on pp. 12, 25, 26, 61).
- Schultze-Berndt, Eva (2016): *Agents in Focus: "Optional" Ergativity and Information structure in Jaminjung/Ngaliwurru*. Slides of talk presented at the Linguistics Association of Great Britain Annual Meeting 2016. URL: https://www.academia.edu/28947681/Agents_in_Focus_Optional_Ergativity_and_Information_structure_in_Jaminjung_Ngaliwurru_2016_ (cit. on pp. 20, 21).
- (2017): Interaction of Ergativity and Information Structure in Jaminjung (Australia). In: *The Oxford Handbook of Ergativity*, ed. by Jessica Coon et al. Oxford: Oxford University Press, pp. 1081–1113. DOI: 10.1093/oxfordhb/9780198739371.013.44 (cit. on pp. 12, 13, 20–22, 60, 61, 97).
- Schulze, Wolfgang (2001): *The Udi language: A grammatical description with sample text*. URL: <http://wschulze.userweb.mwn.de/Uog.html> (cit. on p. 49).
- (2014): ‘A functional grammar of Udi’. Munich: University of Munich, MS (cit. on p. 50).
- Schütze, Carson T (2001): ‘On the nature of default case’. In: *Syntax* 4.3, pp. 205–238. DOI: <https://doi.org/10.1111/1467-9612.00044> (cit. on p. 63).
- Senge, Chikako (2015): ‘A Grammar of Wanyjirra, a language of Northern Australia’. Australian National University PhD Thesis. Canberra. URL: <http://hdl.handle.net/1885/109341> (cit. on p. 79).

- Seržant, Ilja A and Alena Witzlack-Makarevich, eds. (2018): *Diachrony of differential argument marking*. Vol. 19. Language Science Press. URL: <http://langsci-press.org/catalog/book/173> (cit. on pp. 65, 80, 82).
- Silverstein, Michael (1976): Hierarchy of features and ergativity. In: *Grammatical categories in Australian languages*, ed. by R.M.W. Dixon. Canberra: Australian Institute of Aboriginal Studies, pp. 112–171 (cit. on pp. 23, 29, 32–34, 46).
- (1981): ‘Case marking and the nature of language’. In: *AJL* 1, pp. 227–247 (cit. on p. 32).
- Simpson, Jane (1983): ‘Aspects of Warlpiri morphology and syntax’. MIT PhD Thesis. URL: <http://hdl.handle.net/1721.1/15468> (cit. on p. 78).
- (2012): Information structure, variation and the Referential Hierarchy. In: *Potentials of Language Documentation: Methods, Analyses, and Utilization*, ed. by Frank Seifart et al., pp. 73–82. URL: <http://hdl.handle.net/10125/4519> (cit. on p. 52).
- Smith, Ian and Steve Johnson (2000): Kugu Nganhcara. In: *Handbook of Australian languages*, ed. by Robert MW Dixon et al. Vol. 5. Oxford University Press Oxford, pp. 357–489 (cit. on p. 51).
- Smith, Jennifer (2000): ‘Synchrony and diachrony in the evolution of English: evidence from Scotland.’ PhD thesis. University of York (cit. on pp. 94, 113).
- Sung, Jason Bumyong (2016): ‘Ellipsis of the nominative and the accusative case particles in Korean’. University of Hawai’i at Mānoa PhD thesis (cit. on p. 84).
- Suter, Edgar (2010): The optional ergative in Kâte. In: *A journey through Austronesian and Papuan linguistic and cultural space: papers in honour of Andrew Pawley*, ed. by John Bowden et al. Vol. 615. Canberra: Pacific Linguistics, pp. 423–437 (cit. on pp. 12, 15, 27).
- Tagliamonte, Sali and Jennifer Smith (2005): ‘No momentary fancy! The zero ‘complementizer’ in English dialects’. In: *English Language & Linguistics* 9.2, pp. 289–309 (cit. on p. 88).
- Valle, Daniel (2011): ‘Differential subject marking triggered by information structure’. In: *Proceedings of the Conference on Indigenous Languages of Latin America*. Vol. 2, p. 2013 (cit. on pp. 65, 66, 69, 70, 82).
- (2014): ‘Focus Marking in Kakataibo (Panoan)’. In: *Oklahoma Working Papers in Indigenous Languages* 1, pp. 55–78 (cit. on pp. 69, 70).

- Valle, Daniel (2018): ‘Grammar and information structure of Kakataibo’. University of Texas Dissertation. URL: <http://hdl.handle.net/2152/63633> (cit. on p. 69).
- Vergnaud, Jean Roger (2006): Letter to Noam Chomsky and Howard Lasnik (1976). In: *Syntax: Critical concepts in linguistics*, ed. by Robert Freidin et al. Vol. 5. London: Routledge, pp. 21–34 (cit. on p. 3).
- Verstraete, Jean-Christophe (2010): ‘Animacy and information structure in the system of ergative marking in Umpithamu’. In: *Lingua* 120, pp. 1637–1651 (cit. on pp. 12, 15, 81).
- Von Heusinger, Klaus and Georg A Kaiser (2011): ‘Affectedness and differential object marking in Spanish’. In: *Morphology* 21.3-4, pp. 593–617 (cit. on p. 31).
- Williams, C. (1980): *A Grammar of Yuwaalaraay*. Canberra: Pacific Linguistics (cit. on p. 33).
- Wiltschko, Martina (2008): Person hierarchy effects without a person hierarchy. In: *Agreement restrictions*, ed. by Roberta D’Alessandro et al. Berlin: de Gruyter, pp. 281–314 (cit. on p. 40).
- Woolford, Ellen (1997): ‘Four-way case systems: Ergative, nominative, objective and accusative’. In: *Natural Language & Linguistic Theory* 15.1, pp. 181–227 (cit. on p. 5).
- (2006): ‘Lexical Case, Inherent Case, and Argument Structure’. In: *Linguistic Inquiry* 37.1, pp. 111–130. DOI: 10.1162/002438906775321175 (cit. on p. 5).
- (2009): Differential subject marking at argument structure, syntax, and PF. In: *Differential subject marking*, ed. by Helen de Hoop et al. Springer, pp. 17–40 (cit. on pp. 53, 92).