

Constructive Case

Evidence from Australian Languages

RACHEL NORDLINGER



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Stanford, California

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Center for the Study of Language and Information
Leland Stanford Junior University
Printed in the United States

02 01 00 99 98 5 4 3 2 1

Library of Congress Cataloging-in-Publication Data

Nordlinger, Rachel.

Constructive case : evidence from Australian languages / Rachel Nordlinger.

p. cm.

Includes bibliographical references and index.

ISBN 1-57586-135-6 (alk. paper).

ISBN 1-57586-134-8 (pbk. : alk. paper)

1. Australian languages—Case. 2. Australian languages—Syntax. 3. Phrase structure grammar. I. Title.

PL7003.N67 1998

499'.15—dc21 98-5742

CIP

“Bordure pour papier peint. Nénuphar et sagittaire. (Fig. 224),” the drawing on the cover of the paperback edition of this book is by Maurice-Pillard Verneuil from his *Étude de la Plante: Son application aux industries d'art* (1903, Paris: Librairie centrale des beaux-arts). Courtesy Richard Manuck.

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Preface

This is a slightly revised version of my 1997 Stanford dissertation entitled *Constructive Case: Dependent-marking nonconfigurationality in Australia*. There are many people who contributed to the development of the ideas in this work and to whom I extend my heartfelt gratitude. Firstly, I owe an enormous debt to all of my committee members – Nick Evans, Peter Sells, Paul Kiparsky, and most especially Joan Bresnan, without whose inspiration, support and encouragement the dissertation might never have been written. An equal debt is owed to my Wambaya teachers Molly Grue-man, Minnie Nimarra, Mavis Hogan, Judy Holt and Powder O'Keefe for patiently teaching me their language on which many of the ideas in this dissertation are based. For invaluable comments and suggestions I thank Ron Kaplan, Mary Dalrymple, Avery Andrews, Arnold Zwicky, Greville Corbett, Jane Simpson, Mark Donohue, Dick Hudson, and the audiences of the Sociable Syntax Supper Group at Stanford (January 1997), the Linguistics Association of Great Britain Meeting in Edinburgh (April 1997), and the LFG97 Conference in San Diego (June 1997). I am also indebted to Rob Pensalfini, Mark Baker and Mary Laughren for providing unpublished material.

For helping to make my time at Stanford so enjoyable I would like to thank Jennifer Arnold, Miriam Butt, Daniel Dor, Rudi Gaudio, Tracy King, Elizabeth Traugott, Gina Wein and Kyle Wohlmüt; and especially Jim Minifie, Michelle Murray, María-Eugenia Niño, Emily Pidgeon, Scott Schwenter, Amy Culp and Sean Kerr, Sarah McLeod and Branden Barber. Finally, I would like to thank Mum, Dad and Julia for the constant support and encouragement, and most importantly, Dean Robinson, for making it such a pleasure to come home each evening.

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Melbourne, Australia

Abbreviations

This section explains the abbreviations I have used in glossing the example sentences throughout this dissertation. The glossing conventions for Wambaya follow those outlined in Nordlinger (1993b). For all other languages I have retained the glossing conventions of the sources, making only slight adjustments for consistency (e.g. changing a gloss of PAST to PST for past tense). In a few cases I have altered the orthography of the original source to the practical orthography in common use throughout much of Australia. Thus, I consistently use 'j' for the lamino-palatal stop; 'rr' for the alveolar tap/trill; 'r' for the (post)alveolar approximant; 'ng' for the velar nasal; 'ny' for the lamino-palatal nasal and 'ly' for the lamino-palatal lateral.

A	transitive subject
ABL	ablative case
ABS	absolutive case
ACC	accusative case
ACT	actual
ADJ	adjunct
ADMON	admonitive
ALL	allative case
ANIM	animate
A.OBL	associating oblique case
ASP	aspect
AUX	auxiliary
AWAY	direction away
CAUS	causative
C.OBL	complementizing oblique case

COMIT	comitative case	POT	potential
DAT	dative case	PRES	present tense
DES	desiderative	PROG	progressive aspect
DU	dual	PROP	propriative case
EL	elative case	PST	past tense
ERG	ergative case	RR	reflexive/reciprocal
EXC	exclusive	S	intransitive subject
F	feminine	SG	singular
FOC	focus	SPEC	specific
FUT	future tense	SUBJ	subject
GEN	genitive case	USIT	usitative
HAB	habitual aspect	VB	verb thematic suffix
I	masculine gender		
II	feminine gender		
III	vegetable gender		
IV	neuter gender		
IMP	imperative		
INC	inclusive		
IND	indicative		
INF	infinitival suffix		
INST	instrumental case		
INV	inverse marker		
IRR	irrealis mood		
LOC	locative case		
M	masculine		
M.ABL	modal ablative case		
M.LOC	modal locative case		
M.OBL	modal oblique case		
M.PROP	modal propriative case		
NEG	negative		
NFUT	non-future tense		
NMZ	nominalizing affix		
NOM	nominative case		
NPST	non-past tense		
O	object		
OBJ	object		
PART	participial		
PASS	passive		
PERF	perfective aspect		
PL	plural		

1

Introduction

1.1 Overview

The goal of this work is to develop a unified, formal account for the functions of case in the dependent-marking nonconfigurational languages of Australia; and to situate this account within a larger syntactic theory of (non)configurality.

In these nonconfigurational languages—Warlpiri (Hale 1981, Simpson 1991), Wambaya (Nordlinger, *In Press*), Kayardild (Evans 1995a), Jiwari (Austin 1993), among many others—the case morphology carries much of the functional load of phrasal syntax in languages such as English, determining constituency relations and grammatical functions. Perhaps as a result of this increased functional load, dependent-marking Australian languages exhibit many unusual and complex case functions, including case stacking and the use of case to mark tense/aspect/mood information. These properties of case have not been adequately incorporated into any formal theory of case, and consequently no theory of case has yet been able to satisfactorily describe these Australian languages. In this work I will present a theory of case in which the case morphology itself constructs grammatical functions and other clause-level information independently of phrase structure. I will show that such an approach can both naturally account for these unusual properties of case marking in nonconfigurational Australian languages, and provide an explanatory account of case functions more generally.

The empirical facts that I will be concerned with include those briefly outlined and exemplified in I to V below. These range from issues much discussed in the literature on nonconfigurality (Hale 1983, Jelinek 1984, Laughren 1989, Speas 1990, Simpson 1991, Baker (1991, 1996a), Austin and Bresnan 1996)—i.e. free word order (I) and discontinuous constituents (II)—to those that have received relatively little or no attention in recent

theoretical literature (i.e. III, IV, V). Each of these functions will be discussed in considerable detail in the following chapters.

I. Case determines grammatical functions in these 'free' word order languages:

In many of these dependent-marking Australian languages, the order of constituents in simple clauses is grammatically unconstrained in such a way that case marking is frequently the sole indicator of grammatical relations (e.g. Hale (1981, 1983), Austin 1993). In the following (elicited) example from Wambaya, a language from the Barkly Tablelands region of the Northern Territory, all ordering of constituents are grammatical as long as the auxiliary (here, *gin-a*) remains in second position.¹

- (1) *Ngajbi gin-a alaji janyi-ni.*
 see 3SG.M.A-PST boy.I(ACC) dog.I-ERG
 'The dog saw the boy.' (elicited)
Alaji gin-a ngajbi janyi-ni.
Alaji gin-a janyi-ni ngajbi.
Ngajbi gin-a janyi-ni alaji.
Janyi-ni gin-a alaji ngajbi.
Janyi-ni gin-a ngajbi alaji.

In Wambaya, as in many of these Australian languages, word order can not be used as an indicator of grammatical function in main clauses: there is no basic order in which the different grammatical functions are associated with particular positions in the phrase structure. Instead, information about subject, object, and other grammatical functions is specified solely from the morphology; usually from the case morphology.²

II. Case concord associates discontinuous, co-referential nominals:

In many of these Australian languages this word order freedom extends to NP constituents, which can appear discontinuously in the clause (e.g. Hale (1981, 1983), Simpson (1983, 1991), Nash 1986, Austin 1993). The fact that they belong to a single nominal expression is indicated by their case

¹See 1.2 below for an overview of Australian languages and discussion of the data sources used here.

²In some languages like Wambaya, bound pronouns on the auxiliary also determine grammatical functions. In (1), however, we see that the auxiliary information alone is not adequate—in this case it specifies only that the subject is third person singular and has masculine gender, which is true for both noun phrases in the clause.

concord (2–3).³ Many languages also require complete case (and number) concord within (contiguous) NPs (4–5) (Dench and Evans 1988).

- (2) *Nganki ngiy-a lurrqbanyi wardangarringa-ni*
 this.SG.II.ERG 3SG.F.A-PST grab moon.II-ERG
alaji gulug-barda.
 boy.I(ACC) sleep-INF
 'The moon grabbed her sleeping child.'
 (Wambaya, Nordlinger 1993b:257, ex. 15)
- (3) *Karla wantha-nma-rni jarnpa juma.*
 fire(ACC) give-IMP-HENCE light(ACC) small(ACC)
 'Give me a small fire light.' (Jiwarli, Austin 1993:15, ex. 13)
- (4) *Bungmaj-buli-ji ngankawuliji wurl-aji daguma*
 old.woman-DU-ERG this.II.DU.ERG 3.DU.A-HAB.PST hit
juwarramba.
 men.I(ACC)
 'These two old ladies had been killing all of the men.'
 (Wambaya, Nordlinger 1993b:247, ex. 62)
- (5) *Piji-nha mantharta-nha wanka-rla-rninyja ngulu-pa*
 many-(ACC) man-(ACC) live-make-PST that(ERG)-SPEC
martaru-lu.
 gum-ERG
 'That gum has cured many people.' (Jiwarli, Austin 1993:13, ex. 6)

III. Case concord with the subject is possible on sentential adjuncts:

In Warlpiri, a language of central Australia, sentential adverbials can agree in case with the subject of the clause (Hale 1982b, Simpson 1991). In these examples the ergative case marker is not providing a grammatical relation for the nominal to which it is attached, but is providing information about other parts of the clause, namely the subject.

- (6) *Jalangu-rlu ka-lu-jana puluku turnu-ma-ni*
 today-ERG PRES-3.PL.A-3.PL.O bullock(ABS) muster-CAUS

³This is true for the dependent-marking languages I will be concerned with here. In some other Australian languages, noun class marking can serve this same purpose (e.g. Nunggubuyu (Heath 1986), Mayali (Evans 1991)).

yapa-ngku.

man-ERG

'The people are mustering the cattle today.' (Simpson 1991:208, ex. 189)

- (7) *Jalangu-rna ya-nu-rnu ngaju*
 today-1.SG.S go-PST-HITHER 1.SG(ABS)
 'I came today.' (Hale 1982b:281, ex. 116a)

In (6) the temporal adjunct *jalangu* 'today' is inflected with the ergative case as is the subject of the clause *yapa* 'man'. In the intransitive sentence in (7), however, the subject of the clause is in the absolutive case and so there is no ergative case marking on *jalangu*.

IV. Case can mark tense/aspect/mood:

The fact that case markers can carry clause-level information is especially clear in those Australian languages in which case markers carry information about tense/aspect/mood. In Kayardild (North-western Queensland), for example, case markers are used in 'modal' function: they appear on all non-subject NPs in the sentence and provide information about tense and mood (Evans 1995a:107ff, Ch. 10). In this modal function, the case markers do not provide information about grammatical relations at all, but function only to supplement the tense/aspect/mood information provided by the verb.

- (8) *Ngada yalawu-jarr yakuri-na mijil-nguni-na.*
 I(NOM) catch-PST fish-M.ABL net-INST-M.ABL
 'I caught fish with the net.' (Evans 1995a:108, ex. 3-30)
- (9) *Ngada yalawu-ju yakuri-wu mijil-nguni-wu.*
 I(NOM) catch-POT fish-M.PROP net-INST-M.PROP
 'I will catch fish with the net.' (Evans 1995a:109, ex. 3-31)

In (8) the ablative case is used in modal function (glossed M.ABL) to indicate that the clause has past tense. This case is marked directly on the direct object *yakuri* 'fish', but is additional to whatever case marking is already present on nominals in other functions, following the instrumental case marker on the instrumental adjunct *mijil-nguni* 'net-INST'. In (9) the clause has future tense, rather than past tense, and so the non-subject

arguments are inflected with the modal proprietive case (M.PROP) rather than the modal ablative.⁴

V. Case Stacking:

In some Australian languages, case concord extends even to forms that are already inflected with a case affix. This results in case stacking, where a single nominal carries multiple case markers, each one indicating a higher relationship within the clause (Dench and Evans 1988, Simpson 1991, Evans 1995b, Dench 1995b, Austin 1995, Andrews 1996). In these examples case markers do not simply provide the grammatical function for the nominal to which they are attached, but provide the relation for higher phrases in which they are embedded also.

- (10) *Karnta-ngku ka-rla kurdu-ku miyi yi-nyi*
 woman-ERG PRES-3DAT baby-DAT food give-NPST
parraja-rla-ku.
 coolamon-LOC-DAT
 'The woman is giving food to the baby (who is) in the coolamon.'
 (Warlpiri, Simpson 1991:206, ex.187b)
- (11) ... *dan-kinaba-nguni dangka-naba-nguni mirra-nguni walbu-nguni.*
 this-ABL-INST man-ABL-INST good-INST raft-INST
 '... with this man's good raft.' (Kayardild, Evans 1995a:105, ex. 3-21)

In (10), the locative adjunct *parraja-rla* 'coolamon-LOC'⁵ is further inflected with the dative case to indicate that it is predicated of the dative argument *kurdu-ku* 'baby-DAT'. Thus, the nominal *parraja* is inflected with two case markers: the first indicates that it is a locative adjunct, and the second indicates that it modifies a dative argument. In (11), from Kayardild, each member of the embedded genitive phrase 'this man's' is inflected with the ablative case, the case used to mark the genitive relation. Then, by virtue of being embedded within the larger instrumental noun phrase 'with this man's good raft', each member is additionally inflected with the instrumental case, thereby also indicating the relation of the higher NP in which they are embedded.

These different case functions in Australian languages reveal two related

⁴See Evans (1995a) for a detailed discussion of the modal uses of the various cases in Kayardild, and the relationship of their modal function to their regular case functions.

⁵A coolamon is a carved carrying dish.

generalizations that need to be captured by any formal theory of case, and which form the central thesis of this work.

Generalization A:

Case morphology can construct grammatical relations on a par with, and independently from, phrase structure.

That is, the radical nonconfigurationality of many of these Australian languages, whereby the case morphology is generally the sole (or at least the primary) indicator of grammatical functions, demonstrates that case morphology can provide exactly the same types of information about grammatical function that can be provided by phrase structure in more configurational languages (or by verbal morphology in head-marking nonconfigurational languages, see Chapter 3), and that it does not require the presence of phrase structure to do so. Intuitively, the extensive case marking is inextricably linked to the nonconfigurational structure of the languages: it is the case marking that enables their nonconfigurationality. Thus, we need an analysis of case that can also be incorporated into an explanatory model of nonconfigurationality.

Generalization B:

Case morphology can construct the larger syntactic context, including providing complex information about the clause.

Thus, in addition to constructing information about the grammatical function of the nominal to which it is attached, case morphology can construct information about higher phrases in which it is embedded, as with the case stacking examples in (V). And it can also provide other types of clause-level information such as tense/aspect/mood (IV).

The first of these generalizations has been noticed by many researchers, particularly those working on the nonconfigurational languages of Australia (Hale (1981, 1983), Simpson (1983, 1991), Nash 1986, Austin 1993, Austin and Bresnan 1996, also Bresnan (1982, 1996), Andrews 1982, Sadock 1991, Baker 1996b, among many others). However, in most formal accounts of case the presence of case morphology is mediated by something else in the clause: by phrase structure relationships, such as local government or SPEC-HEAD agreement in configurational frameworks (e.g. Chomsky (1981, 1993, 1995), Bittner and Hale 1996, among many others); by case conditionals that associate particular case values with particular grammatical functions (e.g. Andrews 1982, Neidle 1988, King 1995, Bresnan (1995a, 1996)); or by specification in the argument structure of the predicate of the case values

of its arguments (e.g. Simpson 1991, Pollard and Sag 1994). While these various approaches can generally account for the empirical facts associated with Generalization A, they all require the mediation of other parts of the grammar to capture the function of case. Thus they do not adequately capture the intuition that case morphology can construct syntactic relations independently of the rest of the syntax; that we know just from the case marking on the Warlpiri nominal *parraja-rla-rlu* 'coolamon-LOC-ERG', even before it is inserted into any position in the syntax, that it belongs to a locative adjunct NP which modifies the subject of a transitive clause.⁶

Formal theories of case have generally had little to say about Generalization B, the use of case morphology to carry other types of clause-level information apart from just grammatical function. Since case is predominantly a nominal property, accounts of case usually treat it as providing information only about the NP to which it immediately belongs (see the references cited above). Thus these accounts do not easily extend to the functions of case described in IV and V above, in which case is used on sentential adjuncts in agreement with the subject (IV), and case is used to provide information about about tense/aspect/mood (V).

The analysis that I will develop in this work captures both of these generalizations in a natural and explanatory way. The basic intuition is that case functions should be modelled from the 'bottom up'. That is, rather than treating case as being licensed by something in the containing syntactic context—by certain phrase structure configurations, for example—the case morphology should be treated as constructing its context itself: it specifies the syntactic environment in which it is licensed, even providing complex information about that environment. In this way, the syntax is (partially) constructed by the morphology. I will argue that case markers carry information specifying their grammatical function in the next highest phrase (the clause by default): they construct a higher constituent that has a grammatical function to which they belong. This grammatical function information is exactly the same as that associated with particular phrase structure positions in configurational languages—for example, ergative case may carry the information that it belongs to the subject of the clause—thus capturing Generalization A. In addition, since the case marker is providing information about the clause (i.e. a grammatical function), it is predicted that it could come to provide other information about the clause also—for example, ergative case may additionally carry the information that the clause in which it is the subject has non-future tense (see the discussion of Pitta Pitta in 4.4)—thus capturing Generalization B. As we will see

⁶In fact, there are a few intransitive verbs that also take ergative subjects in Warlpiri also, but this does not alter the basic point.

throughout this work, viewing the function of case morphology in this way allows for a natural and unified account of all of the Australian language data exemplified above.

The formal model that I develop assumes the framework of Lexical-Functional Grammar (LFG) (Bresnan (ed.) 1982, Sells 1985, Dalrymple et al. (eds.) 1995, Bresnan 1996, and see section 1.3 for a brief overview). LFG has pioneered much theoretical work on Australian languages (e.g. Simpson (1981, 1991), Andrews 1996, Austin and Bresnan 1996) and on nonconfigurational languages more generally (e.g. Bresnan 1982a, K. P. Mohanan 1982, Kroeger 1993, T. Mohanan 1994, among many others), and has been shown to provide a natural account of nonconfigurational structure (e.g. Bresnan 1996). Many aspects of the analysis I present are due to the insights of such earlier work. In addition, the theme of this work—that morphology, in this case *case* morphology, can construct the larger syntactic context—is central to the LFG architecture and has been the focus of much recent work in the framework ('Morphology competes with syntax' (Bresnan 1996:4, see also Bresnan 1995b). LFG is therefore well-equipped to deal with the empirical facts with which this work is concerned. However, the empirical problems and issues that will be discussed are not specific to LFG, but are important for all linguistic theories. I hope therefore they will be relevant and interesting for researchers working within any framework.

This work can not cover all issues relevant to case, nor even all properties of case morphology in all Australian languages. Rather, I will be concerned only with the morphosyntax of case: the linking between case morphology and syntactic function, and in particular, the way in which case can construct its syntactic context. I will not be concerned with developing a general typology of cases, or with such issues as the semantics of case or the linking of case with argument structure. Nor am I concerned with the morphology of case: issues of allomorphy, syncretism, or the nature of the stem to which case markers attach. All of these topics are interesting in their own right, and all bear on different aspects of the present study, but will not be dealt with in any detail here. Where relevant I refer the reader to other places in the literature where such issues are discussed.

While I will focus only on Australian languages, the theory of case that I propose is intended to apply to (productive) case systems universally. I have concentrated on the Australian languages for two reasons. Firstly, their nonconfigurational phrase structure makes it clear that information about grammatical function is coming from the case morphology itself, and not from the phrase structure. In languages which have evidence for configurational phrase structure as well as having rich case marking, such as Icelandic for example (e.g. Zaenen, Maling and Thráinsson 1985), it is

more difficult to demonstrate that grammatical relations are determined by the case marking also. Crucially, however, the model that I propose is compatible both with the presence and the absence of configurational phrase structure, and so the similarities in function between case marking across all types of languages is captured. Secondly, case marking in Australian languages has some particularly unusual functions—extensive case stacking, the use of case to mark tense/aspect/mood—that do not obviously follow from other theories of case. Thus, these languages provide the extreme examples of what a theory of case must be able to accommodate. As far as I can determine, the model presented here is the first to be able to do so in a natural and unified way.

1.2 Data and Sources

Australian languages are traditionally classified into two major groups: Pama-Nyungan and non-Pama-Nyungan (O'Grady, Wurm and Hale 1966). The Pama-Nyungan group covers approximately 80% of the continent—excluding only the north-central and north-western regions—and consists of a single language family. The term 'non-Pama-Nyungan' on the other hand, does not refer to a single language family, but is used as a general term for the genetically diverse remaining languages, which make up approximately 26 smaller language families (e.g. Wurm 1972). For the most part, this distinction between Pama-Nyungan and non-Pama-Nyungan languages correlates with a typological distinction referred to in the Australianist literature as *suffixing* vs. *prefixing* (Capell 1956): suffixing languages make use only of suffixing strategies; prefixing languages make use of both suffixing *and* prefixing strategies. All of the Pama-Nyungan languages are suffixing whereas almost all of the non-Pama-Nyungan languages are prefixing. In addition, non-Pama-Nyungan languages are generally head-marking, have four or more noun classes, and make only limited use of grammatical case marking. Pama-Nyungan languages on the other hand, are generally dependent-marking, lack noun classes and have extensive case marking systems.

This typological distinction is not absolute, however, since there exist a few languages on the eastern Pama-Nyungan/non-Pama-Nyungan border that are not genetically Pama-Nyungan, but which are similar to Pama-Nyungan languages typologically. These include the Tangkic languages of north-west Queensland (e.g. Kayardild (Evans 1995a); Lardil (Hale 1967, Klopeid 1976); Yukulta (Keen 1983)), and the Barkly languages of northern-central Northern Territory (N.T.) (e.g. Wambaya (Nordlinger 1993b, In Press)); Jingulu (Pensalfini 1997, Chadwick 1978)).

Since the focus of this work is case morphology, I will be concerned

mainly with those Australian languages that make substantial use of case marking; namely, Pama-Nyungan languages, and the few (primarily) dependent-marking non-Pama-Nyungan languages such as Kayardild and Wambaya. The main languages that I discuss are listed in Table 1.1.⁷

Table 1.1 Main languages discussed

Jingulu	Non-Pama-Nyungan (Barkly), N.T.
Jiwarli	Pama-Nyungan (Mantharta), Western Australia
Kalkatungu	Pama-Nyungan, Queensland
Kayardild	Non-Pama-Nyungan (Tangkic), Queensland
Martuthunira	Pama-Nyungan (Ngayarda), Western Australia
Pitta Pitta	Pama-Nyungan, Queensland
Wambaya	Non-Pama-Nyungan (Barkly), N.T.
Warlpiri	Pama-Nyungan (Nyungic), N.T.

For most of these languages the data that I cite is taken from published sources; the source, with page and example number is given with each example. The data from Wambaya, however, comes from my own field research. This data comes from spoken texts, conversations and formal elicitation sessions designed to reveal particular grammatical generalizations. Where possible, the examples given here have been taken from texts, in which case reference is given to the page number of Nordlinger (1993b) where the example can be found. Elicited examples, or examples taken from conversations are marked accordingly.

1.3 The Formal Framework

The formal framework that I assume throughout this work is that of Lexical-Functional Grammar (LFG) (Bresnan (ed) 1982, Kaplan and Bresnan 1982, Sells 1985, Dalrymple et. al. (ed) 1995, Bresnan 1996). LFG has a constraint-based architecture with parallel structures containing partial, localized information and no movement. These different structures are not derived from each other, but are linked by various principles of functional correspondence ('mapping' or 'linking' principles). Each of the different structures of LFG has a distinct formal character and models a different aspect of the structure of language. The main syntactic structures are c(onstituent)-structure, and f(unctional)-structure (to be described shortly). Others include a(rgument)-structure (e.g. Bresnan

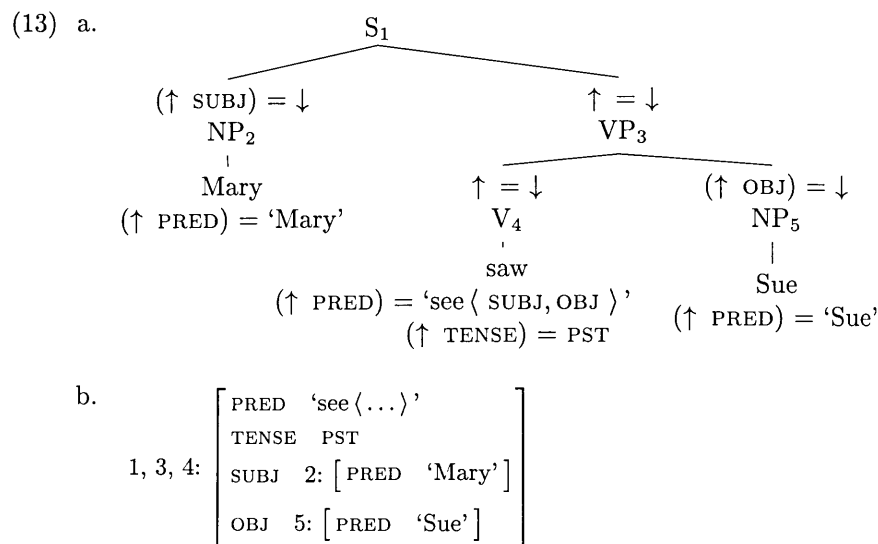
⁷These are the languages that I cite a number of examples from throughout this work. In the table, I give the genetic affiliation and the general location for each language after the language name.

and Kanerva 1989, Bresnan and Moshi 1990, Bresnan and Zaenen 1990, Alsina 1993, Manning 1996), which is the level of predicate-argument relations, and s(ematic)-structure (e.g. Halvorsen 1983, Halvorsen and Kaplan 1995[1988], Dalrymple 1993, Dalrymple et. al. 1993), which models the semantic information. In this section I will briefly outline the formal framework of LFG and the basic theoretical assumptions that I make use of throughout this work. Further details of the framework and the linguistic theory associated with it will be explained where relevant in the ensuing chapters.

C-structure models the 'surface' syntactic form of language: it is here that surface precedence and dominance relations are encoded. C-structures are phrase structure trees, determined by a particular form of X' Theory designed to accommodate the large amount of phrase structure variation found cross-linguistically, from the strict configurationality of languages like English to the radically nonconfigurational languages of Australia (see below for further discussion). Thus, the theory of c-structure produces regular lexical categories (V', VP, NP, etc.) and also functional projections (IP, CP) (e.g. Kroeger 1993, King 1995, Bresnan 1996), as well as providing a category S, having no fixed head (exocentric), which enables more nonconfigurational structures (Bresnan 1982a, Kroeger 1993, Bresnan 1996, Austin and Bresnan 1996, Nordlinger and Bresnan 1996, see also the discussion below and in 3.1). C-structures are always base-generated; there is no movement. The effect of movement is achieved by the fact that different c-structure positions can be mapped into the same f-structure via unification.

The level of f-structure, on the other hand, models grammatical functions and other syntactic relations. Unlike c-structures, which are phrase structure trees, f-structures are attribute-value matrices. F-structure attributes may be syntactic functions (e.g. SUBJ, OBJ, COMP, also TOP(IC), FOC(US)), tense/aspect/mood categories (e.g. TENSE), nominal categories (e.g. CASE, NUM, GEND), or the predicate attribute PRED. The values of these attributes may be atomic symbols (e.g. SG, ERG), complex semantic symbols (e.g. 'boy'), or may be f-structures themselves (for example, when the attribute is a syntactic function) (Kaplan and Bresnan 1982, Bresnan 1996). The input to f-structure is the lexical items of the sentences themselves, or annotations on the nodes of the c-structure. Consider the basic English sentence in (12) and its simplified c- and f-structures in (13).

(12) Mary saw Sue.



The annotations on the c-structure nodes in (13a) associate the c-structure information with information in the f-structure. The $\downarrow$ denotes the f-structure of the node to which the annotation is attached, and the $\uparrow$ denotes the f-structure of its mother. Hence, the annotation $(\uparrow \text{ SUBJ}) = \downarrow$ on node NP_2 states that the f-structure of the mother (i.e. S) has a subject attribute whose value is the f-structure of NP_2 . The head relation is indicated with $\uparrow = \downarrow$ on the V and VP nodes. This annotation ensures that the f-structures of the V (labelled 4) and the VP (labelled 3) are identified with that of the S (1), as shown in (13b) ($1=3=4$).

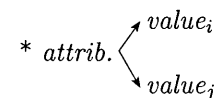
A central assumption of LFG is the Lexical Integrity Principle (Bresnan and Mchombo 1995), which distinguishes the morphological (lexical) and syntactic components, stating that words are constructed according to different principles of composition than are syntactic phrases. Words are constructed in the lexicon (see below); c-structure and f-structure form the core of the syntactic component. This means that the input to these syntactic levels—e.g. the terminal elements of c-structure trees—are fully inflected words, and that syntactic processes cannot manipulate the internal morphological structure of these items. Crucially however, this does not rule out the possibility that both morphological and syntactic constituents may contribute the same types of information to the f-structure (e.g. Simpson (1983, 1991), Bresnan and Mchombo (1985, 1987, 1995), Bresnan 1996). In fact, this latter point has been a central theme in much recent work in LFG, as it will be throughout this discussion, and is encapsulated by the slogan 'Morphology competes with syntax' (Bresnan 1995b, 1996)).

A further defining characteristic of LFG, resulting from this distinction between c-structure and f-structure, is that grammatical functions are independent of configurational structure (cf. the configurational approaches of Government and Binding (Chomsky 1981) and its descendants). In fact, while c-structure is the locus of much cross-linguistic variation, f-structure is assumed to be universally constant. As we will see below and again in Chapter 3, this allows for a natural account of the large cross-linguistic variation in the area of phrase structure, including the radical nonconfigurationality found in many Australian languages, while also capturing the functional equivalences of these different phrase structure possibilities at the level of f-structure.

F-structures are constrained by general conditions that govern well-formed structures. The f-structure well-formedness conditions I assume include the following.

- (14) **Uniqueness Principle:** Every attribute has a unique value (Bresnan 1996).

This principle rules out structures in which a single attribute has two values:



- (15) **Completeness:** Every function designated by a PRED must be present in the f-structure of that PRED (Kaplan and Bresnan 1982, Bresnan 1996).

This condition rules out f-structures which do not contain all of the functions required by the PRED: if the verb requires a SUBJ and an OBJ, for example, this condition will rule out all f-structures in which there is not both a SUBJ function and an OBJ function (as in **He devoured.*). Furthermore, Completeness also requires that all functions have a PRED value themselves: thus, in this case, both the SUBJ and the OBJ must also contain a PRED value (as in (10b)) for Completeness to be satisfied.

- (16) **Coherence:** Every argument in an f-structure must be designated by a PRED (Kaplan and Bresnan 1982, Bresnan 1996).

Coherence is the converse of Completeness. Completeness requires that all argument functions required by the PRED be present in the f-structure of the PRED. Coherence requires that all argument functions present in an f-structure be designated by the PRED. For example, Coherence rules out

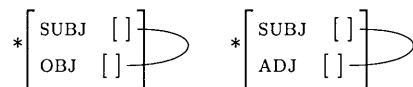
f-structures containing OBJ functions when the verb itself does not select an object (as in *I slept *the man*).

- (17) **Extended Coherence:** All syntactic functions (including adjuncts and grammaticalized discourse functions) must be appropriately integrated into the f-structure (Zaenen 1980, Fassi-Fehri 1984, Bresnan and Mchombo 1987, Bresnan 1996).

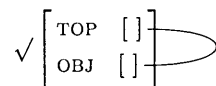
Extended coherence extends the coherence condition to all syntactic functions, including adjuncts and the grammaticalized discourse functions (TOP, FOC). Thus for an f-structure to be well-formed, all syntactic functions must be integrated. Argument functions are integrated by being selected by a PRED, as outlined above; ADJUNCTS are integrated if they are contained within an f-structure with a PRED; and the grammaticalized discourse functions are integrated whenever they are identified with, or anaphorically linked to, an integrated function (Bresnan 1996).

- (18) **Argument-Function Uniqueness:** An argument function must not have the same value as another non-discourse function.

This condition is a slight reformulation of the function-argument biuniqueness condition of Bresnan (1982b) and the argument-to-function uniqueness condition of Alsina (1993). It ensures that each non-discourse function—i.e. argument functions, and ADJUNCTS—have a distinct value from each other and thus rules out f-structures such as the following:



However, since this restriction holds only for non-discourse functions, it allows for an argument to share a value with a discourse function, such as TOP or FOC (see the discussion below):



C-structures are constrained by principles of X' Theory and structure-function correspondence designed to capture cross-linguistic phrase structure variation. Following Bresnan (1996:88ff), I assume that grammatical relations are mapped from overt forms and expressions according to two universally available principles: *endocentricity*, which defines hierarchical, configurational phrase structures according to X' Theory (e.g. Chomsky 1970, Jackendoff 1977, Stowell 1981, Grimshaw 1991), and *lexocentricity* which allows for flatter structures in which all of the arguments (includ-

ing subjects) are sisters to the verb, and syntactic functions are identified by other means, such as case marking or verbal agreement. Thus, broadly speaking, configurational languages are those with endocentric phrase structure (i.e. each phrase has a head of same category, as in (19)) and nonconfigurational languages are those which make primary use of lexocentricity.⁸

The basic structure generated by X' Theory (as a subtheory of LFG c-structure (Bresnan 1996)) is as follows:

- (19) a. $XP \rightarrow YP, X'$
b. $X' \rightarrow X^0, YP$

where X can be either a lexical category (N^0, V^0, A^0, P^0) or a functional category (C^0, I^0, D^0).

The principles of endocentric structure-function association are outlined in (20) (based on Bresnan 1996:93):

- (20) a. C-structure heads are f-structure heads (annotated with $\uparrow = \downarrow$).
b. Specifiers of functional categories are the syntacticized discourse functions (i.e. TOP, FOC, SUBJ).
c. Complements of functional categories are f-structure co-heads (annotated with $\uparrow = \downarrow$).
d. Specifiers of lexical categories are a subclass of adjuncts.
e. Complements of lexical categories are the non-discourse argument functions (i.e. OBJ, OBJ_θ, OBL_θ, COMPL).
f. Constituents adjoined to maximal projections are non-argument functions (i.e. ADJUNCT, TOP, FOC).

Lexocentricity is captured by assuming that, in addition to the standard categories determined by X' theory, universal grammar makes available a nonprojective category *s*, distinguished from these other categories by the fact that it is not headed by something of the same category as itself (exocentric) (Bresnan (1982a, 1996), Kroeger 1993). Intuitively, *s* corresponds to a small clause; a basic clause consisting of a predicate and its arguments (Bresnan 1982a, Chung and McCloskey 1987, Kroeger 1993). Since this category is nonprojective and exocentric, it can have a head of any category and, since it is not subject to the constraints of X' Theory, it can dominate multiple constituents not bearing the typical relations of sisters

⁸We will see below and in Chapter 2 that in fact, the distinction between configurationality and nonconfigurationality should not be thought of as binary. Rather it represents the end points of a continuum ranging from full identification of argument functions in the syntax to full identification in the morphology (or elsewhere); most languages fall somewhere in between the two.

in endocentric structures. Thus, in radically nonconfigurational languages like Wambaya, *s* can be defined as follows:

$$(21) \quad S \quad \longrightarrow \quad C^* \\ (\uparrow (GF)) = \downarrow$$

where *C* ranges over categories, both lexical (X^0) and phrasal (XP).

The annotation $(\uparrow (GF)) = \downarrow$ indicates that the functional annotations $\uparrow = \downarrow$ (the head relation) and $(\uparrow GF) = \downarrow$ (where *GF* stands for the disjunction of all possible grammatical functions) are assigned freely to constituents within *s* (Simpson 1991, Austin and Bresnan 1996).⁹ Effectively, this means that no specific functions are assigned within *s* at all; as we will see in Chapter 3, the information projected by the morphology, in addition to general principles of well-formedness, will rule out all but the grammatical possibilities. This is one of the defining characteristics of radically nonconfigurational languages; since argument functions in these languages are constructed from the morphology, there is no such information assigned to specific positions within *s* in the phrase structure (although, there may be discourse functional annotations associated with other constituents in other phrases, such as [SPEC,IP], for example (see (15b) above, also Aissen 1992, King 1995)).

s is not required by definition to have such a radically flat structure as it does in languages like Warlpiri and Wambaya (see Bresnan 1996:105ff for detailed discussion). Thus, one of the benefits of this approach to phrase structure is that it allows for possibilities between the two extreme positions of fully configurational languages like English, in which phrase structure is fully endocentric and functional annotations are associated with all phrase structure positions, and radically nonconfigurational languages like Jiwari (Austin 1993, Austin and Bresnan 1996), in which a clause usually consists solely of an *s* within which functional annotations are assigned at random. There are languages, such as Tagalog for example, in which just the head position is fixed. In Tagalog, the verb/predicate is always initial (in *s*), but the subject and object can appear in either order, providing they follow the predicate (Kroeger 1993: Ch. 5).¹⁰ Thus, in Tagalog the initial constituent in *s* is assigned the head relation $(\uparrow = \downarrow)$, and the following constituents are assigned $(\uparrow GF) = \downarrow$. The existence of *s* can also account for languages in which there is no VP, but rigid word order: e.g. languages which have a fixed VSO order in all contexts (Jacaltepec may be one such language (Wool-

ford 1991)). In these languages, there is simply a one-to-one relationship between constituents and function annotations within *s*.

Since *s* belongs to the same universally available set of *c*-structure categories as those derived by *X'* Theory, it follows that languages which make use of *s* may also make use of some endocentric phrase structure. Thus, we can capture the fact that even languages with predominantly flat phrase structure can have some endocentricity. In Wambaya, as we will see in Chapter 3, a basic verbal sentence is of category IP, with a nonconfigurational *s* generated as a sister to *I*. And in many other languages an *s* constituent is dominated by a sequence of endocentric phrases which are the locus of different discourse functions (e.g. Russian (King 1995, Bresnan 1996) and Tagalog (Kroeger 1993)).

Thus, this theory of *c*-structure defines a fairly large typological space with respect to phrasal structure and the expression of grammatical relations. Radically nonconfigurational languages, such as Jiwari and many other Australian languages, are characterized by making little to no use of endocentric structure, leaving the assignment of grammatical functions solely to the morphology. In these languages phrase structure position is not relevant for the assignment of grammatical functions, and so word order is largely free.¹¹

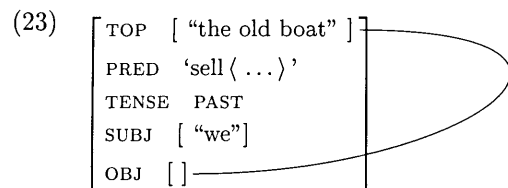
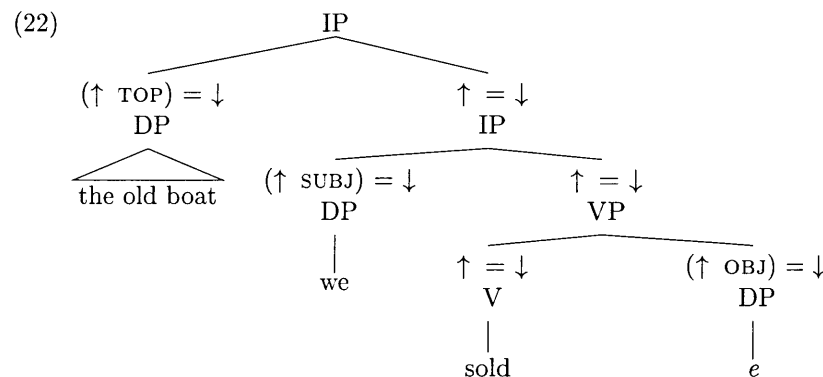
In contrast, radically configurational languages like English have strict endocentric, configurational phrase structure such that all information about grammatical relations is encoded in the phrase structure according to the principles of structure-function correspondence in (20a-f). Since constituents are largely dependent on phrase structure for the assignment of functions, word order in English is predominantly fixed.¹² While phrasal constituents can be topicalized by extraction, there must be an empty category in their canonical position in order to satisfy Completeness and Coherence (see Bresnan 1996: Chs. 5 and 7 for detailed discussion. This example is taken from Bresnan 1996:172):

¹¹The typology of expression of grammatical relations, and particularly the nature of nonconfigurationality, will be discussed in further detail in Chapters 2 and 3.

¹²Modulo such things as heavy NP-shift as in ?*I gave to John *the book* vs. I gave to John *the book that my grandmother wrote when she was growing up in Alice Springs*.

⁹There are alternative analyses available for the assignment of functions in nonconfigurational structures, see 3.3 for discussion.

¹⁰There are, of course, semantic and pragmatic factors which constrain the possible orders in any given context (Kroeger 1993:111).

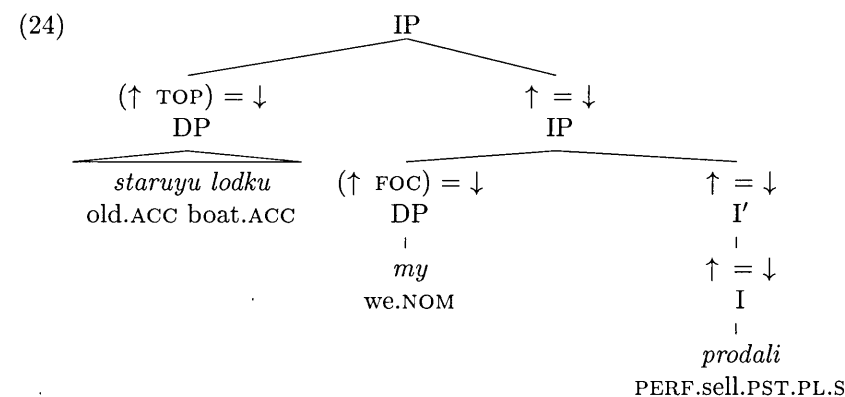


The annotations in (22) follow from the endocentric principles in (20) in conjunction with the Principle of Completeness. According to (20b), the specifier of IP could be either a discourse function or the subject; Completeness will force this to be the subject since there is no other subject specification in the structure. Likewise, Completeness forces the presence of the empty category in the object position. Since NPs in English are not inflected with case markers showing their grammatical function, the only way the topicalized object 'the old boat' can be linked with the object function is through association with an object position in the phrase structure.¹³ Finally, the topicalized phrase is assigned a non-argument function by (20f); the fact that this is TOP can be assumed to be due to language specific rules of English.

Scrambling languages, such as German, Russian and Finnish, represent a logical mid-point between these two possibilities. These languages have endocentric phrase structure (see, for example Webelhuth (1992), Choi (1996), Berman (1997) for German, King (1995) for Russian, Niño (1994), van Steenbergen (1989) for Finnish) that defines a default or canonical order of arguments; in this respect they differ from nonconfigurational languages. However, these languages differ from fully configurational languages like English in also making use of lexocentricity, allowing gram-

¹³I will leave aside the issue here of how this empty category is formally linked with the topicalized phrase—see Bresnan 1996: Ch. 5 for discussion.

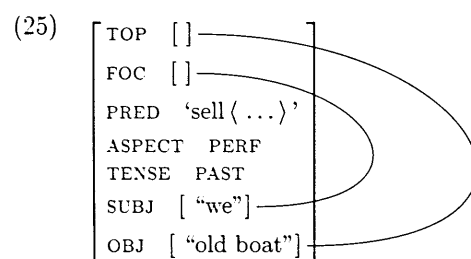
matical function identification to be made in the case morphology as well as in the phrase structure. The result is that constituents are not solely dependent on phrase structure for their grammatical function assignment. They can also appear in non-canonical, non-argument positions with certain discourse effects, and thus word order in these scrambling languages, as in nonconfigurational languages, is largely free. These non-canonical, non-argument positions are the adjoined positions licensed by (22f) above. Consider the Russian sentence *Staruyu lodku my prodali* 'The old boat, we sold'—the Russian equivalent of the English topicalization structure given above—and its c- and f-structures given below (taken from Bresnan 1996:173).¹⁴



¹⁴In Russian the canonical word order of subject and object can be represented by the following two phrase structure rules (based on King 1995), where *s* is generated as a sister to *I*, which is the position of finite verbs.

- ((i)) a. $S \rightarrow \begin{matrix} NP & VP \\ (\uparrow \text{SUBJ}) = \downarrow & \uparrow = \downarrow \end{matrix}$
- b. $VP \rightarrow \begin{matrix} V & NP \\ \uparrow = \downarrow & (\uparrow \text{OBJ}) = \downarrow \end{matrix}$

In (24) both the subject and object have been scrambled; neither appear in their canonical position (within *s*), and so there is no *s* constituent in the clause. The specifier of IP is a discourse position in Russian (King 1995); for concreteness I have labelled it FOC here.



That neither of these DPs are in their canonical phrase structure position is shown by the fact that they are assigned non-argument, rather than argument, functions. That is, the word order in this example is not the neutral word order. The nominative case on *my* indicates that it also has the subject function (we will see in Chapter 3 how this is captured formally given the model of case to be developed there), in addition to the FOC function assigned in the phrase structure. Thus, these two functions are linked in the f-structure, satisfying Extended Coherence. According to (20f), constituents adjoined to maximal projections, such as the highest DP in (24), have a non-argument function—either ADJ or one of the discourse functions TOP or FOC. The accusative case morphology tells us that this DP is the OBJ of the clause; thus, the fact that it is assigned a discourse function in the phrase structure, and not the ADJ function, follows from the Argument-Function Uniqueness principle which stipulates that it cannot be ADJ if it also the OBJ.¹⁵

The case marking on the scrambled DPs in Russian determines their argument functions, and so there is no need for this information to come also from the phrase structure. Hence, unlike the English example discussed earlier, Russian does not need empty categories to satisfy Completeness.¹⁶ Note that even case-marked pronouns in English cannot freely scramble in the same way that Russian DPs can. In 3.3 I will argue that this is due to the fact that case morphemes in languages like Russian (and nonconfigurational languages like Jiwari) actually construct their grammatical function, while residual case such as is found on English pronouns does not (cf. Bresnan 1995b).

C-structure and f-structure form the core of the syntactic component in LFG; the lexicon is the site of all word formation—both inflection and derivation. The fact that morphology belongs to a distinct component of

the grammar, coupled with the assumption of the Lexical Integrity Principle, means that principles of word formation in LFG can be completely different to those of the syntax. While LFG necessarily assumes a lexicalist theory of morphology, it would be equally possible to assume a morpheme-based morphology (e.g. Bloomfield 1933, Halle 1973, Kiparsky 1982, Selkirk 1982, Di Scullio and Williams 1987)¹⁷ or a word-based morphology (e.g. Matthews (1972, 1991), Aronoff (1976, 1994), Anderson (1982, 1992), Zwicky 1985). And indeed, while most work in LFG has assumed a morpheme-based morphology (e.g. Bresnan 1982 (ed.), Simpson (1983, 1991), Neidle 1988, among others), some researchers have used word-based theories (e.g. Börjars, Vincent and Chapman 1996).

I do not intend to enter the debate over the correct nature of morphological representation. For expository purposes, I will assume a simple morpheme-based morphology much like that assumed in the many LFG works cited above. Since all of the languages I will be concerned with are agglutinative, there is no difficulty in treating word formation as involving concatenation of stems and affixes, and this treatment more clearly highlights the general intuition that the addition of each affix corresponds to the building of larger syntactic structures (as in the case stacking discussion in Chapter 5, for example). It should be noted, however, that nothing in the general approach developed here hinges on such a view of the morphology, and the central ideas could be translated into a word-based morphology with a minimal amount of effort.

I will assume for present purposes that the lexicon consists of a list of morphemes—stems and affixes—each with their own lexical entry. This lexical entry specifies the (f-structure) information that is contributed by this morpheme, its category (e.g. N, Affix), the type of stem it attaches to, the type of stem it forms, etc. I assume that both inflectional and derivational affixation involve the same processes (Lieber 1980, Selkirk 1982, Kiparsky 1982), although I will have nothing to say about derivational morphology here. Morphological principles determine the combination of these morphemes into single words at the level of morphosyntactic structure. These morphological principles will have a form similar to c-structure rules, specifying morpheme order, and like c-structure rules, may also specify the functional correspondence between the f-structure information carried by the morpheme and the f-structure information carried by the word it belongs to (e.g. whether the morpheme is a head ($\uparrow = \downarrow$)). In Chapter 4 I will introduce a morphological principle that constrains the composition

¹⁵The fact that it is a TOP and not a FOC is due to language-specific property of Russian discourse structure (see King 1995).

¹⁶This correctly predicts that scrambling, in contrast to extraction, will be locally bounded. For discussion of the difference between scrambling and extraction with respect to weak crossover effects see Bresnan (1995a, b) and Berman (1997).

¹⁷Also Lieber (1992), Halle and Marantz (1993), although these works differ from those listed above in also assuming that the principles of inflectional morphology can be reduced to the principles of syntax and/or phonology.

of the f-structure information carried by individual affixes belonging to a single word. Morphophonological constraints then govern the realization of these morphemes; it is here that morphological allomorphy, idiosyncratic sequencing constraints, etc. are captured. The output of this morphological component—the fully-inflected words—are what serve as the terminal elements of the syntax, being inserted as the leaves of the c-structure trees.

The model of grammar that I will assume throughout this work is given in Figure 1. Since LFG is a non-derivational framework, the arrows in this model should be interpreted as reflecting mapping correspondences, not levels of derivation. The dashed lines connecting c-structure and semantic structure reflect the fact that not all researchers agree that this should be a direct mapping.¹⁸

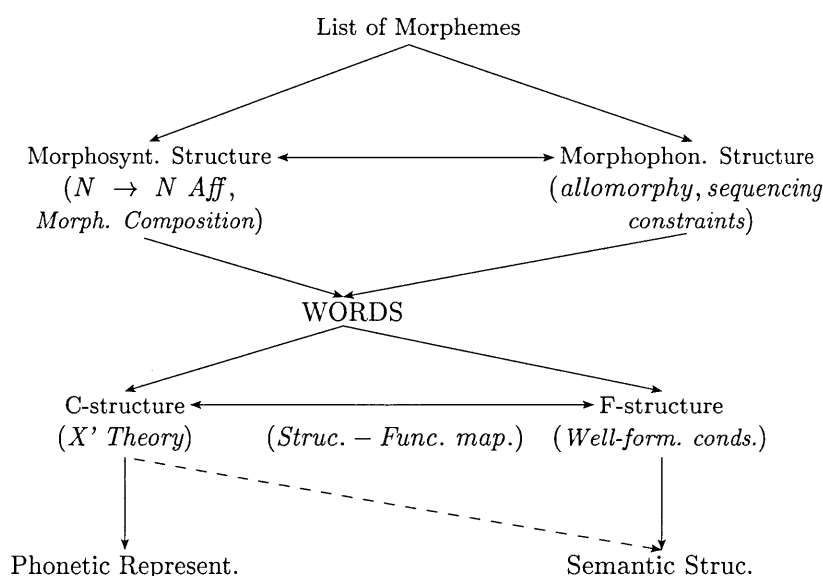


Figure 1 Model of the Grammar

1.4 Organization

The organization of this work is as follows.

¹⁸I have only included in this model the parts of the grammar that I make reference to in this work. A(rgument)-structure, for example, is not included here since it does not feature in the following discussion, and researchers differ as to where it is positioned in the grammar (see, for example, Bresnan and Zaenen (1990), Alsina (1993), Manning (1996), Butt, Dalrymple and Frank (1997), among many others, for discussion).

In Chapter 2 I discuss the notion of nonconfigurationality, especially as it relates to the languages of Australia. The long-running debate over the nature of 'nonconfigurational' languages was sparked by work by Ken Hale on the Australian language Warlpiri (e.g. Hale 1981, 1983). In this chapter I first review the grammatical characteristics originally identified by Hale as indicative of nonconfigurationality and examine the extent to which they are related. I then discuss a prevailing view of nonconfigurationality in the literature, that proposed by Jelinek (1984) and further developed by Baker (1991, 1996a), and argue that, by formally equating nonconfigurationality with the presence of head-marking morphology, it is inadequate for describing the dependent-marking languages of Australia. Finally, I propose an alternative view in which nonconfigurationality is seen as simply one extreme of a continuum concerning the extent to which languages identify grammatical functions in the phrase structure or in the morphology. That this is a continuum is evidenced by the fact that many languages use a combination of these strategies to identify grammatical relations. This continuum is independent of the morphological distinction between head-marking and dependent-marking (Nichols 1986), and thus we correctly predict issues of (non)configurationality to vary independently of this morphological continuum, resulting in both (non)configurational head-marking and (non)configurational dependent-marking languages.

Chapter 3 turns to the formal representation of the different languages types discussed in Chapter 2. I begin by outlining the analysis of nonconfigurational phrase structure in LFG with examples from Wambaya, and present the treatment of head-marking nonconfigurationality within the framework, in which verbal agreement morphology contributes grammatical function information to the f-structure directly. Most of the chapter however, is devoted to the treatment of dependent-marking nonconfigurational languages. It is here that I introduce my theory of constructive case, according to which case morphology constructs grammatical relations in a way exactly analogous to the verbal agreement morphology of head-marking nonconfigurational languages, or to phrase structure positions in configurational languages.

In Chapter 4 I demonstrate that the model of constructive case introduced in Chapter 3 provides a unified account for many properties of case morphology in Australian languages. In particular, since case morphemes provide a grammatical function for the clause, case agreement on discontinuous constituents follows naturally: nominals must be inflected with the same case morpheme in order to be associated with the same grammatical function in the f-structure. By virtue of the principle of morphological composition defined in this chapter, other instances of agreement such as number and gender concord are also shown to follow automatically. Fur-

thermore, since case morphemes on this approach refer directly to the clause (by constructing a grammatical function for it), we see that uses of case to provide clause-level information, such as tense/aspect/mood in Kayardild for example, are also very simply incorporated into the constructive case model.

Chapter 5 addresses the complex phenomenon of case stacking, in which a single word may carry up to four different case markers, each one indicating a successively higher relationship in the clause. Case stacking is problematic for many approaches to case, which generally assume that a case marker contributes information only about the constituent to which it is attached. In contrast, it is shown to follow automatically from the model of constructive case developed in Chapters 3 and 4.

Finally, Chapter 6 summarizes the preceding chapters and briefly considers some possible avenues for further research.

2

Nonconfigurationality in Australian Languages

The existence of such radically nonconfigurational languages as are found in parts of Australia has challenged many of the standard assumptions of formal linguistic theories since they were first introduced into the syntactic literature by Ken Hale's influential work on Warlpiri (e.g. Hale 1973, 1981, 1982a, 1983, 1989, 1992, 1994). Hale showed that Warlpiri exhibits no evidence for the configurational phrase structure determined by standard X' Theory (e.g. Chomsky 1970, Jackendoff 1977, Stowell 1981, Grimshaw 1991), thus challenging its validity as a universal property of human language structure. Hale's claims of such a major typological difference between languages inspired a long-running debate in the syntactic literature over the nature of the difference, and the way it should be formally characterized (see for example, Chomsky 1981, Hale (1983, 1989), Jelinek (1984, 1989), Nash 1986, Laughren 1989, Speas 1990, Baker 1991, Simpson 1991, Austin and Bresnan 1996 and the references cited therein). In this chapter I will outline the main issues of this debate, particularly as they bear on Australian languages and my analysis of case marking to be presented in Chapters 3–5 below. I will discuss the linguistic properties that have been associated with Australian-style nonconfigurationality in the literature, and present a view of possible language structure that identifies the characteristic(s) that distinguish these languages from more configurational languages, as well as from each other. In particular, I will suggest that there is no parametric distinction between configurationality and nonconfigurationality. Rather, these two language types merely represent the extremes of a continuum: languages may identify grammatical relations in the syntax (fully configurational), in the morphology (fully nonconfigurational), or (more usually) by some mixture of the two.

2.1 Defining Nonconfigurationality

Hale (1983) identified three major nonconfigurational properties of Warlpiri: free word order, null anaphora, and the possibility of discontinuous constituents. Since then there has been enormous discussion of nonconfigurationality in the literature, resulting in substantial variation as to how it should be defined and what it is that constitutes the fundamental difference(s) between configurational and nonconfigurational languages. This variation is partly attributable to different theoretical perspectives of the various researchers, who often use theory-internal arguments for identifying nonconfigurational languages. For example, for linguists assuming a theoretical framework such as GB/Minimalism (e.g. Chomsky 1981, 1995), in which binding principles are defined over structural c-command relations, the binding facts of a given language are considered indicative of its phrasal structure, and therefore highly relevant to determining its (non)configurational status (e.g. see Marác and Muysken 1989, Hale 1989, among many others). However, for researchers assuming one of many frameworks in which binding does not refer to phrase structure configuration but to functional hierarchies (as in LFG indexLexical-Functional Grammar (Bresnan 1995a, Bresnan 1996: Ch. 9)), or obliqueness hierarchies (as in HPSG (Pollard and Sag 1994)), such evidence is orthogonal to the issue of configurationality: if binding principles do not refer to phrase structure, then evidence from binding in any given language will reveal nothing about phrase structure in that language.

Differing views of nonconfigurationality also exist even when researchers approach the issue with some similar theoretical assumptions, due to the fact that different researchers have been concerned with different languages, not all of which share all of the same grammatical characteristics. For example, while discontinuous constituents were one of the primary nonconfigurational characteristics identified by Hale (1983), Baker (1990, 1991, 1996a), working on Mohawk, analyses it as nonconfigurational (due to its free word order, extensive agreement morphology, null anaphora and lack of evidence for a VP constituent (Baker 1991)), despite the fact that it has only very restricted discontinuous constituents.¹ There is also great variability on the importance accorded to the property of free word order. Abraham (1986:15), for example, considers German to be nonconfigurational simply on the basis of its (relatively) free ordering of arguments before the verb. On this view, nonconfigurationality is synonymous with free word order (at least, free word order of arguments). Hale (1989), on the other hand, supported also by Speas (1990:138), aims to disassociate the two issues claiming that "It has been an expository mistake, largely my own, to tie

¹I will return to a discussion of Baker's view of nonconfigurationality below.

the configurationality question too closely to the phenomenon of free word order. The latter property is *not* criterial for nonconfigurationality, and it never has been, though many putative nonconfigurational languages, to be sure, exhibit great freedom of word order." (p. 294). Instead, Hale considers the definition of nonconfigurationality to be more concerned with the mode of expression of arguments, analysing Navajo to be nonconfigurational due to its extensive null anaphora and bound pronominal verbal agreement, despite its having fairly fixed word order (Hale 1989). (I will return to a discussion of this approach to nonconfigurationality below.)

In this section, I will begin by exemplifying the three characteristics identified as signalling nonconfigurationality by Hale (1983)—free word order, discontinuous constituents, and null anaphora—and will then discuss some more recent treatments of the issue, as they relate to (dependent-marking) Australian languages. Finally, I will define the view of (non)configurationality that will be assumed throughout the remainder of this work.

The major (so-called) nonconfigurational properties of Warlpiri identified by Hale (1983) have been subsequently shown to be found in many other (dependent-marking) Australian languages also (e.g. Kalkatungu (Blake 1983), Jiwarli (Austin 1993), Wambaya (Nordlinger and Bresnan 1996)).² Consider the following examples from Wambaya (Nordlinger, *In Press*),³ a Non-Pama-Nyungan language of Northern Australia which, although only distantly related to Warlpiri, shares many of its nonconfigurational properties.⁴

- (1) *Dawu gin-a alaji janyini-ni.*
bite 3SG.M.A-PST boy.I(ACC) dog.I-ERG
'The dog bit the boy.' (elicited)
Alaji gin-a dawu janyini-ni.
Alaji gin-a janyini-ni dawu.

²While the most discussed Australian languages are primarily dependent-marking, Australia has many primarily head-marking nonconfigurational languages also (e.g. Nungubuyu (Heath 1984), Mayali (Evans 1991)). However, since my main focus here is case marking, I will be concerned with those languages that make substantial use of dependent-marking morphology, and will have little to say about the head-marking Australian languages.

³The example in (1) is elicited, with each variation judged to be grammatical by native speakers. Naturally occurring examples of the different orders, however, can be found in texts.

⁴The large majority of dependent-marking languages in Australia belong to the Pama-Nyungan family—see Chapter 1. Wambaya (along with the other Barkly languages) is one of a small number of exceptions. The fact that Wambaya is one of the southernmost non-Pama-Nyungan languages, bordering on Pama-Nyungan languages to the west, south and east, highlights the likelihood that it acquired some of its dependent-marking properties through diffusion (e.g. see Green 1995).

Dawu gin-a janyi-ni alaji.
Janyi-ni gin-a alaji dawu.
Janyi-ni gin-a dawu alaji.

The ordering of constituents in a simple Wambaya clause is completely free, as long as the auxiliary (here *gin-a*), containing bound pronominals cross-referencing the subject and object arguments as well as tense/aspect/mood information, remains in second position. That is to say, while the different orders in (1) may be associated with particular pragmatic effects, none can be considered ungrammatical in the way that the corresponding English constructions would be.⁵ Furthermore, none of the possible orders can be considered the basic or 'neutral' order (outside of a particular context).

In a configurational language there is a direct association between grammatical function and phrase structure position such that subject and object can be defined and distinguished purely on structural grounds. This structural relationship is reflected in the word order of basic sentences in such languages: since the different argument functions have fixed positions in the phrase structure, they will usually appear in a fixed order with respect to one another. English, for example, has the basic word order of subject-verb-object; and even configurational languages that allow a certain degree of word order variation can be shown to have a basic, unmarked (i.e. pragmatically neutral) order by which grammatical relations can be defined (e.g. German (Choi 1996, and the references cited therein), Finnish (van Steenbergen 1989), Papago (Hale 1992)).

The fixed position of argument functions in configurational languages is due to phrase structure constituency relations: the object is sister to the verb, and the subject is sister to the higher constituent consisting of the verb and its complements—i.e. VP, or, according to the VP-Internal Subject Hypothesis, *v'* (Fukui and Speas 1986, Kuroda 1988, Koopman and Sportiche 1991). Thus, associated with the notion of configurationality is the existence of a structural asymmetry between subject and object. This asymmetry reveals itself in languages in a variety of different ways. In English, for example, there are many syntactic processes that can apply to a unit consisting of the verb and its object (e.g. pseudo-clefting (2)), but none that apply only to a unit consisting of subject + verb.

(2) a. *Buy a car* is what Mary did.

⁵Austin (1993) thus refers to this characteristic as 'pragmatically conditioned word order'. See also Blake (1983, 1987), Mithun (1992), Swartz (1988), and Payne (1992) for discussion of word order in 'free word order' languages.

b. * *Mary buy* is what did a car.

In languages like Wambaya or Warlpiri however, there is no evidence for such configurational structure. As was pointed out in the discussion of (1) above, in these languages all orderings of constituents are grammatical in a basic sentence, and there does not appear to be any sense in which a particular order could be considered to be basic or unmarked outside of a given context (Swartz 1988, Hale (1992, 1994)). Nor, as Hale (1994:202ff) discusses in some detail for Warlpiri, is there any evidence that the freedom of word order can be accurately analysed as the result of movement: question formation and relativization fail to show any evidence for extraction, nor are there any visible weak crossover effects. Furthermore, in these languages it is extremely difficult to find any evidence of a VP-type constituent at all. In fact, the strongest test for constituency in Wambaya—appearance before the second position auxiliary enclitic—provides fairly strong evidence *against* such a constituent:

(3) *Naniyawulu nagawulu baraj-bulu*
 that.DU.II.NOM female.DU.II.NOM old.person-DU(NOM)
wurlu-n duwa.
 3DU.S(NPST)-PROG get.up
 'The two old women are getting up.' (Nordlinger 1993b:248, ex. 80)

(4) a. * *Daguma janji ng-a ngawurniji.*
 hit dog.I(ACC) 1SG.A-PST 1SG(ERG)
 'I hit the dog.'

b. * *Janji daguma ng-a ngawurniji.*
 dog.I(ACC) hit 1SG.A-PST 1SG(ERG)

(5) *Ngaragi-nka galyurringini-nka wurl-any yarru.*
 drink-DAT water.I-DAT 3DU.S-PST.AWAY go
 'They went to drink some water.' (Nordlinger 1993b:256, ex. 6)

These examples show that while a complex NP can appear before the auxiliary (3), a finite verb with its object cannot, irrespective of their order (4). Furthermore, just in case the verb and object constitute a nominalized infinitival clause, then they can precede the auxiliary (5).⁶

⁶For those who want to maintain the universality of a VP constituent, it may be tempting to assume that the ungrammaticality of (4) follows only from the fact that a constituent consisting of a verb and its object does not constitute a phonological phrase

Topicalization, another test for constituency which can be used to demonstrate the existence of NP constituents in Wambaya, similarly fails to apply to a constituent consisting of a finite verb and its object.⁷ While an NP constituent can be topicalized as in (6), it appears that it is not possible to topicalize a verb and its object.⁸

- (6) *Bungmaji iniyaga, bajijurndu gini-ng-a*
 old.man.I(NOM) that.I.SG.NOM bring.up 3.SG.M.A-1.O-NFUT
ngawurniji.
 1.SG.ACC
 'That old man, he brought me up.' (conversation)

Similar facts show there to be no VP in Warlpiri also (e.g. Laughren 1989:327, Simpson 1991:106ff). In addition, Laughren points out that standard tests for identifying a VP constituent in languages like English and German do not apply to Warlpiri (as is true also for Wambaya). For example, gapping and/or coordination evidence is unrevealing since Warlpiri allows any NP or any combination of V and NP to be gapped in coordinate finite clauses (Laughren 1989:327-328, ex. 12):

- (7) a. (No gapping):
Kuyu=rna nga-rnu, manu miyi nga-rnu
 meat(ABS)=1.SG.A eat-PST and bread(ABS) eat-PST
Napaljarri-rli.
 Napaljarri-ERG
 'I ate meat and Napaljarri ate bread.'
- b. (gapped V + OBJ NP + AUX):
Kuyu=rna nga-rnu, manu Napaljarri-rli-yijala.
 meat(ABS)=1.SG.A eat-PST and Napaljarri-ERG-also
 'I ate meat and Napaljarri (did) too.'

c. (gapped V + AUX):

capable of hosting the auxiliary. However, the fact that an infinitival verb and its object can appear before the auxiliary, as shown in (5) makes such an analysis harder to justify.

⁷In contrast, the scrambling language German, which has comparably free word order to Wambaya, does allow topicalization of a verb and its object (Choi 1996:12), thereby providing evidence for the existence of a VP constituent in German.

⁸I have not explicitly tested this possibility with speakers. However, I have no examples of such a topicalization in the corpus—all examples involved topicalized NPs.

Kuyu=rna nga-rnu, manu nyuntulu-rlu miyi.
 meat(ABS)=1.SG.A eat-PST and 2.SG-ERG bread(ABS)
 'I ate meat and you (ate) bread.'

- d. (gapped SUBJ NP + V + AUX):
Kuyu=rna purra-ja, manu miyi.
 meat(ABS)=1.SG.A cook-PST and bread(ABS)
 'I ate meat, and (I ate) bread.'

Similarly there are no pro-verbs in these languages, such as *do (so)* in English, which identify a VP constituent (as in 'John didn't *mow the lawn*, Mary did.'). Nor are there any syntactic movement and/or gapping rules that refer to such a constituent (see also Heath 1986 for similar arguments from Nunggubuyu).

Of course, it would be theoretically possible to claim that, despite all of this evidence to the contrary, these languages do have VP constituents after all, but for various reasons these are never visible on the surface: finite VPs are not phonological phrases and cannot host the auxiliary; nor can they be topicalized; nor are there any other syntactic processes or lexical items that refer to them, and so on. This would make it possible to maintain the universality of an underlying configurational structure, although at the expense of explanatory power: if these languages *do* have VPs why should it be that they are never referred to by any syntactic process? Furthermore, many other languages outside of the Australian family, including Hungarian (Kiss 1995b), Tagalog (Kroeger 1993) and Jacaltec (Woolford 1991), have also been argued to lack a VP constituent distinguishing subject from object, providing further evidence that such a flat structure is really an option made available by universal grammar.

Not only can arguments appear in any order in Wambaya, but their component parts need not even be contiguous. Thus, it is possible for there to be more than one position in the phrase structure corresponding to a particular grammatical function in any given sentence. In (8) and (9) we see an example of a discontinuous subject and object respectively.

- (8) *Nganki ngiy-a lurrqbanyi wardangarringa-ni*
 this.SG.II.ERG 3SG.F.A-PST grab moon.II-ERG
alaji gulug-barda.
 child.I(ACC) sleep-INF
 'The moon grabbed her sleeping child.' (Nordlinger 1993b:257, ex. 15)

- (9) *Babaga-yi nyi-n jundurra mirnda*
 sister.II-ERG 2.SG.S(PRES)-PROG dust.IV(ACC) 1.DU.INC.DAT
bajbaga yardi.
 big.IV(ACC) put
 'Sister you're making lots of dust for us.' (Nordlinger 1993b:247, ex. 57)

These properties—free word order, discontinuous constituents, and lack of a VP constituent—were shown by Hale (1981, 1983) to challenge many of the standard assumptions made in transformational syntactic frameworks (e.g. Chomsky 1981). In particular, the fact that argument NPs can appear in any position, and in *multiple* positions, in the clause is problematic for the assumption made in these frameworks that the endocentric principles of standard X' Theory are universal; that there is a *universal* one-to-one mapping between grammatical function and phrase structure position (e.g. Chomsky (1970, 1986), Stowell 1981, among many others). Furthermore, crucial to the definition of subject and object in this configurational approach is the existence of a VP; again, something for which there is no evidence in these languages.

The final nonconfigurational characteristic identified by Hale (1983) is the fact that argument NPs are freely omissible in Warlpiri (and many other Australian languages), a phenomenon he referred to as 'null anaphora'. In Wambaya, it is extremely rare to find in texts a transitive sentence containing both a full subject and object NP. Thus, while examples such as (1) above are perfectly grammatical, utterances of the type shown in (10), in which one or more argument NPs have been 'dropped', are more usual in natural, spontaneous speech.⁹

- (10) a. *Gajbi gin-a manganyma.*
 eat 3SG.A-PST food.III(ACC)
 'He ate dinner.' (conversation)
- b. *Ngaj-ba nguyu-ny-u.*
 see-UNCERTAIN 3SG.F.A-2.O-FUT
 'She will see you.' (conversation)

Null anaphora initially appeared problematic for transformational approaches since it violates the Projection Principle, which requires that all arguments selected by a predicator be present at all levels of the grammar (Chomsky 1981:38). However, in cases such as these, where argu-

⁹For discussion of the UNCERTAIN suffix in (10b) see Nordlinger and Bresnan (1996).

ments are not present at surface structure, the Projection Principle can be satisfied by assuming that there is a non-overt argument (*pro* in this case) occupying the position where the nominal should be (e.g. Chomsky 1982, Rizzi 1986). The remaining problem lies in determining the association (assumed e.g. by Hale 1983) between this and nonconfigurationality: why should nonconfigurational languages allow such free occurrence of *pro*, while configurational languages (such as English) do not? The solution proposed by Hale (1983) is to distinguish L(exical)S(tructure), which contains the grammatical organization of the verb and its arguments, from P(hrase)S(tructure), which contains structural relations such as linear order. The difference between configurational and nonconfigurational languages thus results from the Configurationality Parameter which states that in configurational languages, the Projection Principle holds over both of these levels of structure—for each argument in LS, there must be a corresponding constituent in PS; while in nonconfigurational languages the Projection Principle holds only over LS. Thus, in these languages, there are in fact no *pro* constituents (at the level of PS) since they are not required to satisfy the Projection Principle, which simply does not apply at this level. Other grammatical characteristics of Warlpiri likewise followed from this analysis, including freedom of word order, discontinuous constituents, lack of NP-movement rules and lack of pleonastic NPs (Hale 1983:25ff).

Hale's analysis was not widely adopted, however, for a number of reasons. Firstly, it requires typological variation in the nature of the Projection Principle, an undesirable result since the Projection Principle is generally believed (for researchers within the transformational theoretical tradition) to be universal (e.g. Jelinek 1984). Related to this point is the more serious result that the Configurationality Parameter implies that the grammars of configurational and nonconfigurational languages are organized in completely different ways: in particular, nonconfigurational languages make use of a distinction between LS and PS, while in configurational languages this distinction is redundant, the crucial distinction being that between DS and SS (Speas 1990). Finally, the typological predictions made by this parameter are not borne out. For example, if properties such as free word order, discontinuous constituents, lack of pleonastics and null anaphora are all due to a single parameter, we would expect to these properties to cluster such that languages fall into two groups: those with many of these properties, and those with few. However, as Speas (1990:143) shows, this is not the case.

Intuitively, there is no interpretative difficulty in omitting overt argument NPs in examples such as these since the information about grammatical function is recoverable from the bound pronominals in the auxiliary: the auxiliary form *nguyu-ny-u* in (10b), for example, includes the informa-

tion that the subject is third person, singular and feminine (*nguyu-*) and the object is second person singular (*-ny-*).¹⁰ This idea led Jelinek (1984) to propose a formal analysis for such languages in which it is actually the bound pronominals themselves which are the arguments of the verb, with any free nominals simply being co-referential adjuncts.¹¹ Baker (1991, 1996a) also adopts this general view, although with the modification that the bound pronouns are not arguments, but their presence licenses null-*pro* arguments generated in a standard configurational structure.

This approach has been widely accepted in the generative syntactic literature (see also Laughren 1989, Speas 1990, Hale (1989, 1994), Pensalfini 1996, among others). Its appeal can be attributed to the fact that it enables these nonconfigurational languages to be assimilated into a configurational framework. Since the bound pronouns are obligatory (in finite clauses) they can satisfy the Projection Principle without the need to assume that these languages differ in the level at which this principle applies (cf. Hale 1983). Furthermore, the hypothesis that all overt nominals are always adjuncts under this analysis accounts easily for their free order and discontinuity: we already know that adjuncts have freer ordering possibilities than arguments, and are iterable. Thus, the initially problematic properties of these radical nonconfigurational languages appeared to have been straightforwardly explained.

Although the main exponents of this approach all work within a movement-based configurational framework (e.g. Jelinek, Baker, Hale, Speas), the ideas behind the analysis are not specific to such frameworks. It is possible, for example, to incorporate these ideas into a lexically-based framework like LFG, as is shown by Bresnan and Mchombo (1985, 1986, 1987), who independently developed a similar type of analysis for verbal prefixes in Chicheŵa (see also Bresnan 1996: Ch. 6). However, there are good reasons to believe that the Jelinek/Baker approach is actually not the right analysis for the Australian nonconfigurational languages that it was originally developed to explain.

Firstly, while it may seem appealing to derive a number of intriguing syntactic properties of these nonconfigurational languages—i.e. free word

order, discontinuous constituents and null anaphora—from a single source, namely, the presence of bound pronoun clitics, further investigation has revealed that these properties are in fact independent of each other. Pensalfini (1992), a study of 20 Pama-Nyungan Australian languages, shows that the presence of free word order does not necessarily mean that the language will allow discontinuous constituents: Kayardild, a language of north-west Queensland, for example, has very free word order, but does not normally allow discontinuous constituents (Evans 1995a). Similarly, the property of null anaphora is independent of the other nonconfigurational properties: Dyirbal (Dixon 1972) has free word order and discontinuous constituents, but the possibilities for omitting nominal arguments are greatly restricted (Austin and Bresnan 1996:263). Moreover, Austin and Bresnan (1996) show that the bound clitic pronouns on which the Jelinek/Baker account depends are an *areal* feature of Australian languages independent of the other properties of syntactic structure (1996:259ff).

Secondly, extensive empirical arguments against the Jelinek/Baker approach to Australian nonconfigurationality are given by Austin (1993) for Jiwari, Austin and Bresnan (1996) for Warlpiri and Jiwari, and Nordlinger (1993a) for Wambaya. Much of their evidence against the proposal comes from the fact that there are many cases in which analyzing overt nominals as adjuncts is problematic. I will review some of these arguments here.

In Wambaya, bound pronominals only cross-reference subjects and direct objects; dative indirect objects of semi-transitive verbs, for example, are never cross-referenced (Nordlinger, *In Press*). Consider the following examples:

- (11) a. *Ayani gi-n babanya juwa-nka.*
 search 3.SG.S.PRES-PROG sister(NOM) man-DAT
 '(My) sister is looking for a man.' (conversation)
- b. ??*Ayani gi-n babanya.*
 search 3.SG.S.PRES-PROG sister(NOM)
 '(My) sister is looking (for a man/him).'
- (12) a. *Yandu ng-a nganga*
 wait 1.SG.S-PST 2.SG.DAT
 'I waited for you.' (conversation)
- b. ??*Yandu ng-a.*
 wait 1.SG.S-PST
 'I waited (for you).'

¹⁰Object bound pronouns in Wambaya encode only person, not number. When there is no corresponding overt NP the number is interpreted as singular. If the object number is non-singular, an overt free pronoun is required to provide the number information (Nordlinger, *In Press*).

¹¹The association of pronominal arguments with free word order is not an idea original to Jelinek, but has appeared many times throughout the literature on free word order languages (e.g. von Humboldt 1836:130ff, Boas 1911, Steele 1978 (all cited by Austin 1993)). Within the framework of LFG, the idea was developed independently of Jelinek's work by Mchombo (1984), Bresnan and Mchombo (1985, 1986, 1987) and discussed by Simpson (1983).

Verbs such as *ayani* 'search' and *yandu* 'wait' subcategorize for two arguments: a nominative subject, and a dative indirect object. However, as shown in (11a) and (12a), only the subject argument is cross-referenced in the auxiliary. The dative argument must be expressed by an overt nominal, as is shown by the strangeness of (11b and 12b) in which the argument nominal is omitted.¹² If overt nominals were always adjuncts, as is required by the Jelinek/Baker account, then there is nothing in an example such as (12a) that is fulfilling the indirect object function: it cannot be the nominal *nganga*, since it is an adjunct, and there is no bound pronoun that could be doing it either.¹³ Note that an analysis which assumes these indirect object arguments to be registered with zero bound pronouns is untenable, since zero instantiation is reserved for the regular marking of third person singular, as in (8a) above. Furthermore, as shown in the contrast between the (a) and (b) sentences, the presence of the overt nominal in these examples is required. This is not possible in an account in which these nominals are adjuncts since adjuncts, unlike arguments, are generally optional.

Further examples in which overt nominals are required in Wambaya involve non-singular direct objects. As mentioned above, the object bound pronouns in Wambaya register only person, not number: *-ng-* 'first person object', *-ny-* 'second person object', *-Ø-* 'third person object'. When there is no overt coreferential nominal in the clause, these are interpreted as having singular reference, as in (10b) above. When the object is non-singular, therefore, an overt nominal providing the number information is needed.¹⁴

- (13) *Yardi gini-ng-aji ngirra magi-nmanji.*
 put 3.SG.M.A-1.O-HAB.PST 1.PL.EXC.ACC camp-ALL
 'He would drop us all off at the camp.' (Nordlinger 1993b:272, ex. 35)

¹²Examples in which the dative nominal is omitted may be possible in certain restricted discourse contexts, where the indirect object has been ellipsed. However, such ellipsis is also possible in corresponding English constructions (e.g. 'Does your sister have a partner?' 'No, she's looking.'). and thus does not bear on the present discussion.

¹³Ideally, in order to make this point stronger, we would want to see that these dative arguments have all of the same nonconfigurational properties as other NPs. Otherwise the Jelinek/Baker approach could simply retreat to a weaker position and claim that while NPs that are coreferential with a bound pronoun are adjuncts, it is possible for there to be NP arguments as well. My impression is that these dative arguments do behave exactly as all other nominals in terms of freedom of word order, and discontinuous constituents, but unfortunately the present corpus does not contain the relevant data.

¹⁴Although it would be possible to omit the overt object NP in these examples, the object would then be interpreted as singular (i.e. 'me' and 'him', respectively).

- (14) *Guyala ngurr-uji ngajbi juwarramba.*
 NEG 1.PL.INC.A-IRR.PRES see men(ACC)
 'We've never seen the men.' (conversation)

Thus, there are at least these two cases in which nominals cannot be considered to be adjuncts in Wambaya as they are not only obligatory, but are necessary to fully satisfy the argument positions of the predicate.

Austin and Bresnan (1996) point to similar evidence from Warlpiri in Simpson (1991), pointing out that certain types of arguments, such as allative complements, absolutive subjects of cognate object verbs and one of the two objects of ditransitive verbs, can never be registered with a bound pronominal in the auxiliary. Thus, in at least these cases, the overt nominals themselves must be serving the argument function.

Other arguments from Warlpiri against the Jelinek/Baker proposal include the fact that there can be differences in interpretation between adjuncts and arguments (Austin and Bresnan 1996:28ff, although see Baker (1996a:125-9) for discussion)—i.e. overt nominals can have either a definite or an indefinite reading, while bound pronouns in the absence of an overt nominal can only have a definite reading;¹⁵ there is evidence that the case of nominals is governed directly by the verb, rather than by agreement with a clitic pronoun (p. 33ff.); and bound pronominals are not present in all non-finite and (most) non-verbal clauses although the nonconfigurational properties still hold in these clauses.

Perhaps the strongest type of evidence against the Jelinek/Baker analysis of these Australian languages is the fact that there exist languages such as Jiwari which have all of the nonconfigurational properties of Warlpiri and Wambaya, but in addition have no clitic pronouns/agreement markers at all (Austin 1993, Austin and Bresnan 1996). The following examples demonstrate that, while it has no bound pronouns, Jiwari still has the properties of free word order (S-O-V in (15), O-S-V-O in (16), and O-V-S in (17)), discontinuous constituents ((18), (19)) and null anaphora ((20), (21)).¹⁶

- (15) *Ngatha nhurra-nha murrurra mana-ra.*
 1.SG.ERG 2.SG-ACC cicatrice(ACC) get-FUT
 'I will get you cicatrices.' (p. 12, ex. 3)

¹⁵This is true for Warlpiri, but is not necessarily true for all Australian languages. Evans (1995c) shows that bound pronominals can have a generic interpretation in Mayali (p. 213, ex. (30)).

¹⁶Only a few ordering possibilities are shown here. The reader is referred to Austin (1993), from which these examples are taken, for further examples demonstrating the other possible orders.

- (16) *Yinha nhurra parlura-rni-nma payipa nganaju.*
 this(ACC) 2.SG.ERG fill-CAUS-IMP pipe(ACC) 1.SG.DAT.ACC
 'You fill up this pipe of mine!' (p. 13, ex. 4)
- (17) *Yawarnu wanta-rrartu ngatha*
 windbreak(ACC) put-USIT 1.SG.ERG
 'I used to put down a windbreak.' (p. 13, ex. 5)
- (18) *Kutharra-rru ngunha ngurnta-inha jiluru.*
 two(NOM)-NOW that(NOM) lie-PRES egg(NOM)
 'Now those two eggs are lying (there).' (p. 15, ex. 12)
- (19) *Karla wanta-nma-rni jarnpa juma.*
 fire(ACC) give-IMP-HENCE light(ACC) small(ACC)
 'Give me a small fire light.' (p. 15, ex. 13)
- (20) *Papa-ngka tharrpa-rninyja karla.*
 water-LOC insert-PST fire(ACC)
 '(He) put the fire in the water.' (p. 16, ex. 14)
- (21) *Wirntupinya-nyja-rru.*
 kill-PST-NOW
 '(They) killed (him).' (p. 16, ex. 16)

Such evidence from languages like Jiwari clearly invalidates the claim made by the Jelinek/Baker approach that these three syntactic properties are all attributable to, and derived from, the presence of verbal agreement morphology.

In an (as yet) unpublished manuscript Baker (1996b) attempts to defend the 'pronominal argument' hypothesis against the criticisms of Austin and Bresnan (1996), arguing that most of these criticisms can be accounted for by other means and do not, therefore, render the hypothesis completely invalid. For example, the fact that an indefinite interpretation is only possible in Warlpiri when an overt nominal is present is attributable to the fact that pronouns (such as the *pro* arguments) are always definite while nominals can be identified freely as either definite or indefinite at LF (p. 13). When there is no overt nominal adjunct co-referential with the *pro* argument then only a definite interpretation is possible.¹⁷ Thus, according

¹⁷Presumably, Baker is also required to assume that an indefinite specification on an overt nominal overrides the definite specification of the *pro* in order to account for

to Baker, this issue is unrelated to that concerning the argument/adjunct status of nominals.

Baker does concede, however, that a purely head-marking analysis of nonconfigurationality, such as that he proposes for Mohawk (e.g. Baker 1996a) may not adequately account for languages such as Warlpiri and Jiwari. He proposes that like Mohawk, Warlpiri and Jiwari (and, by implication, all nonconfigurational languages) share the property that argument positions can only be filled by *pro*; overt nominals can never be arguments. Nonconfigurational languages, then, have the same phrase structure possibilities as configurational languages (i.e. those licensed by X' Theory), but since the real subject and object arguments aren't overt, the lack of evidence for a VP constituent is explained. The difference is that in Mohawk, these *pro* arguments are licensed by verbal agreement morphology, while in Jiwari and in Warlpiri (at least in non-finite and non-verbal clauses where there are no bound pronouns) they are licensed by something else, possibly whatever it is that licenses null arguments in languages such as Chinese (p. 15).

Baker proposes to capture other differences between Mohawk and the Australian languages—namely, that discontinuous constituents are allowed fairly freely in the latter, but only under very restricted circumstances in the former; and that the Australian languages have case marking on nominals while Mohawk does not—by assuming that the adjunct nominals are related to the *pro* arguments in each language type in different ways. In Mohawk, these adjunct NPs have the syntax of clitic left dislocated elements (Baker 1996a: Ch. 3). Following from this in Baker's analysis, is the fact that the nominals have no case marking (p. 129ff), and that (aside from a few restricted circumstances), there can only be one adjunct NP per argument (i.e. no discontinuous constituents) (p. 138ff). In contrast, adjunct nominals in Warlpiri and Jiwari have the syntax of secondary predicates. This is enabled by the fact that there is generally no distinction between nouns and adjectives in these, and other, Australian languages (e.g. Dixon 1980),¹⁸ making all nominals available for secondary predication (Baker 1996b:16). Case morphology functions to indicate control relations, i.e. what the controller of the PRO subject of the secondary predicate is (p. 12). And the fact that these nominals are licensed by secondary predication, rather than left-dislocation, accounts for the fact that there can be more than one adjunct NP linked to any one argument: while a pronominal

the cases in which the interpretation is indefinite. However, Baker does not discuss this case. Note also that this account would not accurately predict the possibility of indefinite interpretations of bound pronouns in Mayali (Evans 1995c).

¹⁸Although there can be morphosyntactic differences, such as the fact that only nouns can govern number and gender agreement.

argument can license only one dislocated element (as in Mohawk), it can control the subject of more than one secondary predicate (p. 16).

There are a number of reasons why this extended 'pronominal argument' analysis of Baker (1996b) remains problematic. Firstly, since the free omission of nominal arguments was one of the original arguments for the Jelinek/Baker approach to nonconfigurationality in the first place, the fact that *pro* in argument positions can be licensed in different nonconfigurational languages in different ways somewhat undermines the analysis: if null anaphora can be licensed by some other mechanism in Warlpiri non-finite clauses and languages like Jiwari, as well as in configurational languages like Chinese, why not assume that this is also what licenses it in Warlpiri finite clauses?

Secondly, since the general assumption remains that all overt nominals are necessarily adjuncts—whether licensed by left-dislocation or secondary predication—Baker can still not account for cases in which overt nominals are obligatory, as with the Wambaya dative indirect objects and non-singular object pronouns discussed above. If all nominals in these types of languages are always adjuncts, we should find no cases in which a nominal is obligatory. The fact that we do must surely question the validity of such an analysis.

Furthermore, the secondary predicate analysis of dependent-marking nonconfigurational languages brings along with it some new problems. Firstly, since the assumption is that nonconfigurational languages with case marking and no verbal agreement license NP adjuncts by secondary predication, and that a null *pro* argument can control the subject of more than one secondary predicate at a time, this analysis predicts that all dependent-marking nonconfigurational languages must allow discontinuous constituents. This prediction is, in fact, wrong. As mentioned above, Kayardild is one Australian language that is fully dependent-marking, has free word order and extensive null anaphora, but does not generally allow discontinuous constituents (Evans 1995a).¹⁹

Secondly, if all nominals are secondary predicates in these languages, then it follows that there should be no distinction between nominals that can function as arguments and nominals that can function as secondary predicates, that is, it should not be possible to find examples in which a particular nominal can function as a secondary predicate; but not an argument, and vice versa. Once again, Kayardild shows this prediction to be wrong. In Kayardild there is a class of nominals—manner nominals—which can only ever function as secondary predicates (Evans 1995a:359). An example is *kantharrkuru* 'alone':

- (22) *Niya kantharrkuru diya-ja mala-a.*
 3.SG(NOM) alone(NOM) eat-ACT beer-NOM
 'He (always) drinks beer on his own.'
 NOT 'He, the alone one, always drinks beer.'

The fact that some nominals can only function as secondary predicates and never as arguments poses a serious problem for an analysis which assumes that all nominals are always secondary predicates.

With respect to head-marking nonconfigurational languages like Mohawk, Baker (1996a) assumes that the reason overt nominals can not appear in argument positions is that the agreement morphology on the verb absorbs the verb's Case and thus, any overt nominals in argument positions will violate the Case Filter (pp. 83-89). However, for a language without verbal agreement morphology (such as Jiwari), the prohibition of overt nominals in argument position must be due to something else (although Baker (1996b) does not suggest what this might be).

Pensalfini (1996), while adopting many aspects of Baker's approach to nonconfigurationality including the two analyses of overt nominals as adjuncts, offers an alternative explanation for the restriction against overt nominal arguments in nonconfigurational languages. Pensalfini invokes an analysis of the lexicon due to Marantz (1995) according to which a lexical item encodes three distinct types of features: phonological, formal and semantic/encyclopedic (Pensalfini 1996:14). Of these, only formal features (e.g. tense, aspect, pronominal features etc.) are accessible to the syntax. Nonconfigurational languages then, are those in which encyclopedic features are banned from core positions (p. 20), thereby forcing the appearance of *pro* in argument positions.²⁰ In some languages, this ban is restricted to argument positions only (e.g. Mohawk, Jiwari). In other languages, this ban is also extended to predicate positions. Pensalfini claims that Jingulu is one such language: in Jingulu an auxiliary-like element containing tense/aspect/mood, cross-referencing bound pronouns, and directional information is obligatory,²¹ while lexical verbs are optional (and therefore adjuncts) (pp. 10-11). Thus, according to Pensalfini, Jingulu

²⁰As Pensalfini notes (footnote 7, page 14) this would seem to suggest that free, overt pronominals could also occupy argument positions in these languages, since they presumably contain no more encyclopedic information than *pro* does. See Austin and Bresnan (1996:247ff) for arguments against this view, based on evidence showing that overt pronominals exhibit the same nonconfigurational properties as overt nominals do.

²¹Unlike Wambaya, where this is a separate morphological word, in Jingulu it is usually suffixed to the lexical verb. Only when there is no lexical verb in the clause does it stand alone.

¹⁹Another such language is Watjarri (Douglas 1981).

bans encyclopedic information in all core positions, both argument and predicate positions: all overt nominals and lexical verbs are adjuncts.²²

As far as I can tell, this analysis of Pensalfini's does not solve any of the problems associated with Baker's (1996b) analysis discussed above. Since Pensalfini assumes the same analyses of adjunct NPs as Baker, he is too is faced with the problems concerning the obligoriness of some NPs in Wambaya, and the wrong predictions made by the secondary predication analysis for languages like Kayardild. In addition, however, his approach raises at least one other question: if a language like Jingulu bans encyclopedic material in all core positions, including predicate positions, what is the analysis of nominal clauses, such as (23)?

- (23) *Ngarri-na kirda ngunbuluka.*
1SG.GEN-I father doctor
'My father is a doctor.' (Pensalfini 1996:5)

Such clauses do not contain the auxiliary-like element that Pensalfini claims fills the predicate position in verbal clauses, so the question is, what is the predicate in these clauses? Is there a null predicate with a null subject, with all nominals being adjuncts; or are nominal clauses exempt from the ban on encyclopedic information in core positions in Jingulu?²³

We can conclude from the above discussion that there are serious problems with analyses of nonconfigurational languages—at least the dependent-marking nonconfigurational languages of Australia—that are based on the idea that these languages are defined by the fact that their argument positions are filled by *pro*. Furthermore, we have seen that at least two of the three nonconfigurational properties identified by Hale (1983)—null anaphora and discontinuous constituents—can not be considered sufficient conditions for identifying nonconfigurationality: there are nonconfigurational languages that do not freely allow discontinuous constituents (e.g. Kayardild, Mohawk) or free dropping of arguments (e.g. Dyirbal (Dixon

1972)); and null anaphora is possible even in languages that are fully configurational (e.g. Chinese (Huang 1984, Tan 1991)).

While the Jelinek/Baker type of analysis may have some conceptual and formal problems, there is a basic intuition running through this and all other approaches to nonconfigurationality which points to the heart of the issue. Namely, that (overt) NP arguments are not associated with positions in the phrase structure in these languages in the same way that they are in configurational languages like English. Thus, the (surface and overt) syntactic structure of these languages does not conform to the phrase structure configuration generated by the endocentric principles of X' Theory. According to these principles an object argument is defined by virtue of the fact that it is a phrasal element generated as a sister to X under X'; and a subject is defined as a phrasal element generated as sister to X' under X'' (XP) (Chomsky 1986:3). Thus, inherent in this system is the fact that grammatical functions like subject and object universally have fixed positions in the phrase structure. And this is the assumption that nonconfigurational languages challenge.

We can therefore describe the distinction between configurational and nonconfigurational languages in terms of the identification of grammatical relations: configurational languages are those languages in which this identification is made in the syntax; nonconfigurational languages are those in which grammatical relations are identified by other parts of the grammar, particularly the morphology^{24, 25} (i.e. lexocentric in the discussion in 1.3). Unlike configurational languages, nonconfigurational languages have no determinate mapping between argument functions and phrase structure configuration at clause level. Thus, nonconfigurational languages will show no evidence for a VP-type constituent that includes both the verb and its complements, to the exclusion of the subject. In addition, nonconfigurational languages will have free word order (*contra* Hale 1989)—at least of argument functions—since, by definition, if a language has fixed positions for argument functions (i.e. definable subject and object positions) then

²²Pensalfini lists Warlpiri as having the same restrictions as Jingulu (p. 21), although he provides no evidence for the assumption that lexical verbs do not occupy core predicate positions in Warlpiri.

²³Pensalfini (pers. comm.) suggests a possible solution to this problem is to assume that verbless clauses such as these constitute a small clause, rather than an IP, and to restate the ban on encyclopedic information as pertaining only to IPs, and not to small clauses. In many languages, however, including Wambaya, these clauses with nominal predicates show the same nonconfigurational properties of free word order, discontinuous constituents, and null anaphora as full verbal clauses do. Thus, the fact that the ban on encyclopedic information may not apply to these clauses weakens the argument that it is the source of nonconfigurationality in verbal clauses.

²⁴Note that this definition cross-cuts that made in Chapter 1 between endocentricity and lexocentricity. According to this definition, nonconfigurational languages necessarily make use of lexocentricity, while configurational languages may be either endocentric or lexocentric (i.e. having a flat c-structure but with argument functions assigned to particular phrase structure positions).

²⁵Languages can identify grammatical relations in other ways too. For example, in Fore, a language of Papua New Guinea, the relative animacy of the arguments can play a role in identifying subject and object (e.g. Donohue (1996)). And in Papago (North America) there is a relationship between intonation and argument function in some constructions (Hale 1992:70). However, I will be concerned only with the two main possibilities—syntax and morphology—here.

there *is* a determinate mapping between argument functions and phrase structure configuration, and so the language is configurational.²⁶

This definition of (non)configurationality does not require that nonconfigurational languages necessarily have a completely flat structure; such languages may have some hierarchical structure but, as long as this does not uniquely define argument functions, then the languages will fit this definition of nonconfigurational (we will see this in the analysis of Wambaya phrase structure in Chapter 3).²⁷ Thus, according to this definition, the discourse configurational languages of Kiss (1995a) (see also Kroeger 1993, King 1995) are (argument) nonconfigurational since the evidence for configurationality in these languages is relevant to discourse functions only.

In section 2.2 I will expand the view of (non)configurationality briefly introduced here and show how it can account for the type of variation found among languages in terms of the identification of grammatical functions. In Chapters 3–5 I will present a formal analysis of case marking that captures the fact that it is the case marking morphology in dependent-marking nonconfigurational languages that functions to identify argument relations, on a par with the role of phrase structure in configurational languages.

2.2 A Mini-Typology of (Non)Configurationality

As discussed above, the Jelinek (1984, 1989)/Baker (1991, 1996a) approach to nonconfigurationality assimilates all nonconfigurational languages into a model of head-marking. Baker (1996a:5), for example, proposes the following “crude three-way typology” of languages:

(24)	I	II	III
Morphol. type	Isolating	Dependent-mark.	Head-mark.
Word order	Head initial	Head final	Free
Exemplar	English	Japanese	Mohawk

Notice that there is no obvious position for a language like Jiwari in this typology; like type II languages, it is completely dependent-marking, yet like languages of type III, it has free word order. So, if this typology is correct, we are left with only two options as to our treatment of Jiwari: either we analyse it as a head-final language despite all the evidence against

that and place it in type II with languages like Japanese; or we consider it to be head-marking, despite the fact that this is not overtly reflected in the morphology of the language at all, and put it in type III with Mohawk. A third, and more reasonable, option is to expand this typology.

In section 2.1 I made a distinction between languages in which argument functions are encoded in the phrase structure (configurational), and those in which they are encoded in the morphology (nonconfigurational).²⁸ In fact, these two possibilities merely represent the extremes of what is really a continuum. Few languages make use solely of one means or the other for identifying grammatical relations; it is much more usual for languages to have a mixture of the two. As we saw in Chapter 1, scrambling languages such as German (Webelhuth 1992, Choi 1996) are good examples of this. Unlike truly nonconfigurational languages, scrambling languages can be shown to have a basic word order, showing configurational assignment of argument functions in pragmatically unmarked clauses. Unlike truly configurational languages however, this configurational assignment of functions is overridden in a large majority of contexts by pragmatic principles that cause the argument functions to appear in different orders: in these contexts it is the case-marking morphology alone that determines the grammatical relations. Thus, in contrast to the more parametric views of (non)configurationality held by Hale (1983), Jelinek (1984), Speas (1990), Baker (1996a, b) and others, the present view does not require all languages to be classified absolutely as configurational or nonconfigurational. On this view it is possible to talk about degrees of (non)configurationality, according to the extent to which languages use one strategy or another, or both, for determining argument relations, capturing the intuition expressed by Hale (1989) that (non)configurationality is not so much a property of languages as it is a property of constructions. For terminological simplicity throughout this work, I will continue to use the terms ‘configurational’ and ‘nonconfigurational’ to refer to languages that make primary use of syntactic strategies and morphological strategies respectively for the identification of grammatical functions, although the reader should bear in mind that this is not referring to a strict binary opposition between the two types.

²⁶In fact, as we will see in section 2.2 below, these two possibilities—configurational and nonconfigurational—merely represent the two extremes of a continuum: the large majority of languages (most notably, scrambling languages like German) do not identify grammatical relations solely in the syntax or in the morphology, but use a mix of the two (see the discussion in 1.3).

²⁷A more precise term for languages satisfying this definition of nonconfigurationality, then, may be ‘argument nonconfigurational’.

²⁸A very similar view of nonconfigurationality to that proposed here is held by Haider (1989), although expressed within the language of Government and Binding Theory. In Haider’s terms, configurational languages are those in which θ -roles are mapped onto an NP, unique in terms of its structural position (S(tructural)-system); while nonconfigurational languages are those in which the NP is unique in terms of its morphological marking (M(orphological)-system) (p. 186). Kiparsky (1997a, b) makes a similar distinction to mine between languages that have positional licensing, and those in which licensing is done through case marking or agreement. And Baker (1996a) expresses a similar intuition when he says “there is a sense that some languages are syntactically oriented, whereas others are morphologically oriented” (p. 4).

Among languages with rich morphology, there is independent evidence for a typological distinction between head-marking languages and dependent-marking languages (Nichols 1986). Head-marking languages are those in which syntactic relations are marked on the head of a constituent, and dependent-marking languages are those in which these relations are marked on a dependent. With respect to the marking of grammatical functions within the clause, dependent-marking languages are those with case marking bearing syntactic relations information; head-marking languages instead have affixes attached to the verb to indicate these grammatical functions. Nichols (1986:61) schematizes this as in (25), examples of both types from Japanese (26) and Tzutujil (27) follow.

- (25) a. *Dependent-marked:*
Noun+Case Noun+Case Noun+Case Verb
- b. *Head-marked:*
Noun₁ Noun₂ Noun₃ Verb+Aff₁+Aff₂+Aff₃
- (26) *Boku ga tomodati ni hana o ageta*
I SUBJ friend DAT flowers OBJ gave
'I gave flowers to my friend.'
(Kuno 1973:129, cited in Nichols 1986:61, ex. 22)
- (27) *x-Ø-kee-tij tzyaq ch'ooyaaʔ.*
ASP-3SG-3PL-ate clothes rats
'Rats ate the clothes.'
(Dayley 1981:417 cited in Nichols 1986:61, ex. 25)

As with (non)configurationality, the distinction between head-marking and dependent-marking is not a simple binary opposition, but defines a continuum of which most languages (if they have inflectional morphology at all) will fall somewhere between the two (such as Warlpiri, Wambaya, Turkish, Finnish, which all have case-marking and (some) verbal agreement). Throughout this work I will use the terms 'head-marking' and 'dependent-marking' to denote languages that make primary use of the respective morphological strategy, but this should not be read as necessarily excluding the possibility that the language also makes some use of the other strategy as well.

Thus, we have two independent typological continuums:²⁹ nonconfigurational vs. configurational, relevant to syntactic structure, and (among

²⁹Of course, these are just two of many; but it is only these two that I will be concerned with here.

morphologically rich languages) head-marking vs. dependent-marking, relevant to word structure. The interaction between these two continuums, specifically the fact that they are relevant to different parts of the grammar, means that there should *not* be a direct relationship between head-marking and nonconfigurationality, *contra* the claims implicit in the Jelinek/Baker approach to nonconfigurationality. In fact, since configurational languages can be both head-marking (e.g. Navajo (Speas 1990))³⁰ and dependent-marking (e.g. Finnish (van Steenberghe 1989)), we would predict that nonconfigurational languages can be also. And, indeed, this is the case: Mohawk is an example of a head-marking nonconfigurational language, and Jiwari is an example of a dependent-marking one.

On the basis of these two typological continuums, then, we can identify three *broad* language types according to the way in which grammatical functions are (primarily) identified: (i) grammatical relations are identified with phrase structure positions (configurational); these languages may have head-marking or dependent-marking morphology, or neither; (ii) grammatical relations are constructed by verbal agreement/incorporated pronouns (nonconfigurational, head-marking); (iii) grammatical relations are constructed by the case marking (nonconfigurational, dependent-marking). Among the languages of Australia, we find no examples of purely configurational languages (type (i)) (although see below), but many examples of the two nonconfigurational types; nonconfigurational head-marking languages (type (ii)) include Nunggubuyu (Heath 1986), and Mayali (Evans 1995c); and languages like Jiwari (Austin 1993), Kayardild (Evans 1995a), Guugu Yimidhirr (Haviland 1979) and Dyirbal (Dixon 1972) belong to the nonconfigurational, dependent-marking type (type (iii)).

In fact, as was discussed above, the three language types described in (i) - (iii) are not mutually exclusive possibilities. Thus, one of the advantages of this view is that it can easily accommodate languages which have a mix of some of these properties. Scrambling languages like German and Finnish, as well as the Australian languages Panyjima (Dench 1991), Diyari (Austin 1981a) and Uradhi (Crowley 1983) which have relatively fixed word orders but extensive case marking morphology, are examples of languages which mix configurational properties (type (i)) with nonconfigurational properties (i.e. type (iii)) such that grammatical relations information comes from both the phrase structure and the morphology. Other languages, such

³⁰As noted above, Hale (1989) considers Navajo to be nonconfigurational. However, since it has fairly rigid word order, it is (more) configurational according to the definition of (non)configurationality given here (see also Speas 1990: ch. 4 who argues additionally that overt nominals must in general be treated as arguments in Navajo, rather than adjuncts, thus ruling out a Jelinek/Baker style nonconfigurational analysis for the language).

as Wambaya and Warlpiri, mix head-marking nonconfigurationality (type (ii)) with dependent-marking nonconfigurationality (type (iii)). In these languages, information about grammatical relations comes both from the case marking and, in some instances, from the head-marking morphology also. Consider the following Wambaya examples repeated from above:

- (28) a. *Ayani gi-n babanya juwa-nka.*
 search 3.SG.S.PRES-PROG sister(NOM) man-DAT
 '(My) sister is looking for a man.'
- b. *Ayani gi-n juwa-nka.*
 search 3.SG.S.PRES-PROG man-DAT
 'She is looking for a man.'

According to the analysis of these languages to be presented in detail in Chapters 3–5 below, the case marking on *babanya* and *juwa-nka* in (28a) constructs the information that they function as subject and indirect object respectively, while information about the subject is also coming from the auxiliary. In (28b), the dative case marking on *juwa* still functions to identify it as fulfilling the indirect object function, but the information about the subject is now being projected *only* from the head-marking morphology, by way of the bound pronominal contained in the auxiliary.³¹

The basic typology outlined above is schematized in the following table.³²

³¹An alternative analysis is that the pronominal properties of the subject are also being projected from the verb itself in the context. This is the analysis suggested by Simpson (1991) and Austin and Bresnan (1996) for Warlpiri, since the subject NP can be omitted even in cases where there is no bound pronoun. Whether all of the subject information comes from the bound pronoun in this example or whether some of it comes from the verb has no bearing on the point being made here; both analyses are equally compatible.

³²Note that this is idealized in many respects. Firstly, since the head-marking/dependent-marking continuum is not relevant for languages that have little or no morphology, these languages are not included here. Secondly, the positions of the various example languages along the continuums are approximate only.

Table 2.1. *Basic Typology of expression of grammatical relations*

	← more nonconfig. ————— more config. →	
↑	Mohawk, Mayali	Navajo Chicheŵa
more <i>h</i> -mark.		
	Wambaya, Warlpiri	
↓	Jiwarli, Dyirbal	Icelandic, Martuthunira
more <i>d</i> -mark.		

As I will show in Chapter 3, this typology can be easily captured in a unification-based model of grammar such as LFG. LFG allows morpholexical specifications of grammatical functions of the same formal and substantive type as syntactic specifications; it is possible for words to carry the same type of grammatical function information in their lexical entries as can also be introduced by phrase structure rules in the syntax. In this framework, it is possible for grammatical relations information to come from different places (i.e. verbal morphology, case marking, phrase structure) and then, through the general principles of structure-function association, be unified and identified (in the f-structure) with the structure of the clause as a whole. Thus, the same type of information can potentially be coming from more than one place, just as long as it is unifiable (compatible).

Many other researchers have also recognized that there are dependent-marking nonconfigurational languages in which the information about grammatical relations comes from the case marking (see Hale 1981, Blake 1983, Laughren 1989, Simpson 1991, Austin 1993, Bresnan 1996, Austin and Bresnan 1996, Baker 1996b, among many others). However, formal accounts have not always captured this important role of the case marking directly. There is frequently an asymmetry in the treatment of head- and dependent-marking nonconfigurational languages in this respect: in formal analyses of head-marking nonconfigurational languages, the information about grammatical functions is carried by and projected from the verbal morphology directly. In transformational analyses this means that the verbal morphology absorbs the Case and theta-roles assigned by the verb (or licences null pronominals which do so), on a par with full-NPs in configurational languages (as in the Jelinek/Baker analysis). In LFG indexLexical-Functional Grammar this means that the information carried by the head-marking morphology alone constructs the relevant grammatical relations (by specifying that the clause contains a subject having cer-

tain person and number features, for example) in the same way that phrase structure rules do in configurational languages (e.g. Bresnan and Mchombo 1987, Bresnan 1996). In analyses of dependent-marking nonconfigurational languages, on the other hand, the equivalent function of case is generally not carried by and projected from the case morphology in the same way, but instead falls out from other parts of the grammar. For example, in most transformational analyses case marking is treated as simply spelling out syntactic relations that are determined by and encoded in the phrase structure (e.g. Bittner and Hale 1996). Even in LFG, which has long recognized the need to allow morphology to construct syntactic relations (e.g. K. P. Mohanan 1982, Andrews 1982, Bresnan 1982a, Simpson 1983, among many others), case marking does not carry grammatical relations information in the way that head-marking morphology does. Rather, the role that case marking plays in determining grammatical relations in these languages is mediated through the interaction between the simple case feature provided by the case marker (e.g. CASE = ERG) and the case requirements imposed by the verb on its arguments (e.g. Simpson 1991, Austin and Bresnan 1996); or by case conditionals that associate particular case values with particular grammatical functions (e.g. Andrews 1982, King 1995, Bresnan (1995a, 1996)). Thus, while the morphology of head-marking nonconfigurational languages is treated as being directly *constructive* of grammatical relations, independently of phrase structure, the same function of case morphology in dependent-marking nonconfigurational languages is not captured formally in the same way. In Chapter 3, I will present an analysis of case marking that can capture its constructive properties directly, thereby redressing this imbalance and accounting for its important role in identifying grammatical relations in dependent-marking nonconfigurational languages.

3

Modelling Nonconfigurationality

In this chapter I will present a formal model of nonconfigurationality which can accommodate the typology presented in Chapter 2. This model is couched within the framework of LFG (see 1.3 for a brief overview) and is based on the founding work already done on describing nonconfigurational languages within this framework (e.g. Simpson (1983, 1991), Kroeger 1993, K.P. Mohanan 1982, T.Mohanan (1994a, 1995), Bresnan 1996, Austin and Bresnan 1996, Andrews 1996, Nordlinger 1995, Nordlinger and Bresnan 1996). In section 3.1 I describe the way in which nonconfigurational phrase structure is captured in LFG, and in section 3.2 I show how the constructive role of head-marking morphology in head-marking languages is modelled in the framework. In section 3.3, I add to the framework by proposing an analysis of case marking that captures the constructive function of case marking in determining grammatical functions in dependent-marking languages, in a way analogous to the analysis of head-marking presented in section 3.2. Chapters 4 and 5 will be devoted to demonstrating that this model of case not only captures the intuitive function of case marking to construct grammatical relations, but can also account for many other complex properties of case marking in Australian languages that have been largely ignored by other analyses of case. Finally, in summarizing in section 3.4, I show how this model can easily account for languages that have combinations of the various typological properties: mixing both head-marking and dependent-marking morphology; determining grammatical relations by both morphological and syntactic means, and so on.

3.1 Nonconfigurational Phrase Structure

As was discussed in Chapter 2, a nonconfigurational language is one in which argument functions are constructed by the morphology, rather than being identified in the syntax: there is no (phrase) structural basis on which subject and object can be defined. Thus, in these languages there is

no evidence for the VP constituent generated by the endocentric principles of X' theory which distinguishes the object (sister to the verb) from the subject (c-commanding the constituent containing the object and the verb). However, as we will see exemplified for Wambaya below, the fact that these languages do not have configurational phrase structure relevant to argument functions does not mean that there is no phrase structure at all. We therefore need a formal model of phrase structure that can incorporate both the presence and absence of phrase structure configurationality, as well as allowing for some type of mix of the two.

In Chapter 1 we saw that the theory of c-structure in LFG indexLexical-Functional Grammar achieves this by supplementing the familiar endocentric categories generated by X' Theory with an exocentric, nonconfigurational phrasal category *s* (Bresnan 1982a, Chung and McCloskey 1987, Kroeger 1993). In this section I will show how this theory of phrase structure can naturally account for nonconfigurationality, with a discussion of the phrase structure of Wambaya. The analysis that I will present here is taken from Nordlinger (1995) and Nordlinger and Bresnan (1996) and is similar to that which has been proposed for Warlpiri (e.g. Simpson 1991, Kroeger 1993, Austin and Bresnan 1996).

Recall from Chapter 1 that the definition of *s* in radically nonconfigurational languages such as Wambaya is that in (1):

$$(1) S \rightarrow C^* \\ (\uparrow (GF)) = \downarrow$$

where *C* ranges over categories, both lexical (*X*⁰) and phrasal (*XP*).

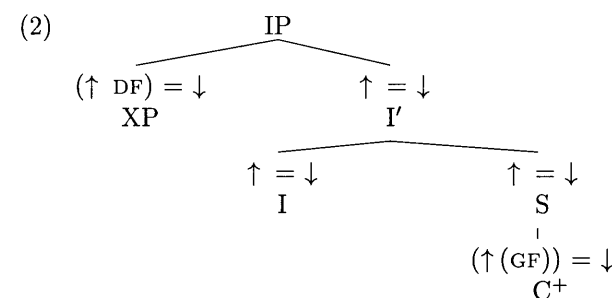
The annotation $(\uparrow (GF)) = \downarrow$ indicates that the functional annotations $\uparrow = \downarrow$ (the head relation) and $(\uparrow GF) = \downarrow$ (the non-head relation) are assigned freely to constituents within *s* (Simpson 1991, Austin and Bresnan 1996). In other words there are no predetermined functions assigned to positions within *s*; the functions of the various constituents are determined morphologically, as we will see below.

For present purposes, I follow Simpson (1991) in treating the annotation $(\uparrow GF) = \downarrow$ as standing for a disjunction of all the possible grammatical functions that could be assigned: $(\uparrow \text{SUBJ}) = \downarrow \vee (\uparrow \text{OBJ}) = \downarrow \vee (\uparrow \text{TOP}) = \downarrow \vee (\uparrow \text{ADJ}) = \downarrow$, etc.¹ Grammatical possibilities will be constrained by the information projected from the morphology, in conjunction with the well-formedness conditions of Extended Coherence and Argument-Function Uniqueness defined in Chapter 1. Therefore, if the case morphology specifies the NP as having the grammatical function of SUBJECT (see 3.3.2),

¹There are alternative analyses available; these will be presented in 3.3.2.

for example, Argument-Function Uniqueness will rule out all structures in which that NP is assigned a function other than SUBJECT in the c-structure.²

The basic Wambaya clause consists of an endocentric IP, with an *s* generated as a complement to *I*. Thus, Wambaya phrase structure is a good exemplar of the way in which configurational and nonconfigurational phrase structure can interact and coexist within a single system. The structure of a simple Wambaya clause is given in (2). (I return to a discussion of auxiliary placement below). As shown in this structure, *i* is the locus of the second position auxiliary, while the main verb appears in *v* (within *s*). The order of constituents within *s* is completely free and all constituents are optional. As will be discussed in more detail in Chapter 4, there is independent evidence supporting the existence of NP constituents in Wambaya, and thus *s* is specified as consisting of categories *v* and/or NP.³ Since *s* is exocentric, its head may be either a verbal predicator (as in (5) and (6)), or a nominal predicator (as in (3)). The [SPEC,IP] position is optional and can be filled only by a maximal projection (cf. Kroeger 1993); thus in Wambaya, it is limited to NPs. The annotations shown in (2) follow from the general principles of structure-function association given in 1.3:⁴



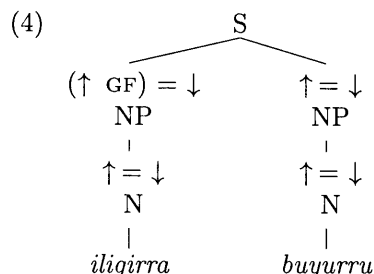
²Actually, as we saw in Chapter 1, Argument-Function Uniqueness will only rule out the assignment of another *non-discourse* function in the c-structure; it allows an argument function like SUBJECT to also be associated with a discourse function such as TOP. So in the present case, assignment of TOP (or FOC) would be possible in the c-structure too, resulting in the NP being the value of both the SUBJECT function and the TOPIC (or FOCUS) function in the f-structure. In Chapter 1 we saw that this possibility allows for an explanatory account of scrambling phenomena in languages like Russian and German (e.g. King 1995, Choi 1996, Bresnan 1996).

³There are also some closed class items, such as adverbs and particles, but I will leave aside discussion of them here.

⁴The phrase in the [SPEC,IP] position is represented here as having an unspecified discourse function. This is in lieu of further research to determine how the function of this initial phrase can best be characterized. Austin and Bresnan (1996), following Swartz (1988), describe this position in Warlpiri as having a focus function.

Evidence from Wambaya for the existence of *s* as a constituent separate from the auxiliary (in *i*) comes from (at least) two sources: clauses with nominal predicates, and coordination. Firstly, clauses with nominal predicates, such as (3), can never contain an auxiliary and, thus, can only be of category *s*:⁵

- (3) *Iligirra buyurru.*
river.IV(NOM) dry.IV(NOM)
'The river is dry.'



Secondly, it is possible to coordinate either IPs (eg. (5a), (6a)) or *ss* (e.g. (5b), (6b)). In the latter case there is no auxiliary in the coordinated clause(s) (since the auxiliary appears in *i*).

- (5) a. *Bardbi wurl-a, [IP yagu wurl-a alaji gulug-barda].*
run 3.DU.S-PST leave 3.DU.A-PST boy.I(ACC) sleep-INF
'They ran away (and) they left the little boy sleeping.'
- b. *Bardbi wurl-a, [s yagu alaji gulug-barda.]*
run 3.DU.S-PST leave boy.I(ACC) sleep-INF
'They ran away (and they) left the little boy sleeping.' (conversation)
- (6) a. *Manjunga ngirr-a angbardi, [IP nguya ngirr-a jambal], [IP wugbardi ngirr-a mayinanji].*
shade.IV(ACC) 1PL.EXC.A-PST build dig 1PL.EXC.A-PST
ground.IV(ACC) cook 1PL.EXC.A-PST goanna.I(ACC)
'We built a shade, (and) we dug (a hole in) the ground (and) we cooked the goanna.'

⁵The association of the GF function assigned in the c-structure for *iligirra* with the SUBJ function will be discussed below.

- b. *Manjunga ngirr-a angbardi, [s nguya jambal],*
shade.IV(ACC) 1PL.EXC.A-PST build dig ground.IV(ACC)
[s wugbardi mayinanji].
cook goanna.I(ACC)
'We built a shade, (and we) dug (a hole in) the ground (and we) cooked the goanna.' (Nordlinger 1993b:273, ex. 49-50)

The auxiliary is base-generated in the *i* position. However, since it is actually an enclitic (despite the convention of writing it as a separate word), its placement is prosodically conditioned; it needs to follow another word to which it can cliticize.⁶ When there is a constituent in the [SPEC,IP] position the auxiliary in *i* can encliticize to the final member of the NP:

- (7) *Naniyawulu nagawulu baraj-bulu*
that.DU.II.NOM female.DU.II.NOM old.person-DU(NOM)
wurlu-n duwa.
3DU.S(NPST)-PROG get.up
'The two old women are getting up.' (Nordlinger 1993b:248, ex. 80)

However, if there is no constituent in [SPEC,IP], meaning that the auxiliary is the first constituent in the clause, I will adopt Austin and Bresnan's (1996) analysis of Warlpiri and assume that it undergoes 'prosodic inversion' (Halpern 1995), being attached prosodically to the end of the first phonological word to its right (i.e. the (first member of the) first constituent of *s*). It is in this way that the auxiliary can appear after the verb, as in examples like (5a) above and (8).⁷

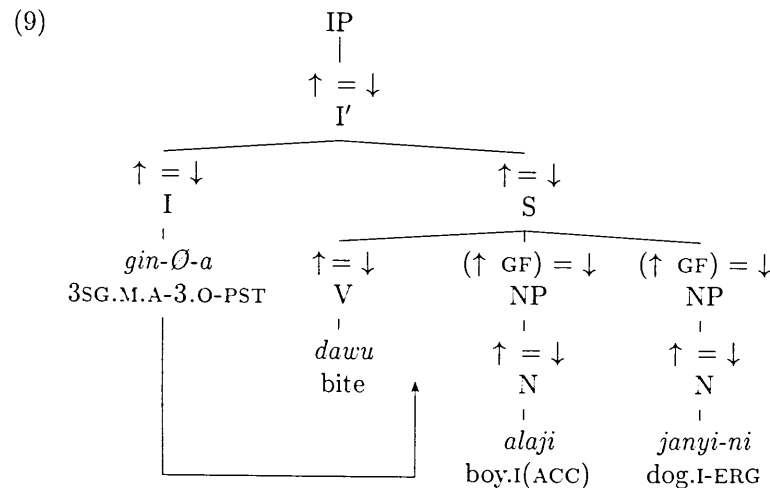
⁶When the auxiliary is monosyllabic it is completely unstressed (i), when it is polysyllabic, it constitutes its own stress domain (as do all polysyllabic morphemes in Wambaya, see Nordlinger (In Press: Ch. 2)), having secondary stress on the first syllable (ii). Since it is a clitic, the auxiliary can not receive primary stress and must therefore combine with the preceding word to form a phonological word. In the following examples I use ' to indicate primary stress and ` to mark secondary stress:

- (i) *Yárru g-a álaji.*
go 3SG.S-PST boy.I(NOM)
'The boy went.'
- (ii) *Yárru wùrl-a álaji-wùlu.*
go 3DU.S-PST boy.I-DU(NOM)
'The two boys went.'

⁷The independent evidence for this analysis in Warlpiri—namely, the fact that the auxiliary can actually be realized in initial position under certain circumstances (Laughren 1989, Simpson 1991), and the fact that the auxiliary can split a single lexical unit made up of a preverb and a verb (Simpson 1991)—does not exist in Wambaya. Thus, while

The structure of (8) is given in (9). The arrow indicates the direction of prosodic inversion.

- (8) *Dawu gin-a alaji janyini-ni.*
 bite 3.SG.M.A-PST boy.I(ACC) dog.I-ERG
 'The dog bit the boy.' (elicited)



This analysis of Wambaya phrase structure can easily deal with all (standard) Wambaya sentences such as those given above. Furthermore, it also accounts for the nonconfigurational characteristics of Wambaya discussed in Chapter 2: free word order and the absence of a VP is possible since S has a flat structure, with no ordering restrictions within it. Discontinuous constituents are possible since there is no fixed position in the configuration for any particular grammatical function, and so there is nothing that rules out the appearance of multiple constituents in S all bearing the same grammatical function (as long as the information they carry is unifiable). The fact that these multiple phrases are one expression semantically is captured by associating them with each other at f-structure. In Chapter 4 we will see how this is easily effected with the analysis of case marking to be presented in section 3.3. Null anaphora is similarly not problematic as this model chooses not to embrace the Projection Principle and there is therefore no requirement that all arguments be present at c-structure. Instead, null pronominals are admitted into the f-structure by

this analysis accurately captures all of the Wambaya data, further research is required to fully justify its application to the Wambaya auxiliary.

the lexical entries of the verbs and the bound pronouns and are linked to arguments in the predicator's argument structure. This will be discussed in more detail in section 3.2.

3.2 Head-Marking Nonconfigurationality

In head-marking nonconfigurational languages, the identification of argument relations is effected solely through the verbal morphology. In other words, the verbal morphology directly constructs the argument functions of the clause; any corresponding NPs are then identified with the respective argument functions through unification. Consider the following example from the Northern Australian language Mayali (Evans (1991, 1995c)):

- (10) *A-banbani-na-ng daluk bogen.*
 1.SG-3.DU-see-PST.PERF woman two
 'I saw the two women.' (Evans 1995c:212, ex. 22)

Mayali being a nonconfigurational language, argument functions are not associated with positions in the phrase structure (Evans 1995c:213). Instead, it is by virtue of the verbal prefixes *a-banbani*, which construct a first singular subject and a third dual object, that the syntactic relations in this example are constructed. In this example, the verb alone projects the core f-structure in (11):⁸

- (11)
- | | | | | | | | |
|--------|---|------|-------|------|----|-----|----|
| PRED | 'see (...)' | | | | | | |
| TENSE | PAST | | | | | | |
| ASPECT | PERFECTIVE | | | | | | |
| SUBJ | <table border="1"> <tr> <td>PRED</td> <td>'PRO'</td> </tr> <tr> <td>PERS</td> <td>1</td> </tr> <tr> <td>NUM</td> <td>SG</td> </tr> </table> | PRED | 'PRO' | PERS | 1 | NUM | SG |
| PRED | 'PRO' | | | | | | |
| PERS | 1 | | | | | | |
| NUM | SG | | | | | | |
| OBJ | <table border="1"> <tr> <td>PERS</td> <td>3</td> </tr> <tr> <td>NUM</td> <td>DU</td> </tr> </table> | PERS | 3 | NUM | DU | | |
| PERS | 3 | | | | | | |
| NUM | DU | | | | | | |

Unification then forces the NP *daluk bogen* to be the object: otherwise the person and number features would fail to unify.

This constructive property of head-marking morphology falls out of standard LFG analysis. In LFG morphemes can carry the same type of functional information that is also associated with syntactic phrases: words and phrases are alternative means of expressing the same grammatical relations

⁸Overt argument NPs are optional in Mayali, which explains the absence of a subject NP in this example (Evans 1995c:211). When no corresponding NP is present, the PRED feature of the argument is introduced by the verbal prefix—see below for further discussion.

(Bresnan 1995b). Thus, verbal agreement morphology simply carries information about the argument functions of the clause—this is true even for configurational languages. The third singular subject verbal suffix *-s* in English, thus has the following lexical entry (from Bresnan 1996:50, ex. 44):

- (12) *-s: infl_V*: (↑ TENSE) = PRES
 (↑ SUBJ) = ↓
 (↓ PERS) = 3
 (↓ NUM) = SG

Therefore, in a way exactly analogous to the Mayali example given above, a verb inflected with this suffix in English is inserted into the c-structure carrying information both about the clause as a whole (since the verb is the functional head) and about its subject. The constructive role of head-marking morphology in both English and Mayali is similar in this respect. The difference lies in the fact that in Mayali verbal morphology is the only way in which grammatical relations are identified; while in English their identification comes primarily from the phrase structure. Consequently verbal agreement morphology in (head-marking) nonconfigurational languages is considerably more complex and extensive than that of configurational languages, as is clear in the comparison between Mayali and English.

Frequently, extensive head-marking morphology correlates with optionality of argument NPs, or 'null anaphora' (Hale 1983).⁹ As discussed in Chapter 2, it is this correlation that led to the analysis of nonconfigurational languages originally proposed by Jelinek (1984, 1989) and further developed by Baker (1990, 1991, 1996a) in which the head-marking morphology (or null pronominals licensed by it) is analysed as actually fulfilling the argument functions of the verb, and the overt NPs are considered to be co-referential adjuncts.

In fact, the idea that verbal agreement markers can also function as incorporated pronominals is not due originally to Jelinek, nor is it a possibility restricted to nonconfigurational languages (e.g. von Humboldt 1836, Boas 1911, Givón 1976, Mchombo 1984). Within the LFG literature, for example, Bresnan and Mchombo (1985, 1987) independently developed such an analysis in their discussion of subject and object markers in the head-

⁹In fact, null anaphora is found in all types of languages including configurational languages (e.g. Chinese (Huang 1984)).

marking *configurational* language Chicheŵa.¹⁰ Bresnan and Mchombo use syntactic, phonological and discourse evidence to show that in Chicheŵa the object verbal prefixes obligatorily fulfill the argument function of the verb, while any coreferential NPs can be shown to have a non-argument function as an adjunct, topic or focus. In contrast, subject markers have dual functions: they can be simple agreement markers, with a co-occurring NP required to fulfill the subject function, or they too can function as incorporated pronominals. In LFG the difference between an incorporated pronominal and an agreement marker is minimally captured by the presence or absence of a PRED 'PRO' feature in the lexical entry of the verbal affix. If a subject marker, for example, carries only agreement information (e.g. person, number, gender), as in the English example given above, then it is an agreement marker. If, on the other hand, the affix also carries a PRED feature for the subject—e.g. (↑ SUBJ PRED) = 'PRO'—then it functions as an incorporated pronominal. In this latter case, the principle of Uniqueness (Bresnan 1996), which requires that each attribute have a single value, will disallow the existence of a overt NP also having the subject function, since any overt NP will have its own PRED feature, which will clash with that contributed by the verbal affix. Thus, in this case, the verbal affix alone is satisfying the argument structure of the verb.

In order to account for affixes which can be used as either agreement markers or pronominal arguments, as with the subject marker in Chicheŵa (Bresnan and Mchombo 1987) and the verbal prefixes in Mayali (see above), we simply assume that the affix carries an optional PRED feature—e.g. ((↑ OBJ PRED) = 'PRO'): when the PRED feature is present, the affix is a pronominal argument; when it is absent, it is an agreement marker and an overt NP is required to provide a PRED feature for the subject (by virtue of the principle of Completeness (Bresnan 1996:56)).

Thus, the formal framework of LFG is already well-equipped to account for head-marking nonconfigurationality: the nonconfigurational phrase structure is easily accounted for in the way outlined in section 3.1, and the constructive role of the head-marking morphology in identifying grammatical relations is captured by the fact that these morphemes can carry information about grammatical relations of the same kind as that carried by the phrase structure in configurational languages. Furthermore, the common tendency for verbal affixes to function as incorporated pronominals in head-marking languages is captured by assuming that, in addition

¹⁰For other work also making use of this idea in LFG see Uyeche 1991, Demuth and Johnson 1989, Andrews 1990a, Börjars, Vincent and Chapman 1996, Vincent and Börjars 1996, Bresnan 1996, Toivonen 1996, among many others.

to agreement information, these affixes can carry a PRED feature for the grammatical relation they construct.

If it were the case that all nonconfigurational languages could be assimilated to a model of head-marking, as is suggested by the analysis advocated by Jelinek (1984, 1989), Baker (1991, 1996a), Speas (1990) and others, nothing more would need to be said. However, as was argued in Chapter 2, this view does not adequately account for a whole typological class of nonconfigurational languages in which information about grammatical relations is constructed instead from dependent-marking morphology. In the next section, I will argue for an LFG analysis of case marking that allows these languages to also be neatly accounted for within a formal framework.

3.3 Dependent-Marking Nonconfigurationality

This work is not the first to distinguish head- and dependent-marking nonconfigurationality. Within the framework of LFG, Bresnan (1996), for example, recognizes that within the class of languages that make use of “lexocentric function specification” dependent-marking and head-marking represent two general types (see also Baker 1996b, Pensalfini 1996 and the discussion in Chapter 2, for this distinction in other frameworks).¹¹ Bresnan schematizes these two types as in (13) (Bresnan 1996:104):¹²

- (13) a ‘dependent-marking’
 $(\downarrow \text{CASE}) = \kappa \Rightarrow (\uparrow \text{GF}) = \downarrow$
 b ‘head-marking’
 $(\downarrow \text{AGR}) = (\uparrow \text{GF AGR}) \Rightarrow (\uparrow \text{GF}) = \downarrow$

Therefore, in a dependent-marking nonconfigurational language, a GF—say, SUBJ—can be associated with an NP if there is a case attribute with a particular value (represented here by κ)—say ERG—in the f-structure of the NP. Thus, in this model, grammatical functions are identified in dependent-marking languages by matching up case values with the grammatical functions that these values can be associated with, this association of case values and grammatical functions being defined elsewhere in the grammar (in the lexical entries of verbs (e.g. Simpson 1991, Austin and Bresnan 1996), and/or by default rules (Bresnan (1982a, 1996:171)), for example).

¹¹Although he does not directly address the issue of nonconfigurationality, Kiparsky (1997a, b) also presents a theory of case capturing this distinction and relatively compatible with the one I present here.

¹²The use of conditionals such as in (13) to capture the function of case marking in LFG is originally due to Andrews (1982).

In the head-marking type, on the other hand, a GF can be associated with an NP if the NP’s f-structure contains certain agreement features which match the agreement features already associated with the function through the verbal morphology (for example). We saw many instances of how this works in 3.2 above.

Notice that there is an asymmetry in the role attributed to the inflectional morphology in these two schemata. In the head-marking schema, the head-marking morphology is directly responsible for constructing the grammatical relations information: the morpheme contains a specification of the grammatical function— $(\uparrow \text{GF AGR})$ —which is then unified with the f-structure of the relevant noun phrase. Thus, for these languages, this schema captures the generalization that it is the head-marking morphology that constructs the grammatical relations.

The corresponding generalization is not captured by the schema for the dependent-marking languages, however. In these languages, the pre-theoretical generalization is that it is the case marking that identifies the argument functions. In (13a), however, this is not encoded directly, but merely falls out of the implicational relationship between certain case features and certain grammatical functions; the case morphemes themselves carry no information about grammatical function, only a case feature.

An analogous asymmetry is also present in other analyses of nonconfigurational languages such as that championed by Jelinek (e.g. 1984) and Baker (e.g. 1996), and discussed in Chapter 2. In this approach, verbal affixes in nonconfigurational languages function as the arguments of the clause, receiving Case and theta-role assignment from the verb. Thus, the intuition that it is this morphology that constructs the grammatical relations in these languages is captured. In contrast, case marking in dependent-marking nonconfigurational languages is not treated in a way that reflects its comparable importance in the identification of grammatical functions. In the analysis proposed by Baker (1996b), for example, this function of case marking follows only very indirectly from the fact that case marking is used to associate the adjunct NPs (which are all secondary predicates on his analysis) with the null pronominal arguments that control them.

3.3.1 Introducing Constructive Case

I propose to resolve this general asymmetry by treating the case morphology in dependent-marking languages as containing information that directly constructs grammatical relations. This can be done simply and intuitively within the framework of LFG indexLexical-Functional Grammar by making use of ‘inside-out’ function application, usually associated with the mechanism of ‘inside-out functional

uncertainty' (IOFU) (Halvorsen and Kaplan 1995[1988], Dalrymple 1993).¹³ The need for this mechanism has been motivated independently in the framework in the areas of anaphoric binding (Dalrymple 1993) and topicalization (Bresnan 1996: Ch. 7). As I will demonstrate in Chapters 4 and 5, this approach to case marking not only allows the role of case marking to be intuitively incorporated into the LFG framework, but can account for many unusual properties of case in Australian languages that have not been adequately accounted for in any other analysis of case.

Inside-Out Functional Uncertainty can be defined as follows (Bresnan 1996):

- (14) (i) For any f-structure f' and attribute a , (af') designates the f-structure f such that $(fa) = f'$.
- (ii) For any f-structure f' , attribute a and string of attributes x ,
 $(ef') = f'$ (e the empty string), and
 $(xaf') = (x(af'))$, and
 $(\alpha f') = v$ holds iff for some a in the set of strings α $(af') = v$.

For the most part, the analysis presented here will make use of (i), which defines the notion of 'inside-out' function application. In order to illustrate how this works, let $a = \text{SUBJ}$. In the regular designator $(f \text{ SUBJ})$, f denotes the outer f-structure: it denotes the f-structure from which one can follow a path *inwards* through SUBJ to the f-structure denoted by the whole designator (i.e. f' in (15)). Thus, the function application works from the outside in.

$$(15) \quad f: \left[\text{SUBJ} \quad f': [] \right]$$

'Inside-out' function application is exactly opposite. In the inside-out (IO) designator $(\text{SUBJ } f')$, the f' denotes an f-structure from which one can follow a path *outwards* through SUBJ to the higher f-structure denoted by the whole designator (i.e. f in (15)). Thus, in this case the function application works from the inside out.

My proposal is that case morphemes contain IO designators that directly specify the grammatical function of the f-structure to which they belong,

¹³The idea of using inside-out functional uncertainty with case marking is originally due to Mary Dalrymple, who suggested it as a way of handling multiple case marking (see Chapter 5), inspired by Avery Andrews' idea of inside-out unification (e.g. 1996). Andrews (1996) also mentions the possibility of using IOFU for this purpose.

as well as also providing the traditional case feature.¹⁴ So, for example, the information carried by the Wambaya ergative suffix *-ni* is as in (16):¹⁵

$$(16) \quad \begin{array}{l} -ni: \quad (\text{SUBJ } \uparrow) \\ \quad \quad (\uparrow \text{ CASE}) = \text{ERG} \end{array}$$

This suffix carries two pieces of information: (i) that the inner-most f-structure to which the case marker belongs (i.e. that denoted by $\uparrow$) is the value of the SUBJ attribute of the immediately higher f-structure (denoted by $(\text{SUBJ } \uparrow)$); (ii) that the f-structure denoted by $\uparrow$ (i.e. that to which the case marker belongs) contains the information CASE ERG.¹⁶ This case suffix, therefore, when attached to a nominal in the morphology, both identifies it with the subject function of the higher clause and marks the subject as having ergative case. The inflected nominal *alanga-ni* 'girl-ERG' has the structure in (17), projecting the f-structure in (18).¹⁷

¹⁴In fact, case markers do not necessarily contain these designators in all of their uses—see below for further discussion.

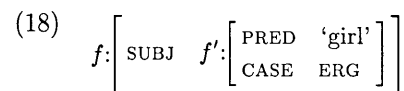
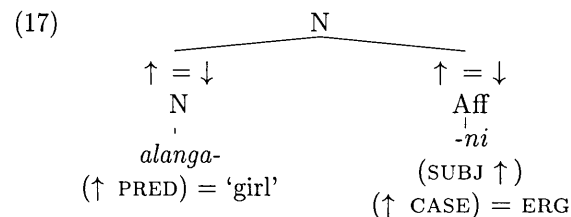
¹⁵Here and throughout this work I use grammatical function labels such as SUBJ, OBJ, ADJ, and case feature values such as ERG, ACC, NOM. However, these could be thought of as place holders for bundles of features, as has been proposed by Simpson (1983), Bresnan and Zaenen (1990), Kiparsky (1997a, b) for grammatical functions, and Jakobson (1958), Neidle (1988) for case values.

Note also that such information in (16) is actually associated with the ergative case *morpheme*, rather than with a particular morphophonological realization (such as *-ni*). However, for ease of exposition I will identify the lexical entries of morphemes with the most common realization (as in (16)) rather than using abstract morpheme labels such as ERG. As was discussed in Chapter 1, while I use a morpheme-based morphology here, the overall analysis does not depend on this view of morphology and could equally be adapted into a rule-driven analysis (e.g. Matthews (1972, 1991), Zwicky 1985, Anderson 1992, Aronoff 1994).

¹⁶The function(s) that a given case marker constructs can vary cross-linguistically. For example, an ergative case marker in a syntactically-ergative language may construct an object or oblique function, rather than the subject (Manning 1996). However, it will share the same case feature as the ergative in other languages, namely CASE ERG, which will associate it with the same semantic properties.

¹⁷I will assume for present purposes that case markers are attached by the following rule:

$$(i) \quad \begin{array}{ccc} N & \longrightarrow & N \quad \text{Aff} \\ & & \uparrow = \downarrow \quad \uparrow = \downarrow \end{array}$$



As can be seen in (18), a case marker projects two f-structures: a lower f-structure (f') for which it specifies case information, and a higher f-structure (f) of which it identifies the grammatical function fulfilled by the lower f-structure. All case markers are restricted by default to specify information about the f-structure projected by the N to which they belong (here f'), and the f-structure one level higher (here f). This is captured in the IO designator in (16) by the fact that the path from the higher f-structure to the lower f-structure is restricted to consisting of exactly one GF attribute (here SUBJ) (i.e. these chains involve a notion of ‘inside-out—as in (16i)—without involving any ‘functional uncertainty’—as defined in (16ii)).¹⁸

3.3.2 Integrating Constructive Case into the Clause

In order to see how this treatment of case marking interacts with the rest of Wambaya sentence structure, consider the simple Wambaya sentence given in (8), repeated in (19), and its corresponding c-structure (21) and f-structure (22). The information associated with each terminal constituent in the c-structure is given in (20a-d). Note that accusative case is realized with the unmarked form for nominals in Wambaya—this will be discussed in more detail below.^{19, 20}

- (19) *Dawu gin-a alaji janyi-ni.*
 bite 3.SG.M.A-PST boy.I(ACC) dog.I-ERG
 ‘The dog bit the boy.’ (elicited)

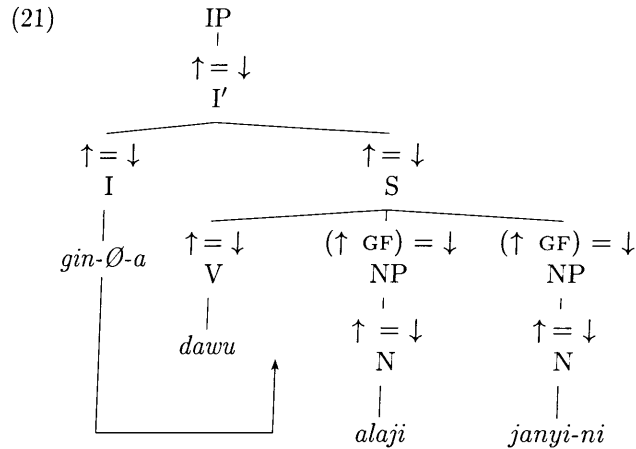
- (20) a. *gin-a*: $(\uparrow \text{ TENSE}) = \text{PST}$
 $(\uparrow \text{ SUBJ PERS}) = 3$
 $(\uparrow \text{ SUBJ NUM}) = \text{SG}$
 $(\uparrow \text{ SUBJ GEND}) = \text{MASC}$
 $(\uparrow \text{ OBJ PERS}) = 3$
- b. *dawu*: $(\uparrow \text{ PRED}) = \text{'bite } \langle (\uparrow \text{ SUBJ}), (\uparrow \text{ OBJ}) \rangle$
- c. *alaji*: $(\uparrow \text{ PRED}) = \text{'boy'}$
 $(\uparrow \text{ GEND}) = \text{MASC}$
 $(\text{OBJ } \uparrow)$
 $(\uparrow \text{ CASE}) = \text{ACC}$
- d. *janyi-ni*: $(\uparrow \text{ PRED}) = \text{'dog'}$
 $(\uparrow \text{ GEND}) = \text{MASC}$
 $(\text{SUBJ } \uparrow)$
 $(\uparrow \text{ CASE}) = \text{ERG}$

In the following c-structure, the endocentric phrases (including NP) are assigned the functional annotations given to them by the general principles of X' Theory and endocentric structure-function association given in 1.3. s, being a nonconfigurational, exocentric category in Wambaya, randomly assigns function annotations to its constituents—all assignments other than those given here will be ruled out by other principles of the grammar, as I explain below.

¹⁸In Chapter 5 however, in the discussion of case stacking, we will see more complicated examples in which each additional case marker projects an f-structure one level higher than that projected by the previous one.

¹⁹Wambaya, like many other Australian languages (Goddard 1982), can be shown to have a three-way case distinction between ergative (transitive subject), nominative (intransitive subject) and accusative (object). See Nordlinger (In Press) and 3.3.4 for discussion.

²⁰To avoid complicating the picture unnecessarily, I have simplified the representation of tense marking in these examples. In actual fact, the tense value of Wambaya clauses is determined through a complex interaction of tense marking both on the auxiliary (here the morpheme *-a* in *gin-a*) and on the verb (here represented by the unmarked form of *dawu*). See Nordlinger (1995, 1996) and Nordlinger and Bresnan (1996) for discussion.



The $\uparrow = \downarrow$ annotation on I results in the information carried by the auxiliary being unified with the f-structure for the whole IP. Thus, from the auxiliary alone, the f-structure for the clause contains the following:

(22)

$$\left[\begin{array}{cc} \text{TENSE} & \text{PAST} \\ \text{SUBJ} & \left[\begin{array}{cc} \text{PERS} & 3 \\ \text{NUM} & \text{SG} \\ \text{GEND} & \text{MASC} \end{array} \right] \\ \text{OBJ} & [\text{PERS } 3] \end{array} \right]$$

This then needs to be unified with the f-structure associated with the s, since s, being the complement of a functional category, is a f-structure co-head of the clause (see 1.3). The constituents of the s each project their own f-structures, as shown in (23a–c):

(23) a.

$$\text{dawu:} \left[\begin{array}{cc} \text{PRED} & \text{'bite' } \langle \dots \rangle \\ \text{SUBJ} & [] \\ \text{OBJ} & [] \end{array} \right]$$

b.

$$\text{alaji:} \left[\begin{array}{cc} \text{OBJ} & \left[\begin{array}{cc} \text{PRED} & \text{'boy'} \\ \text{GEND} & \text{MASC} \\ \text{CASE} & \text{ACC} \end{array} \right] \end{array} \right]$$

c.

$$\text{janyi-ni:} \left[\begin{array}{cc} \text{SUBJ} & \left[\begin{array}{cc} \text{PRED} & \text{'dog'} \\ \text{GEND} & \text{MASC} \\ \text{CASE} & \text{ERG} \end{array} \right] \end{array} \right]$$

These f-structures will force the correct assignment of functional annotations within s. For example, the v specifies that it is contained within an f-structure that has SUBJ and OBJ attributes. If this constituent is assigned $(\uparrow \text{ GF}) = \downarrow$ in the c-structure, this f-structure will be specified as functioning as the value of some GF of a higher f-structure:

(24)

$$\left[\begin{array}{cc} \text{GF} & \left[\begin{array}{cc} \text{PRED} & \text{'bite' } \langle \dots \rangle \\ \text{SUBJ} & [] \\ \text{OBJ} & [] \end{array} \right] \end{array} \right]$$

but there will be no PRED value for this higher f-structure, violating Extended Coherence, and no PRED values for the SUBJ and OBJ attributes within the lower f-structure, violating the principle of Completeness (see 1.3). Thus, any c-structure in which the v is not assigned $\uparrow = \downarrow$ will be ruled out by independent principles.

The f-structures associated with each of the NPs require that they be assigned a GF function within the higher f-structure. If both of these constituents are assigned the head relation $(\uparrow = \downarrow)$ then s will be identified both with the value of SUBJ (from *janyi-ni*) and with the value of OBJ (from *alaji*), and will be specified as having two PRED values—‘dog’ and ‘boy’, as well as two grammatical functions. Thus, this will be ruled out by (at least) the Uniqueness principle, which requires that each attribute have only one value, as well as the Argument-Function Uniqueness condition, which rules out two argument functions with the same value (see 1.3). In fact, any structure in which the verb is assigned $\uparrow = \downarrow$ will require that no NPs are assigned $\uparrow = \downarrow$ for this same reason. And since we have already seen that the verb must be assigned $\uparrow = \downarrow$, then we can conclude that the only grammatical structures are going to be those in which the NPs are annotated with $(\uparrow \text{ GF}) = \downarrow$. Furthermore, as was discussed in 3.1, the Argument-Function Uniqueness condition also ensures that the value given to the variable GF in the c-structure matches that constructed by the case morphology.²¹ If the c-structure were to assign a different grammatical function from the case marker, the resulting f-structure would contain two grammatical functions with the same value and would be ill-formed.²²

²¹Putting aside for the moment the possibility *not* ruled out by Argument-Function Uniqueness that a single argument is assigned an argument function in the morphology and a discourse function in the syntax.

²²For the purposes of this work I am assuming that GF here stands for a disjunction of all possible grammatical functions, and that these general principles of well-formedness rule out all but the grammatical f-structures that are generated. However, there are (at least) two alternative analyses possible. The first is that GF is actually an additional

The f-structure thus associated with *s* as a whole is given in (25).

$$(25) \left[\begin{array}{l} \text{PRED} \quad \text{'bite' } \langle \dots \rangle \\ \text{SUBJ} \quad \left[\begin{array}{l} \text{PRED} \quad \text{'dog'} \\ \text{GEND} \quad \text{MASC} \\ \text{CASE} \quad \text{ERG} \end{array} \right] \\ \text{OBJ} \quad \left[\begin{array}{l} \text{PRED} \quad \text{'boy'} \\ \text{GEND} \quad \text{MASC} \\ \text{CASE} \quad \text{ACC} \end{array} \right] \end{array} \right]$$

Since *s* and *i* are co-heads of the clause, this f-structure gets unified with that projected from *i*, given in (22) above, resulting in the following f-structure for the whole IP:

underspecified grammatical function that requires further specification (i.e. from the morphology) to be fully interpretable in the f-structure. One way of achieving this formally would be to decompose the grammatical functions into bundles of features (as in Simpson 1983, Bresnan and Zaenen 1990 or Kiparsky 1997b, for example). Grammatical function attributes in the f-structure would thus be mini-f-structures themselves containing these bundles of features and the appropriate values. (Johnson 1988 defines a formal system of attribute-value logic that allows attributes to be f-structures.) The attribute GF would simply be underspecified for these features, being uninterpretable as an attribute without further specification from the morphology.

A second possible analysis (suggested to me by Ron Kaplan) is to adopt the technique used originally by Kaplan and Bresnan (1982) for prepositional phrases in English. On this analysis, the annotation assigned to NP constituents in *s* would not be $(\uparrow \text{GF}) = \downarrow$, but rather $(\uparrow (\downarrow \text{GF})) = \downarrow$, and case markers would be specified as having the relevant grammatical function as the value of the attribute GF. For example, an ergative case marker would carry the information $(\uparrow \text{GF}) = \text{SUBJ}$ (in addition to its case feature and IO designator). Then, the functional annotation on the c-structure node specifies that the f-structure of the clause $(\uparrow)$ has an attribute which is the same as the value of the GF attribute of its daughter—i.e. in this case, SUBJ—and that the value of that attribute is the f-structure of the daughter $(\downarrow)$. In other words, when the NP is inflected with ergative case, meaning that the value of $(\downarrow \text{GF})$ is SUBJ, the annotation $(\uparrow (\downarrow \text{GF})) = \downarrow$ will be formally equivalent to the annotation $(\uparrow \text{SUBJ}) = \downarrow$.

This latter possibility has the advantage of forcing the function assigned to the particular NP in the c-structure to be exactly the same as that constructed by the case marker, as opposed to the disjunction analysis which overgenerates and then uses Argument-Function Uniqueness to rule out the ungrammatical structures. However, I do not adopt it here for a couple of reasons. Firstly, as we will see in Chapters 4 and 5, the IO designator in the entries of the case markers is needed independently in order to account for many properties of case marking, such as case stacking and the use of case to mark tense/aspect/mood. This analysis therefore requires the addition of more information, namely $(\uparrow \text{GF}) = X$, to the entry of the case marker, which is not needed on the disjunction analysis. And secondly, as we saw in the discussion of scrambling languages in Chapter 1, it is not always desirable to force the function assigned in the c-structure and that constructed by the morphology to be the same; in scrambling languages constituents assigned discourse functions in the syntax also construct an argument function from their case morphology.

$$(26) \left[\begin{array}{l} \text{PRED} \quad \text{'bite' } \langle \dots \rangle \\ \text{TENSE} \quad \text{PAST} \\ \text{SUBJ} \quad \left[\begin{array}{l} \text{PRED} \quad \text{'dog'} \\ \text{PERS} \quad 3 \\ \text{NUM} \quad \text{SG} \\ \text{GEND} \quad \text{MASC} \\ \text{CASE} \quad \text{ERG} \end{array} \right] \\ \text{OBJ} \quad \left[\begin{array}{l} \text{PRED} \quad \text{'boy'} \\ \text{PERS} \quad 3 \\ \text{GEND} \quad \text{MASC} \\ \text{CASE} \quad \text{ACC} \end{array} \right] \end{array} \right]$$

Thus, this analysis of case captures the fact that it is the case markers alone which construct grammatical relations in nonconfigurational languages which make primary use of dependent-marking morphology. While this effect is also achieved by analyses involving principles of case association such as that in (13a) above, these latter approaches give us an asymmetrical typological view of nonconfigurational languages: in head-marking languages, the morphology constructs information directly about grammatical function; in dependent-marking languages, however, information about grammatical function comes from the interaction between case features encoded in the morphology, and stipulated principles associating case features with grammatical functions. My analysis, in contrast, allows us to make the typological distinctions clear: nonconfigurational languages are those in which argument functions are identified only from the morphology. Within this group, head-marking languages are those where this information is encoded by head-marking morphology, and dependent-marking languages are those where it is encoded by dependent-marking morphology.

3.3.3 Arguments for Retaining Case Features

Other lexicalist treatments of case (e.g. Neidle 1988, Simpson 1991, Bresnan 1996, Lieber 1992, although cf. Kiparsky (1997a, b)) generally assume that case markers provide just a case feature (possibly decomposed into binary features (e.g. Neidle 1988, Lieber 1992)); an ergative case marker simply carries the information $(\uparrow \text{CASE}) = \text{ERG}$, for example. In the analysis presented above, I have argued that case markers can *also* carry information about grammatical function. Thus, a reasonable question to ask might be whether, given my analysis, it is necessary and/or desirable to retain the simple case feature, or whether it can be completely replaced by the IO designator encoding grammatical function. I believe that there are a number of arguments showing that it is both necessary *and* desirable to

assume that case markers (at least, in their prototypical function) carry both types of information.

Firstly, other approaches to case treat all instances of case marking in all functions to be formally alike. Case markers in a language in which they function consistently to identify grammatical relations—as in non-configurational languages like Jiwari or more configurational languages like Icelandic—are assumed to carry exactly the same information as case markers in languages where they no longer appear to serve this function (as in languages with residual case systems, like English).²³ Furthermore, in languages with productive case systems, regular uses of case carry exactly the same information as irregular uses: for example, dative case in its regular function in Icelandic is treated as formally identical to quirky dative case (e.g. Zaenen, Maling and Thráinsson 1985, Yip, Maling and Jackendoff 1987).²⁴ In contrast, my analysis provides an obvious way of distinguishing between these functions of case, thereby allowing for a simple account of their different behaviour: regular, productive case markers carry both grammatical function information and a case feature; irregular, residual and/or quirky case markers (in their quirky use) carry only a case feature.²⁵ This, therefore, reflects that fact that productive case markers, as in dependent-marking nonconfigurational languages for example, have a greater role: they take on functions carried by phrase structure (and/or head-marking morphology) in other languages. Irregular or quirky uses of case have no such function (at least, synchronically): they simply carry a grammatical feature to satisfy a formal requirement elsewhere in the grammar (e.g. in the lexical entry of the predicate). This constructive model of case marking can therefore capture both the similarities between case markers in all languages—they carry a case feature with one of a fixed,

²³Peter Sells makes an interesting point about case on pronouns in English that shows it to be fundamentally different from productive case systems in languages like Wambaya or Japanese. There are many constructions in English in which the form of a pronoun shows great variation among speakers (e.g. 'between you and I/me', 'This is she/her', 'Sam and I/me went home', etc.). In addition, as contrasts like 'Who did you talk to' and 'To whom did you talk' show, the case form of a word may differ depending on its position in the structure even though its syntactic function remains the same (Paul Kiparsky, pers. comm.) Such variation between grammatical case forms does not seem to be found in languages where case marking functions consistently to construct grammatical relations.

²⁴i.e. the difference between the two functions is considered to follow only from other parts of the grammar. Andrews (1990b) and Sag, Karttunen and Goldberg (1992) provide analyses distinguishing default case from quirky case at a functional level, but even here this difference is the result of other facts, rather than reflecting a difference in the information carried by each type of case marker.

²⁵Case marking on predicate nominals is another example of a case marker that doesn't construct a grammatical relation—see below for discussion.

universally available set of values—as well as the differences—in some languages (some) case markers can have the additional function of constructing grammatical relations.

Related to this point is one concerning the modelling of historical change. Historical change—at least with respect to grammatical elements—can be modelled in LFG as involving the loss or addition of grammatical features, each of which provides partial information about the syntactic context. The development of verbal inflections out of independent pronouns, for example, involves the loss of the PRED feature of the pronoun (in addition to the morphological process by which the pronoun becomes a bound element) (Bresnan 1996: Ch. 6, Börjars, Vincent and Chapman 1996, Vincent and Börjars 1996, Börjars and Chapman 1996, Toivonen 1997). Therefore, if increased function is analysed as involving additional features, as in the analysis of productive, regular case proposed here, change involving the loss of that function can be neatly modelled as involving the loss of the relevant feature. Thus, if a language changes from a dependent-marking nonconfigurational language into a configurational language with residual case marking, the case markers can be seen to have lost the feature which constructs grammatical relations—this information may now come from the phrase structure instead—but retained the case feature. Similarly, change in the other direction can be seen as involving the transferral of grammatical relations information from the phrase structure into the case morphology, supplementing the traditional case feature. In contrast, if productive case markers were to contain information of a totally different type than that of irregular and/or residual case markers—say, for example, the former carried only IO chains constructing grammatical function, and the latter traditional case features—change in either direction would involve a complete replacement of the information carried by case markers, and the case markers at the end of the change would have no functional resemblance to their predecessors.

Other arguments in favour of retaining the case feature in my analysis are more technical. For example, it is possible for a case morpheme to construct more than one grammatical function. In Wambaya (as in many Australian languages (Blake 1977)) the ergative case marks both transitive subjects and instruments. This can be captured in my analysis by assuming that the ergative case marker has alternative IO chains in its lexical entry; it can construct either the subject relation, or an adjunct relation (assuming for present purposes that instrumental phrases are to be treated as adjuncts).²⁶

²⁶Here and throughout this work I will simplify things by treating adjuncts as single value attributes, of which a clause may have more than one. In order to avoid violating

- (27) *-ni*: (SUBJ ↑) ∨ (ADJ ↑)
(↑ CASE) = ERG

The presence of a single case feature shows clearly that these are not two homophonous case suffixes, but simply alternative functions of a single morpheme. Thus, the fact that all the allomorphic realizations are consistent irrespective of the function will follow naturally.

Perhaps the strongest argument in favour of retaining the case features in my analysis is that case features are needed to distinguish between different cases that happen to construct the same grammatical function. For example, semantic cases such as locative, ablative and instrumental all construct the adjunct relation, but with clearly distinct semantic effects. The IO designator (ADJ ↑) provides purely formal information; the semantic differences between the cases is encoded in the different case features (LOC, ABL, INST).²⁷ Another similar example involves the distinction between ergative and nominative subjects, to which we will now turn.

3.3.4 Grammatical Case Assignment

Since case markers in this model specify their grammatical function in the clause, this is largely sufficient for determining their distribution: case-inflected nominals will only be possible in positions where the grammatical function they construct is licensed. This is an advantage over case-feature approaches,²⁸ which have generally had to resort to other means to capture the distributional facts.²⁹ Neidle (1982, 1988), for example, uses constraining equations for this purpose: on her account, case inflected nominals do not provide a case feature themselves, but require that it be provided by something else in the clause (i.e. from phrase structure rules, or from the lexical entries of predicates). This ensures that case inflected nominals will only be able to occur when their presence is licensed by something which provides their required case feature. Andrews (1982) achieves the same result with a universal Case Convention stipulating that 'CASE appears in a functional structure only if there is a rule or constraint which requires it' (p. 485). In the present model, however, such stipulations are not re-

functional Uniqueness, I will sort clause-level adjuncts according to their semantic relation in the f-structure: locative case markers will introduce the ADJ_{LOC} function, and so on. This is slightly different from standard LFG in which adjuncts are generally treated as sets (e.g. Kaplan and Bresnan 1982, Bresnan 1996). To incorporate a set analysis into the present approach would simply require substituting (ADJ ∈ ↑) where I have (ADJ ↑) (Mary Dalrymple, pers. comm.).

²⁷I will return to a more detailed discussion of my treatment of semantic case shortly.

²⁸i.e. those approaches in which case markers are considered to carry simply a case feature.

²⁹I am grateful to Avery Andrews for bringing this to my attention.

quired: the case markers specify the grammatical function that they serve, and the general principles of Completeness and Coherence will ensure that they appear only in contexts which allow that grammatical function. The greater freedom of the nominative (or absolutive) case in many languages is captured automatically by the fact that it is the only case that does not construct a grammatical function, thus its distribution is less restricted (see below for discussion).

However, the grammatical function alone will not account for all aspects of the distribution of grammatical cases, since it is possible for different cases to construct the same grammatical relation, but with different predicates. For example, as we have seen, the ergative case marker constructs the subject relation as well as assigning it the case feature ERG. However, only subjects of certain classes of verbs (usually, transitive verbs) can be inflected with the ergative case. In Wambaya, for example, subjects of transitive verbs such as *daguma* 'hit' and *ngajbi* 'see' must be inflected with the ergative case, while those of the intransitive verbs *bardbi* 'run' and *bardgu* 'fall' cannot be; they appear in the nominative case instead. Thus, we need some way of ruling out the occurrence of the ergative case with subjects of verbs such as these.

The question as to how the distribution of the ergative case marker should be captured formally is not a trivial one, and it is beyond the scope of this work to provide a detailed analysis here.³⁰ For present purposes, I will assume that for languages like Wambaya, where there seems to be an absolute correlation between the presence of an ergative subject and grammatical transitivity (at least, in that one direction), the ergative case marker carries the information in (28), in which it not only constructs the subject relation, but specifies that the clause must contain an object as well.³¹

- (28) ((SUBJ ↑) OBJ)
(↑ CASE) = ERG

Any transitive verbs that idiosyncratically select nominative subjects (such as *ngarlwi* 'speak' in its transitive use 'speak (a language)') could be specified as such in their lexical entries (i.e. (↑ SUBJ CASE) = NOM), thus ruling out the appearance of the ergative case marker in these instances.

³⁰See Hale (1982b), Nash (1986), Simpson (1991) for discussion of linking in Warlpiri. For discussion of linking and the Lexical Mapping Theory in LFG indexLexical-Functional Grammar see Bresnan and Kanerva (1989), Bresnan and Moshi (1990), Bresnan and Zaenen (1990), Zaenen and Engdahl (1994), among many others.

³¹Note that this is basically equivalent to the analysis given by Bittner and Hale (1996) in which the ergative case is licensed by the presence of a "case competitor" in the clause.

However, there are many languages in which this correlation between ergative case marking and transitivity is not so absolute. In Warlpiri, for example, subjects of cognate object verbs such as *sing* take ergative subjects even when used intransitively:

- (29) *Ngarrka-ngku ka yunpa-rni.*
 man-ERG PRES sing-NPST
 ‘The man is singing.’ (Hale 1982b:237, ex. 30a)

Such uses would not follow if ergative case always required the presence of an object in the f-structure, as in (28). Simpson (1991) assumes that these intransitive ergative subjects share the same thematic roles as subjects of transitive verbs, namely the thematic roles of Agent, Causer and/or Perceiver (pp. 350-351), and that this is why they receive the ergative case.³² Under the present model this can be captured by encoding the semantic restriction into the ergative case marker. For example, the ergative case could specify that the argument to which it is attached have the semantic properties associated with agents/causers/perceivers (e.g. Dowty 1991); for present purposes, let’s refer to such properties as α . In addition to the regular grammatical function and case feature then, the ergative case marker could carry the information in (30):³³

- (30) $(\uparrow \sigma \alpha)$

where σ is a projector defining a mapping from f-structure to semantic structure and $\uparrow \sigma$ represents the semantic structure that is reachable from the f-structure denoted by $\uparrow$ (i.e. that to which the case marker belongs) (Dalrymple 1993:104). Thus, (30) encodes the information that the semantic structure corresponding to the f-structure of the nominal to which the ergative case marker is attached has the semantic property of α (defining Agents/Causers/Perceivers). Other semantic properties associated with case markers (such as the fact that inanimate objects marked with the accusative case must be definite in Hindi (T. Mohanan 1994a:83)) could also be captured in this way.

Nominative case (or absolutive case, for languages like Warlpiri) is not linked with semantic roles, and I will assume it to be assigned by a rule in the morphology which obligatorily applies to all nominals not already

carrying a case feature.³⁴ This rule does not assign any grammatical function, but only the case feature ($\uparrow \text{CASE}$) = NOM. Principles of Completeness and Coherence driven by the requirements in the argument structure of the verb will ensure that the correct function is associated with the nominative-marked nominal in all cases. For example, the argument structure of an intransitive verb will specify that it requires a subject. Since case markers generally construct their grammatical function, most will not be compatible with the grammatical function of subject (semantic cases construct the ADJ function, accusative case constructs the OBJ function, etc.). Only nominals inflected with either the ergative case (which constructs SUBJ) or the nominative case (which constructs nothing) will be able to fulfill the grammatical function of SUBJ. However, the ergative case has additional requirements that there also be an object (in Wambaya) and/or that the subject have a particular semantic property (e.g. in Warlpiri), and so in this case only nominals inflected with the nominative case will generate well-formed structures. In addition, we can invoke the principle of morphological blocking (Andrews 1990a) to ensure that nominative nominals do not appear in places that would be compatible with other cases, such as as direct objects (which take the accusative case), and as modifiers within NPs having different case values.³⁵

3.3.4.1 Split ergativity

Wambaya, like many Australian languages, has a ‘split-ergative’ case marking system (Silverstein 1976, Dixon (1979, 1994), Goddard 1982), in which there is a different case marking pattern for different sub-classes of nominals. Consider the following:³⁶

³⁴This at least, is true for Wambaya, where all nominals must have case in the syntax. Warlpiri, however, like many other Australian languages, requires case marking only on the right most member of the NP: caseless nominals are allowed as long as they precede all case-marked nominals within the NP, and are followed by at least one. In Warlpiri, therefore, this default rule applies in the syntax (to clause-level NPs), as assumed by Simpson (1991:253). The case marking patterns of Australian languages will be discussed in more detail in Chapter 6.

In languages that allow case stacking, this rule will also optionally apply to nominals already carrying a case feature, in which case it will be subject to the principle of morphological composition (see Chapter 4).

³⁵Case agreement among NP constituents will be discussed in more detail in Chapter 4.

³⁶Following standard conventions, I use A, S and O to refer to transitive subject, intransitive subject and transitive object respectively (Dixon 1972).

³²It has long been argued that case marking is (in part) semantically-based (e.g. Wierzbicka (1980, 1981), Hale 1982b, Simpson 1991, T. Mohanan 1994a, see also Jakobson 1958, Neidle (1982, 1988), Kiparsky 1997b).

³³Of course, I am abstracting away from many details of the semantic representation in order to make the general point.

(31)

<i>Gloss</i>	A	S	O
'girl'	alanga-ni		alanga
'2.SG'	nyamirnji		
'2.PL'	girriyani		girra

As shown in this table, there are three different case marking patterns in Wambaya: regular nominals inflect according to an ergative/absolutive pattern; singular pronominals make no core case distinctions; and non-singular pronominals have a nominative/accusative pattern. These three different case marking patterns define three substitution classes, as indicated by the three columns (A, S, and O) in (31), although no nominal actually makes this tripartite distinction morphologically.

Many researchers have argued that such systems highlight the need to separate CASES from CASE MARKERS (Wierzbicka (1980, 1981), Goddard 1982, Blake (1987, 1994), T. Mohanan 1994b): CASES are the sets of mutually substitutable forms, while CASE MARKERS are the actual morphophonological realisations of these on the nominals. Thus, in Wambaya, the interaction of the different case marking systems reveal three distinct cases, which I will refer to as ergative (A), accusative (O) and nominative (S, as well as the citation form, predicate form and general unmarked form) following Goddard (1982). Regular nominals have homophonous accusative and nominative forms; non-singular pronominals have homophonous ergative and nominative forms; and singular pronominals have homophonous forms for all three core cases.

As Goddard shows, analysis of a three-way case system in languages such as Wambaya simplifies enormously many statements about the grammar. For example, the CASE of transitive subjects can be defined as 'ergative', rather than 'ergative' for regular nominals and 'nominative' for pronominals; the CASE of nominal predicates can be stated as 'nominative' rather than 'absolutive' for regular nominals and 'nominative' for pronominals, and so on. Furthermore, rules of agreement between co-occurring nominals that inflect by different patterns are greatly simplified: appositive constructions in which both a pronominal and a nominal in Wambaya refer to a transitive subject would require agreement between a nominative (pronominal) and an ergative (nominal) on an analysis that did not recognize a tripartite system of CASE for the language.³⁷

³⁷Kiparsky (1997b) presents some detailed arguments against the Goddard tripartite analysis. In particular he shows that this analysis cannot predict why it is that there are systems that collapse ergative and nominative, and those that collapse nominative and accusative, but none that collapse ergative and accusative. On the present analysis this can be captured by the fact that ergative and accusative both construct distinct grammatical functions while nominative is simply a default case assignment. Moreover,

This argument is made stronger by the fact that there are many Australian languages that actually do distinguish the three cases morphologically, at least for some sub-classes of nominals. For example, in Pitta Pitta nominals in the non-future tense are marked with *-lu* (A), *-nha* (O), or nothing (S) (Blake 1979b) and in Dhalandji all nominals except for the 1 SG pronoun have a similar three-way system (*-lu* (A), *-nya* (O) and unmarked (S)) (Austin 1981b).³⁸

In this work, I will be concerned with CASES, rather than with the particular markers that realize them.³⁹ I will assume that the morphological component of the grammar corresponds to two levels of structure: the morphosyntactic level, at which morphemes are combined and the f-structure for the word is constructed; and the morphophonological level, at which the different morphemes are realized. At the morphosyntactic level, Wambaya has three core cases: ergative (32), accusative (33) and nominative (34).⁴⁰

It may be that this fact follows from a purely functional motivation: ergative and accusative mark the two arguments in a simple transitive clause while nominative marks the single argument in an intransitive clause; if case marking systems arise out of a need to distinguish the arguments of a verb, the most advantageous place to mark a morphological contrast would be between the two arguments of a single verb (Anderson 1976). This would then predict that if a language was going to mark a case distinction among grammatical arguments at all, it would first distinguish ergative (A) from accusative (O). Other arguments presented by Kiparsky (1997b) involve the conditions governing transitivity parallelism effects in different ergative languages. He shows convincingly that a simple three-way analysis such as that presented by Goddard cannot adequately account for the typological variation found in the identity requirements for coordination of arguments of different clauses: whether transitive subjects can be coordinated with intransitive subjects, intransitive subjects with transitive objects, and so on. It is beyond the scope of this work to explore this issue here, but as far as I can tell, this problem is avoided by the present analysis since case markers contain grammatical function information as well as case features. The identity requirements of coordinated arguments can then be stated in terms of either grammatical functions, or case features, or both.

³⁸See Goddard (1982:177-8) for discussion of many other Australian languages that also show a three-way case distinction for some nominals.

³⁹Although, I will often use markers to identify the lexical entries of different cases for expository purposes.

⁴⁰Note that the claim is not that all (Australian) languages have this tripartite distinction. Warlpiri, for example, has a straight ergative/absolutive marking system on all nominals (including pronouns) (Nash 1986), and there is therefore no reason to assume that Warlpiri has anything more than those two core cases.

This solution is not the only one available to us in the constructive case model, but merely the simplest one, and therefore the easiest one to adopt for present purposes. An alternative approach would be to assume Wambaya to be like Warlpiri in that it only has two cases—ergative and absolutive—and that certain functions and/or case values are encoded within the lexical entries of the pronouns. Hence, all (subject) pronouns would contain an optional ergative specification: ((SUBJ ↑), (↑ CASE) = ERG), which would allow them to function as transitive subject. In addition, the object pronouns would carry the object specification (OBJ ↑) to ensure that they cannot be used in

$$(32) \quad \text{ERG: } ((\text{SUBJ } \uparrow) \text{ OBJ}) \\ (\uparrow \text{ CASE}) = \text{ERG}$$

$$(33) \quad \text{ACC: } (\text{OBJ } \uparrow) \\ (\uparrow \text{ CASE}) = \text{ACC}$$

$$(34) \quad \text{NOM: } (\uparrow \text{ CASE}) = \text{NOM}$$

That certain of these distinctions are neutralized at the morphophonological level by different subclasses of nominals is an issue worthy of detailed explanation, but not one that will be addressed in this work (see Kiparsky 1997b for detailed discussion).

3.3.5 Semantic Case

It is common to draw a distinction between grammatical, or syntactic, case and semantic case (e.g. Mel'čuk 1986, Blake 1994): the former is solely concerned with identifying the particular syntactic function of the nominal and includes such cases as nominative, accusative, dative; while the latter also expresses a particular semantic relationship between the nominal to which it is attached and some other participant in the discourse—examples of semantic cases include locative case and allative case. In many languages this difference is reflected syntactically. For example, the semantic relationships associated with semantic case are often expressed by prepositions (e.g. 'on', 'towards' in English) which function as predicates, taking a noun phrase as their complement. In contrast, grammatical case is simply a feature associated with noun phrases—it does not have a predicative function, nor does it take the noun as its argument.

The fact that this difference exists syntactically in many languages has led some researchers to analyse such a formal distinction even in languages in which both types of relationship are expressed by case markers. Simpson's (1991) analysis of Warlpiri, for example, treats grammatical and semantic case markers as being substantially different. In her analysis, grammatical case markers carry only a case feature (e.g. $(\uparrow \text{ CASE}) = \text{ERG}$). When these case suffixes are attached to a nominal stem, the nominal stem is the functional head of the whole nominal, yielding an f-structure as in (35) for the nominal *kurdu-ngku* 'child-ERG':

$$(35) \quad \left[\begin{array}{cc} \text{PRED} & \text{'child'} \\ \text{CASE} & \text{ERG} \end{array} \right]$$

Semantic case suffixes, on the other hand, are analysed as introducing their own PRED feature, and taking the nominal stem to which they are attached as their OBJECT_θ argument. Thus, in this case it is the case marker which is the functional head of the nominal, as indicated in the morphological rule in (36):

$$(36) \quad \text{N} \longrightarrow \text{N}^{-1} \quad \text{Aff} \\ (\uparrow \text{OBJ}_\theta) = \downarrow \quad \uparrow = \downarrow$$

The f-structure associated with a nominal such as *karru-ngka* 'creek-LOC' is therefore as in (37) (Simpson 1991:231):⁴¹

$$(37) \quad \left[\begin{array}{cc} \text{PRED} & \text{'LOC } ((\text{SUBJ}) \text{ OBJ}_\theta) \\ \text{OBJ}_\theta & \left[\begin{array}{cc} \text{PRED} & \text{'creek'} \\ \text{CASE} & \text{LOC} \end{array} \right] \end{array} \right]$$

Simpson gives two main arguments for treating semantic case markers in this way. The first is that this analysis of semantic case markers captures the functional similarity between these affixes and prepositions in languages like English (Simpson 1991:223). The second argument is that there are examples in which semantic case markers clearly function as main predicates, as in (38):⁴²

$$(38) \quad \text{Ngaju pirli-ngka} \\ \text{I} \quad \text{rock-LOC} \\ \text{'I am on the hill.' (p. 215, ex. 193a)}$$

The only sensible interpretation of this sentence has the locative case suffix as the predicate, with *ngaju* and *pirli* as its arguments. Note that

⁴¹Simpson also assumes a morphological rule which assigns the equation $(\downarrow \text{CASE}) = \text{C}$ to the nominal to which a case-suffix C attaches (p. 234). Thus, it is by virtue of this rule that the f-structure of the OBJ_θ in this example contains the information CASE LOC.

⁴²Simpson notes that examples such as these are only marginally acceptable in Warlpiri, and that a verbal construction such as in (i) is preferred (p. 215):

$$(i) \quad \text{Ngaju ka-rna} \quad \text{nyina-mi pirli-ngka} \\ \text{I} \quad \text{PRES-1.SG.S sit-NPST} \quad \text{rock-LOC} \\ \text{'I am sitting on the hill.' (p. 215, ex. 193b)}$$

However, examples such as (38) are perfectly acceptable in other languages, such as Wambaya (Nordlinger, In Press).

subject position. Default case assignment of absolutive would assign absolutive case to all object pronouns, and to other pronouns that do not have the ergative feature active. Absolutive case would also be assigned to regular nominals that are not inflected with the ergative case marker.

if one were to assume that *ngaju* was the subject of the nominal predicate *pirli*, rather than of the case marker, the sentence would have the absurd meaning ‘I am a rock’. Since there is evidence that some semantic case markers can be used as predicates, supporting a structure as in (37), the simplest position appears to be to assume that all semantic case markers have this structure also (see also Andrews 1996:9).

While these are both reasonable arguments for analysing semantic case markers in this way, there are also good arguments (some of which are noted by Simpson (1991:223ff)) for treating all case markers—both grammatical and semantic—to be formally alike, and allowing the differences between them to be captured in the semantic interpretation.

Firstly, the parallelism between semantic case markers in Warlpiri and prepositions in English is not absolute and there are many ways in which semantic case markers are functionally identical to grammatical case markers. For example, semantic case markers, like grammatical case markers but unlike prepositions, have a concord use as shown in (39) from Warlpiri:

- (39) *Kirri-ngka wiri-ngka-rlipa nyina-ja*
 large.camp-LOC big-LOC-1.PL.INC.S sit-PST
 ‘We sat in the large camp.’ (Simpson 1991: 130, ex. 105a)

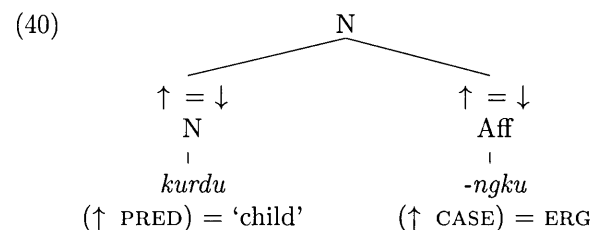
In the locative noun phrase in this example, both the head and the attribute are inflected with the locative case. Yet, since both appear before the auxiliary, we know that they must belong to a single c-structure phrase (see 3.1). If both locative case suffixes were treated as predicates in this example, the resulting f-structure for the locative phrase would have two PRED values, one from each instantiation of the locative case suffix. The Uniqueness condition (Bresnan 1996:38), which requires that each attribute have a unique value, along with the assumption that each instance of a semantic form (i.e. each PRED value) is distinct (Kaplan and Bresnan 1982:225) means that the two PRED values of the two locative suffixes could not unify, and the structure would be ungrammatical. Therefore, in order to account for this concordial use of semantic case suffixes, Simpson (1991) assumes that the PRED feature is optional: in (39), only one of the locative case suffixes is functioning as a predicate, the other is simply contributing a case feature and thus behaving exactly as grammatical case suffixes do on her analysis. Even on Simpson’s analysis then, semantic case markers have a function in which they behave exactly as grammatical case markers.⁴³

⁴³Avery Andrews (1996) offers an alternative account in which PREDs introduced by closed-class items can be parametrically specified as exceptions to the assumption that PRED values can not unify (p. 11). Thus, for him, both instances of the locative case

It seems, therefore, that the similarity between semantic case suffixes and prepositions is not absolute, and that in fact, there are alternative reasons for considering semantic case markers to be formally similar to grammatical case markers.

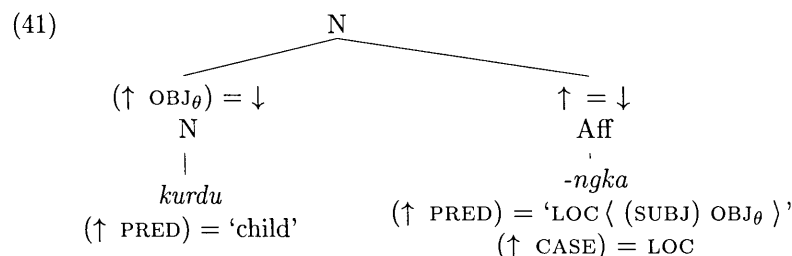
Secondly, even in languages in which such constructions as (38) are perfectly acceptable, it is generally the case that only a small subset of semantic case markers can have this function. In Wambaya, for example, both locative case, and dative case with purposive function can function as matrix predicates, as can derivational suffixes like the privative and propriative,⁴⁴ but other semantic case suffixes, such as the allative and the ablative can not. If all semantic case suffixes introduced their own PRED values, it is not clear why only certain case suffixes could actually function as matrix predicates. Instead, this can be captured by assuming that semantic case suffixes usually don’t have PRED values, and that those few that *can* function as predicates have an alternative function analogous to derivational suffixes, and an alternative lexical entry in which they do have PRED values.

Finally, Simpson’s analysis of semantic case markers requires complicating the morphology. This is due to the fact that words consisting of a nominal stem followed by a case suffix can have one of two possible structures: either both the nominal stem and the case suffix are co-heads, as with grammatical case suffixes and concordial semantic case suffixes (40), or the nominal stem is an OBJ_θ argument of the case marker, as with semantic case suffixes in all other functions (41):

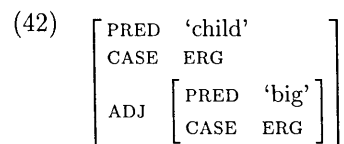


suffix in this example would be functioning as predicates, with the two PRED values simply unifying in the f-structure of the NP. While this approach has the advantage of maintaining a single lexical entry for the semantic case suffixes in all functions, it greatly weakens the constraint against unifying separate instances of semantic forms, and thus seems undesirable.

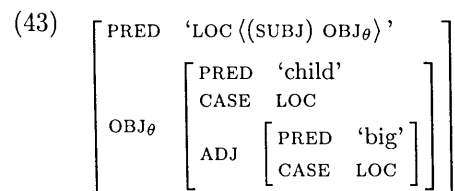
⁴⁴There has been some debate in the Australianist literature over whether these two common affixes are best treated as derivational or inflectional (see Dench and Evans 1988 for discussion). While they are clearly case suffixes in many languages—in Martuthunira, for example, they participate in case stacking along with all other case markers (see Dench and Evans 1988, Dench 1995a and Chapter 5)—in Wambaya these suffixes are clearly derivational. Evidence includes the fact that the propriative and privative affixes, unlike regular case suffixes, inflect for both gender and case (Nordlinger, In Press).



The result of this is that we need two different morphological rules to account for the affixing of case markers (given in (44) and (36) respectively), and we also need two different ways of dealing with nominal modifiers.⁴⁵ In the structure in (40), the stem *kurdu* functions as the (co-)head of the nominal. Thus, a modifying nominal, say *wiri-ngku* 'big-ERG' will have the function of ADJUNCT, in order to produce the f-structure in (42) for the phrase *kurdu-ngku wiri-ngku* 'child-ERG big-ERG':⁴⁶



In contrast, when the nominal is inflected with a semantic case it does not function as a (co-)head, but as the OBJ_θ argument, as shown in (41). In this case, then, a modifying nominal, say *wiri-ngka* in *kurdu-ngka wiri-ngka* 'child-LOC big-LOC', does not have the simple ADJUNCT function (which would mean it was modifying the locative PRED feature), but must have the function of OBJECT_θ ADJUNCT in order for the modifying nominal to be placed within the appropriate f-structure, as in (43):



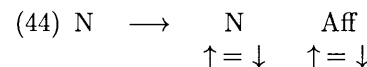
Thus, on this analysis of semantic case markers, the formal account

⁴⁵The following discussion is concerned with Simpson's account of nominal modification only. I show how such modification proceeds in the current model in Chapter 4.

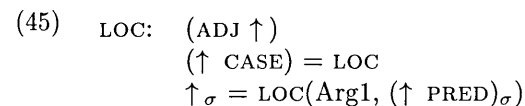
⁴⁶Note that I am including in these f-structures only the information that is relevant to the issue under discussion.

has to allow for duplicate functions—whenever a nominal can function as an ADJ, it must also be able to function as an OBJ_θ ADJ. However, the distribution of these two functions is completely predictable: a modifier will only have the latter function if it is modifying something inflected with a semantic case marker, and will have the former function otherwise. It seems less stipulative, then, to assume that the modifier has the same function in both cases—it always functions to modify the nominal stem—and that the more predicative nature of the semantic case markers follows instead from their semantics (see below).

Therefore, in light of these considerations and in the interests of formal simplicity, in this work I will treat grammatical and semantic case markers as formally the same.⁴⁷ I will assume that the nominal stem is always the functional head of the nominal word, and that the case marker is affixed by the simple morphological rule given in (44):



In addition, I will assume that the different case features carried by the case suffixes trigger different interpretations in the semantics, and that this accounts for the fact that some case markers, namely those traditionally classified as semantic case markers, have more semantic content than others: just as the feature CASE ERG may be associated in the semantics with a property such as agentivity (see the discussion in 3.3.4), the feature CASE LOC may be interpreted as referring to a locative predicate relating two particular arguments, a subject (here represented with Arg1) and the (referent of the) stem to which it is attached. For example:⁴⁸



Recall from 3.3.4 that $\uparrow_\sigma$ represents the semantics associated with the f-structure denoted by $\uparrow$. Thus, the equation $\uparrow_\sigma = \text{LOC}(\text{Arg1}, (\uparrow \text{PRED})_\sigma)$ here encodes the fact that the semantics of the f-structure containing the locative case marker is the relation LOC applied to a subject and a second argument, which is defined as the semantics associated with the PRED of

⁴⁷It is important to note, however, that nothing hinges on this analysis of semantic case marking: it would be straightforward to incorporate Simpson's analysis into the constructive case model presented here.

⁴⁸I leave aside here the issue of how the subject of the LOC relation is interpreted. We will see an example of this in Chapter 5.

that f-structure, namely the PRED of the nominal to which the locative case marker is attached.

3.3.6 Conclusion

In this section I have introduced an analysis of case marking that captures its functional role in directly constructing grammatical relations in dependent-marking nonconfigurational languages. In the following chapters I will explore the ramifications and benefits of this approach in more detail. In the next section I will summarize the typological picture as I have presented it, and show how the approach to linguistic structure presented here can account for all the basic language types discussed in Chapter 2, as well as languages that involve interactions between them.

3.4 Summary

I have formally identified three primary ways in which languages can encode information about grammatical relations: (i) in the phrase structure (i.e. by way of functional annotations in the c-structure rules); (ii) from verbal agreement morphology; (iii) or from the case morphology. And I have associated these three different possibilities with three different typological classes of languages: configurational languages (which make primary use of (i)), head-marking nonconfigurational languages (which make primary use of (ii)), and dependent-marking nonconfigurational languages (which make primary use of (iii)).

In order to keep the discussion as clear as possible, I have talked about languages as if they can all be classified as belonging to one of these three distinct types. In fact, as was discussed in Chapter 2, this is very rarely the case; more usually, languages fall between one or more of these typological groups, having mixtures of the different grammatical properties. For example, many languages have both head-marking and dependent-marking properties; many also mix configurational and nonconfigurational properties (i.e. having information about grammatical relations coming both from the phrase structure and the morphology). One of the substantial benefits of the model of grammar that I have presented here is that it allows for, and thus predicts, such interaction.

As we have seen, in the framework of LFG the same type of information about syntactic relations can be encoded in the morphology as in the syntax. Furthermore, since these two components of the grammar are independent, parallel structures, there is nothing preventing the presence of the same information in both places at the same time. Thus, a language can encode information about grammatical relations in more than one place in a single structure, just as long as the information is compatible under unification. For example, Wambaya, as we have seen, has a mixture

of head-marking and dependent-marking properties. While the primary information about grammatical function is constructed by the case morphology, bound pronouns in the auxiliary encode some of this information also. Consider the following example:

- (46) *Alanga-ni ngiy-a dawu darranggu.*
 girl.II(ERG) 3.SG.F.A-PST bite tree.IV(ACC)
 'The girl chopped the tree.' (elicited)

The (simplified) f-structure associated with the NP *alanga-ni* is as in (47), the subject function having been constructed by the IO chain (SUBJ ↑) in the lexical entry of the ergative case marker:

- (47)
$$\left[\text{SUBJ} \begin{bmatrix} \text{PRED} & \text{'girl'} \\ \text{GEND} & \text{FEM} \\ \text{CASE} & \text{ERG} \end{bmatrix} \right]$$

Now, the subject function is also constructed by the subject bound pronoun *ngiy(i)*- in the auxiliary, the auxiliary having the f-structure in (48). Note that it provides person information about the object also.

- (48)
$$\left[\begin{array}{cc} \text{TENSE} & \text{PAST} \\ \text{SUBJ} & \begin{bmatrix} \text{PERS} & 3 \\ \text{GEND} & \text{FEM} \\ \text{NUM} & \text{SG} \end{bmatrix} \\ \text{OBJ} & \begin{bmatrix} \text{PRES} & 3 \end{bmatrix} \end{array} \right]$$

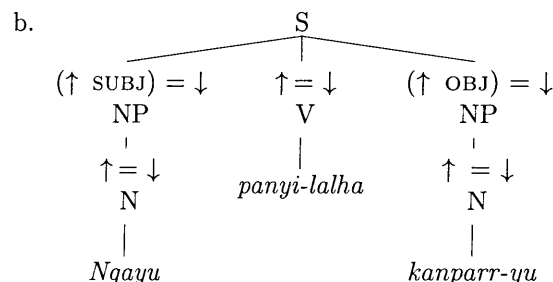
Thus, in this example, the grammatical relation of subject has been constructed from two sources: from the case marking and from the agreement marking in the auxiliary. This is nonproblematic in LFG—the two f-structures will simply unify, resulting in the following f-structure for the subject as a whole:

- (49)
$$\left[\text{SUBJ} \begin{bmatrix} \text{PRED} & \text{'girl'} \\ \text{PERS} & 3 \\ \text{NUM} & \text{SG} \\ \text{GEND} & \text{FEM} \\ \text{CASE} & \text{ERG} \end{bmatrix} \right]$$

Similarly, there are languages in which grammatical relations are projected from the phrase structure and from the morphology; these languages

have both configurational and lexocentric properties. Martuthunira, a language of Western Australia, is an example of such a language. Being a Pama-Nyungan language, Martuthunira is related to languages of the non-configurational dependent-marking type (e.g. Jiwarli, Warlpiri, etc.) and, like these languages, has extensive case morphology, obligatorily marked on all NPs (Dench 1995a). However, Martuthunira is not obviously non-configurational, showing a strong tendency for SVO word order (Dench 1995b). It appears, then, that Martuthunira may be in the process of developing from a nonconfigurational dependent-marking language, like its relatives, to one in which grammatical relations are encoded in the phrase structure also. Once again, this situation is easily captured in the model presented here. Consider the following Martuthunira sentence. For present illustrative purposes, I will assume that this has the (simplified) structure in (50b).⁴⁹

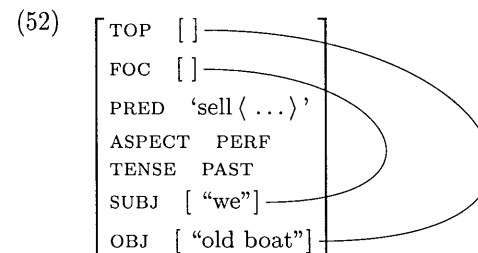
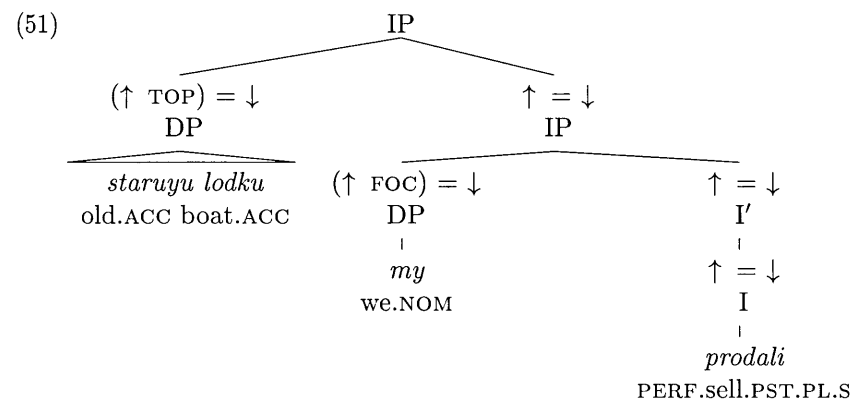
- (50) a. *Ngayu panyi-lalha kanparr-yu.*
 1SG.NOM step-PST spider-ACC
 'I stepped on a spider.' (Dench 1995a:67, ex. 4.1)



The IO designator (OBJ ↑) associated with the accusative case form *kanparr-yu* constructs the object relation, identifying the f-structure associated with the nominal in N as its value. The (↑ OBJ) = ↓ annotation in the phrase structure likewise identifies the f-structure associated with the nominal in N (since it is the head of the NP) with the object function of the clause. The information projected from the two sources is therefore consistent and unification is possible.

Scrambling languages constitute another class of languages that make use of both configurational and lexocentric properties. In 1.3 we saw that DP constituents in scrambling languages carry case morphology identifying their argument function, allowing them to appear in non-canonical, non-

argument positions without the need for extraction. Recall the Russian example given in 1.3 and repeated here.



Clearly, in the same way that we have seen for the dependent-marking nonconfigurational languages discussed here, the case morphemes in Russian will carry an IO designator constructing their grammatical function; accusative case, for example, carrying the designator (OBJ ↑). Thus, each of the DPs in this example have two functions in the f-structure: a discourse function, assigned by the phrase structure, and an argument function constructed by the case morphology.

In this way then, the model presented here can not only account for languages in which grammatical relations information is projected from a single source, as in purely nonconfigurational dependent-marking languages like Jiwarli, but it can also accommodate the many languages in which this information comes from more than one source, as in Wambaya, Martuthunira or Russian. This is made possible with a framework such as LFG in which the grammar consists of local constraints on partial structures (Bresnan 1996: Ch. 2). In contrast, other analyses of nonconfigurationality, most particularly that advocated by Jelinek (1984) and Baker (e.g. 1991,

⁴⁹Dench (1995a, b) does not discuss syntactic evidence for the presence of a VP constituent in Martuthunira, so for present purposes I have provided it a flat structure.

1996a), cannot account for these various possibilities so easily. Firstly, by assimilating all nonconfigurational languages to a model of head-marking, they do not capture the clear typological difference between languages like Mohawk, in which grammatical relations are constructed by the verbal morphology, and those like Jiwarli, where this function is held by the case marking. Secondly, by assuming that configurationality and nonconfigurationality arise from different parameterized 'settings', this approach can not capture the truly mixed nature of languages with both configurational phrase structure and productive, constructive case morphology (such as Russian, for example).

In this chapter, I have presented the fundamentals of my analysis of constructive case morphology and incorporated it into a view of (non)configurationality and the expression of grammatical relations more generally. One of the consequences of this approach to case marking is that case morphology, by virtue of carrying information about grammatical relations, contributes information about the higher clause or phrase in which it is embedded, rather than simply providing a case feature for the NP to which it immediately belongs. As I will show in the next two chapters, this extends easily to an analysis of case morphology that functions unusually to mark such things as tense/aspect/mood marking, as well as to the complex phenomenon of case stacking.

4

Constructive Case I: Case Concord, Case and Tense/Aspect/Mood

In Chapter 3 I presented the core of my analysis of constructive case in dependent-marking Australian languages, and situated it within a general typology of (non)configurationality. In this chapter and the next, I consider this approach to case marking in more detail, and show how it can account for other functions of case in Australian languages. One of the strengths of this model is that it provides a unified account for many extended functions of case that have not been adequately incorporated into other analyses.

After laying out some of the details of NP structure in these languages that will bear directly on the ensuing discussion, I turn in section 4.2 to a discussion of case agreement on continuous and discontinuous adjuncts. I show how the constructive approach to case marking can not only account naturally for agreement in case without the need for any stipulative agreement conventions or principles, but also provides an account of gender and number concord on modifying nominals as well. I define a general principle of morphological composition that constrains the construction of complex f-structures from morphologically complex words; the empirical motivation for this principle will be evident throughout this chapter, and in the discussion of case stacking in Chapter 5. In sections 4.3 and 4.4 I extend this analysis to case functions that do not simply construct a grammatical relation, but provide other kinds of clause-level information. In section 4.3 I discuss the marking of ergative case on sentential modifiers in Warlpiri, in which the case marker signals agreement with the case of the subject of the clause. And in 4.4 I discuss the use of case to provide tense/aspect/mood information for the clause as a whole. Such uses of case argue strongly for the view of case marking presented here in which the case morphology, even in its regular function of constructing grammatical relations, is treated as carrying information relevant to the whole clause. In contrast,

they are extremely difficult to account for in more traditional analyses of case which restrict case markers to contributing information (usually just a case feature) about their immediately containing NP.

4.1 NP Structure

Some Australian languages have been claimed not to have NP constituents at all. Blake (1983), for example, makes this claim for Kalkatungu, a dependent-marking nonconfigurational language of Queensland, suggesting that “there are in fact no noun phrases, but that where an argument is represented by more than one word we have nominals in parallel or in apposition” (p. 145). Claims such as this, in conjunction with the identification of discontinuous constituents as a nonconfigurational property of Warlpiri by Hale (1981, 1983), have meant that for some researchers, the lack of an NP constituent has become associated with nonconfigurationality. Dench (1995b), for example, cites the fact that “there are structures that look like NPs” as evidence *against* considering Martuthunira to be nonconfigurational (p. 385). However, the existence of NP structure, as well as the possibility of discontinuous constituents, can in fact vary independently of word order (see Pensalfini 1992 for detailed discussion): languages can be nonconfigurational at the level of the sentence, but have NPs (e.g. Wambaya (Nordlinger, In Press), Kayardild (Evans 1995a)). And nonconfigurational languages with NPs can either allow (as in Wambaya) or disallow (as in Kayardild) discontinuous constituents.¹ Details of NP structure, including whether or not a language allows discontinuous NP constituents, are for the most part independent of nonconfigurationality. There may be some correlations—for example, if a language does not assign fixed phrase structure positions for specific grammatical relations, it is more likely to allow multiple constituents having the same grammatical relation to appear discontinuously in the clause—but it is important that a theory of nonconfigurationality be compatible both with the absence (as in Kalkatungu) or the presence (as in Wambaya, Kayardild) of NP structure, and with the presence (as in Wambaya, Kalkatungu) or the absence (as in Kayardild) of discontinuous constituents.

As I will show in section 4.2 below, the analysis proposed here meets this requirement. Since the case morphology always builds the f-structure context in which the nominal appears, the same f-structure will result irrespective of whether this morphologically constructed information is matched in the c-structure or not. Thus, this analysis is consistent with a language

¹Actually, Kayardild does allow some discontinuous NPs, although only under highly restricted conditions: split NPs always straddle the verb and convey very particular semantics (Evans 1995a:249–50). These are of a very different nature to the discontinuous constituents found in languages like Warlpiri, Wambaya and Kalkatungu.

like Kalkatungu in which there is no corresponding NP structure—in these languages each nominal will simply be a daughter of s and will therefore be unified with the f-structures of all the other daughters in the way outlined in Chapter 3. This analysis is also consistent with languages in which there *is* NP structure: the f-structure built from the case morphology can unify with corresponding phrasal structure, just as long as the two are compatible. Thus, languages may have fully articulated NPs providing that the level of embedding and the grammatical functions assigned in the c-structure is unifiable with that constructed by the morphology.

In the remainder of this section I will outline the assumptions that I make about basic NP structure in those languages which have NPs.² To this end, consider once again the case of Wambaya. While Wambaya freely allows discontinuous constituents, there is also evidence for the existence of NPs. For example, sequences of nominals can precede the second position auxiliary, thereby showing them to be a single constituent (see 3.1 and Nordlinger (In Press) for discussion). In addition, it is possible to identify the following ordering preferences among contiguous nominals, providing further evidence that these form a single syntactic constituent:³

- | | | | |
|-----|--|--------|------------|
| (1) | (MODIFIERS)* | HEAD | (MODIFIER) |
| | (Determiner)(Possessor)(Number)(Qualifier) | Entity | |

These functional classifications do not correlate with any syntactic and/or morphological sub-classes of nominals. Although it would be possible to subdivide the nominal class into minor lexical categories—each one corresponding to one of the functions in (1)—this subclassification would be relevant *only* for describing NP structure: all subclasses have identical morphological possibilities, for example.⁴ Wambaya NPs from the syntactic point of view, therefore, consist simply of strings of nominals. I will

²It should be noted that the analysis of NP structure to be presented here is given purely for the expository purposes of this work: it does not reflect any detailed systematic study of this issue and glosses over many interesting complexities which do not bear directly on the discussion here. This topic is one in which further research is required.

³Similar facts have been given for NPs in Gooniyandi (McGregor 1990), Martuthunira (Dench 1995a) and Kayardild (Evans 1995a). Interestingly, this ordering is also very similar to that described for Kalkatungu by Blake (1983), although in Kalkatungu this order also holds for discontinuous nominal expressions.

⁴Evans (1995a) makes the same point for Kayardild, noting that this “places the burden of characterizing the NP on *functions* like determiner, qualifier, etc., rather than on formally-based phrasal *categories* like Determiner Phrase, Adjectival Phrase and so on” [emphasis original] (p. 236). This point is made clearer by the fact that the same words can appear in different positions in the Kayardild NP having different functions: possessive pronouns, for example, can be determiners, as in *niwanda kiyarrngka thabuju* ‘his two brothers’ or qualifiers, as in *kiyarrngka niwanda thabuju* ‘two (of) his elder brothers’. I suspect the same is true for Wambaya, although my current corpus does not contain the necessary examples.

assume that the functional ordering of these nominals is captured by semantic principles which interact directly with the c-structure, and that the linear order of the nominals does not have to be reflected in f-structure.⁵ I will also assume, as Simpson (1991) claims is true for Warlpiri, that there is only one level of embedding for nominal constituents—there appears to be no evidence for the existence of a specifier position distinguishing the N' level from the NP level, as would be generated by the endocentric principles of c-structure outlined in Chapter 3 (see also Bresnan 1996). Therefore, I assume the basic rule for nominal constituents in Australian languages to be as in (2).⁶

$$(2) N' \longrightarrow N \\ \uparrow = \downarrow$$

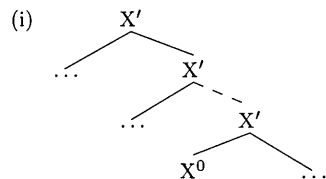
This analysis of nominal phrase structure is similar to that which has been proposed for Japanese (e.g. Fukui and Speas (1986), Fukui (1995)) and for Korean (Sells 1994). In fact, these researchers assume that this lack of specifiers is true for other constituents also: Sells (1994) assumes that Korean phrasal syntax consists only of the two levels X^0 and X' (p. 353); Fukui (1995), on the other hand, argues that the specifier position is universally restricted to phrases headed by functional categories, while lexically-headed phrases always project only to the X' level.⁷

Clearly the principles of endocentric phrase structure outlined in Chapter 3 will need to be modified in order to allow for languages which lack specifier positions for some or all phrasal categories. Whether this should

⁵In much LFG work it has been assumed that semantic structure has access only to f-structure, meaning that all semantically relevant distinctions have to be reflected in the f-structure in some way (e.g. Kaplan and Bresnan 1982, Halvorsen 1983, Dalrymple 1993). However, other researchers have argued that s(ematic)-structure must also have input from other levels also, such as c-structure and/or a-structure (Halvorsen and Kaplan 1995[1988], Andrews and Manning 1993, T. Mohanan 1994a, Mohanan and Mohanan 1994. See also Joshi (1993) who argues that c-structure order may reflect semantic information.).

⁶Note that for terminological simplicity, I will continue to talk about NPs throughout this work; this should be understood to be referring to the N' in this c-structure rule.

⁷More specifically, Fukui (1995) argues that lexical categories have the structure in (i), in which the X' level is iterable:

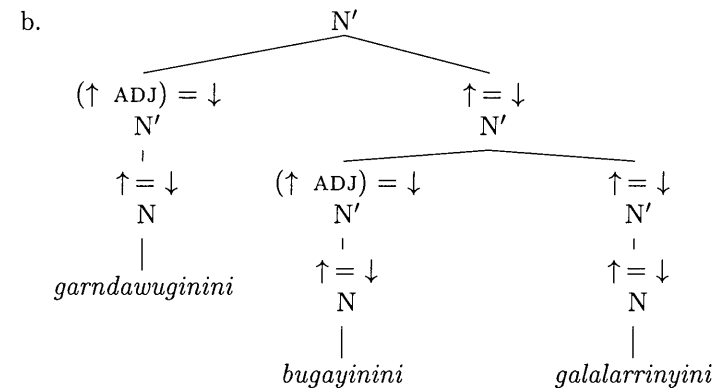


while functional categories project to the XP level, but are limited to only a single specifier and complement (p. 25).

be simply an option made available by the principles of X' Theory (as implied by Sells (1994:353)), or whether projection to the XP level should be restricted only to functional categories (as argued by Fukui (1995)) is a question that I will leave open, to be decided by further empirical research.

I will assume that in the Australian languages under discussion, all modifiers are to be treated as adjuncts, adjoined as sisters to N' dominated by N' . Thus, the structure of the complex Wambaya noun phrase in (3a) will be assumed to be that in (3b):⁸

- (3) a. *garndawugini-ni bugayini-ni galalarrinyi-ni*
 one-ERG big-ERG dog-ERG
 'one big dog'



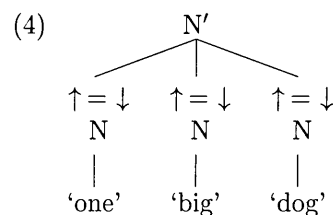
Since adjuncts are largely unconstrained, they can adjoin either to the right or the left of the head, thus accounting for the fact that modifiers can follow the head as well as precede it.⁹ The result is that the phrase structure associated with nominal constituents in these Australian languages is fairly minimal, and that linear order within the phrase is unconstrained by the c-structure.¹⁰

⁸While I use binary branching trees for representing NP structure this does not reflect any empirically based decision, nor does it have any bearing on any aspect of the model of case marking presented here. It would be equally possible to have flatter structures in which each adjunct N' is generated as a sister to the head N' , and to each other.

⁹However, this in itself does not explain why it is that there can be only one post-head modifier (see (1)). This fact may also follow from semantic principles, like other aspects of NP order (McGregor (1990:267ff) describes a very particular semantic function for the single post-head modifier in Gooniyandi, for example), or could result from a general constraint on c-structure. It is beyond the scope of the present work to resolve this issue here.

¹⁰Gil (1987) in a discussion of NP typology, identifies a number of properties associated with less articulated NP structure, such as that assumed here. Many of these properties

The N' structure that I will assume here is very different from that presented by Simpson (1991) for Warlpiri. For Simpson, Warlpiri noun phrases are essentially flat sequences of nominals, all of which are assigned the head relation (p. 277). Thus, on her analysis, a Warlpiri phrase corresponding to that given in (3a) for Wambaya would have the c-structure in (4):



Principles of morphological structure ensure that the nominals are assigned the correct grammatical functions and that the correct f-structure results.

While Simpson's analysis works well for Warlpiri, there are a few general problems with it. Firstly, it is not compatible with any current version of X' Theory, including that adopted here and outlined in 3.1: according to these principles, lexical phrases have only a single c-structure and f-structure head, thus ruling out flat structures with multiple heads. And secondly, as Andrews (1996) points out, it does not extend to other Australian languages, like Martuthunira, in which noun phrases can be shown to have phrase structure embedding and function assignment in the c-structure. As far as I can tell, Warlpiri noun phrases are consistent with the basic endocentric structure that I have outlined for Wambaya above, and thus I will assume that they can be analysed in this way also.¹¹

As with all c-structure constituents in LFG, the head noun in an N' is optional in principle, as long as it is not needed to satisfy another requirement in the grammar (King 1995, Bresnan 1996). It is therefore possible for an N' to consist only of an adjunct, providing that the f-structure head of the N' (i.e. that which the adjunct is modifying) is contributed from somewhere else in the syntactic and/or discourse context. In the case of discontinuous constituents, this head is simply provided by another constituent within the clause. As will be demonstrated in detail in the discussion of adjuncts in 4.2.1, the analysis of constructive case marking automatically captures the fact that these discontinuous expressions are functionally identical to

are also found in the Australian languages under discussion, including the lack of obligatory marking of (in)definiteness, the absence of obligatory number marking on nominals (Dixon 1980), and the lack of a determiner category (Bittner and Hale 1995).

¹¹This is not to suggest that all details of Warlpiri and Wambaya noun phrases are identical, but only that the differences between them do not affect the basic structural assumptions made here, nor are they relevant to this overall discussion.

those in which the different elements belong to a single phrase in the c-structure: since the case morphology constructs the grammatical relations independently of the phrase structure, a modifying adjunct will construct the same f-structure information irrespective of its c-structure position. That is, both contiguous and discontinuous adjuncts look the same at f-structure (cf. Simpson 1991). This approach to case marking, in conjunction with the analysis of nonconfigurational phrase structure presented in 3.1, thus accounts automatically for the fact that many of these dependent-marking nonconfigurational languages freely allow discontinuous nominal constituents.

However, as we have already seen, it is wrong to assume a necessary correlation between nonconfigurational structure and the possibility of discontinuous constituents. While it appears true that a language can only allow unrestricted discontinuous constituents if it is nonconfigurational at the clausal level, the reverse does not hold: not all nonconfigurational languages freely allow nominal elements of a single functional expression to appear discontinuously in the phrase structure (e.g. Kayardild (Evans 1995a)). Hence, I assume that these latter languages have an additional restriction that the head position within an N' is not optional: all N' constituents must dominate their f-structure head (Simpson 1983). This requirement will ensure that modifiers and heads must form a single phrase in the c-structure, and therefore, that discontinuous constituents are not freely possible.

To summarize, in this section I have briefly outlined the basic NP structure that I will assume throughout this rest of this work. This structure is fairly simple: nominal phrases are treated as consisting of a single head position, with a number of modifying adjuncts freely generated on either side of the head, and in any order with respect to each other. I then assume that semantic principles constrain the co-occurrence and the ordering of adjuncts to reflect the functional ordering of NP-internal constituents such as that of Wambaya given in (1). A simple difference between whether or not a given language allows the generation of (f-structure) headless N' s accounts for the presence of discontinuous constituents in some of these languages, and their absence in others.

4.2 Adjunct Agreement

In this section I will extend the analysis presented in Chapter 3 to nominal modifiers and show how it accounts naturally for case concord among continuous and discontinuous constituents (4.2.1), as well as gender and number agreement (4.2.2).

4.2.1 Case agreement

One of the advantages of the constructive approach to case marking, is that it allows for a straightforward analysis of adjunct case agreement, without the need to stipulate any specific agreement conventions (cf. Simpson 1991). In Wambaya, as in many dependent-marking languages, modifying adjuncts must agree in case with the nominal that they modify—this is true whether the two elements are in the same phrase at c-structure (5), or are discontinuous (6), and is irrespective of their order:¹²

- (5) a. *Galalarrinyi-ni bugayini*(-ni) gini-ng-a dawu.*
 dog.I-ERG big.I-ERG 3SG.MASC.A-1.O-NFUT bite
 ‘The big dog bit me.’ (elicited)
- b. *Bugayini*(-ni) galalarrinyi-ni gini-ng-a dawu.*
 big.I-ERG dog.I-ERG 3SG.MASC.A-1.O-NFUT bite
 ‘The big dog bit me.’ (elicited)
- (6) a. *Galalarrinyi-ni gini-ng-a dawu bugayini*(-ni).*
 dog.I-ERG 3SG.MASC.A-1.O-NFUT bite big.I-ERG
 ‘The big dog bit me.’ (elicited)
- b. *Bugayini*(-ni) gini-ng-a dawu galalarrinyi-ni.*
 big.I-ERG 3SG.MASC.A-1.O-NFUT bite dog.I-ERG
 ‘The big dog bit me.’ (elicited)

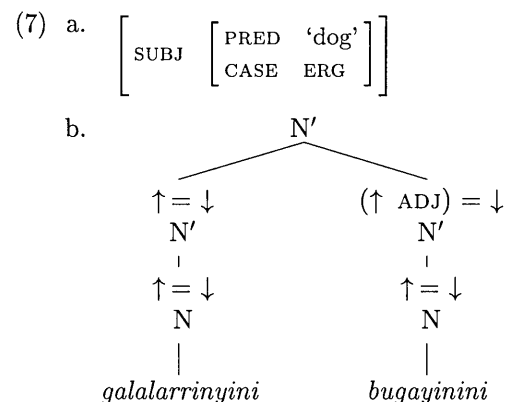
Theories of case in which case is assigned configurationally to a phrasal constituent (e.g. Bittner and Hale (1996) and most other movement-based approaches) are presumably required to assume a mechanism of case percolation to account for the appearance of case on all members of the NP. Other lexicalist approaches such as that assumed by Simpson (1991) account for such agreement by stipulating that all modifiers must have the same value for case as their head (p. 213). In contrast, on the present view of case this agreement follows intuitively from the fact that the case marking specifies the grammatical function of a nominal. Thus, in these examples, the case marking on both *galalarrinyi-* and *bugayini-* carries the

¹²Australian languages exhibit a wide range of case marking patterns within nominal constituents. Apart from complete concord, another very common pattern is for languages to have right-edge marking, in which only the final member of the NP is marked for case (e.g. Pitjantjatjara (Bowe 1990), Diyari (Austin 1981a)). Many right-edge marking languages also allow full concord within the NP (e.g. Warlpiri (Nash 1986)), and as far as I am aware, all require it across discontinuous NPs. See Chapter 6, also Dench and Evans (1988), Blake (1977, 1987) for further discussion.

information that the respective nominal belongs to the f-structure of the subject. If *bugayini-* were to carry a different case marker—say comitative, which constructs the adjunct relation—it would not be unified into the f-structure of the subject, but would be construed as modifying some unexpressed comitative adjunct. Since Wambaya requires all nominals in the syntax to have case, as evidenced by the fact that it requires complete concord on all modifiers even when they are inside the same phrase as their head (5), it is also not possible for *bugayini-* to have no case marker at all.

In fact, this simple account of case concord does not yet follow from the basic model of constructive case introduced in Chapter 3. In order for it to do so it will be necessary to address two additional questions: (i) how to characterize the difference in function between case on a head and case on a modifier?; and (ii) how to constrain the way in which complex information contributed by pieces of morphology gets unified into a single f-structure for a word? As we will see throughout the rest of this work, the answers to these questions are not only relevant for an analysis of simple case concord, but have important ramifications for many other extended case functions, including case stacking and the use of case to mark tense/aspect/mood.

Consider (5a) above. From the discussion in Chapter 3, we know that the inflected head noun *galalarrinyi-ni* projects an f-structure as in (7a), and following the discussion in 4.2, we can assume that the structure of this phrase is as in (7b):¹³



Now, it cannot simply be the case that the modifier *bugayini-ni* also projects an f-structure similar to that for *galalarrinyi-ni*, such as that in (8),

¹³I have omitted from the f-structures in this section any features that are not directly relevant to the discussion, such as gender.

$$(8) \left[\text{SUBJ} \left[\begin{array}{cc} \text{PRED} & \text{'big'} \\ \text{CASE} & \text{ERG} \end{array} \right] \right]$$

since the grammatical function constructed by the morphology (SUBJ) will clash with that assigned in the phrase structure (ADJ), resulting in ungrammaticality. In fact, even if there were no functions assigned in the phrase structure (i.e. if this was a language like Kalkatungu, in which there are claimed to be no NP-type constituents (Blake 1983)), there would still be a problem. In this type of language each nominal would be generated as a separate daughter of S, and would simply unify at f-structure. However, straight unification of the f-structures of *galalarrinyi-ni* and *bugayini-ni* would still result in an ungrammatical f-structure, namely that in (9):

$$(9) * \left[\text{SUBJ} \left[\begin{array}{cc} \text{PRED} & \text{'dog'} \\ \text{PRED} & \text{'big'} \\ \text{CASE} & \text{ERG} \end{array} \right] \right]$$

This f-structure violates the Uniqueness condition (Bresnan 1996) since there is one attribute (PRED) with two different values ('dog' and 'big').

Intuitively the case marker on the modifier 'big' has a slightly different function from that on the head 'dog': while the latter indicates that the nominal *is* the subject, the former indicates that the nominal is *a part of* a subject, in this case contained within an embedded ADJUNCT f-structure.¹⁴ There are two possible ways of capturing this difference in function in the model assumed here. The first is to encode it directly into the case marker: as well as constructing a grammatical function GF, all case markers could have the option of constructing an ADJUNCT embedded within the GF. Thus, the ergative case marker in Wambaya would contain the information in (10), in which the optional ADJ attribute has been added into each part of the entry:

$$(10) \begin{array}{l} (\text{SUBJ} (\text{ADJ} \uparrow)) \\ (((\text{ADJ} \uparrow) \text{CASE}) = \text{ERG}) \end{array}$$

¹⁴Simpson (1991) refers to these two different case functions as the argument-relating use and the attribute use respectively.

The result of this would be that the ergative case marker could construct either a SUBJ or an ADJ embedded within a SUBJ in both cases specifying that the SUBJ has ergative case.¹⁵

The alternative, which will be adopted here, is to assume that the optional (ADJ $\uparrow$) designator is actually contained in the nominals themselves and that the presence of this can affect the function of the case markers that attach to them. This is supported by the fact that there is generally no syntactic distinction in Australian languages between nouns and adjectives;¹⁶ all belong to a single class of nominals (Dixon 1980:272ff) and many can function as either heads or modifiers. Allowing nominals to optionally construct an adjunct relation provides a simple account of this dual function, as well as allowing for a distinction between nominals that have both functions (the large majority in most languages) and the few that must function always as a head, or always as a modifier: the former will not have the optional (ADJ $\uparrow$) designator and for the latter it will be obligatory rather than optional. As we will see in 4.2.2 below, this approach also has the advantage of naturally accounting for gender and number agreement also.

Thus, (the majority of) nominal stems have the option of constructing their function in the same way that case markers do. When this information is not present, the nominal stem will simply project an f-structure with no function, and will therefore be the f-structure head. When the IO designator is present, however, the nominal will construct a higher f-structure (i.e. that of the whole NP) that contains an ADJUNCT function, to which the nominal itself belongs. For example, the nominal stem *bugayini*-¹⁷ in this function has the lexical entry in (11a), constructing the f-structure in (11b).¹⁸

¹⁵Note that it would be necessary to ensure that each part of the lexical entry matches with respect to the attributes constructed: in other words, the optional ADJ feature has to be included in both parts of the entry, or in neither.

¹⁶Although there may be morphosyntactic differences, such as the fact that nouns, and not adjectives, govern number and gender agreement.

¹⁷The internal structure of this nominal is more complex than this discussion suggests. Nominals in Wambaya are inflected for gender and *bugayini*- is the stem for the masculine gender only. For more detailed discussion see Nordlinger (In Press: Ch. 4).

¹⁸Simpson (1991) treats all modifying nominals as predicates that subcategorize for a pronominal subject anaphorically controlled by the argument they modify:

$$(i) \left[\text{ADJ} \left[\begin{array}{cc} \text{SUBJ} & \left[\begin{array}{cc} \text{PRED} & \text{'PRO'} \end{array} \right] \\ \text{PRED} & \text{'big' } \langle \text{SUBJ} \rangle \end{array} \right] \right]$$

Here and throughout this work I have simplified the representations by not including subjects for modifying nominals. This does not reflect an important theoretical choice; the analysis presented here is perfectly consistent with the presence of nominal subjects in these instances also.

- (11) a. *bugayini-* ($\uparrow$ PRED) = 'big'
(ADJ $\uparrow$)

b. $\left[\text{ADJ} \left[\text{PRED} \text{ 'big'} \right] \right]$

The overgeneration that the optionality of this feature creates is constrained by general principles of Completeness and functional Uniqueness as well as principles of semantic interpretation. For example, the grammar will generate four possibilities for the noun phrase *bugayini-ni galalarrinyini*: (i) the feature (ADJ $\uparrow$) is present for the first nominal, but not the second ('big dog'); (ii) the feature (ADJ $\uparrow$) is present for the second nominal but not the first ('doggish big one'); (iii) the feature (ADJ $\uparrow$) is present for both ('doggish big X'); (iv) the feature (ADJ $\uparrow$) is present for neither ('dog big one'). Both (i) and (ii) are predicted to be grammatical, providing the functional information present in the phrase structure (if any) matches that projected by the morphology. I assume that it is a property of the semantics of the two nominals that (i) is preferred over (ii). Of the remaining two, (iv) will be ruled out in the way demonstrated for (9) above. And, (iii) (providing, once again, the phrase structure is compatible with the morphology) would generate an f-structure in which both *bugayinini* and *galalarrinyini* were adjuncts modifying the subject (by virtue of the ergative case marking). Thus, this would be grammatical as long as there was something else in the clause (e.g. an incorporated pronoun on the verb) contributing the PRED feature for the subject, otherwise the structure would violate the principle of Completeness (i.e. there would be an argument function selected by the verb—namely, SUBJ—that would not have a PRED value (Bresnan 1996:56)). Thus, while the existence of these two alternative morphological rules allows overgeneration in the grammar, other principles already in existence will rule out all but the acceptable interpretations.

Therefore the nominal stem, when used as an adjunct, constructs information about its function within the larger nominal constituent. What then happens once it is inflected with a case marker, which constructs grammatical function information about its role in the clause? Recall the lexical entry of the Wambaya ergative case marker given in 3.3, and repeated here:

- (12) *-ni*: ($\uparrow$ CASE) = ERG
(SUBJ $\uparrow$) OBJ

Simply attaching this case marker as it is to the nominal stem *bugayini-* in (11a) will result in an ungrammatical structure: the f-structure contain-

ing the nominal is specified as belonging to both an ADJ (from *bugayini-*) and the SUBJ (from the ergative case suffix):¹⁹

$$(13) \quad * \quad f: \left[\text{ADJ/SUBJ} \quad f': \left[\begin{array}{cc} \text{PRED} & \text{'big'} \\ \text{CASE} & \text{ERG} \end{array} \right] \right]$$

Clearly, if we are going to allow the morphology to carry complex information about the f-structure of an equivalent type to that carried by the syntax (as has always been assumed in LFG (e.g. Kaplan and Bresnan 1982, Simpson 1983, Bresnan and Mchombo 1987, Andrews 1990a, T. Mohanan 1995, Bresnan 1995b, Sells 1995, Bresnan 1996) and as I have shown to be motivated by the Australian language data under discussion), then we need to have a principle for combining the information constructed by different pieces of a single word. Intuitively, in the current example, what we need is for the ergative case marker to be able to construct structure *higher* than that already constructed by the nominal stem to which it attaches. Notice that IO designators construct two f-structures, an outer one containing a grammatical function attribute, and an inner one that is the value of that attribute. In (13) these are *f* and *f'* respectively. Thus, all we need to do is allow the case marker to take *f* as its inner f-structure, and then construct a higher f-structure (*f_x*) containing a SUBJ function that has the *whole* of *f* as its value. This would result in the f-structure in (14), which is the one we want:

$$(14) \quad f_x: \left[\text{SUBJ} \quad f: \left[\begin{array}{cc} \text{CASE} & \text{ERG} \\ \text{ADJ} & f': \left[\text{PRED} \text{ 'big'} \right] \end{array} \right] \right]$$

I propose the Principle of Morphological Composition given in (15), which ensures that the f-structure of a word is constructed incrementally, any structure built by an affix being added outside of that already built by the stem. This is achieved by composing the functional designators of the stem and the affix such that the affix embeds the functional designator of the stem into its own, with the result that the lower f-structure projected by the affix is substituted for the higher f-structure projected by the stem to which it is attached.²⁰ In the case that the stem contains a IO designator, its higher f-structure is identified by the sequence (GF $\uparrow$) (i.e. (ADJ $\uparrow$) in

¹⁹For simplicity, I will omit the OBJ function also constructed by the ergative case marker in Wambaya (see 3.3.4) from the discussion in this chapter.

²⁰There are alternative ways of formalizing this operation to that presented here—see Appendix A for discussion.

our example), and the lower f-structure projected by the affix is simply that denoted by the $\uparrow$.²¹

(15) **Principle of Morphological Composition:**

Where x is a string of attributes:

$$\begin{array}{ccc} \text{Stem} & \text{Aff} & \\ \text{((GF}^n \uparrow)) & \text{((GF}^m \uparrow)) & x \\ \hline \text{Stem} & \text{Aff} & \\ \text{((GF}^n \uparrow)) & \text{((GF}^m \uparrow)) & x \end{array} \Rightarrow \begin{array}{ccc} \text{Stem} & \text{Aff} & \\ \text{((GF}^n \uparrow)) & \text{((GF}^m \uparrow)) & x \end{array}$$

Hence, the formal effect of this mechanism is to take the IO designator of the stem (i.e. the sequence $(\text{GF}^n \uparrow)$), which designates the highest f-structure projected by the stem, and substitute it for any $\uparrow$ in the lexical entry of the affix, since it is this $\uparrow$ which designates the lowest f-structure projected by the affix. In the simple case, in which an affix attaches just to a nominal stem with no IO designator, $(\text{GF}^n \uparrow)$ will refer simply to the $\uparrow$ arrow present in the lexical entry of the noun (e.g. in $(\uparrow \text{ PRED}) = X$) and this process will apply vacuously, substituting an $\uparrow$ for an $\uparrow$ and resulting in no change to the f-structures constructed by the case affix. As we will see in the remainder of this chapter, and in the discussion of Chapter 5, morphological composition is not invoked solely for the purposes of accounting for simple case concord, but is the key to understanding many complex properties of case marking in these Australian languages.²²

When the ergative case marker in (12) is added to the nominal stem *bugayini-* in (11), morphological composition will replace the $\uparrow$ arrows in the lexical entry of the case marker with the IO designator $(\text{ADJ } \uparrow)$ from the lexical entry of the nominal stem. Thus, in this context, the information carried by the ergative case marker will be as in (16):

$$(16) \quad -ni: \quad ((\text{ADJ } \uparrow) \text{ CASE}) = \text{ERG} \\ (\text{SUBJ } (\text{ADJ } \uparrow))$$

In order to see more clearly how this interacts with the lexical entry of the nominal stem, consider the following lexical tree.

²¹The dotted line in (15) indicates the difference between the input (on the left of the arrow) and the output (on the right).

²²This Principle of Morphological Composition shares some similarities, in spirit if not in effect, with Sadock's (1991) strong Linearity Constraint, Anderson's (1992) Layering convention (p. 94) and the Mirror Principle (Baker 1985).

$$(17) \quad \begin{array}{ccc} & N(f_1) & \\ \uparrow = \downarrow & & \uparrow = \downarrow \\ N(f_2) & & \text{Aff}(f_3) \\ \text{bugayini-} & & -ni \\ (\uparrow \text{ PRED}) = \text{'big'} & & ((\text{ADJ } \uparrow) \text{ CASE}) = \text{ERG} \\ (\text{ADJ } \uparrow) & & (\text{SUBJ } (\text{ADJ } \uparrow)) \end{array}$$

The $\uparrow = \downarrow$ annotations identify both the f-structure of the stem (f_2) and of the affix (f_3) with that of the whole nominal (f_1). Thus, all of the $\uparrow$ arrows contained in the lexical entries of these constituents are ultimately referring to the f-structure f_1 . The stem both specifies that f_1 contains the information PRED 'big', and constructs an f-structure containing an ADJ function whose value is f_1 . Thus:

$$(18) \quad \left[\text{ADJ } f_1: [\text{PRED 'big'}] \right]$$

The case affix carries the information that the higher f-structure constructed by the stem (i.e. that designated by $(\text{ADJ } \uparrow)$) has a CASE attribute whose value is ERG:

$$(19) \quad \left[\begin{array}{cc} \text{CASE} & \text{ERG} \\ \text{ADJ } f_1: & [\text{PRED 'big'}] \end{array} \right]$$

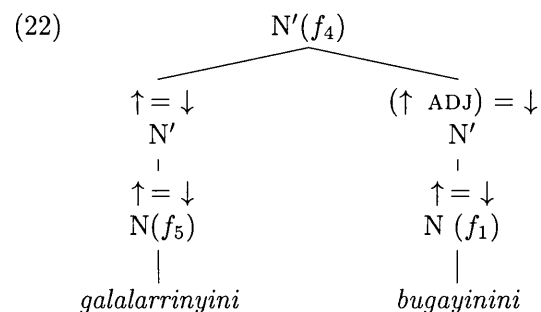
In addition, it constructs a higher f-structure such that one can follow a path from f_1 out through an ADJ attribute and then a SUBJ attribute to arrive at this higher f-structure (this is what is designated by the equation $(\text{SUBJ } (\text{ADJ } \uparrow))$). Thus, it takes the f-structure in (19) and builds an f-structure with a SUBJ function that has (19) as its value:

$$(20) \quad \left[\begin{array}{cc} \text{SUBJ} & \left[\begin{array}{cc} \text{CASE} & \text{ERG} \\ \text{ADJ } f_1: & [\text{PRED 'big'}] \end{array} \right] \end{array} \right]$$

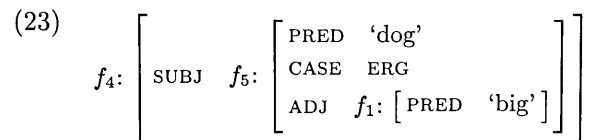
Note that (20) is exactly the f-structure we were after, as shown in (14) above. Now, let's consider how this f-structure will unify with that of the head nominal, given in (21).

$$(21) \quad f_4: \left[\begin{array}{cc} \text{SUBJ} & f_5: \left[\begin{array}{cc} \text{PRED} & \text{'dog'} \\ \text{CASE} & \text{ERG} \end{array} \right] \end{array} \right]$$

Recall the c-structure for the noun phrase given in (7) above, repeated here:



The f-structure projected by *bugayinini* in (20) specifies that the N (f_1) has the function of ADJ in the higher f-structure. This specification is also made in the phrase structure: the f-structure of N (f_1) is identified with that of the higher N' (by virtue of the $\uparrow = \downarrow$ annotation), and the N' is specified as having the function of ADJ in the higher phrase (f_4). The morphological structure and the phrase structure associated with *bugayinini* are compatible. Thus, the f-structures of both nominals can unify, resulting in the following (correct) f-structure for the whole phrase:



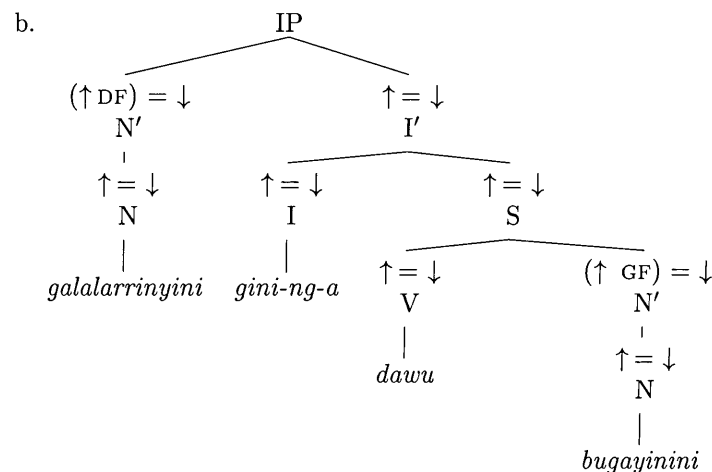
Notice that on this account the case marker on the modifying adjunct does not contribute case information to the f-structure of the *adjunct*, but rather unifies with the case feature of the head in the head's f-structure. Thus, this account correctly captures the intuition that the case feature is a property of the head, and that the case marker on the modifier functions to *agree* with the head, rather than to mark a property of the modifier itself.

Furthermore, this analysis has the distinct advantage of forcing agreement between the adjunct and the head noun: since all nominals must be marked for case in Wambaya, if *bugayini-* were to be in any other form, it would construct a different grammatical relation—it may construct an ADJ embedded in an ADJ, rather than one embedded in a SUBJ for example—as well as a different case feature, and could not be unified into the same f-structure as the head nominal *galalarrinyi-*. The case feature that is also associated with the case morpheme ensures that the head and the modifier

are inflected with exactly the same case morpheme, and not with two different ones that just happen to construct the same grammatical relation. For example, nominative case can also appear in the SUBJ function. However, it is not possible in Wambaya for a modifier inflected with the nominative case to co-occur with a head noun in the ergative. This falls out from this analysis since the case marker of the modifier specifies the CASE value of the SUBJ (ERG in this case), and thus it will not unify with a head nominal that has a different case feature.

Since all of this information is projected from the morphology this analysis will proceed in the same way whether or not the adjunct and head belong to the same phrase in the c-structure. It therefore captures the fact that the same relationships between heads and modifiers can exist independently of phrase structure constituency. For example, consider (6a), repeated here, and its c-structure:²³

- (24) a. *Galalarrinyi-ni gini-ng-a dawu bugayini*(-ni).*
 dog.I-ERG 3SG.MASC.A-1.O-NFUT bite big.I-ERG
 'The big dog bit me.'



The f-structure constructed by *bugayinini* will be the same as above. This f-structure will unify with that of the verb *dawu* resulting in the following f-structure for the S:

²³The [SPEC,IP] position in (24b) is annotated with the underspecified $(\uparrow \text{DF}) = \downarrow$, as per the discussion in 3.1.

$$(25) \left[\begin{array}{l} \text{PRED} \text{ 'bite' } \langle \dots \rangle \\ \text{SUBJ} \left[\begin{array}{l} \text{CASE} \text{ ERG} \\ \text{ADJ} \left[\text{PRED} \text{ 'big'} \right] \end{array} \right] \end{array} \right]$$

When unified with the f-structure provided by the auxiliary, we get:

$$(26) \left[\begin{array}{l} \text{PRED} \text{ 'bite' } \langle \dots \rangle \\ \text{TENSE} \text{ NFUT} \\ \text{SUBJ} \left[\begin{array}{l} \text{PERS} \text{ 3} \\ \text{NUM} \text{ SG} \\ \text{GEND} \text{ MASC} \\ \text{CASE} \text{ ERG} \\ \text{ADJ} \left[\text{PRED} \text{ 'big'} \right] \end{array} \right] \\ \text{OBJ} \left[\begin{array}{l} \text{PRED} \text{ 'PRO'} \\ \text{PERS} \text{ 1} \\ \text{NUM} \text{ SG} \end{array} \right] \end{array} \right]$$

And finally, this structure unifies with that projected by *galalarrinyini* to give the following f-structure for the whole clause:

$$(27) \left[\begin{array}{l} \text{PRED} \text{ 'bite' } \langle \dots \rangle \\ \text{TENSE} \text{ NFUT} \\ \text{DF} \left[\right] \\ \text{SUBJ} \left[\begin{array}{l} \text{PRED} \text{ 'dog'} \\ \text{PERS} \text{ 3} \\ \text{NUM} \text{ SG} \\ \text{GEND} \text{ MASC} \\ \text{CASE} \text{ ERG} \\ \text{ADJ} \left[\text{PRED} \text{ 'big'} \right] \end{array} \right] \\ \text{OBJ} \left[\begin{array}{l} \text{PRED} \text{ 'PRO'} \\ \text{PERS} \text{ 1} \\ \text{NUM} \text{ SG} \end{array} \right] \end{array} \right]$$

Notice that the f-structure of the nominal modifier *bugayinini* has been unified with that of the subject in exactly the same way that it was when it appeared in the same c-structure constituent as its head (shown in (23) above). The f-structure for the subject has the same form irrespective of whether the nominals are contiguous or not in the phrase structure (the only difference between the two subject f-structures is the person, number

and gender information provided by the auxiliary in (27) which was simply not included in (23)). All case agreement between nominal modifiers and heads—whether they are in the same phrase or not—thus falls out of this constructive approach to case marking:²⁴ as with (23), if *bugayinini* had been inflected with a different case marker in (27) it would have constructed a different grammatical relation and therefore not been unified into the f-structure of the subject.

Since the agreement facts follow automatically from this analysis of constructive case marking, the approach has an advantage over that taken by Simpson (1991) for Warlpiri. In Simpson's approach, the case agreement between heads and modifiers is stipulated as a condition on the well-formedness of f-structures, by way of the "Adjunct Agreement Convention" (Simpson 1991:213): *Adjuncts must not disagree in case with the arguments they attribute properties to*. This is necessary for Simpson since case in her analysis does not have the ability to construct information pertaining to any f-structures other than the one to which the case marker immediately belongs.

4.2.1.1 Secondary predicates

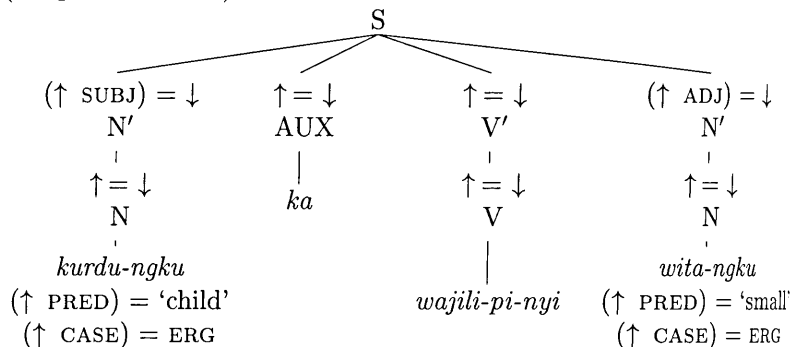
However, Simpson's analysis could be considered to have one advantage. As we have seen, modifiers in my analysis are always unified into the f-structure of their heads irrespective of whether or not they are contained within the same phrase at c-structure. In contrast, in Simpson's analysis this is not necessarily the case. Like the analysis of nonconfigurational phrase structure presented in 3.1, Simpson assumes that the c-structure freely assigns grammatical relations in Warlpiri (p. 83). However, for Simpson, this is the main place in which such grammatical functions are identified—case markers do not construct grammatical relations but carry only a case feature. This means that case-inflected adjuncts do not carry any information about the grammatical function of the head they modify, and can be assigned any grammatical function in the c-structure that is consistent with their case feature. The discontinuous modifier *wita-ngku* in (28), for example, can thus be assigned either ($\uparrow \text{ADJ}$) = $\downarrow$ or ($\uparrow \text{SUBJ}$) = $\downarrow$ in the c-structure. These two possibilities correspond to the c- and f-structures in (29) and (30) respectively (in the interests of clarity, I have

²⁴Although, as we will see shortly, secondary predication gets a slightly different analysis.

omitted information from these structures that is not presently relevant).²⁵

- (28) *Kurdu-ngku ka wajili-pi-nyi wita-ngku*
 child-ERG PRES chase-NPST small-ERG
 'The small child is chasing it.' (p. 279)

(29) a. (Simpson 1991:280)



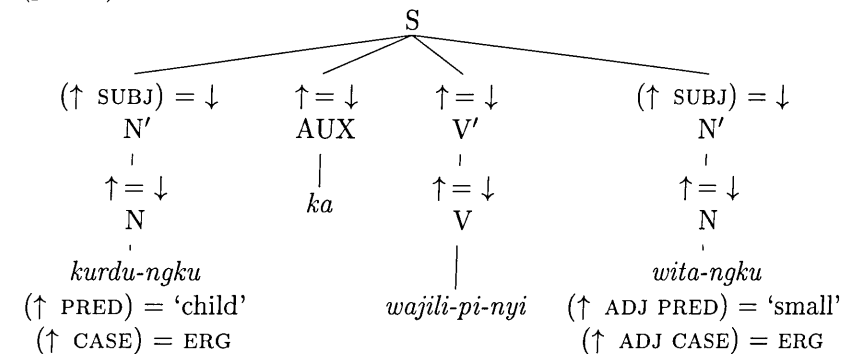
- b.
$$\left[\begin{array}{l} \text{PRED 'wajilipinyi'} \\ \text{SUBJ} \left[\begin{array}{l} \text{PRED 'child'} \\ \text{CASE ERG} \end{array} \right] \\ \text{ADJ} \left[\begin{array}{l} \text{PRED 'small'} \\ \text{CASE ERG} \end{array} \right] \\ \text{OBJ} \left[\text{PRED 'PRO'} \right] \end{array} \right]$$

²⁵While clause-level grammatical relations are assigned in the c-structure, Simpson assumes that NP-internal grammatical functions are assigned in the morphology (p. 277). This is captured in her analysis by allowing the nominal stem (N^{-1} in the following morphological rule) to be assigned either the head relation ($\uparrow = \downarrow$), the ADJ function, the OBJ_θ function, or the OBJ_θ ADJ function (the latter two are relevant only to semantic case markers on her analysis, and so need not concern us here).

$$(i) N \longrightarrow \begin{array}{cc} N^{-1} & \text{Aff} \\ (\uparrow (\text{OBJ}_\theta)(\text{ADJ})) = \downarrow & \uparrow = \downarrow \end{array}$$

In (29) both nominal stems (*kurdu-* and *wita-*) are heads in the morphology. In contrast, in (30), the stem of the head nominal *kurdu-ngku* has been assigned the head relation in the morphology, while that of the adjunct nominal *wita-ngku* is assigned the ADJ relation.

(30) a. (p. 281)

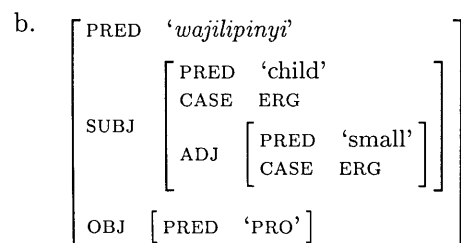


- b.
$$\left[\begin{array}{l} \text{PRED 'wajilipinyi'} \\ \text{SUBJ} \left[\begin{array}{l} \text{PRED 'child'} \\ \text{CASE ERG} \end{array} \right] \\ \text{ADJ} \left[\begin{array}{l} \text{PRED 'small'} \\ \text{CASE ERG} \end{array} \right] \\ \text{OBJ} \left[\text{PRED 'PRO'} \right] \end{array} \right]$$

In contrast, when the modifier is contained within the same phrase as its head as in (31), there is only one phrase at the clausal level, and thus there is no way to assign different functional annotations to the head and the modifier. In this case then, the two will always be unified into the same f-structure, as in (32b), which is identical to (30b) above.

- (31) *Kurdu-ngku wita-ngku ka wajili-pi-nyi*
 child-ERG small-ERG PRES chase-NPST
 'The small child is chasing it.' (p. 266)

(34) *Kurdu-ngku wita-ngku ka wajili-pi-nyi*
 child-ERG small-ERG PRES chase-NPST
 'The small child is chasing it.'
 NOT 'The child is chasing it and she is small.'



(33) *Kurdu-ngku ka wajili-pi-nyi wita-ngku*
 child-ERG PRES chase-NPST small-ERG
 a. 'The small child is chasing it.'
 b. 'The child is chasing it and she is small.'

In contrast, in the analysis that I have presented, the different c-structure possibilities of the adjuncts do not correspond to a difference in the f-structure: adjuncts will always be generated within the f-structure of their head irrespective of whether or not they belong to the same c-structure constituent. As was shown above, this fact has the advantage of allowing case concord to follow automatically. However, it also means that the generalization concerning merged and unmerged interpretations of modifiers in Warlpiri is not yet accounted for.

On Simpson's account (also the analysis suggested by Hale 1983:38-9), unmerged modification is treated as formally identical to secondary predication: like unmerged adjuncts, secondary predicates are treated as sentence-level adjuncts that agree in case with the function that they refer to (p. 200-201). This formal similarity captures the intuition that the difference between the merged and unmerged interpretations in (33) is that in the latter the adjunct functions as another predicate on the head, rather than simply modifying it. I will therefore follow Simpson in assuming that unmerged adjuncts should be analysed as secondary predicates.²⁶

²⁶According to Simpson the unmerged interpretation covers “non-restrictive attribution of properties (*the philosophical Greeks*), apposition (*my friend, Mr. Leahey*), secondary predication (*They want him alive*) as well as some other types” (1991:258). Hale (1981:24) describes the interpretation as corresponding “roughly to coordination as in the English sentence ‘The two children are chasing the dog, and they (the children) are small’ or the ‘afterthought’ construction ‘The two children are chasing the dog—that is, the small ones are’”. In Hale (1994) he gives a number of examples of secondary predication that appear very similar to unmerged interpretations (e.g. having translations such as ‘The dog, tired, is chasing the kangaroo’ and ‘The dog is chasing the kangaroo (and the latter is) tired’ (p. 192)) and notes that there is still a lot of work to be done in Warlpiri on understanding the structure of “sentences with nonadjacent nominals “construed together” ... and the question of whether secondary predication is really at issue here, technically speaking” (p. 193). Clearly there is still much that we don’t understand about the nature of this unmerged interpretation and it could very well turn out that an analysis treating it like secondary predication is only partially explanatory.

Case marking on secondary predicates has a very different (although related) function to the uses of case that we have considered so far. The function of the ergative case in the examples discussed above, for example, is to indicate that the nominal is (a part of) the subject. The function of the ergative case on a secondary predicate, is to indicate that the nominal is predicated of the subject. An example of secondary predication from Wambaya is given in (35).²⁷

- (35) *Ngawurniji ng-a yagu alanga-ni yirda.*
 1.SG.(ERG) 1.SG.A-PST leave girl.II-ERG father.I(ACC)
 'I left my father (when I was) a girl.' (conversation)

As their name suggests, secondary predicates introduce a second domain of predication into the clause. I will refer to such secondary predicates as predicative adjuncts²⁸ and assume that they are values of the grammatical function ADJ-P in the f-structure.²⁹

It is clear that in this secondary predicate function, the case marker does not construct its regular GF, but rather functions to identify the secondary predicate's referent with a particular argument in the clause: the ergative case marker, for example, does not function to construct the SUBJ relation in this use (since secondary predicates are sentence-level adjuncts), but instead indicates that the referent of the predicative nominal is identified with ergative argument (the SUBJ) of the clause. I assume that the semantic structure of the secondary predicate *alanga* is that of a simple one place predicate, namely *girl*(Arg1), where I use the informal notation 'Arg1' to denote the first (and only) argument of the predicate.³⁰ The information

However, for the purposes of this work, I will follow Simpson and assume that this is how they are best treated.

²⁷Secondary predicates in Australian languages cover a wide range functions and detailed research into the syntactic, semantic and discourse factors governing their distribution is greatly needed. The purpose of this discussion is not to give a comprehensive analysis of secondary predicates, but to suggest a way in which the function of case marking on secondary predicates could be naturally incorporated into the constructive case model.

²⁸Note that some verbs can subcategorize for secondary predicates on one of their arguments. *Manku* in its meaning of 'feel' subcategorizes for a secondary predicate on its subject as in (i):

- (i) *Manku ngi-ngg-a baginga*
 feel 1.SG.S-RR-NFUT bad.II(NOM)
 'I don't feel well.' (conversation)

²⁹What I am calling ADJ-P was called XADJ in Bresnan (1982a).

³⁰Thus, my Arg1 is identical here to the *R* of Grimshaw (1990) and Williams (1994) which denotes the single argument of referential nominals.

carried by the ergative case marker in its secondary predicate use in (34), then, is that given in (36), compared with that of its regular function in (37):

- (36) ((ADJ-P ↑) SUBJ CASE) = ERG
 (↑_σ Arg1) = ((ADJ-P ↑) SUBJ)_σ

- (37) (SUBJ ↑)
 (↑ CASE) = ERG

The designator (ADJ-P ↑) constructs the ADJ-P relation for the secondary predicate, and the additional information (SUBJ CASE) = ERG specifies that the clause in which the ADJ-P is contained contains a subject with ergative case. The equation (↑_σ Arg1) = ((ADJ-P ↑) SUBJ)_σ identifies the Arg1 of the secondary predicate's semantics with the semantics of the SUBJ. Thus, the f-structure constructed by the secondary predicate *alanga-ni* in (35) is that in (38). For present purposes, I indicate the referential identity between the ADJ-P and the relevant argument with subscripts on the grammatical function attribute in the f-structure, although this information is actually represented in the semantic structure.³¹

- (38)
$$\left[\begin{array}{l} \text{SUBJ}_i \text{ [CASE ERG]} \\ \text{ADJ-P}_i \text{ [PRED 'girl']} \end{array} \right]$$

The f-structure for the whole clause is given in (39):

³¹Another possibility would be to assume that the secondary predicate contains an f-structure subject and that the association between the secondary predicate and the relevant argument is done in the f-structure, rather than in the semantics (Simpson 1991). However, as far as I am aware, there is no other evidence for the presence of a SUBJ in the f-structure in these cases and so I assume that this association is done in the semantic structure.

- (39)
$$\left[\begin{array}{l} \text{SUBJ}_i \left[\begin{array}{l} \text{PRED 'PRO'} \\ \text{PERS 1} \\ \text{NUM SG} \\ \text{CASE ERG} \end{array} \right] \\ \text{PRED 'leave (SUBJ OBJ)'} \\ \text{OBJ} \left[\begin{array}{l} \text{PRED 'father'} \\ \text{GEND MASC} \\ \text{CASE ACC} \end{array} \right] \\ \text{ADJ-P}_i \left[\text{PRED 'girl'} \right] \end{array} \right]$$

This alternative lexical entry can be captured by assuming a general morphosyntactic rule that creates an alternative entry for all case markers that can license secondary predicates.³² The rule replaces the designators (GF $\uparrow$) and $(\uparrow \text{ CASE}) = X$ in the basic lexical entry of the case marker with $((\text{ADJ-P } \uparrow) \text{ GF CASE}) = X$, and $(\uparrow_\sigma \text{ Arg1}) = ((\text{ADJ-P } \uparrow) \text{ GF})_\sigma$ in the new entry.

Thus, in this way Simpson's analysis of the unmerged interpretation of modifiers can be incorporated into the present model of case: modifiers can be generated within the f-structure of their head, in which case they function attributively, having the merged interpretation (in Warlpiri); or they can function as secondary predicates, in which case they receive the unmerged interpretation (at least, in Warlpiri). The fact that nominals in the latter function can not be contained within the same c-structure NP as the nominal they modify is captured by the fact that modifiers within NPs are constrained to have the ADJ function in the c-structure, which cannot unify with the ADJ-P function of the secondary predicate. Note that, unlike regular nominal modification in which the modifying nominal is specified as having the adjunct function in its lexical entry, nominals functioning as secondary predicates do not have this property: the ADJ-P grammatical function is coming from the case marker instead. In this way we capture the fact that predicative nominals are heads in the same way that head nominals in other functions are. Furthermore, this analysis captures the fact that the function of the case marker in the two different constructions is different: in one it functions to agree with the GF constructed by the

³²The case markers that this rule applies to will be language specific. In Wambaya it appears that secondary predicates are possible only on the subject (Nordlinger, In Press), in Warlpiri they are possible at least on absolutive and dative objects also (Hale 1994).

f-structure head; in the other it identifies the semantic argument of the secondary predicate with a particular GF in the main clause.³³

4.2.2 Gender and number agreement

A particularly appealing result of this approach to case marking is that other agreement facts, such as gender and number agreement, also fall directly out of this system. Consider the following examples from Warlpiri (40) and Wambaya ((41), (42)).

- (40) *Kurdu-jarra-rlu ka-pala maliki wajili-pi-nyi*
 child-DU-ERG PRES-3.DU.SUBJ dog(ABS) chase-NPST
wita-jarra-rlu.
 small-DU-ERG
 'The two small children are chasing the dog.'
 (Austin and Bresnan 1996:225, ex. 13)

- (41) *Yandu ngi-n bungmaj-buli-ja*
 wait 1.SG.S(PRES)-PROG old.person-DU-DAT
gijilulu-nguj-buli-ja.
 money-PROP-DU-DAT
 'I'm waiting for the two old women with money.' (conversation)

- (42) *Ngajbi ng-a nangi-marnda-rna alalangmiminya.*
 see 1.SG.S-PST 3.SG.M.POSS-PL-II(ACC) daughter.PL.II(ACC)
 'I saw his daughters.' (conversation)

As these examples show, modifiers in Warlpiri and Wambaya must agree with their head in number and in gender (for Wambaya), as well as in case.³⁴ A standard formal approach to this might be to assume that the modifiers in these examples themselves have a number feature (i.e. that, say, the f-structure to which *wita-jarra-rlu* immediately belongs contains a NUM attribute whose value is DU), and that a general principle of agreement, much like the Adjunct Agreement Convention of Simpson's mentioned above, would ensure that NUM specifications of modifiers are

³³This analysis of secondary predication suggests an obvious way of incorporating an account of the use of case on nonfinite subordinate clauses in many Australian languages to indicate the function of the controlling argument in the main clause (e.g. Blake 1987, Dench and Evans 1988), and of the use of ergative case to mark 'subject-orientation' in languages like Yankunytjatjara (Dench and Evans 1988:17). Further research is required.

³⁴I will be concerned only with regular ADJUNCTS here, not secondary predicates. These latter modifiers also agree in number and gender with the NP they modify; for present purposes I assume that this is due to their identification with the referent of the NP in the semantic structure.

consistent with that of their head. However, there is something unintuitive about assuming that the modifiers also contain number values. In (40), for example, dual number is not a semantic property of the modifier *wita* 'small'; rather, the dual number marker functions only to agree with the number of the head noun. This point is seen most clearly with the possessive pronoun in (42). The modifier *nangi-marndi-rna* has two different number and gender specifications: masculine gender and singular number, which is inherent to the meaning of the pronoun—i.e. this information remains constant in any context in which the pronoun appears—as well as feminine gender and plural number, which appear in agreement with the head noun *alalangmiminya*.³⁵ Clearly these two different number and gender features cannot belong to the same f-structure, since their values are not unifiable,³⁶ and so we need a way of capturing the fact that while these different number and gender values are marked on a single word, they actually refer to two different f-structures.

The analysis presented here provides a simple and intuitive analysis of this problem for free. Consider first the simpler example in (40). Let's assume that the lexical entry of the modifier is that in (43), and that of the dual suffix is as in (44):

- (43) *wita*: ($\uparrow$ PRED) = 'small'
((ADJ $\uparrow$))

- (44) *-jarra*: ($\uparrow$ NUM) = DU

In this example, *wita* functions as an adjunct, and thus the IO designator in its lexical entry will be active. Thus, on its own, *wita* constructs the f-structure in (45):

- (45) $\left[\text{ADJ} \left[\text{PRED} \text{ 'small'} \right] \right]$

By virtue of the principle of morphological feature composition defined in (4.2.1) above, when the number suffix is added to the stem *wita*, the IO designator (ADJ $\uparrow$) is embedded within its lexical entry, resulting in the designator ((ADJ $\uparrow$) NUM) = DU. Thus, rather than placing the NUM specification into the ADJ f-structure, this will actually place it into the higher f-structure, that to which the head *kurdu* belongs:

³⁵This type of 'double marking' on possessive items is widespread crosslinguistically—see Corbett 1991 for discussion.

³⁶Unless, of course, we consider them to belong to two different number/gender attributes—see Zwicky 1986.

- (46) $\left[\begin{array}{cc} \text{NUM} & \text{DU} \\ \text{ADJ} & \left[\text{PRED} \text{ 'small'} \right] \end{array} \right]$

Since the NUM value constructed by the modifier actually contributes information about the f-structure of the head, rather than the f-structure of the modifier, number agreement will follow automatically: if the attribute constructs a different number value from the head, then the two won't unify, and the structure will be ungrammatical.³⁷

In the same way, this analysis provides an automatic account for the two different gender and number specifications that we saw on the possessive pronoun in (42). I will assume that the lexical entry of the possessive pronoun *nangi* is as in (47):³⁸

- (47) *nangi*:- ($\uparrow$ PRED) = 'PRO'
($\uparrow$ PERS) = 3
($\uparrow$ GEND) = MASC
($\uparrow$ NUM) = SG
(ADJPOSS $\uparrow$)

The various features contained in this lexical entry are not affected by the IO designator (ADJPOSS $\uparrow$), and so these carry information about the f-structure of the possessor. Thus, *nangi*- constructs the f-structure:

- (48) $\left[\begin{array}{cc} \text{ADJPOSS} & \left[\begin{array}{cc} \text{PRED} & \text{'PRO'} \\ \text{PERS} & 3 \\ \text{GEND} & \text{MASC} \\ \text{NUM} & \text{SG} \end{array} \right] \end{array} \right]$

Then, in the same way that we saw above, the lexical entries of *-marnda*-(($\uparrow$ NUM) = PL) and *-rna*(($\uparrow$ GEND) = FEM) will embed the IO designator of the stem, thereby constructing information about the higher f-structure, namely that of the head *alalangmiminya*:

³⁷Of course, this doesn't in itself explain why the modifier has to have any number marking at all; since unmarked nominals in Australian languages are usually unspecified for number, the modifier could in principle carry no number marking, in which case unification would be possible. I assume that this situation is ruled out by a principle of morphological blocking (Andrews 1990a), which requires the use of the most specific form compatible with the context. In some languages this blocking may need to be optional: Nash (1986:174), for example, reports NPs such as *kurdu-ngku wita-jarra-rlu* 'child-ERG small-DU-ERG' to be marginally grammatical in Warlpiri.

³⁸For expository purposes I assume a simplified representation of possession here, treating it as the value of an attribute ADJPOSS.

- (49)
$$\left[\begin{array}{cc} \text{GEND} & \text{FEM} \\ \text{NUM} & \text{PL} \\ \text{ADJPOSS} & \left[\begin{array}{cc} \text{PRED} & \text{'PRO'} \\ \text{PERS} & 3 \\ \text{GEND} & \text{MASC} \\ \text{NUM} & \text{SG} \end{array} \right] \end{array} \right]$$

Hence, this approach gets the analysis of the possessive pronoun *nangi-marnda-rna* exactly right. While the pronoun carries two different number and gender features morphologically, only one set of these contributes information about the possessor; the other is unified into the f-structure of the nominal that the pronoun modifies. This captures the intuition that only one set of number and gender features actually refers to the possessive pronoun; there is no need to assume that the modifier contains two different number and gender features itself at f-structure.

In this section we have seen that the model of constructive case can account naturally for case agreement between heads and modifiers, as well as for agreement in gender and number. Furthermore, this model is compatible both with the presence and the absence of corresponding phrase structure, thereby accounting for agreement in languages like Kalkatungu that do not have nominal phrases at all, as well as agreement in both continuous and discontinuous constituents in those languages that do. In the next two sections I extend this discussion of case marking to functions other than the simple construction of grammatical relations, functions which have not received a unified account in any other model of case that I am aware of, and show that the model presented here can provide a straightforward analysis for these also.

4.3 Sentential Adjuncts in Warlpiri

One of the fundamental ways in which this approach to case marking differs from more standard approaches is that it treats case markers as directly contributing information about the whole clause: the IO designator (SUBJ ↑) carried by an ergative case marker, for example, refers directly to the clause, specifying that the clause contains a SUBJ attribute with the value ↑. If it is true that case markers refer directly to the clause, then we might expect them to be able to provide other types of clausal information also, apart from just information about grammatical relations. In fact, there are many examples in dependent-marking Australian languages in which case markers do just that. In this section I show that case can be marked on sentence-modifying adjuncts in Warlpiri to show case agreement with the subject of the clause. Interestingly, the analysis proposed for this use of case automatically accounts for the restriction of instrumental adjuncts

to transitive clauses in Warlpiri also. Then, in section 4.4 I discuss the use of case markers to encode tense information, including the particularly striking example of modal case in Kayardild in which case markers in this function appear on all non-subject arguments of the clause. Both of these types of extended case functions provide strong evidence that case morphology does not carry information only about its dominating NP, as standard treatments suggest, but contributes information to the clause as a whole.

In Warlpiri, time modifiers can agree in case with the subject of the clause. In the transitive clause (50), the adjunct *jalangu* can optionally be inflected with the ergative case; in contrast, ergative case marking is impossible when the clause has a non-ergative subject, as in the intransitive clause (51):³⁹

- (50) *Jalangu(-rlu) ka-lu-jana puluku turnu-ma-ni*
 today(-ERG) PRES-3.PL.S-3.PL.O bullock(ABS) muster-CAUS
yapa-ngku.
 man-ERG
 'The people are mustering the cattle today.' (Simpson 1991:208)

- (51) *Jalangu*(-rlu)-rna ya-nu-rnu ngaju*
 today*(-ERG)-1.SG.S go-PST-HITHER 1.SG(ABS)
 'I came today.' (Hale 1982b:281, ex. 116a)

These temporal adjuncts clearly modify the whole clause and thus there is no sense in which the case marker can be considered to be constructing a subject relation. Rather, in (50), the ergative case on *jalangu* is functioning to indicate that the clause which it modifies contains a subject whose case is ergative.

This use of the ergative case in Warlpiri has a straightforward analysis in the present theory of case. Firstly, there is independent evidence in Warlpiri that the ergative case can construct an adjunct relation: as is common in Australian languages (Blake 1977), the ergative case in Warlpiri also functions to mark instrumental adjuncts, as in (52).

³⁹Note that the ergative case marker on the adjunct refers to the case of the subject, not to transitivity, since it is also possible with the few intransitive verbs that take ergative subjects (Mary Laughren, pers. comm., example based on Hale (1982b:239, ex. 32a)):

- (i) *Jalangu-rlu ka ngarrka-ngku ngungkurru pangi-rni.*
 today-ERG PRES man-ERG snore dig-NPST
 'Today the man is snoring.'

- (52) *Wawirri kapi-rna kurlarda-rlu panti-rni ngajulu-rlu.*
 kangaroo(ABS) FUT-1.SG.S spear-ERG spear-NPST 1.SG-ERG
 'I will spear the kangaroo with a spear.' (Hale 1982b:276, ex. 103(b))

Thus, the ergative case marker in Warlpiri can construct two grammatical relations, as in (53):

- (53) *-ngku*: (SUBJ $\uparrow$) $\vee$ (ADJ $\uparrow$)

On the present analysis case markers also carry a case feature designator, such as ($\uparrow$ CASE) = ERG. This contributes the information that the f-structure to which the case marker immediately belongs has the value ERG for the attribute CASE. Notice that this is formally equivalent to the more complex designator ((SUBJ $\uparrow$) SUBJ CASE) = ERG: this encodes the information that the f-structure to which the case marker belongs ($\uparrow$) is the value of a SUBJ attribute of the higher f-structure denoted by (SUBJ $\uparrow$), and that this higher f-structure has a SUBJ attribute which has a CASE attribute whose value is ERG. The agreement use of the ergative case in (50) can be captured by simply assuming that in Warlpiri the case feature of the ergative case does not have the simple form ($\uparrow$ CASE) = ERG, but instead has the more complex form ((GF $\uparrow$) SUBJ CASE) = ERG. In other words, it specifies that the clause (denoted by (GF $\uparrow$)) has a SUBJ whose CASE value is ERG. When the ergative case marker constructs the SUBJ relation this will be formally equivalent to the regular ($\uparrow$ CASE) = ERG. However, when the ergative case marker constructs the ADJ relation, this will have the effect of requiring that the SUBJ of the clause also have ergative case. Thus:

- (54) *-ngku/-rlu*: (SUBJ $\uparrow$) $\vee$ (ADJ $\uparrow$)
 ((GF $\uparrow$) SUBJ CASE) = ERG

- (55) *Jalangu-rlu* 'today-ERG'

[	SUBJ	[	CASE	ERG	]
]	ADJ	[	PRED	'today'	]

Since the ergative case is also used to mark instruments in Warlpiri, this analysis of the ergative will require that these adjuncts only appear in clauses with ergative subjects also. In fact, this appears to be exactly right: Hale (1982b) states that the instrumental use of the ergative suffix is limited to transitive sentences (p. 275) and that it is always understood

that the entity using the instrument is that denoted by the *ergative* subject (p. 276, emphasis mine).⁴⁰

An analysis of case that does not treat case morphology as carrying clause-level information will have difficulty accounting for such case agreement on sentence modifiers. Simpson (1991), for example, is required to assume that the clause itself has a case feature, which is identified with that of the subject by way of the equation (($\uparrow$ SUBJ) CASE) = ($\uparrow$ CASE) attached to the phrase structure rule expanding S. Adjuncts that modify the clause then, can optionally agree in case with the case of the clause (p. 209). In contrast, as we have seen, both the appearance of the ergative case on sentential adjuncts and the fact that instrumental adjuncts do not appear in intransitive clauses in Warlpiri can follow straightforwardly from the analysis of constructive case presented here.⁴¹

⁴⁰Note, however, that instrumental adjuncts are restricted to transitive sentences in some other Australian languages too, where it is not marked with the ergative case (e.g. Kayardild (Nick Evans pers. comm.)). For these languages we may therefore need to appeal to a semantic explanation.

⁴¹Of course, this raises the question of why it should be that these adjuncts are sensitive to the case of the subject as opposed to another argument. Since transitive object is marked with the default absolutive case in Warlpiri, it follows that the absolutive would not be reanalysed to show agreement with the case of the object (or intransitive subject) in this way: since the absolutive is the default it does not construct a grammatical feature at all (see Chapter 3). However, in languages that have a marked accusative case, we would predict that such a reanalysis is possible: that the accusative case marker could come to be used on adjuncts to indicate that the clause also contains an accusative object. In fact, this appears to have happened in Korean, in which the accusative case can be marked on certain types of adverbials when the object is also inflected with the accusative case. When the clause is passivized and there is no longer an accusative object, the same adverbials must be inflected with the nominative case instead (Maling 1989, Wechsler and Lee 1996:635). (Note however that the situation in Korean is a little more complicated: this use of the accusative case is extended beyond just clauses with accusative objects, see Wechsler and Lee (1996) for discussion.)

However, given the present analysis, it could be possible for another case marker, say LOC, to be reanalysed in the same way, providing the information in (i) rather than (ii):

- (i) (ADJ $\uparrow$)
 ((GF $\uparrow$) ADJ CASE) = LOC
- (ii) (ADJ $\uparrow$)
 ($\uparrow$ CASE) = LOC

I assume that functional considerations rule out such a reanalysis, namely that the presence of adjuncts is unpredictable (adjuncts being generally optional) and so does not reliably identify a class of sentences in the same way that the presence of an ergative subject does.

4.4 Case and Tense/Aspect/Mood Marking

A particularly striking example of the use of case markers to provide clause-level information is found in languages like Pitta Pitta and Kayardild, in which case markers carry information about tense (and, in the latter case, tense/aspect/mood). As far as I am aware, such functions of case have not been incorporated into other theories of case marking, and are extremely difficult to account for on any view of case that does not allow case morphology to contribute information about the whole clause, but assumes it to carry information only about its containing NP. In contrast, the use of case to mark tense/aspect/mood information is a natural extension of the constructive case analysis: if case markers can provide such clause-level information as grammatical function, and the case of main clause subjects (4.3), then we would expect them to be able to provide tense/aspect/mood information also.

In Pitta Pitta (Blake 1979b), not only do case markers carry tense information—distinguishing future from non-future—but the system of case marking differs depending on the tense involved, as shown in the following table (taken from Blake 1987:59, Table 13).⁴²

(56)		S	A	O	INST
	<i>Nonfuture</i>	zero	-lu	-nha	-lu
	<i>Future</i>	-ngu	-ngu	-ku	-ngu

Thus, in the nonfuture tenses, there is a three way case distinction between nominative (S), ergative (A) and accusative (O). In the future tense, however, a marked nominative case covers both S and A functions, while O is marked with a different case marker (the dative). Note that in both tenses the instrumental is marked with the same case marker as the transitive subject, as is usual in Australian languages (Blake 1977).

While complex, this system is easily incorporated into the present model of case.⁴³ I will assume that the lexical entries of each of the case markers are those given in (57).⁴⁴

⁴²I have omitted from Blake's table the genitive/purposive case and the dative case, which do not distinguish tense. Note however, that the dative case is *-ku*, the same form that is used to mark the accusative in future tense clauses. The pronouns exhibit the same case system as the nominals, but there are some differences in form, see Blake (1979b:195) for discussion.

⁴³Note that I am only concerned here with capturing the synchronic functions of the respective case markers. Ideally this analysis would be supplemented with a diachronic explanation for how these case markers came to develop this tense marking function in the first place.

⁴⁴Verbs in Pitta Pitta make a three way tense distinction between past, present, and future tenses. In the latter tense the verb is unmarked, the tense information being un-

- (57) a. *-lu*: (SUBJ ↑) ∨ (ADJ ↑)
 (↑ CASE) = ERG
 ((GF ↑) TENSE) = ¬ FUT
- b. *-nha*: (OBJ ↑)
 (↑ CASE) = ACC
 ((GF ↑) TENSE) = ¬ FUT
- c. *-ngu*: (SUBJ ↑) ∨ (ADJ ↑)
 (↑ CASE) = ¬ ACC
 ((GF ↑) TENSE) = FUT
- d. *-ku*: (OBJ ↑)
 (↑ CASE) = ACC
 ((GF ↑) TENSE) = FUT
- e. (↑ CASE) = NOM.

Thus, when the tense of the clause is future, nominals are inflected with *-ngu* when the subject and *-ku* when the object.⁴⁵ The less specific case feature of the former (i.e. ¬ ACC, which in this case could be defined as ERG ∨ NOM) enables it to function as either transitive or intransitive subject. When the clause is in the past or present tense, *-lu* appears on transitive subjects, *-nha* on objects, and intransitive subjects are assigned nominative (unmarked) case. The equation ((GF ↑) TENSE) = X in all of the entries specifies the clause (represented by (GF ↑)) as having the tense value X. This will then unify with the tense marker provided by the verb or, in the case of the future tense in which the verb is unmarked for tense, will be the sole provider of the tense information for the clause.⁴⁶

Kayardild (Evans 1995a) provides an especially striking example of the use of case markers to provide tense/mood information since it has developed a system of case-tense/mood marking largely distinct from the system of case constructing grammatical functions. In other words, certain case markers have an alternative use in which they provide tense/mood information, and in this use (called the 'modal' use by Evans) the marking of

ambiguously provided by the case markers (Blake 1979b). The non-future case markers thus co-occur with both present tense and past tense forms of the verb, represented here by defining their tense value negatively, as being NOT the future tense (which can be defined as the disjunction of present tense and past tense).

⁴⁵Blake (1987:60) notes that in the closely related language Wangka-Yutjuru the accusative marker *-nha* is found in both future and nonfuture tense clauses. Thus, in this language, *-nha* is simply unspecified for tense, and the dative marker *-ku* does not have the alternative lexical entry in (57d).

⁴⁶A similar analysis could be provided for the restriction of ergative case to clauses with perfective aspect in Hindi (e.g. T. Mohanan 1994a:69-70).

tense/mood is their primary function.⁴⁷ Consider the following examples (from Evans 1995a:107-108):⁴⁸

- (58) *Ngada warra-ja ngarn-kir.*
I(NOM) go-ACT beach-ALL
'I am going/have gone to the beach.'

- (59) *Ngada warra-ju ngarn-kiring-ku.*
I(NOM) go-POT beach-ALL-M.PROP
'I will go to the beach.'

- (60) *Ngada warra-jarra ngarn-kiring-kina.*
I(NOM) go-PST beach-ALL-M.ABL
'I went to the beach.'

- (61) *Ngada warra-da ngarn-kiring-inj.*
I(NOM) go-DES beach-ALL-M.OBL
'I would like to go to the beach.'

In (59)–(61) the allative complement *ngarn-kir* is inflected with an additional case affix that signals the tense and/or mood of the clause: the propriative case encodes futurity in (59), the ablative case encodes past in (60), and the use of the oblique in (61) indicates a strong emotion (here, desire) towards the event.

Case suffixes in modal function appear on all non-subject NPs in the clause.⁴⁹ The following examples show the distribution of modal case across different NP constituents (62)–(64), as well as among members of the same NP constituent ((64) and (65)). Examples (66) and (67) below show that modal case marking also appears on sentential modifiers, such as time

⁴⁷A similar system to Kayardild's is also found in the closely related language Lardil (Hale 1967, Evans 1995a).

⁴⁸Case markers in modal use are indicated with an M. in the gloss.

⁴⁹In fact, the distribution of modal case marking is more complicated than this suggests. In addition to not appearing on subject NPs, and any NPs construed with the subject (such as subject complements, and second predicates on the subject), modal case is also not found on certain non-subject NPs, where it might otherwise be expected. For example, the 'intentional objects' of verbs such as *janija* 'search' are never marked with modal case, nor are (some) body part instruments and demoted human agents (Evans 1995a:412). Evans argues that all of these NPs can be seen to be semantically associated with the subject in some way, meaning that the absence of modal case marking on these constituents can be linked to the general blocking of modal case on subject-related NPs (pp. 416-423).

nominals. Note that direct objects such as *yakuri* in (62) do not take any other case marker, but are inflected with the modal case directly.

- (62) *Ngada yalawu-jarr yakuri-na mijil-nguni-na.*
I(NOM) catch-PST fish-M.ABL net-INST-M.ABL
'I caught fish with the net.' (Evans 1995a:108, ex. 3-30)

- (63) *Ngada yalawu-ju yakuri-wu mijil-nguni-wu.*
I(NOM) catch-POT fish-M.PROP net-INST-M.PROP
'I will catch fish with the net.' (p. 109, ex. 3-31)

- (64) *Dulk-uru-y dangka-y barrwaa-j dulk-i.*
place-PROP-M.LOC man-M.LOC block-ACT place-M.LOC
'(McKenzie, a white settler) blocked the traditional owners off from their land.' (p. 379, ex. 9-260)

- (65) *Ngijin-jina dun-kina nyingka buru-tharr*
my-M.ABL husband-M.ABL 2.SG(NOM) take-PST
'You've taken my husband!' (p. 628, ex. 12)

The modal case markers can not be considered to be simply copied from the tense/mood marking on the verb. For some case markers, such an analysis might be tempting, since they are formally identical to the corresponding verbal inflection. For example, the potential verb inflection is formally identical to the corresponding propriative case (e.g. (63)), even having the same range of allomorphic variation (Evans 1995a:399). However, as Evans shows in detail (Ch. 10), this analysis is not generally tenable, since the semantics of modal case do not correlate consistently with the semantics of the verbal inflections. Rather, each inflectional category carries a different component of the semantics of the tense and mood categories, and it is the interaction of the information contributed by the modal case and by the verbal inflection that determines the tense/mood category for the clause as a whole. Consider the following examples.

- (66) *Ngada kurri-nangku mala-wu (balmbi-wu).*
1.SG(NOM) see-NEG.POT sea-M.PROP morrow-M.PROP
'I won't be able to see the sea (tomorrow).' (p. 404, ex. 10-12)

- (67) *Ngada kurri-nangku mala-y (barruntha-y).*
1.SG(NOM) see-NEG.POT sea-M.LOC yesterday-M.LOC
'I could not see the sea (yesterday).' (ex. 10-13)

In these examples the verbal inflection remains constant, and variation in the modal case causes a change in the interpretation of the sentence. The verbal inflection in this case is signalling inability; the presence of the modal propriative case in (66) places the speaker's inability in the future, while the locative case in (67) indicates that there was a real occasion (here, yesterday) when the speaker was unable to see the sea (p. 404).⁵⁰

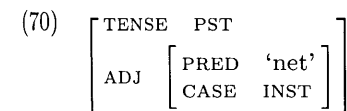
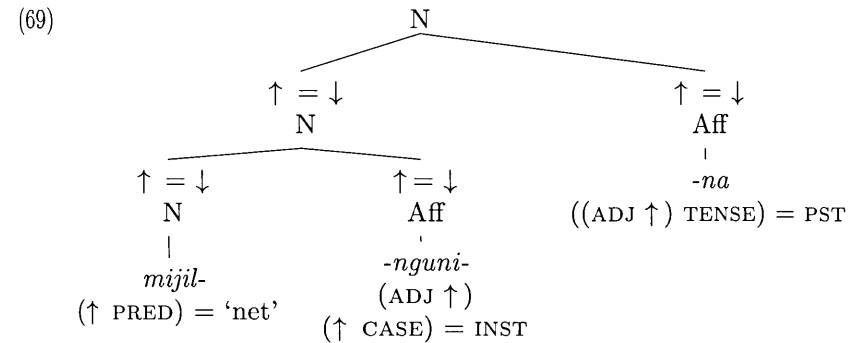
Case markers in this modal use do not construct grammatical functions, but appear to be a special type of tense/mood marker. I assume that they should be treated in a way analogous to tense/mood markers on verbs: contributing a particular value for the attribute TENSE.⁵¹ For present purposes, I will represent this value as that of the case marker's prototypical use—e.g. propriative case will be TENSE = FUT, and ablative case TENSE = PST—although as we saw above, this is an oversimplification of the semantics of the case marker and these values need to be further refined (see footnote 50). Thus, the basic information contributed by the ablative case in modal function is as in (68) (this will be slightly revised below).

(68) *-na*: ($\uparrow$ TENSE) = PST

When this case marker is attached to a stem that contains an IO designator, such as the instrumental phrase *mijil-nguni-na* 'net-INST-M.ABL' in (62), or a temporal adjunct like *balmbi* 'morrow' in (66) (recall from 4.2 that nominal stems can contain the IO designator (ADJ $\uparrow$) in their lexical entries) morphological composition will result in the TENSE value in this lexical entry being unified into the f-structure of the clause. Thus, *mijil-nguni-na* has the morphological structure in (69), constructing the f-structure in (70). In (70), the outermost f-structure is that which corresponds to the whole clause.

⁵⁰ As Avery Andrews points out (pers. comm.), this interaction between the semantics of the verbal inflection and modal case suggests an analysis along the lines of that proposed by Nordlinger and Bresnan (1996) for the split tense/mood marking in Wambaya. In this analysis the different superordinate tense values are decomposed into more primitive features, with the various tense inflections providing different (possibly underspecified) combinations of these features, and combining to fully specify the tense category for the clause as a whole.

⁵¹ In this way they differ from the Pitta Pitta case markers discussed above, which construct a regular grammatical function also.



In actual fact, the lexical entry in (68) doesn't quite account for all of the data. Recall that direct object NPs inflect only with the modal case marker, as exemplified by *yakuri-* in (71), repeated from above.

(71) *Ngada yalawu-jarr yakuri-na mijil-nguni-na.*
 I(NOM) catch-PST fish-M.ABL net-INST-M.ABL
 'I caught fish with the net.' (Evans 1995a:108, ex. 3-30)

If the ablative case in this instance were to contribute only the information given in (68), the TENSE feature would end up being unified into the same f-structure as the information provided by the nominal stem. Thus, *yakuri-na* would correspond to the f-structure in (72).



Presumably there is something semantically anomalous about referential forms having tense values, and so such a structure would be ruled out. Thus, it appears that there are still some instances in which case in modal function constructs a grammatical relation: it can optionally construct the grammatical relation of OBJECT. This can be captured for the modal ablative case by modifying the above lexical entry to include an optional OBJ, as in (73). I assume that the lexical entries for all other modal cases are

analogous to that of the modal ablative, with the PST tense value replaced by the appropriate tense/mood information for each suffix.⁵²

$$(73) \quad -na: (((OBJ) \uparrow) TENSE) = PST$$

This now says that the ablative can either carry the information $(\uparrow TENSE) = PST$ —as in (69)—or it can carry the information $((OBJ \uparrow) TENSE) = PST$, in which case it provides a tense feature for the clause and constructs the OBJ relation for the nominal to which it is attached. When attached to a plain nominal stem such as *yakuri*, the modal case will construct the object relation, as in (74):

$$(74) \quad \left[\begin{array}{cc} TENSE & PST \\ OBJ & \left[\begin{array}{cc} PRED & \text{'fish'} \end{array} \right] \end{array} \right]$$

I assume a simple morphosyntactic rule adds an optional $(OBJ \uparrow)$ designator to the lexical entries of all case markers that contribute tense information, in order to capture the generalization that all cases with modal function can optionally construct the OBJ relation.

Thus, this analysis of modal case can straightforwardly account for its function to construct tense and mood information for the clause, as well as its appearance on object NPs, on temporal adjuncts, and on NPs that are already inflected with a case marker.⁵³ In addition, this analysis also accounts for the fact that modal case does not appear on subject NPs. This follows in the following way. Since the only grammatical relation constructed by the modal case marker is the object relation, there is no way that modal case could be affixed to a bare nominal stem that had subject function. Thus, the only possibility would be for the subject nominal to be affixed with a subject-constructing case suffix first, which the modal case marker could follow, analogous to the example given in (69). However, the only subject case in Kayardild is the nominative case, which is a de-

⁵²Modal case is also added directly to nominals functioning as locative adjuncts, as in the following example:

- (i) *Nyingka ngaka-tharra kabara-na*
 2.SG(NOM) wait-PST saltpan-M.ABL
 'You waited on the saltpan.' (Evans 1995a:130, ex. 4-4)

Evans describes this as being due to a general ban on the locative case marker being followed by anything other than the oblique case (p. 129). I will assume for present purposes that the locative case morpheme is present in the morphosyntactic structure, but is deleted at the morphophonological level due to this constraint.

⁵³I will add to this analysis of modal case slightly in 5.3.

fault case—it appears only where no other case has been assigned (Evans 1995a:136). If the nominative case is assigned to a nominal not already inflected with case affix (as described for Wambaya in Chapter 3), it could never be followed by a modal case marker (or other case affix) since the default rule responsible for nominative case assignment will not apply if the nominal is eligible to be inflected with any other case marker.^{54, 55}

The use of case marking to provide tense and mood information for the clause is extremely puzzling for standard views of case in which case markers do no more than contribute a case feature for their immediately containing NP. In contrast, as we have seen, this function is predicted by, and therefore follows naturally from, a model of constructive case:⁵⁶ if case markers carry grammatical relations information about the whole clause, it is not surprising that they might come to carry other information also.

⁵⁴This analysis does not account for the absence of modal case on NPs such as the intentional objects of verbs like 'search', however (see footnote 49). I have no explanation for these exceptions, but will assume that they can be ruled out on semantic grounds, as suggested by Evans (1995a:10.3.2).

⁵⁵There may also be a formal reason for not having modal case on subjects, arising out of functional control structures (we will see in 5.3 that modal case is also found on members of controlled clauses). Ron Kaplan points out a potential problem for the constructive case approach that could arise with SUBJ—SUBJ control. As far as I am aware, this problem never arises empirically, and it has no bearing on any data that I am concerned with in this work. However, it is worth mentioning here should it ever arise.

Consider the following f-structure, which might be a skeletal f-structure for a sentence such as 'Mary kept eating'.

$$(75) \quad \left[\begin{array}{cc} PRED & \dots \\ SUBJ & [\dots] \\ XCOMP & 2: \left[\begin{array}{cc} PRED & \dots \\ SUBJ & [\dots] \end{array} \right] \end{array} \right]$$

Suppose there was a modal case marker that constructed the SUBJ function as well as providing a tense value for the f-structure containing the SUBJ—i.e. carrying the equation $((SUBJ \uparrow) TENSE) = PST$. If this case marker were attached to the main clause subject (say, 'Mary') it would specify that the clause in which 'Mary' is a subject has past tense. Yet 'Mary' is a subject in both the main clause and the subordinate clause, thus we would not know whether this tense feature belongs to f-structure 1 or f-structure 2. While this would certainly be a problem, there are no instances in which it arises in the data I have considered throughout this work—interestingly, modal case in Kayardild is never found on subjects—and there may not be any examples in which it does so. However, further research is required.

⁵⁶In conjunction with a good semantic and diachronic theory of what developments in the use of case markers are possible—see Evans (1995a:10.4) for a detailed discussion of the evolution of the modal case system in these Tangkic languages.

4.5 Summary

In this chapter I have shown how the model of constructive case introduced in Chapter 3, motivated independently in order to accurately capture the nonconfigurational nature of these dependent-marking languages, also provides a simple and intuitive account for many other properties of case marking. In 4.2 I defined a general principle of morphological composition that constrains the way in which functional information carried by pieces of the morphology can combine to construct the f-structure for a word. This then allows an analysis of case, gender and number concord among both continuous and discontinuous constituents to follow naturally. And in 4.3 and 4.4 I discussed two particularly unusual functions of case—the case agreement with the subject of temporal adjuncts and instrumentals in Warlpiri, and the use of case to mark tense and/or mood in Pitta Pitta and Kayardild—both examples in which case markers carry clause-level information apart from that concerning grammatical function. Such uses are problematic for more standard views of case as a contributor of NP-internal information only. In contrast, we saw that these functions can not only be accounted for in a model of constructive case, but are to be expected. On this model case morphemes already refer to the clause by constructing a particular grammatical function contained within it; these functions simply represent the use of case to carry other types of clause-level information also.

5

Constructive Case II: Case Stacking

In Chapters 3 and 4 I presented an analysis of case marking in which the case morphology itself directly constructs the larger syntactic context in which it appears. I showed that this view of case naturally incorporates the use of case to mark various types of clause-level information including tense/aspect/mood, uses of case that have not received a unified account in other analyses. In this chapter I present some of the strongest evidence in favour of this approach to case marking, by showing that various independently motivated aspects of the analysis automatically account for the complex phenomenon of case stacking. Case stacking, found in many dependent-marking Australian languages, is a particularly striking example of the ability of case markers to construct the context in which they appear since, in this case, case markers do not simply build their immediate context, but each stacked case marker constructs successively higher levels of structure than the one preceding it in the word. The result is that a case marker attached to a nominal may carry information about a phrase three or four levels above.

5.1 Simple Case Stacking

Case stacking (also called ‘multiple case marking’ or ‘suffixaufnahme’), although unusual, is found in various unrelated language groups around the world (see Plank 1995). However, it appears to be in dependent-marking Australian languages that we find it in its most extreme forms—i.e. the possibility of a noun being inflected with up to four case markers in languages such as Kayardild (e.g. Evans 1995a, b). Case stacking (CS) in Australian languages has been well catalogued in the influential survey by Dench and Evans (1988), which was the first detailed discussion of the phenomenon and its various formal properties in languages of Australia. More recent work includes the broader survey by Schweiger (1995), which encompasses the whole Australian continent, and the more language-specific

discussions of Austin (1995), Dench (1995b) and Evans (1995b) in the same volume. I will draw on these discussions for much of the data and information presented here. In addition, Simpson (1983, 1991), working on Warlpiri, and Andrews (1996), concentrating on the languages Martuthunira and Kayardild, have developed detailed and insightful analyses of CS in these respective languages, both within the framework of LFG. Many aspects of my analysis are due to insights of these earlier works.

CS arises when a word (usually a nominal) is inflected with a number of case suffixes, each of which indicates the role of the word in successively higher constituents. The simplest and most common examples are those involving possessive constructions, in which the embedded possessor noun phrase is marked with genitive case (or, as in many Australian languages, the dative case (e.g. Blake 1977)) and then the entire NP is marked for its grammatical role by attaching a case suffix to both the head and the embedded possessor phrase. Thus, the possessor phrase ends up carrying two case markers: one marking possession, and the other indicating the role of the higher NP to which it belongs, as in the following example from Gumbaynggir (Eades 1979:277, ex. 23):

- (1) *Ba:ba-gu junuy-gundi-yu ju:ngu jala:ny jamay barway.*
 father-ERG child-GEN-ERG say-FUT tongue-NOM too big-NOM
 'The child's father will say "(your) mouth is too big".'

In many languages case stacking, if it exists at all, is restricted to such examples with the genitive (e.g. Gumbaynggir, Kalkatungu (Blake 1979a), Yidiny (Dixon 1977), among many others).¹ However, in other languages the requirement of case concord exists in its strictest sense, such that any modifier, even those already inflected with a case suffix, must also carry a case marker indicating the role of the higher NP in which it is embedded. In these languages, case stacking will arise whenever a NP contains a modifying nominal that is already inflected with *any* case suffix(es), thus involving many more case suffixes than just the genitive. Consider the following examples from Warlpiri (Simpson 1991):

¹This has prompted many researchers to analyse the genitive suffix in these languages as a derivational morpheme which derives an adjective-functioning stem that can then take the full range of case inflections (e.g. Dixon 1980:300).

- (2) *Karnta-ngku ka-rla kurdu-ku miyi yi-nyi*
 woman-ERG PRES-3DAT baby-DAT food(ABS) give-NPST
parraja-rla-ku.
 coolamon-LOC-DAT
 'The woman is giving food to the baby (who is) in the coolamon.'
 (p.206, ex.187b.)
- (3) *Karnta-ngku ka-rla kurdu-ku miyi yi-nyi*
 woman-ERG PRES-3DAT baby-DAT food(ABS) give-NPST
parraja-rla.
 coolamon-LOC(ABS)
 'The woman is giving the baby food (which is) in the coolamon.'
 (p.206, ex.187c.)
- (4) *Purlka-ngku ka-rla yapa-ku miyi marda-rni*
 old.man-ERG PRES-3DAT man-DAT food(ABS) hold-NPST
ngurra-ngurlu-ku.
 camp-EL-DAT
 'The old man is holding food for the person (who is on his way) from camp.' (p.243, ex.209)
- (5) *Japanangka-rlu luwa-rnu marlu pirli-ngka-rlu.*
 Japanangka-ERG shoot-PST kangaroo(ABS) rock-LOC-ERG
 'Japanangka shot the kangaroo (while) on the rock.' (p. 196, ex.171a)

In (2), the case-inflected nominal 'coolamon-LOC' is further inflected with the dative case to indicate that it is predicated of the dative argument of the main clause, namely, 'baby'. Similarly, in (4), 'camp-EL' is inflected with the dative case in agreement with the benefactive adjunct 'man-DAT' and in (5) 'rock-LOC' is further inflected with the ergative case to show that it is predicated of the subject rather than the object. In (3), where there is no additional case marker, the locative adjunct is interpreted as having absolutive case, referring to the absolutive object argument 'food' (Simpson 1991:252-253).²

²Alternatively, the rule of absolutive case assignment may not apply, in which case the adjunct would be interpreted as expressing the location of the whole event. In this example, however, such an interpretation would be semantically incongruous.

I assume that languages differ on the domain of application of default case assignments according to the extent to which they allow stacking of overt case markers. In Wambaya, where there is no case stacking, the default can only apply to nominals that are not

Warlpiri allows stacking of up to two case makers. Languages such as Martuthunira (6) (Dench 1995a, b) and Kayardild (Evans 1995a, b), on the other hand, allow (at least) three.³

- (6) *Ngayu nhawu-lha ngurnu tharnta-a*
 1SG.NOM saw-PAST that(ACC) euro-ACC
mirtily-marta-a thara-ngka-marta-a.
 joey-PROP-ACC pouch-LOC-PROP-ACC
 'I saw that euro with a joey in its pouch.' (Dench 1995a:60, ex.3.15)

In (6), the most embedded noun *thara* carries three case inflections. The locative suffix relates 'pouch' with 'joey';⁴ the proprietive suffix relates the embedded phrase 'joey in pouch' to the head nominal 'euro' (note that it is marked on both elements of the embedded phrase) and the accusative case suffix appears on all elements of the higher noun phrase to indicate that it functions as the object of the clause. Thus, the morphological structure of a

already inflected with a case marker. In Warlpiri, which allows stacking of up to two case markers, the default assignment can apply to a nominal that already contains one case marker, and so on.

³Kayardild actually allows up to four case markers on a single nominal (e.g. Evans 1995b). However, in this case, the fourth case marker does not have the same function as is being discussed here, but has what Evans (1995b) refers to as a 'complementizing' function by which case markers are used to mark interclausal relations on complementized clauses; each member of the lower clause is inflected with the complementizer case (p. 406). An example is:

- (i) *Ngada mungurru, [maku-ntha yalawu-jarra-ntha*
 I know [woman-C.OBL catch-PST-C.OBL
yakuri-naa-ntha thabuju-karra-nguni-naa-ntha mijil-nguni-naa-nth].
 fish-M.ABL-C.OBL brother-GEN-INST-M.ABL-C.OBL net-INST-M.ABL-C.OBL
 'I know that the woman caught the fish with brother's net.' (Evans 1995b:406, ex. 35)

In this example, the lower clause is inflected with the oblique case (C.OBL) since it is an object argument of the verb *mungurru*. Within the lower clause, the non-subject arguments are inflected with the modal ablative case (M.ABL), which marks the lower clause as having past tense (see 4.4 and Evans 1995a for discussion). Thus, the most deeply embedded nominal *thabuju* 'brother' has four case markers: the genitive to indicate its adnominal function within the instrumental NP ('with brother's net'); the instrumental by virtue of it belonging to this higher instrumental NP; the modal ablative to mark it as belonging to a non-subject argument of the past tense clause 'the woman caught the fish with brother's net' and finally the oblique since the clause to which it belongs functions as a complement of the higher clause.

While this complementizer use of case in Kayardild (and other Australian languages) is extremely interesting, it represents a different use of case than I am focussing on here, and thus will not be included in this discussion. I return to a brief discussion of this use of case in Chapter 6.

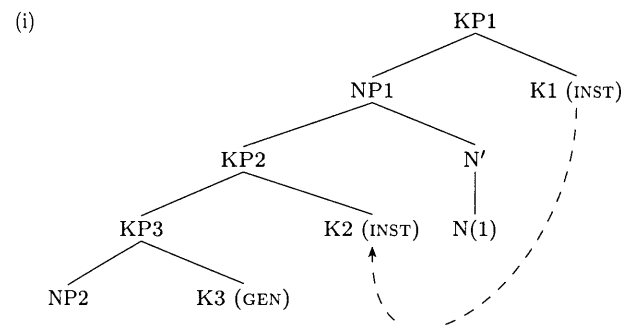
⁴A 'euro' is a type of kangaroo; a 'joey' is a baby kangaroo.

single nominal can, with the use of stacked case suffixes, mark successively embedded syntactic relationships.

This phenomenon, although descriptively straightforward, poses serious problems for many theories of grammatical structure. In particular, case is usually assumed to mark syntactically local relationships between a governor (such as a verb) and its arguments (e.g. Chomsky 1981, Bittner and Hale 1996, see also the standard treatments of case assignment in LFG (e.g. Bresnan 1996) and HPSG (e.g. Pollard and Sag 1994)) or between a SPEC and its HEAD (e.g. Chomsky (1993, 1995) and other work within the Minimalist Program). However, under a view of case as a marker of syntactically local relationships, there is no simple explanation for how a nominal as deeply embedded as 'pouch' in (6) can be inflected with a suffix which marks the role of the NP three layers up. In addition, implicit in many theories of case is the assumption that a single nominal will only carry one case marker, something that these Australian examples clearly violate.⁵

In contrast, such case stacking follows automatically from the model of constructive case proposed here. On this view, case markers are capable of

⁵Libert (1988) presents an analysis of case stacking using case copying, whereby the case of a higher constituent is copied down onto lower constituents. An example of his suggested structure for an instrumental NP containing a genitive modifier (e.g. 'N(2)-GEN-INST N(1)-INST') is in (i) (p. 108).



However, there are a number of serious problems with his analysis. Firstly, as shown in (i), it requires positing a fixed phrase structure for all languages that allow case stacking, including a fixed head-final order for NP-internal constituents since the agreeing KP (KP2 in (i)) must be below the head KP in order to receive its case value by "some sort of case copying or percolation" (p. 118). As we have seen throughout this work, there is little evidence to posit much configurational structure in the large majority of Australian languages under discussion here, and there is especially little for fixing NPs as head-final. Other problems include that fact that this analysis requires an enormous proliferation of KPs in the syntactic structure—one for each individual case feature on each constituent—which appears largely unconstrained. For example, it is not clear what determines which KPs can create agreeing KPs below them, and what forces them to do so.

constructing the larger syntactic context in which they appear. Furthermore, through the composition of functional designators contributed by the various parts of the word (see Chapter 4), they can construct successively higher levels of structure by adding on to that built by the stem to which they are attached.⁶ In order to see how this follows, consider the Warlpiri example given in (5) above, and repeated here:

- (7) *Japanangka-rlu luwa-rnu marlu pirli-ngka-rlu.*
 Japanangka-ERG shoot-PST kangaroo(ACC) rock-LOC-ERG
 'Japanangka shot the kangaroo on the rock.' (Simpson 1991:196, ex.171a)

The adjunct *pirli-ngka-rlu* contains two case markers: the locative followed by the ergative. The basic lexical entries for each of these case markers are given in (8), and the f-structure associated with the combination *pirli-ngka-* is in (9):

- (8) a. *-ngka*: (ADJ ↑)
 (↑ CASE) = LOC
 b. *-rlu*: (SUBJ ↑)
 (↑ CASE) = ERG

- (9) $\left[\text{ADJ}_{\text{LOC}} \left[\begin{array}{cc} \text{PRED} & \text{'rock'} \\ \text{CASE} & \text{LOC} \end{array} \right] \right]$

Recall the principle of morphological composition defined in Chapter 4, and repeated in (10):

(10) **Principle of Morphological Composition:**

Where x is a string of attributes:

$$\left(\begin{array}{c} \text{Stem} \\ \text{(GF}^n \uparrow) \end{array} \right) \left(\begin{array}{c} \text{Aff} \\ \text{(GF}^m \uparrow) \end{array} x \right) \Rightarrow \left(\begin{array}{c} \text{Stem} \\ \text{(GF}^n \uparrow) \end{array} \right) \left(\begin{array}{c} \text{Aff} \\ \text{(GF}^m \text{ (GF}^n \uparrow))} \end{array} x \right)$$

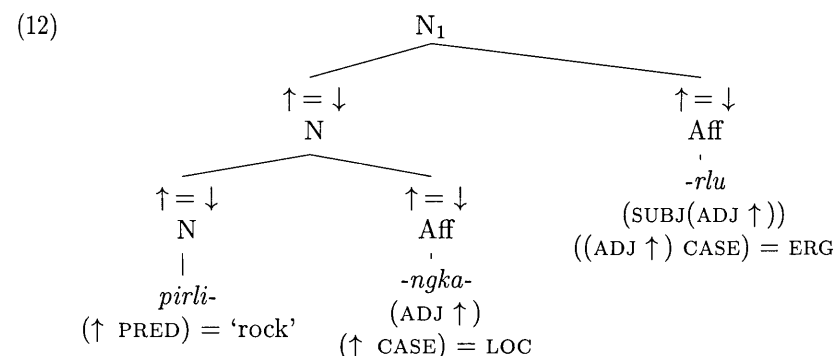
When the locative marker *-ngka* is attached to the stem *pirli-* this operation applies vacuously, replacing the ↑ of the locative case marker with the ↑ of the stem, (i.e. that in the equation (↑ PRED) = 'rock'). When the ergative case marker *-rlu* is added to the stem *pirli-ngka-*, however, the embedding operation takes effect. In this case, the ergative case marker is

⁶The idea of using inside-out functional uncertainty (IOFU) to handle case stacking is originally due to Mary Dalrymple, inspired by Avery Andrews' idea of inside-out unification. Andrews (1996) also mentions the possibility of using IOFU for this purpose.

added to a stem that already contains an IO designator (namely (ADJ ↑) contributed by the locative case marker). Thus, the embedding operation will substitute this IO designator for the ↑ arrows in the lexical entry of the ergative case suffix, thereby identifying the higher f-structure projected by the locative case marker with the lower f-structure projected by the ergative case marker:

- (11) *-rlu*: (SUBJ (ADJ ↑))
 ((ADJ ↑) CASE) = ERG

The morphological structure of the whole nominal *pirli-ngka-rlu* is given in (12):



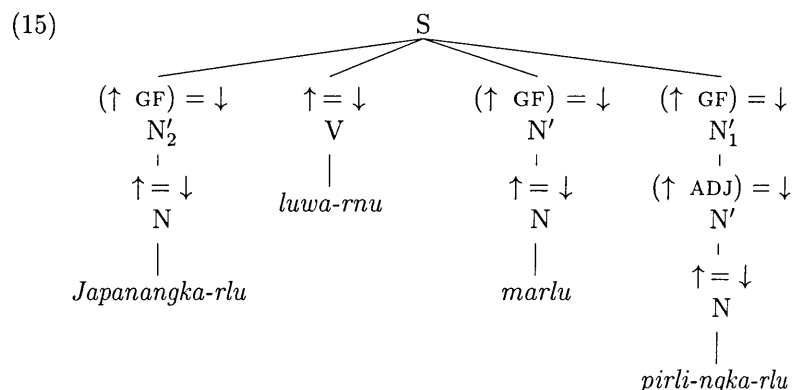
Since all of the nodes in this structure are annotated $\uparrow = \downarrow$ all of them are contributing information directly about the whole nominal; i.e. all of the ↑ arrows refer to N_1 . As we saw in (9) above, the combination *pirli-ngka-* contributes the information that N_1 has a PRED 'rock', has locative case, and belongs to an f-structure that has the function of ADJ:

- (13) $\left[\text{ADJ}_{\text{LOC}} \left[\begin{array}{cc} \text{PRED} & \text{'rock'} \\ \text{CASE} & \text{LOC} \end{array} \right] \right]$

The ergative case suffix contributes the information that this f-structure is embedded within a higher f-structure that has the function of SUBJ, and that this higher f-structure has ergative case. Thus, the f-structure associated with the whole nominal (N_1) is in (14):

$$(14) \left[\text{SUBJ} \left[\begin{array}{cc} \text{CASE} & \text{ERG} \\ \text{ADJ}_{\text{LOC}} & \left[\begin{array}{cc} \text{PRED} & \text{'rock'} \\ \text{CASE} & \text{LOC} \end{array} \right] \end{array} \right] \right]$$

The unification of this f-structure with that of the nominal *Japanangka-rlu*, which it modifies, proceeds in just the same way that was described for other discontinuous constituents in Chapter 4. Assuming the c-structure in (15) for the whole sentence,



the unification of all of the daughter constituents in S will result in N'_1 and N'_2 being unified into the following f-structure for the subject as a whole:

$$(16) \left[\text{SUBJ} \left[\begin{array}{cc} \text{PRED} & \text{'Japanangka'} \\ \text{CASE} & \text{ERG} \\ \text{ADJ}_{\text{LOC}} & \left[\begin{array}{cc} \text{PRED} & \text{'rock'} \\ \text{CASE} & \text{LOC} \end{array} \right] \end{array} \right] \right]$$

Simpson points out that it is unusual for multiply case-marked NPs to appear within the same c-structure NP as their f-structure head in Warlpiri. This is one of her strongest arguments for assuming that the ADJ relation is not assigned in the c-structure in Warlpiri NPs and that all nominals are assigned the head relation (1991: 272-3). In this work, I have assumed that Warlpiri NP structure, as well as that of other Australian languages, adheres to the principles of endocentricity defined in Chapter 3 which rule out the occurrence of multiple heads within the NP (see the discussion in 4.1). Thus, the restriction of multiply case-marked modifiers to appearing outside of the c-structure phrase of their f-structure head in Warlpiri does not follow

syntactically from the account provided here, since it is designed to generate the same f-structures irrespective of whether the two constituents form a c-structure phrase or not (as in (16)). And in fact, as Simpson notes, there are Warlpiri examples in which multiply case marked nominals *do* appear in the same NP as the head:

- (17) *Pirli-ngka-rlu wati-ngki-nganpa luwa-rnu.*
 rock-LOC-ERG man-ERG-1.PL.EXC.O shot-PST
 'The man on the hill shot us.' (Simpson 1991:292, ex. 236a)

Therefore, I assume that multiply case marked nominals should not be grammatically restricted from appearing in the same phrase as their head, but that the general dispreference for this position follows from a semantic restriction (implied by Simpson p. 293), namely that such modifiers prefer the unmerged interpretation, which is only possible if the modifier is outside of the c-structure phrase of the head (4.2). In (16), the adjunct was generated inside the f-structure of the SUBJ which, in Warlpiri, would lead to the locative modifier having the merged interpretation. In order to allow case stacked nominals to have the unmerged interpretation also, we can simply assume that the (ADJ ↑) specification contributed by the semantic case marker is optional. When it is absent a nominal such as *pirli-ngka* 'rock-LOC' will project the f-structure in (18):

$$(18) \left[\begin{array}{cc} \text{PRED} & \text{'rock'} \\ \text{CASE} & \text{LOC} \end{array} \right]$$

This nominal does not construct a grammatical function and therefore cannot appear in the syntax without further inflection. And it cannot function as an adjunct within an NP since morphological blocking would require it to have the (ADJ ↑) information present, since this is also assigned by the c-structure. Nor can this nominal be inflected with a case marker in its regular function, say ergative, since there is no IO designator to raise the f-structure level projected by the ergative case marker, with the result that the case feature assigned by the ergative would clash with that of the locative:

$$(19) * \left[\text{SUBJ} \left[\begin{array}{cc} \text{PRED} & \text{'rock'} \\ \text{CASE} & \text{LOC/ERG} \end{array} \right] \right]$$

However, as we saw in 4.2, the ergative case marker has an additional function in which it constructs a secondary predicate, and this secondary

predicate construction can be used to identify the unmerged interpretations of Warlpiri nominals. In this alternative function the ergative case constructs the information in (20).

- (20) $(((\text{ADJ-P } \uparrow) \text{ SUBJ CASE}) = \text{ERG})$
 $(\uparrow_{\sigma} \text{ Arg1}) = ((\text{ADJ-P } \uparrow) \text{ SUBJ})_{\sigma}$

Recall from 3.3.5 that the locative case marker has the semantics in (21):

- (21) $\uparrow_{\sigma} = \text{LOC}(\text{Arg1}, (\uparrow \text{ PRED})_{\sigma})$

The information carried by the ergative case (in (20)) will identify the first argument of the LOC predicate with the referent of the SUBJ of the clause, in the same way that we saw in 4.2. Thus, when added to the locative nominal in (18), this generates the f-structure in (22).

- (22)
$$\left[\begin{array}{l} \text{SUBJ}_i \left[\begin{array}{l} \text{CASE} \quad \text{ERG} \end{array} \right] \\ \text{ADJ-P}_i \left[\begin{array}{l} \text{PRED} \quad \text{'rock'} \\ \text{CASE} \quad \text{LOC} \end{array} \right] \end{array} \right]$$

As we saw in 4.2, the fact that the nominal in this case constructs an ADJ-P, rather than an ADJ ensures that it cannot appear within the c-structure phrase of the head.

Hence, the analysis of constructive case motivated in Chapters 3 and 4 can also account for multiple case stacking, without the need for any additional assumptions or mechanisms apart from those already necessary for regular adjunct agreement. Simpson (1991) also provides an account of case stacking in Warlpiri. However, as Andrews (1996) accurately points out, her analysis requires the absence of grammatical functions in the phrase structure. Thus, while her analysis works fine for Warlpiri, which she claims has a flat N' structure in which all constituents are assigned the head relation of $\uparrow = \downarrow$ (see 4.2.1), it runs into problems with languages like Martuthunira which has clear NP-internal structure (and, therefore, must have grammatical relations assigned within the NP by the phrase structure, ruling out such a flat analysis) (Andrews 1996:12).

In contrast, as I have shown at various points throughout the preceding chapters, the analysis presented here is compatible both with the presence and the absence of grammatical relations information in the c-structure. Thus, it can also account for case-stacked nominals within NPs. Consider the Martuthunira sentence in (23), repeated from above:

- (23) *Ngayu nhawu-lha ngurnu tharnta-a*
 1SG.NOM saw-PAST that(ACC) euro-ACC
mirtily-marta-a thara-ngka-marta-a.
 joey-PROP-ACC pouch-LOC-PROP-ACC
 'I saw that euro with a joey in its pouch.' (Dench 1995a:60, ex.3.15)

Let's assume that the c-structure of the whole object NP in (23)—*ngurnu tharnta-a mirtily-marta-a thara-ngka-marta-a* 'that(ACC) euro-ACC joey-PROP-ACC pouch-LOC-PROP-ACC'—is as in (24):^{7, 8}

- (24)
-

Note that this example differs from the Warlpiri example discussed above in that the various nominals all belong to a single matrix NP.

I will assume for present purposes that the lexical items have the lexical entries given in (25).

- (25) a. *ngurnu*: $(\text{ADJ } \uparrow)$
 $(\uparrow \text{ REMOTE}) = +$

⁷The exact syntactic function of demonstratives in Australian languages is unclear and cannot be resolved here (Bittner and Hale 1995, for example, argue against the existence of a category of demonstratives distinct from that of nominals in Warlpiri). Thus, in the interests of clarity, I am oversimplifying in my treatment of the demonstrative in this example.

⁸Martuthunira appears to have a fairly fixed SVO word order (Dench 1995a, b). Thus, I assume that the OBJ function of the highest noun phrase in this example is annotated with $(\uparrow \text{ OBJ}) = \downarrow$ in the c-structure.

- b. *tharnta*: ($\uparrow$ PRED) = 'euro'
 c. *mirtily*: ($\uparrow$ PRED) = 'joey'
 d. *thara*: ($\uparrow$ PRED) = 'pouch'

In addition, I will assume that the various case suffixes have (basic) lexical entries analogous to the Warlpiri case suffixes discussed above, namely:

- (26) a. *-a*: (OBJ $\uparrow$)
 ($\uparrow$ CASE) = ACC
 b. *-marta*: (ADJ $\uparrow$)
 ($\uparrow$ CASE) = PROP
 c. *-ngka*: (ADJ $\uparrow$)
 ($\uparrow$ CASE) = LOC

So, the f-structures associated with the demonstrative *ngurnu* (and therefore N'_w) and the head nominal *tharnta* are as follows (for present purposes, I will assume that the demonstrative is inflected with accusative case):

$$(27) \left[\text{OBJ} \left[\begin{array}{cc} \text{CASE} & \text{ACC} \\ \text{ADJ} & [\text{REMOTE} \quad +] \end{array} \right] \right]$$

$$(28) \left[\text{OBJ} \left[\begin{array}{cc} \text{PRED} & \text{'euro'} \\ \text{CASE} & \text{ACC} \end{array} \right] \right]$$

The f-structure associated with N'_k is as in (29). Note that, since the accusative case marker has attached to a form already containing a case marker, its lexical entry has undergone morphological composition in the same way that we saw for the ergative case marker in (12) above, so that it now projects a higher level of f-structure:

$$(29) \left[\text{OBJ} \left[\begin{array}{cc} \text{CASE} & \text{ACC} \\ \text{ADJPROP} & \left[\begin{array}{cc} \text{PRED} & \text{'joey'} \\ \text{CASE} & \text{PROP} \end{array} \right] \end{array} \right] \right]$$

And finally, the most embedded nominal *thara-ngka-marta-a* 'pouch-LOC-PROP-ACC' (N'_y) projects the f-structure shown in (32). Recall that morphological composition identifies the highest f-structure projected by the stem with the lower f-structure projected by the case affix. Thus, in this example, the presence of the locative case marker causes the propriative case marker to project a third level of structure (30). Then, since the highest f-structure projected by the propriative case marker is now three levels up, this is identified with the lower f-structure projected by the accusative case, which therefore projects a fourth f-structure; the (ADJ ADJ $\uparrow$) sequence in the IO chains of the composed propriative suffix are identified with the $\uparrow$ in the IO chains of the accusative suffix (31). In (32) I have labelled the individual f-structures to correspond with the above description: the locative case projects f-structures (1) and (2), the propriative case projects f-structures (2) and (3), and the accusative case projects f-structures (3) and (4):

$$(30) \text{ -marta: } \left(\text{ADJ}(\text{ADJ } \uparrow) \right) \\ \left((\text{ADJ } \uparrow) \text{ CASE} \right) = \text{PROP}$$

$$(31) \text{ -a: } \left(\text{OBJ} (\text{ADJ}(\text{ADJ } \uparrow)) \right) \\ \left((\text{ADJ}(\text{ADJ } \uparrow)) \text{ CASE} \right) = \text{ACC}$$

$$(32) \left[\begin{array}{c} 4: \left[\text{OBJ} \right. \\ \left. 3: \left[\text{ADJPROP} \right. \right. \\ \left. \left. 2: \left[\begin{array}{cc} \text{CASE} & \text{PROP} \\ \text{ADJLOC} & 1: \left[\begin{array}{cc} \text{PRED} & \text{'pouch'} \\ \text{CASE} & \text{LOC} \end{array} \right] \end{array} \right] \right] \right] \end{array} \right]$$

Now, as was discussed in Chapter 4, such structure built by the morphology can simply unify with any information present in the c-structure, as long as the two are compatible. The f-structure in (32) is constructed by the nominal *thara-ngka-marta-a*, and is therefore associated with the phrase N'_y in (24), of which it is the head. This f-structure specifies that the nominal *thara-ngka-marta-a* has the function of ADJ within a phrase that is also functioning as ADJ of a higher phrase, which has the function of OBJ. This is exactly what is specified by the c-structure: N'_y is as ADJ of N'_x , which is an ADJ of N'_z which is the head of N'_i which is annotated with the OBJ function. Thus, the structure built by the morphology is unifiable with that in the c-structure, yielding the correct f-structure (32). The morphological structure projected by the other nominals is likewise com-

patible with their c-structure annotations, thus resulting in the following f-structure for the whole object phrase (N'_i):⁹

- (33)
$$\left[\begin{array}{c} \text{OBJ} \\ \left[\begin{array}{c} \text{PRED 'euro'} \\ \text{CASE ACC} \\ \text{ADJ [REMOTE +]} \\ \text{ADJPROP} \left[\begin{array}{c} \text{PRED 'joey'} \\ \text{CASE PROP} \\ \text{ADJLOC} \left[\begin{array}{c} \text{PRED 'pouch'} \\ \text{CASE LOC} \end{array} \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right]$$

A basic generalization about case stacking is that when the stacking involves a grammatical case and a semantic case, the former always follows the latter. That is, 'N-PROP-ACC' is a possible form (as we have seen above), but 'N-ACC-PROP' is not. This generalization follows automatically on this analysis from the fact that grammatical case markers construct *argument* functions—e.g. SUBJ, OBJ—while semantic case markers construct adjuncts. And unlike adjuncts, argument functions must be licensed by the presence of a predicate that subcategorizes for them (by the Principle of Coherence); thus they are greatly restricted in their occurrence, usually to a clause-level position. That they cannot be followed by a semantic case marker is thus captured by the fact that the semantic case constructs an adjunct, meaning that the clausal f-structure constructed by the grammatical case marker would be embedded within an adjunct, a structure that is virtually impossible to generate in the c-structure given general (LFG) assumptions about possible grammatical functions.¹⁰

This analysis of constructive case marking is inspired by Andrews' (1996) analysis of semantic case-stacking, and by incorporating many of his insights, is similar in a number of respects. However, there are two important differences between the analyses. Firstly, Andrews (1996) introduces a new mechanism—'Inside-out Unification'—for the purposes of accounting for case stacking, whereas this analysis makes use instead of Inside-out function application, which has already been motivated independently in

⁹As we have seen, on this analysis case-inflected modifiers construct their surrounding functional context independently of the presence of their head. This approach, then, would extend naturally to problems of ellipsis such as those discussed by Evans (1993) for Kayardild, in which the interpretation of ellipsed fragments is constrained significantly by the (often extensive) case morphology. See also Dench (1995b) for a discussion of the interaction of ellipsis and case stacking.

¹⁰i.e. that clausal adjuncts construct a different relation from the regular ADJ relation, sometimes referred to as XADJ (Bresnan 1982a).

the LFG framework as a part of Inside-Out Functional Uncertainty (IOFU) (Halvorsen and Kaplan 1995[1988], Dalrymple 1993, Bresnan 1996).¹¹ Andrews does point out that his analysis could be translated into one using IOFU, although his suggestion of how that would be done differs fundamentally from that presented here: Andrews assumes that the IO designators are attached to the nodes in the morphological structure, rather than to the case markers themselves (p. 42). More importantly, the analysis presented here is not invoked solely to account for case stacking (cf. Andrews 1996:52), but has the advantage of having been integrated into an account of the nonconfigurational properties of these languages, and a typology of nonconfigurationality more generally.

5.2 The Interaction of Case and Number

Interestingly, in some Australian languages, not only do we find multiple levels of case stacking, but number markers can interact with these stacked case markers, the scope of the number marking changing depending on where it appears in the morphological structure. In this section we will see that this complex data also follows automatically from the model of constructive case.

Consider the following examples:¹²

- (34) a. *maku-wala-nurru*
 woman-MANY-ASSOC
 'having many wives'
- b. *maku-nurru-walad*
 woman-ASSOC-MANY
 'the many having wives' (Kayardild, Evans 1995a:123)
- (35) *maku-yarr-nurru-naba-walad*
 woman-DU-ASSOC-ABL-MANY
 'the many belonging to (those) having two wives' (Kayardild, Evans 1995a:123)

¹¹Of course, this analysis also makes use of the principle of morphological composition, but Andrews (1996) analysis requires an analogous principle, which he calls morphological 'wimpiness', to ensure that the sequence of case markers on the nominal matches the embedding in the f-structure generated by the syntax (p. 24). Furthermore, the principle of morphological composition can be reduced to more standard LFG mechanisms, as in shown in Appendix A.

¹²In the Kayardild examples the associative suffix (ASSOC) denotes 'having' and the ablative suffix (ABL, in (35)) denotes 'belonging to'.

- (36) *dangka-walad karndi-wuru-walad mirra-wuru-walad*
 man-MANY wife-PROP-MANY good-PROP-MANY
 'many men with good wives' (Kayardild, Andrews 1996:6, ex (6)b)

- (37) *Ngunhu wartirra puni-lha ngurnu-ngara-mulyarra*
 that woman go-PST that-PL-ALL
kanyara-ngara-mulyarra kapunmarnu-marta-ngara-mulyarra
 man-PL-ALL shirt-PROP-PL-ALL
jirli-wirriwa-marta-ngara-mulyarra.
 arm-PRIV-PROP-PL-ALL
 'That woman went towards those men with shirts without sleeves.'
 (Martuthunira, Andrews 1996:19, ex. (28))

In (34) we see that the ordering of case and number markers reflects differences in the scope of the number marker. In (35) we see that a single word can have multiple number markers, each modifying a different referent: in this example, the dual number marker, being closest to the stem, modifies the stem *maku* and the 'many' number marker refers to that which the whole nominal *maku-yarr-nurru-naba-walad* modifies, i.e. the X that belongs to those having two wives. In (36) and (37) we see that the number markers also participate in concord, thus showing them to be inflectional rather than derivational (Andrews 1996:6).

This interaction between stacked case markers and number markers follows automatically from the analysis of constructive case presented here. As we saw in the discussion of number and gender concord in 4.2.2, morphological composition applies to all affixes, not just case markers, and thus number markers are also affected by this operation. For example, let's assume that the plural suffix *-ngara* in Martuthunira has the lexical entry in (38):

- (38) *-ngara*: ($\uparrow$ NUM) = PL

When this affix is attached to a bare nominal stem the embedding operation will apply vacuously, simply substituting the $\uparrow$ arrows of the stem for the $\uparrow$ arrow in the lexical entry of the plural suffix. Thus, the f-structure constructed by the combination *kanyara-ngara* 'man-PL' will be that in (39):

- (39)
$$\begin{bmatrix} \text{PRED} & \text{'man'} \\ \text{NUM} & \text{PL} \end{bmatrix}$$

When the number marker is attached to a stem that contains a case marker, however, the situation is different: in this case morphological composition will have an effect. Consider the Martuthunira nominal *kapunmarnu-marta-ngara-mulyarra* 'shirt-PROP-PL-ALL'. The proprietive case suffix *-marta* carries the IO designator (ADJ $\uparrow$). When the number suffix *-ngara* is attached, composition will substitute the (ADJ $\uparrow$) of the proprietive suffix for the $\uparrow$ arrows of the number suffix. Thus, the information contributed by the number suffix in this case will be ((ADJ $\uparrow$) NUM) = PL. The number suffix is not assigning plural number to the nominal stem 'shirt', but to the f-structure which contains the ADJ function to which 'shirt' belongs:

- (40)
$$\begin{bmatrix} \text{NUM} & \text{PL} \\ \text{ADJPROP} & \begin{bmatrix} \text{PRED} & \text{'shirt'} \\ \text{CASE} & \text{PROP} \end{bmatrix} \end{bmatrix}$$

The allative suffix *-mulyarra* is then also affected: the (ADJ $\uparrow$) from the number marker is substituted for the $\uparrow$ arrows in its lexical entry yielding:

- (41) *mulyarra*: (ADJ (ADJ $\uparrow$))
 ((ADJ $\uparrow$) CASE) = ALL

and resulting in the following f-structure for the whole nominal:

- (42)
$$\begin{bmatrix} \text{ADJALL} & \begin{bmatrix} \text{NUM} & \text{PL} \\ \text{CASE} & \text{ALL} \\ \text{ADJPROP} & \begin{bmatrix} \text{PRED} & \text{'shirt'} \\ \text{CASE} & \text{PROP} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

The f-structures of each of the other nominals in the phrase will be constructed in the same way and will unify with each other, and with the information in the phrase structure as was discussed for (32) above. The resulting f-structure for the whole allative phrase is given in (43):¹³

¹³I have treated the demonstrative in the same simplified way here as in (33) above.

- (43)
$$\left[\begin{array}{c} \text{ADJALL} \\ \left[\begin{array}{c} \text{PRED 'man'} \\ \text{NUM PL} \\ \text{CASE ALL} \\ \text{ADJ [REMOTE +]} \\ \text{ADJPROP} \left[\begin{array}{c} \text{PRED 'shirt'} \\ \text{CASE PROP} \\ \text{ADJPRIV} \left[\begin{array}{c} \text{PRED 'arm'} \\ \text{CASE PRIV} \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right]$$

5.3 Associating and Modal Case in Kayardild

All of the above examples of case stacking involve a strict iconicity between the ordering of the case affixes in the word, and the level of embedding in the syntax. Indeed, the formulation of the principle of morphological composition in Chapter 4 assumes such iconicity to be the regular state of affairs. Kayardild, however, provides an example in which this is not the case (Evans 1995b). In just one construction—namely, when a case marker in associating function co-occurs with a case marker in modal function—the order of affixes is anti-iconic.

We have already seen examples of modal case in Kayardild, in which case markers are used to provide tense and mood information for the clause (see 4.4). In addition, Kayardild has another type of case function, which Evans (1995a) terms the ‘associating’ function. In this function, the oblique case affix¹⁴ is used to associate non-subject NP arguments with their nominalized verbs.¹⁵ These nominalized verbs may be used as complements of perception verbs (44), in which case they are inflected with modal case, or independently as predicators showing ongoing, uncompleted action (45), in which case they receive the nominative case by default (Evans 1995a:111):

- (44) *Ngada kurri-ja dathin-ki kunawuna-ya*
1.SG(NOM) see-ACT that-M.LOC child-M.LOC
rajurri-n-ki.
walk.about-NMZ-M.LOC
‘I saw that child walking around.’ (p. 112, ex. 3-39)

- (45) *Dathin-a kunawuna rajurri-n-d.*
that-NOM child-NOM walk.about-NMZ-NOM
‘That child is walking around.’ (ex. 3-38)

In (44), the nominalized verb *rajurri-n-ki* ‘walk around’ is predicated of the object NP *dathin-ki kunawuna-ya* ‘that-M.LOC child-M.LOC’. Both of these constituents—the object NP and the nominalized verb—being non-subject arguments of the main clause, are inflected with the modal locative case, was discussed in 4.4. In (45) the nominalized verb is the main predicate. In this case it is inflected with the nominative case, as is the subject NP *dathin-a kunawuna*.

All non-subject arguments of these nominalized verbs are inflected with the oblique case, glossed A.OBL to indicate its associating function:

- (46) *Bi-l-da jani-n-da bartha-wuru-ntha*
3-PL-NOM search-NMZ-NOM track-PROP-A.OBL
kunawuna-wuru-nth.
child-PROP-A.OBL
‘They are looking for the child’s footprints.’ (ex. 3-41)
- (47) *Ngada kurri-jarra niwan-jina kurdama-n-kina*
I(NOM) see-PST 3.SG-M.ABL drink-NMZ-M.ABL
nguku-naa-ntha wuruman-urru-naa-nth.
water-M.ABL-A.OBL billy-ASSOC-M.ABL-A.OBL
‘I saw him drinking the water in the billy.’ (ex. 3-44)

In (46) the nominalized verb is once again functioning as the main predicate of the sentence; thus, it receives nominative case by default as does its subject *bi-l-da* ‘they’. In this example, however, the clause contains non-subject arguments also—the intensional object *bartha-wuru-ntha kunawuna-wuru-nth*. The object is inflected first with the proprietive case, which is the usual case for such objects in Kayardild (Evans 1995a), and then with the associating oblique case, since they are non-subject arguments of a nominalized verb. In (47) the nominalized verb is a complement of the main predicate *kurri-jarra* ‘see-PST’. As with (47), the (nonsubject) arguments of the nominalized clause ‘drinking water in the billy’ are inflected with the associating oblique, by virtue of being arguments of the nominalized verb *kurdama-n-kina* ‘drinking’. In addition, they are also inflected with the modal ablative, by virtue of belonging to a nonsubject argument of the matrix clause. Note however, that the associating case appears outside the modal case. This is exactly opposite to what we would

¹⁴‘Oblique’ being the name Evans (1995a) uses for a particular case marker.

¹⁵Other Australian languages also provide less striking examples of this use of case. See Dench and Evans (1988:31-33) for discussion.

expect if iconicity were to be maintained: the associating case makes reference to the lower clause, while the modal case refers to the higher clause, and thus we would expect the modal case to be on the outside.

Andrews (1996) uses this anti-iconic ordering of associating and modal case as an argument for restricting his mechanism of Inside-out Unification to semantic case markers only (as in the Martuthunira example given in (6) above). Andrews argues that the distribution of the associating and modal cases across all non-subject NPs, in addition to this anti-iconic ordering when the two co-occur, is evidence that these case functions should be analysed as being associated with a particular node in the syntax—e.g. VP or S—and then copied onto the relevant NPs (pp. 43ff). However, as we saw in 4.4, an account of the distribution of modal case is straightforward on the constructive case model, and there is thus no reason to analyse case in this function as being any different in its licensing conditions than in any other function. A similar analysis can also be given for the associating oblique, as we will now see.

I agree with Andrews (1996) that the associating case function should be associated with a particular c-structure node. This case function is very different from other functions discussed in the earlier chapters in that the associating oblique functions to associate c-structure constituents with their nominalized head, rather than to provide information to the f-structure. This can be easily captured in this present framework with the use of the inverse mapping function ϕ^{-1} , which maps from f-structure to c-structure. For present purposes I will leave aside the question of the exact nature of the c-structure node containing the nominalized verb and its arguments,¹⁶ and will assume that it can be simply identified as having the feature NMZ 'nominalized'.¹⁷ Thus, the basic lexical entry of the oblique case in associating function will be assumed to be that in (48) (explained immediately below).

$$(48) \quad \text{A.OBL: } \lambda (\uparrow_{\phi^{-1}}) = \text{NMZ}$$

¹⁶Evans (1995a) refers to this constituent as a VP, although he notes that this is for simplicity only as there is little independent evidence for the existence of a VP constituent in Kayardild (p. 121). I suspect that it is best analysed as a type of NP constituent as, like other NP constituents in Kayardild, its constituents are generally contiguous (cf. the otherwise free word order of constituents in Kayardild (Evans 1995a:1)), and these nominalized clauses are distributionally equivalent to NPs (p. 451). However, I will leave this issue aside here.

¹⁷This feature will be adequate for the purposes of this discussion. In fact, however, this feature must be able to distinguish 'plain' nominalizations from other nominalizations, since only the former license associating oblique case on their complements (Evans 1995a:470).

In this entry, $(\uparrow_{\phi^{-1}})$ refers to the set of c-structure nodes that correspond to the f-structure denoted by $\uparrow$. In other words, it denotes the set containing the c-structure node of the element to which the case marker is attached and any other c-structure nodes in the same head chain.¹⁸ The λ function maps the set of c-structure nodes onto the set of category labels (Kaplan 1995:10), such that $\lambda(N) = L$ means that the c-structure node N has the category label L . Since we are dealing with sets of c-structure nodes here, I extend this λ function from individual c-structure nodes to sets of c-structure nodes, such that it is true if *one* of the nodes in the set has the category label L . Hence, the lexical entry of the associating oblique encodes that (at least) one of the c-structure nodes corresponding to the f-structure to which the case marker belongs has the category label NMZ.

The nominalizing suffix converts the verb to a nominal, while keeping its predicate argument structure intact. The fact that nominalized clauses can also function as object complements of perception verbs can be captured by allowing the nominalizer to optionally construct the XCOMP relation, which denotes a predicative complement whose subject is obligatorily controlled by an argument of the main clause (Bresnan 1982a, 1996). The fact that in Kayardild this controlling argument must be the object (at least with perception verbs) is captured by associating the equation $(\uparrow \text{XCOMP SUBJ}) = (\uparrow \text{OBJ})$ with all verbs that subcategorize for the XCOMP (see Bresnan 1996: Ch. 11). Thus the lexical entry of the nominalized verb *kurdama-n* 'drink-NMZ-' is in (49).¹⁹

$$(49) \quad \text{kurdama-n: } N \quad (\uparrow \text{PRED}) = \text{'drink } \langle (\uparrow \text{SUBJ})(\uparrow \text{OBJ}) \rangle' \\ ((\text{XCOMP } \uparrow))$$

When the nominalized verb functions as the head of the clause, as in (46), the nominalizing suffix will not construct the XCOMP relation. In (47), however, where the (phrase headed by the) nominalized verb functions to modify the object of the matrix clause, then this IO designator will be active. This will be ensured by principles of (at least) Coherence and functional Uniqueness since, if the nominalized verb were to construct the XCOMP relation when functioning as the predicate of the main clause in (46), the entire clause would be embedded within an XCOMP attribute of a higher f-structure, yet this higher f-structure would have no PRED feature. Conversely, if the nominalized verb in (47) were not to construct the XCOMP relation, there would be no specified grammatical function for

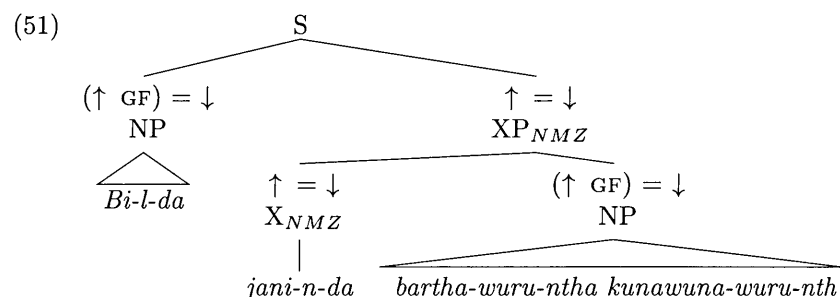
¹⁸By head chain, I mean c-structure nodes that are all annotated with $\uparrow = \downarrow$, mapping into the same f-structure. An example would be V, VP and S—see below.

¹⁹Since this is a nominal predicate, it will receive nominative case marking by default, like other nominal predicates.

the complement clause. Alternatively, it could be assigned the head relation in the c-structure, but this will then generate two PRED features for the clause (one from the main verb, and the other from the nominalized verb) and so the structure would violate the Uniqueness Principle.

In order to see how this analysis works, consider the nominalized clause given in (46) and repeated below. I assume that the simplified c-structure of this clause is as in (51).

- (50) *Bi-l-da jani-n-da bartha-wuru-ntha*
 3-PL-NOM search-NMZ-NOM track-PROP-A.OBL
kunawuna-wuru-nth.
 child-PROP-A.OBL
 'They are looking for the child's footprints.'



The nominalized verb *jani-n-da* constructs the f-structure in (52).²⁰

- (52)
$$\left[\begin{array}{ll} \text{PRED} & \text{'look for } \langle \dots \rangle \text{' } \\ \text{CASE} & \text{NOM} \\ \text{SUBJ} & [] \\ \text{ADJPROP} & [] \end{array} \right]$$

which unifies with the two NPs in the regular way:

- (53)
$$\left[\begin{array}{ll} \text{PRED} & \text{'look for } \langle \dots \rangle \text{' } \\ \text{CASE} & \text{NOM} \\ \text{SUBJ} & [\text{"They"}] \\ \text{ADJPROP} & [\text{"child's footprints"}] \end{array} \right]$$

²⁰I have simplified the analysis of the propriative goal argument *bartha-wuru-ntha kunawuna-wuru-nth* in this example, treating it as if it were simply a propriative adjunct. I have also left aside the fact that these clauses have continuous, ongoing aspect.

By virtue of the IO designator (ADJ ↑) in the lexical entry of the propriative case marker, the principle of morphological composition will affect the lexical entry of the associating oblique affixes in these examples, which will now contribute the information given in (54). Just as before, the principle of morphological composition embeds the structure constructed by the stem so that all of the properties of ↑ in the lexical entry of the associating oblique now hold of the higher f-structure (ADJ ↑).

- (54) A.OBL: $\lambda ((\text{ADJ } \uparrow)_{\phi-1}) = \text{NMZ}$

Thus, the associating oblique in this context specifies that the f-structure of the nominal (↑) belongs to the ADJ function of the higher f-structure (ADJ ↑) and that this *higher* f-structure corresponds to a set of c-structure nodes at least one of which has the label NMZ. The f-structure denoted by (ADJ ↑) is the outer f-structure in (53), the f-structure of the clause. This f-structure corresponds in (51) to the root node (S) and the head nodes (X_{NMZ} , XP_{NMZ}), which both have the feature NMZ in their label, and so the requirement of the associating oblique is satisfied.

Note in fact that, as with the modal case markers discussed in 4.4, the associating oblique can also optionally construct the OBJ relation, as shown by its attachment directly to the nominal stem *thungal* 'tree' in (55):

- (55) *Niya kala-n-da thungal-inja*
 3.SG(NOM) cut-NMZ-NOM tree-A.OBL
bijarrba-marra-ntha narra-nguni-nj.
 dugong-UTIL-A.OBL shell-INST-A.OBL
 'He is cutting the tree with a shell axe, to use for spearing dugong.'
 (Evans 1995a:112, ex. 3-40)

Thus, the associating oblique actually carries the information in (56). As with modal case markers, the optional (OBJ) will not be present when the associating oblique is attached to a nominal that already contains a case marker (such as *bijarrba-marra-ntha* in (55)) since in this case the previous case marker constructs the grammatical function for the nominal, as we saw for the propriative nominals above.²¹

²¹The associating oblique is like the modal case markers in that it is never found on the subject, or on any subject modifiers. This will follow from this analysis in the same way that it does for modal case (see 4.4 for discussion). Note however that the associating oblique does not have exactly the same domain as modal case: intentional objects of verbs like 'search' which unexpectedly escape modal case, do receive associating case marking (Evans 1995a:112).

$$(56) \quad \text{A.OBL: } \lambda(((\text{OBJ}) \uparrow)_{\phi^{-1}}) = \text{NMZ}$$

The analysis presented so far will account for all of the nominalized main clauses, such as (55) and (45), (46) above. These nominalized clauses can also have the XCOMP function with perception verbs—see (57), repeated from above.

$$(57) \quad \begin{array}{l} \text{Ngada kurri-jarra niwan-jina kurdama-n-kina} \\ \text{I(NOM) see-PST} \quad \text{3.SG-M.ABL drink-NMZ-M.ABL} \\ \text{nguku-naa-ntha} \quad \text{wuruman-urru-naa-nth.} \\ \text{water-M.ABL-A.OBL billy-ASSOC-M.ABL-A.OBL} \\ \text{'I saw him drinking the water in the billy.' (ex. 3-44)} \end{array}$$

These examples are complicated by the presence of the modal case markers appearing on all elements of the nominalized clause. In these examples the ordering of the associating and modal case markers is anti-iconic: the associating oblique constructs information about the complement clause, while the modal case constructs information about the main clause. Thus, according to the principle of morphological composition, which automatically generates iconicity between the ordering of case affixes and the level of f-structure they contribute information to, these two affixes should be ordered the other way around. In fact, Evans shows that this does not reflect any structural property of nominalized clauses—in resultative nominalizations the modal case appears in the expected (iconic) order (1995b:412)—but simply results from a morphophonological constraint that the oblique case marker, in any function, cannot be followed by any other case affix (Evans 1995a:129).²² Thus, the ordering of associating and modal case markers in examples such as (57) reflects purely morphophonological, rather than morphosyntactic, constraints. Since the constructive case model presented here is concerned with the level of morphosyntax this anti-iconic realization of the associating and modal case morphemes need not affect the present analysis: we can assume that the two case *morphemes* appear in the expected order at the morphosyntactic level and that the anti-iconic ordering of their *allomorphs* simply represents a language particular mismatch between the morphosyntactic and morphophonological levels of structure.²³

²²For a historical explanation for the existence of this constraint see Evans (1995b:419-421). Intuitively, on the present account, it may follow from the fact that the associating oblique is providing c-structure information about the containing constituent, rather than information about the f-structure.

²³In a sense, then, this can be seen as the morphological analogue of prosodic inversion (Halpern 1995), where there is a mismatch between the position of an element in the syntax and its realization in the linear string. The principle of morphological

Thus, in order to account for all of these examples also, we need only allow for modal case markers to appear inside XCOMP clauses as well as in main clauses. This can be done by allowing modal case markers to optionally construct the XCOMP relation. The lexical entry for the modal ablative given in 4.4. can thus be modified as in (58):

$$(58) \quad \text{-na: } (((\text{OBJ} \vee \text{XCOMP}) \uparrow) \text{ TENSE}) = \text{PST}$$

This lexical entry expands into the three possibilities: $(\uparrow \text{ TENSE}) = \text{PST}$; $((\text{OBJ} \uparrow) \text{ TENSE}) = \text{PST}$ (these are the two main clause possibilities, and are exemplified in 4.4); $((\text{XCOMP} \uparrow) \text{ TENSE}) = \text{PST}$. General principles of Completeness, Coherence and functional Uniqueness, as well as interactions with the c-structure, will rule out all but the correct possibilities in any given context, along the lines described above for the nominalizing suffix above. In particular, if the third option were used when the modal case affix was attached to a main clause constituent, the main clause would be embedded inside an XCOMP function in the f-structure. Alternatively, if the main clause options (options 1 and 2) were used with an XCOMP constituent, then the tense feature would be unified into the f-structure of the XCOMP. I assume this is ruled out by the fact that XCOMPs are non-finite by definition, and are thus incompatible semantically with the presence of a tense feature.

Consider the complement clause constituent *wuruman-urru-naa-nth* ‘billy-ASSOC-M.ABL-A.OBL’. The lexical entries of each of the affixes in this context (i.e. after morphological composition has applied) are given in (59):

$$(59) \quad \begin{array}{ll} \text{a.} & \text{-urru-: } ((\text{ADJ} \uparrow) \\ & (\uparrow \text{ CASE}) = \text{ASSOC} \\ \text{b.} & \text{-nth: } \lambda((\text{ADJ} \uparrow)_{\phi^{-1}}) = \text{NMZ} \\ \text{c.} & \text{-naa-: } ((\text{XCOMP} (\text{ADJ} \uparrow)) \text{ TENSE}) = \text{PST} \end{array}$$

Morphological composition substitutes the IO designator of the associative suffix (ADJ $\uparrow$) for the $\uparrow$ arrow in the lexical entries of the associating oblique (b) and the modal ablative (c). Thus, the f-structure generated by this nominal is that given in (60):

composition generates strict iconicity at the morphosyntactic level, and I assume that the unmarked situation is for this to be matched at the level of morphophonological structure. Thus, mismatches such as the one here will be highly marked, arising as the result of idiosyncratic diachronic development, for example (Evans 1995b).

(60) *wuruman-urru-naa-nth* 'billy-ASSOC-M.ABL-A.OBL':



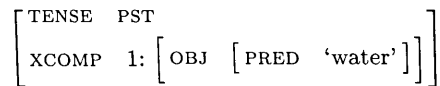
and the associating oblique requires that the f-structure denoted by (ADJ $\uparrow$), namely that labelled 1 here, corresponds to (at least one) c-structure node labelled with the feature NMZ. Since f-structure 1 is that of the XCOMP, this will be so (since the XCOMP is headed by a nominalized verb) and thus the associating oblique will be satisfied.

In the same way we can construct the morphosyntactic structure (61) and corresponding f-structure (62) of the object of the complement clause *nguku-naa-ntha* 'water-M.ABL-A.OBL':²⁴

(61)

water- A.OBL- M.ABL
($\uparrow$ PRED) $\lambda((\text{OBJ } \uparrow)_{\phi-1}) = \text{NMZ}$ (XCOMP (OBJ $\uparrow$)) TENSE = PST
= 'water'

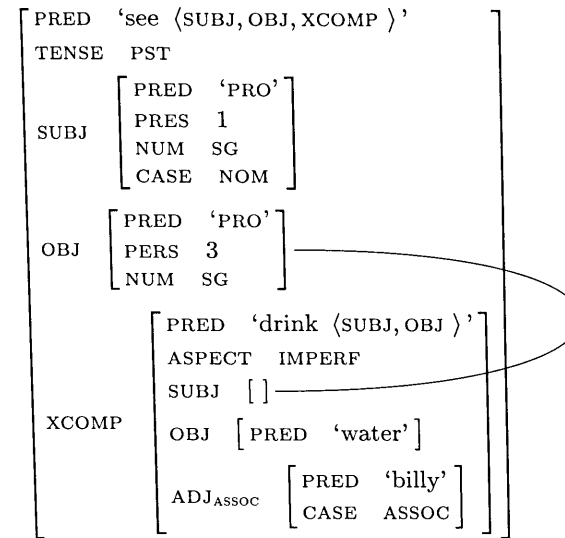
(62) *nguku-naa-ntha* 'water-M.ABL-A.OBL':



resulting in the following f-structure for the whole clause:

²⁴Note that in this case, the associating oblique constructs the OBJ relation, although it still refers to the same f-structure as above (namely, 1).

(63)



Therefore, using exactly the same principles that have been used for all other case functions throughout this work, we can naturally account for the distribution of associating oblique case also. This is an advantage over the analysis of Andrews (1996), in which he assumes that modal and associating case are to be analysed differently from all other case functions, and from other instances of case stacking. As we have seen, the two main arguments he provides for assuming a spreading analysis for these case functions—namely, their distribution across all non-subject members of the clause, and the anti-iconic ordering of modal and associating case—are nonproblematic for the present approach,²⁵ and thus we can assume that there is no reason that these case functions should require a different formal account from any other.

5.4 Summary

Thus, in this chapter we have seen that the model of constructive case developed throughout this work can automatically account for one of the hardest case-related problems of all: the phenomenon of case stacking. In fact, not only does it provide an account of a variety of case stacking problems, including associating case in Kayardild, but the complex interaction between case and number inflection discussed in 5.2 also follows directly.

²⁵In fact, the non-iconicity of associating and modal case affixes is correlated with the fact that they encode different kinds of information: c-structure information and f-structure information respectively.

The constructive case model, then, allows for a unified analysis of many complex properties of case marking in Australian languages that have been ignored by most other theories of case, including the use of case on sentential adjuncts to agree with the subject (4.3); the use of case to mark clause-level information such as tense, aspect and mood (4.4); and the issues of multiple case and number inflection discussed above. Furthermore, this model integrates an analysis of these case marking properties into a general model of case that provides a straightforward analysis of the non-configurationality of many of these dependent-marking languages (Ch. 3).

6

Conclusion

This work has been concerned with the function of case in the nonconfigurational dependent-marking languages of Australia. In these languages case morphology can be shown to play a fundamental role in constructing syntactic relations, often independently of any phrase structure. Furthermore, in many of these languages, case functions not just to construct grammatical relations, but to provide other types of information about the greater syntactic context. In the preceding chapters I have developed a model of case that can capture these unusual functions of case in an intuitive and explanatory way.

In this final chapter I will begin by presenting a brief summary of the conclusions reached in this work. Then I will briefly discuss some possible avenues for future research.

6.1 Summary and Concluding Remarks

The morphosyntactic model of case that I develop in this work is based on two fairly simple ideas. The first is that the case morphology itself must be treated as determining grammatical relations directly. Rather than contributing only a case feature to the immediately containing NP, case morphemes specify the grammatical function of the clause to which they belong: ergative case, for example, specifies that the clause has a subject function in which the ergative nominal is contained. The second simple idea is that when a stem builds structure in this way, subsequent affixes add to the structure already built by the stem. Thus, the addition of affixes to structure-building stems builds successively larger structures. In this way, a single word can carry complex structural information, as we saw in the discussion of case stacking in Chapter 5.

I showed that these two ideas can be captured naturally with the use of inside-out function application in LFG (3.3.1). I argued that in addition to carrying a simple case feature, case morphemes also carry an inside-out des-

ignator specifying their grammatical function in the clause. Case-inflected nominals thus enter the c-structure carrying complex f-structures containing information about grammatical relations, removing the need for such information to also be present in the c-structure. In this way we can capture the generalization that case morphology can function to construct grammatical functions in exactly the same way as head-marking morphology and phrase structure can (3.3.1, 3.3.2). A further result of treating case in this way is that, since the case markers themselves specify their functions, most of the distributional facts are captured automatically, without the need for further case licensing constraints (3.3.4). Moreover, we can now capture the difference between productive, regular uses of case, such as is found in these Australian languages, in Japanese, German, Finnish and so on, and remnant case (as in pronouns in English) or quirky, irregular case (as with some verbs in Icelandic). Productive case morphology constructs grammatical relations, and thus these case morphemes carry both an inside-out designator and a case feature. Irregular and/or remnant case, on the other hand, carries only a case feature. Thus we predict that nominals inflected with these case morphemes will not consistently construct a particular grammatical function (e.g. in English *Him and I* saw it/*He and I* saw it/*Me and him* saw it, etc.), and will need to be associated with particular phrase structure positions in order to receive a grammatical function (e.g. the impossibility of scrambling quirky-case subjects in Icelandic (Kiparsky 1997a)) (3.3.3).

Many properties of case follow naturally from this model. Since case morphemes construct their grammatical functions, case concord on both contiguous and discontinuous modifiers is ensured: a different case marker would construct a different grammatical function and so the modifier and head would be unified into two different places in the f-structure (4.2.1). Furthermore, the principle of morphological composition, which causes affixes to take the outer f-structure of the stem as their inner (or only) f-structure and thus results in the successive building up of f-structure as each new affix is added, causes the case affix on modifiers to provide information about the higher f-structure in which the modifying adjunct is contained, namely, the f-structure of the head. In this way, we capture the intuition that the case affix on the modifier is not providing information about the modifier itself, but about the nominal that it modifies (cf. the distinction between *independent* and *agreement* case made by Börjars and Vincent 1997). In fact, the principle of morphological composition applies to all affixes, not just to case markers, and thus in the same way this model captures the varying scope of number and gender agreement also (4.4.2).

Most importantly, this model of constructive case also captures many unusual properties of case marking found in these Australian languages that

are not so easily incorporated into other formal models of case: specifically, case stacking, and the use of case to mark clause-level information such as subject case agreement on sentential adjuncts, and tense/aspect/mood. Case stacking as well as the interaction between case and number markers follows automatically in exactly the same way as simple case concord, thus capturing the intuition that it is simply a more extensive form of regular case agreement on modifiers (Chapter 5). The use of case to mark clause-level information is not only captured by this approach, but is predicted by it: if case morphemes reference the clause, by specifying a particular grammatical function for it, then it is not surprising that they might come to carry other types of clause-level information also. Thus, on this view, these functions of case are simply a natural extension of the basic function of case to construct grammatical functions.

The marking of ergative case on Warlpiri sentential modifiers in clauses with ergative subjects can be seen to follow from a simple reanalysis of the Warlpiri ergative case marker. Rather than specifying that the f-structure to which the case marker immediately belongs has ergative case, the Warlpiri ergative case morpheme specifies that the *clause* to which the case marker belongs has a *subject* with ergative case. When the case affix is itself attached to the subject, this case feature will refer to the f-structure of the case-marked nominal; when it is attached to a sentential adjunct, it will specify that the subject of the clause have ergative case (4.3).

The use of case to mark tense/aspect/mood information in languages like Pitta Pitta and Kayardild similarly follows from this approach. In Pitta Pitta case markers specify a particular tense value for the clause in addition to constructing a grammatical function for it. And in Kayardild, case morphemes in modal function carry only a tense feature (and optionally construct the object relation). The principle of morphological composition ensures that, when a modal case marker is attached to a case-inflected stem, the tense feature it provides is unified with the f-structure of the clause (4.4).

This model of constructive case provides a unified account for complex functions of case in these Australian languages, many of which have had little or no discussion in the literature. Furthermore, it is not dependent on the existence of nonconfigurational phrase structure, nor does it require that languages with constructive case be purely dependent-marking; this model is perfectly compatible both with the presence and absence of grammatical function specification elsewhere in the grammar, just as long as the information constructed by the different sources is compatible under unification. Thus, it can be easily integrated into a typological view according to which languages can encode grammatical function information in the syntax (configurational), in the morphology (noncon-

figurational), or (more usually) with a mixture of the two. On this view, the configurationality/nonconfigurationality distinction is not a binary one; rather the two represent the end points of a continuum that ranges from full specification of argument functions in the syntax, to full specification in the morphology (2.2). Within the class of languages that use morphology as the primary means of constructing grammatical relations—i.e. nonconfigurational languages—we can identify two types: those in which the information comes from case marking (dependent-marking) and those in which it comes from verbal morphology (head-marking). Once again, these two options are simply the extremes on a continuum, and thus there are many languages that have a mixture of the two morphological types (e.g. Wambaya and Warlpiri, for example) (2.2). In the model of case developed here, case morphology carries exactly the same information that is carried by phrase structure in more configurational languages, and by verbal morphology in head-marking languages. Thus, the different possibilities allowed by this typological perspective, as well as the interactions between them, are captured naturally. Finally, the fact that this approach to case marking, in conjunction with the general treatment of nonconfigurationality assumed within the framework of LFG (see Chapter 3), easily accommodates languages with mixed (non)configurational and morphological properties is an advantage over other approaches to configurationality, particularly that advocated by Jelinek (1984) and Baker (e.g. 1991, 1996a, 1996b), which require strong parameterized differences between configurational and nonconfigurational languages, and which don't easily account for these dependent-marking nonconfigurational Australian languages at all (2.1).

6.2 Further Issues

In this section I discuss two areas for future research arising out of this work, one empirical and one formal. First I briefly describe a major function of case morphology in many Australian languages that has not been addressed in this work: the use of case in nonfinite subordinate clauses. Second I turn to the formal problem of how the model I develop here should be constrained.

6.2.1 Complementizing Case

A number of Australian languages use case markers in subordinate clauses, in what Dench and Evans (1988) refer to as 'complementizer function', to express various types of relationships with the main clause. The exact nature of this case function differs widely among languages in terms of the cases used, the relationships they encode, and the constituents of the subordinate clause on which they appear (see Dench and Evans (1988:18ff)

for detailed discussion). The model of constructive case should extend fairly naturally to these case functions also, and this will be a topic of future research.

Following Dench and Evans we can recognize two types of complementizer function: T-complementizer, which specifies temporal or spatial relationships between the two clauses (see also the T-relative adjoined relative clause of Hale 1976); and C-complementizer, which expresses co-reference relationships between main and subordinate clause participants (1988:18). Examples of T-complementizer case suffixes are given in (1–3). The most common situation is for the case marker to be added to a nominalized verb (e.g. the Warumungu example in (1)), although in a few languages it is affixed to a finite verb (e.g. Marthuthunira (2)), or to an uninflected verb stem (as in Wambaya (3)).¹

- (1) *Api-jirra warnapartt'arna ngapa-ku pari-nji-kki.*
walk-towards tomorrow I-FUT water-DAT get-NMZ-DAT
'I will go tomorrow to get water.'
(Warumungu, Dench and Evans 1988:19, ex. 33)
- (2) *Ngayu jina-rru malyarra-rnuru puni-lha-nguru jurrwal-yi-la.*
1.SG.NOM foot-NOW sore-PRES go-PST-ABL heat-LOC
'My foot is sore from having gone in the heat.'
(Martuthunira, Dench 1995a:244, ex.10.12)
- (3) *Gangga g-a alalangmiji-nnga Jabiru.*
return 3.SG.S-PST hunt-ABL Jabiru
'Jabiru returned from hunting.' (Wambaya, Nordlinger 1993b:252, ex. 36)

In these examples the dative and ablative case affixes on the subordinate verbs are used to indicate the temporal relationship of the action described by the subordinate clause with respect to that of the main clause. In (1) the dative case marker is used to indicate purpose; that the subordinate event is the purpose of the main clause event. In (2) and (3), the ablative case is used to indicate that the subordinate event occurred prior to that of the main clause.

In C-complementizer function, case affixes are used to indicate agreement with a co-referential NP in the matrix clause, as in the following examples (all taken from Dench and Evans 1988:28).

¹In (3), *alalangmi-j* is the stem ('j' is the thematic consonant for the verb class) and /i/ is an epenthetic vowel inserted between stops and nasals.

- (4) *Tangka-ya=karri ngit-a karna-ja makurrarra-wurlu-ya*
 man-ERG=3A:3O:PRES wood-ACC light-IND wallaby-PROP-ERG
karna-j-urlu-ya.
 light-VB-PROP-ERG
 'The man lit a fire in order to cook the wallaby.' (Yukulta)
- (5) *Ngatha wiya-rna ngunha-yu marlpa-yu*
 1.SG.NOM see-PST that-ACC man-ACC
paka-lalha-ku nharniwali-ku warrungkamu-la-ku.
 come-PERF-ACC here.ALL-ACC morning-LOC-ACC
 'I saw that man who came this way this morning.' (Panyjima)
- (6) *Panyu-ngurni ngaliwa puni-layi, kuyilwa-nnguli-yirri*
 good-BEHIND 1.PL.INC go-FUT spoil-PASS-LEST
kuyil-a kayulu-la ngurnta kuyilwa-lwayara-la.
 bad-LOC water-LOC manner spoil-HAB-LOC
 'We'll go carefully, in case we get mucked about in this water which is generally treacherous.' (Martuthunira).

In these examples, the subordinate clause is inflected with the case of the main clause constituent that is coreferential with the subject of the subordinate clause. In (4) the controlling argument is the main clause subject 'man', and so the subordinate clause is inflected with the ergative case. In (5), the controlling argument is the object 'man' and so the subordinate clause is inflected with the accusative case. And in (6) the subordinate clause is inflected with the locative case in agreement with the controlling locative NP 'water'.

A particularly striking example of the use of case in complementizing function comes from Kayardild, in which all constituents of the subordinate clause are marked with the complementizing case (here the oblique case, glossed C.OBL):²

- (7) *Ngada mungurru, maku-ntha yalawu-jarra-ntha*
 I know woman-C.OBL catch-PST-C.OBL
yakuri-naa-ntha thabuju-karra-nguni-naa-ntha
 fish-M.ABL-C.OBL brother-GEN-INST-M.ABL-C.OBL
mijil-nguni-naa-nth.
 net-INST-M.ABL-C.OBL
 'I know that the woman caught the fish with brother's net.' (Evans 1995b:406, ex. 35)

²The details of complementizing case in Kayardild are complex. See Evans (1995a:Ch. 12) for discussion.

Recall that the oblique case is also used in Kayardild in associating function, to associate the arguments of a nominalized verb with their head (5.3). The fact that it is also used in complementizing function (and as a regular oblique case marker) highlights the fact that the interpretation of a case morpheme frequently depends on the larger syntactic context—whether the nominal to which it is attached is embedded within a subordinate clause, for example—and provides support for the unification-based model presented here in which information can come from many different sources, to be unified in the f-structure.

In many languages C-complementizing case systems such as these have developed into switch-reference systems, such that case markers are used in subordinate clauses to mark the sameness or difference of subordinate subjects and the subjects of their controlling clauses (see Austin (1981c) for detailed discussion, also Dench and Evans (1988:29-30)). The Bilinara (Ngumpin, Pama-Nyungan) system is fairly typical: locative case is used when the two subjects are the same (8), and allative case is used when they are different (9) (when the subordinate subject is co-referential with the main clause object).

- (8) *Karrap-rna-ngku-lu nya-nya jaru-ngka*
 watch-1.SUBJ-2.SG.OBJ-PL.SUBJ see-PST language-LOC
jarrakap-kurla.
 talk-LOC
 'We saw you (when we were) talking language.' (Nordlinger 1990:130, ex. 8-20.)
- (9) *Purrrarni-warla-yi-lu ngayi kurru nya-ngku*
 everybody-FOC-1.SG.OBJ-3.PL.SUBJ 1.SG listen.to see-FUT
jarrakap-jirri.
 talk-ALL
 'Everybody will have to listen to me talking.' (ibid. ex. 8-21)

These switch-reference uses of the local cases also have T-complementizing properties: they are only used when the subordinate clause event is simultaneous with that of the main clause.

The use of case to mark different types of subordinate clauses, and to indicate switch-reference are rather puzzling for theories of case which see case as a purely nominal property, contributing information only about the containing NP. According to the model of constructive case, however, case markers provide information about the larger syntactic context, and it is therefore a natural extension of the theory that they may come to mark relationships between clauses, and between arguments of these

clauses. Working out the details of how this can be done, however, will be left for future research.

6.2.2 Constraints

The formal model of representation that I have developed in this work is powerful enough to provide a unified account for a number of case functions in Australian languages, many of which have not been adequately incorporated into other formal theories. However, it will also need to be constrained. One obvious way to do this would be to situate it within a larger theory of markedness, such as that provided by Optimality Theory (Prince and Smolensky 1993), which could filter out the large number of possibilities overgenerated by the formal model according to various types of constraints. The embedding of the LFG framework into Optimality Theory has been the subject of much recent work (see Bresnan (1996b, 1997a, 1997b) and Choi 1996).

Some of these constraints will need to restrict the information that can be carried by case markers. For example, we have seen in 4.3 that the ergative case marker in Warlpiri can provide information about the case value of the subject of the clause, by virtue of the equation $((GF \uparrow) \text{ SUBJ CASE}) = \text{ERG}$ in its lexical entry. Thus, case markers can provide certain information about the arguments of the clause to which they belong. We would not expect, however, to find an ergative case marker that contributed case information for a modifier of the subject, for example—i.e. having the equation $((GF \uparrow) \text{ SUBJ ADJ CASE}) = \text{ERG}$. Nor would we expect an ergative case marker to carry information about the PRED of the clause, or the number of its object, or the fact that the clause contains an adjunct. In this work I have assumed that case markers in their basic function contain only a case feature and an IO designator constructing a single GF for the immediately containing f-structure, and that extensions of this basic function are constrained by paths of diachronic change that bring about certain types of reanalysis. However, it is clear that more work is needed in terms of determining exactly what these constraints are.

Other constraints will be needed in the morphological component. For example, one strong advantage of this model is that it can accommodate the wide variety of case marking patterns found in Australian languages. These include (i) complete concord (case on all members of an NP); (ii) right-edge marking (case only on the final word of an NP); (iii) head-marking (case only on the head of an NP) and (iv) free-marking (case on any member of an NP) (see Dench and Evans 1988).³ Examples of complete concord are

³Blake 1987 divides these into two groups: word-marking (which contains (i)) and phrase-marking (containing (ii)–(iv)).

found throughout this work; examples of the other possibilities are given in (10) to (12).⁴

(10) *Right-edge marking* (Pitjantjatjara):

Tjitji ninti pukurl-rtu marlanypa nya-ngu.

child clever happy-ERG young.sibling see-PST

'The clever happy child saw his younger brother.' (Bowe 1990:30, ex. 95)

(11) *Head-marking* (Uradhi):

Utagher-mpu amanyama(-mpu) udhumpunya ighanhanga-n

dog-ERG big(-ERG) back(ABS) break-PST

'The big dog broke (the other dog's) back.'

(Crowley 1983, cited in Dench and Evans 1988:5, ex. 2)

(12) *Free-marking* (Nyigina):

Gudyarra-ni wamba mug yirrinymirri yila

two-ERG man hit they-did-it dog

'Two men hit the dog.' (Stokes 1982:59, cited by Dench and Evans 1988:5)

The model of constructive case presented here can account for all of the variation described above. Since case markers actually construct the higher context in which they appear independently of the phrase structure, the result is the same irrespective of their linear order, or their function within the NP (i.e. whether they are head or modifier). However, we also need to rule out all but the grammatical possibilities in any given language. In Wambaya, for example, case must be marked on all members of the NP, thus we can assume that Wambaya has the syntactic constraint that all nominals in the syntax must be inflected for case. However, Wambaya does not allow case stacking, thus we can assume that it also has a morphological requirement that case suffixes must be final in the word (i.e. can not be followed by other suffixes). Warlpiri, on the other hand, allows right-edge marking, and therefore caseless nominals in the syntax, but has the syntactic requirement that caseless nominals precede case marked nominals within the same NP in the c-structure. In addition, Warlpiri morphology allows case markers to be followed by another case marker in the word, but restricts this to one.

Of course, any constraints will need to be motivated empirically. There-

⁴In Nyigina, the free-marking language exemplified in (12), the case marker usually appears either on the initial constituent of the phrase, or on the 'most significant item' (Stokes 1982:59, cited in Dench and Evans 1988:5).

fore, before we can accurately determine what constraints are needed more research must be done on how this view of case can be applied to the properties of case morphology in languages outside of Australia. By viewing case in other languages from the perspective of the constructive case model, the unusual functions of case in Australian languages may turn out to more common cross-linguistically than we originally thought.

A

Restating the Principle of Morphological Composition

The Principle of Morphological Composition was defined in Chapter 4, and is repeated in (1):

(1) **Principle of Morphological Composition:**

Where x is a string of attributes:

$$\begin{array}{ccc} \text{Stem} & \text{Aff} & \\ \text{((GF}^n \uparrow \text{))} & \text{((GF}^m \uparrow \text{)) } x & \implies \text{Stem} \quad \text{Aff} \\ & & \text{(GF}^n \uparrow \text{)) ((GF}^m \text{(GF}^n \uparrow \text{))}x \end{array}$$

This principle exactly captures the relevant linguistic generalization, namely that affixes incorporate any structure already built by the stem to which they attach. Numerous examples of this principle's effectiveness in accounting for nominal inflectional morphology in many Australian languages were presented throughout Chapters 4 and 5.

However, the Principle of Morphological Composition as I have stated it is not obviously reducible to the standard LFG mathematics of quantifier-free equality, because it involves pattern matching to find the point of substitution (and pattern matching involves quantification). What I will demonstrate here is that the Principle of Morphological Composition can be easily reduced to standard LFG mechanisms without any extension of formal power.¹

This alternative to morphological composition involves incorporating its effects into the morphological rules that combine affixes and stems. In addition it requires dividing the stems and affixes into groups depending on whether they are constructive or not. I will use the term 'constructive' to refer to stems and affixes that construct more than a single layer of

¹I am greatly indebted to Mary Dalrymple and Ron Kaplan for their detailed input on this issue. In particular, this alternative solution is due largely to their suggestions.

f-structure, i.e. those that carry an IO designator. Case affixes are constructive affixes; nominal stems in adjunct function are constructive stems. I will refer to the other stems and affixes as 'nonconstructive'. This distinction is important since an affix attached to a constructive stem will be required to embed the structure built by the stem, while an affix added to a nonconstructive stem will simply contribute information to the same f-structure as the stem. And a stem will become constructive if it is inflected with a constructive affix.

(2) **Affixes:**

<i>Constructive</i> (C):	case markers with IO designators
<i>Nonconstructive</i> (NC):	num., gend., case markers without IOS (e.g. most uses of modal case)

These affixes will need to be tagged in the lexicon according to their classification. I will use the abbreviations Aff(C) and Aff(NC) for this purpose.

I will also distinguish between two types of stems: N^{-1} stems and N stems. N stems are inflected constructive stems. All other stems—those that have not been inflected at all, and those that are inflected with an Aff(NC) and remain nonconstructive—are N^{-1} stems. Note that this distinction is not exactly equivalent to the distinction between constructive (C) and nonconstructive (NC) stems, since a stem can be inherently constructive (as with nominal adjuncts, that carry the IO designator (ADJ $\uparrow$) in their lexical entry) without having been inflected.² Thus:

(3) **Stems:**

	N^{-1}	N
C:	bare nom. adjs	any nom. + Aff(C), nom. adj. + Aff(NC)
NC:	bare head nom. (no IO), head nom. + num./gend.	---

We can then define four morphological rules. These are given in (4), and discussed below.³

²This distinction therefore allows us to classify all uninflected nominals as N^{-1} in the lexicon despite the fact that many of them have an optional (ADJ $\uparrow$) in their lexical entries and can therefore be either constructive or nonconstructive.

³The side arrow $\leftarrow$ denotes the f-structure of the sister of the node to which it is attached (Ron Kaplan, pers. comm.). Note that this is a different use of the side arrow than in Dalrymple (1993:129ff).

(4) (i) $N^{-1} \rightarrow N^{-1} \text{ Aff(NC)}$
 $\uparrow = \downarrow \quad \uparrow = \downarrow$
 Used to attach nonconstructive affixes to nonconstructive stems (5a).

(ii) $N \rightarrow N^{-1} \text{ Aff(C)}$
 $\uparrow = \downarrow \quad \uparrow = \downarrow$
 Used to attach constructive affixes to nonconstructive stems (6a).

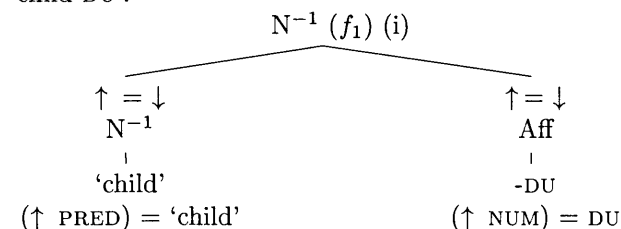
(iii) $N \rightarrow N^{-1} \text{ Aff}$
 $\uparrow = \downarrow \quad (GF \leftarrow) = \downarrow$
 Used to attach all affixes to constructive N^{-1} stems (8a, 9a).

(iv) $N \rightarrow N \text{ Aff}$
 $\uparrow = \downarrow \quad (GF \leftarrow) = \downarrow$
 Used to attach all affixes to N stems (10a, 11a).

These rules fall into two types: those in which the affix is a co-head (having $\uparrow = \downarrow$ like the stem)—rules (i) and (ii)—and those in which the affix embeds the structure of the stem—rules (iii) and (iv). (These latter two rules will be explained in detail shortly). The need for four different rules arises from the fact that whether or not an affix will embed the structure of the stem depends on whether the stem is constructive or not. This will become clear in the ensuing discussion. Independent principles will ensure that these rules can only apply in the right context, see below.

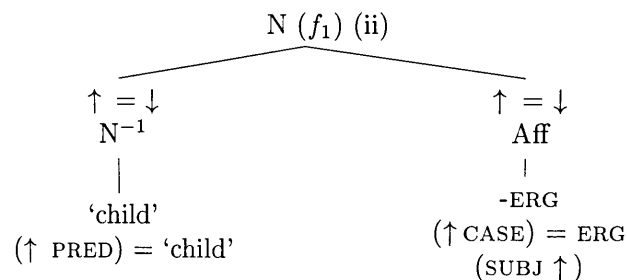
Examples of the application of rules (i) and (ii) follow. (5) makes use of (i); (6) makes use of (ii), and (7) makes use of (i) to attach the number marker and (ii) for the case marker. Here and elsewhere in this discussion I put the relevant rule number next to each node that was created by it.

(5) a. 'child-DU':



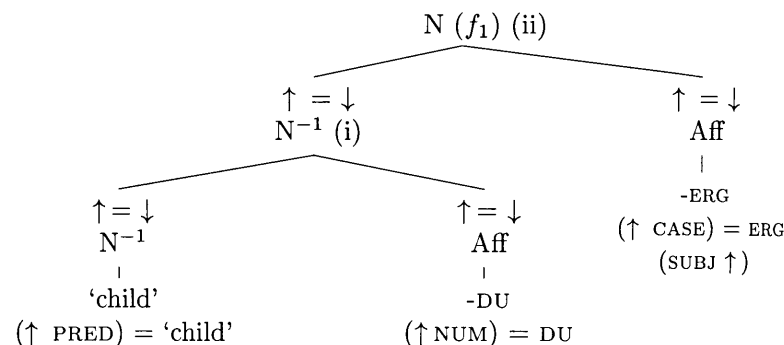
b. $f_1: \begin{bmatrix} \text{PRED} & \text{'child'} \\ \text{NUM} & \text{DU} \end{bmatrix}$

(6) a. 'child-ERG':



b. $\left[\text{SUBJ } f_1: \left[\begin{array}{cc} \text{PRED} & \text{'child'} \\ \text{CASE} & \text{ERG} \end{array} \right] \right]$

(7) a. 'child-DU-ERG':

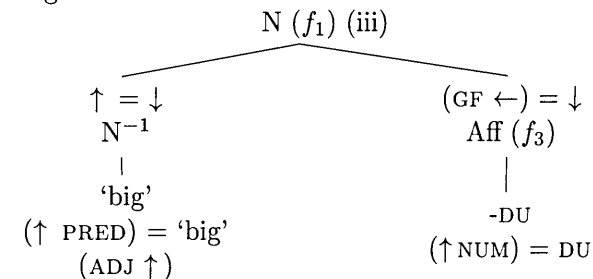


b. $\left[\text{SUBJ } f_1: \left[\begin{array}{cc} \text{PRED} & \text{'child'} \\ \text{NUM} & \text{DU} \\ \text{CASE} & \text{ERG} \end{array} \right] \right]$

In the case of the structure-embedding rules (rules (iii) and (iv)), the affix is annotated with $(\text{GF } \leftarrow) = \downarrow$. The $\leftarrow$ refers to the f-structure of the sister of the affix, namely the stem, and $(\text{GF } \leftarrow)$ constructs an f-structure that contains a GF whose value is the f-structure of the stem; this outer f-structure is then identified with the f-structure of the affix (denoted by $\downarrow$). These rules are used to attach any affix to a constructive stem. Rule (iii) attaches both number (8) and case (9) affixes to constructive N^{-1} stems, and rule (iv) attaches affixes to all other constructive stems: those that are the output of rule (iii) (10), and those that have been inflected with a case marker, by either rule (ii) (11), or rule (iv) (12). (13) shows that rule

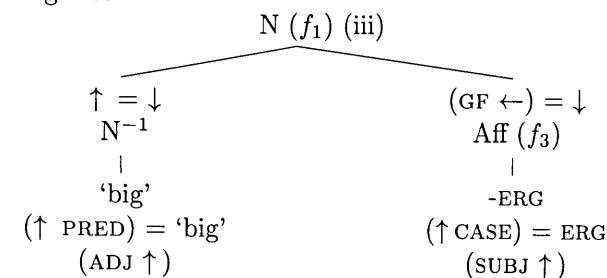
(iv) applies to number affixes also—this is how we capture the interactions between case and number marking discussed in 5.2.

(8) a. 'big-DU':



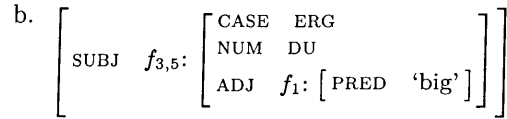
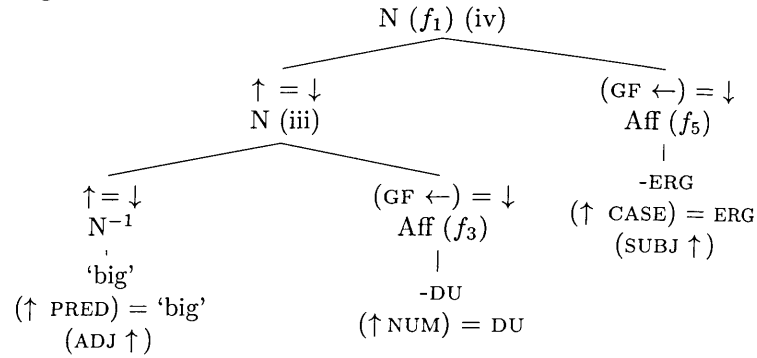
b. $f_3: \left[\begin{array}{cc} \text{NUM} & \text{DU} \\ \text{ADJ} & f_1: \left[\begin{array}{cc} \text{PRED} & \text{'big'} \end{array} \right] \end{array} \right]$

(9) a. 'big-ERG':

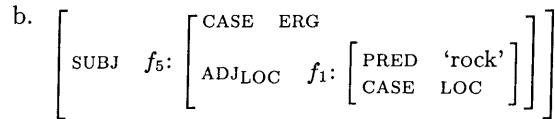
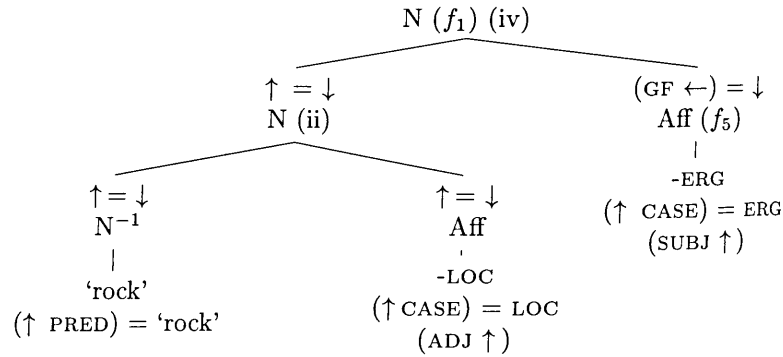


b. $\left[\text{SUBJ } f_3: \left[\begin{array}{cc} \text{CASE} & \text{ERG} \\ \text{ADJ} & f_1: \left[\begin{array}{cc} \text{PRED} & \text{'big'} \end{array} \right] \end{array} \right] \right]$

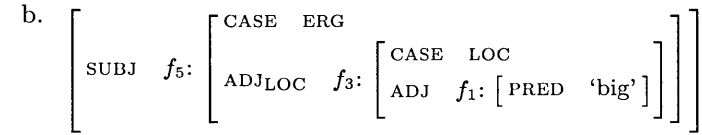
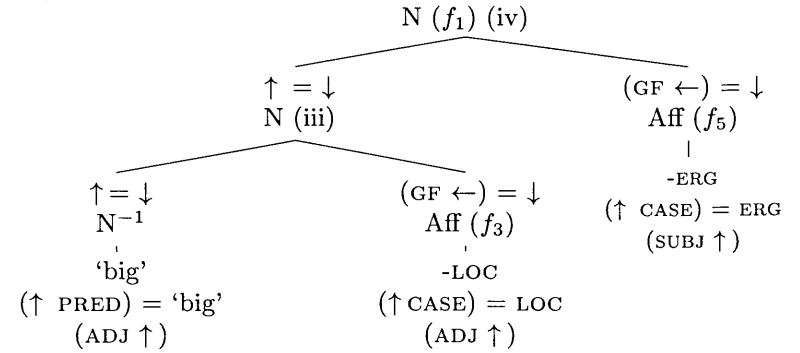
(10) a. 'big-DU-ERG':



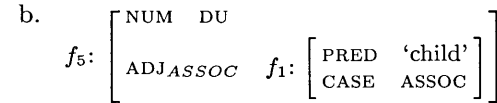
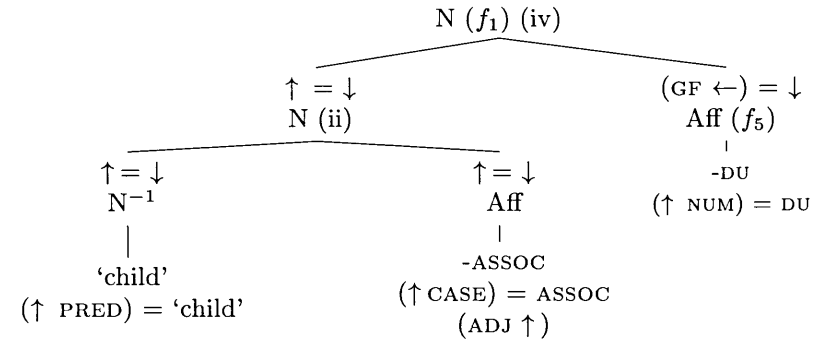
(11) a. 'rock-LOC-ERG':



(12) a. 'big-LOC-ERG':



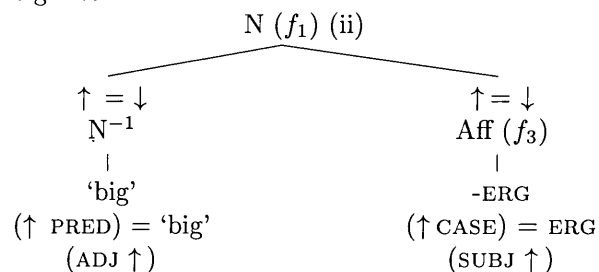
(13) a. 'child-ASSOC-DU':



As the reader can verify, these four rules will generate all of the different case and number marking examples discussed throughout this work. In addition, other independent principles of the grammar will rule out most of the ungrammatical examples that arise from applying the wrong rule to the wrong form. For example, the use of a non-structure-embedding

rule with a case affix (ii) will result in a feature clash when used with a constructive stem:⁴

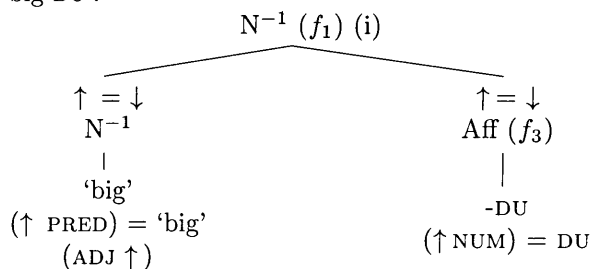
(14) a. 'big-ERG':



b. $\ast \left[\text{SUBJ/ADJ } f_{1,3}: \left[\begin{array}{cc} \text{PRED} & \text{'big'} \\ \text{CASE} & \text{ERG} \end{array} \right] \right]$

The use of rule (i) with a number affix and a constructive stem will generate the f-structure in (15):

(15) a. 'big-DU':



b. $\left[\text{ADJ } f_{1,3}: \left[\begin{array}{cc} \text{PRED} & \text{'big'} \\ \text{NUM} & \text{DU} \end{array} \right] \right]$

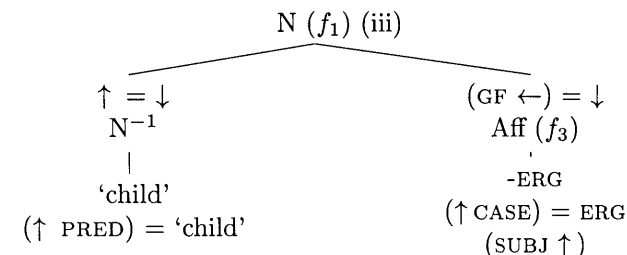
⁴Of course, if the case affix constructs the same grammatical function as the stem, then there won't be a feature clash. For example, if the case suffix in (14) instead was LOC, which constructs the ADJ relation like the stem 'big', then the two would unify. This would generate a grammatical f-structure, namely that in (i), but with a different interpretation since 'big' would be the f-structure head of the ADJ, rather than a modifier of the ADJ.

(i) $\left[\text{ADJ}_{\text{LOC}} f_{1,3}: \left[\begin{array}{cc} \text{PRED} & \text{'big'} \\ \text{CASE} & \text{LOC} \end{array} \right] \right]$

This f-structure is grammatical, but I assume it will be ruled out on semantic principles since 'big', being a modifier, cannot have a number value—this number value is a property of the head that 'big' modifies, see (8).

Finally, the use of the structure-embedding rule (iii) with a nonconstructive stem⁵ will generate an extra, embedded grammatical function attribute:

(16) a. 'child-ERG':



b. $\ast \left[\text{SUBJ } f_3: \left[\begin{array}{cc} \text{CASE} & \text{ERG} \\ \text{GF} & f_1: \left[\begin{array}{cc} \text{PRED} & \text{'child'} \end{array} \right] \end{array} \right] \right]$

Thus, while the morphological principle defined in Chapter 4 more elegantly captures the correct linguistic generalization, the same effect can be achieved without any additions to the LFG formalism, by dividing the class of inflectional affixes into two groups, depending on their (non)constructive properties, and incorporating the embedding mechanism into an expanded set of morphological rules.

⁵Note that since it can only apply to N-stems, (iv) is required to apply to constructive stems by definition.

Bibliography

- Abraham, Werner. 1986. Word order in the Middle Field of the German sentence. In *Topic, Focus and Configurationality*, ed. Werner Abraham and Sjaak de Meij. 15–38. Amsterdam: John Benjamins.
- Aissen, Judith L. 1992. Topic and focus in Mayan. *Language* 68(1):43–80.
- Alsina, Alex. 1993. *Predicate Composition: A theory of syntactic function alternations*. Doctoral dissertation, Stanford University.
- Anderson, Stephen R. 1976. On the notion of subject in ergative languages. In *Subject and Topic*, ed. Charles N. Li. 1–23. New York: Academic Press.
- Anderson, Stephen R. 1982. Where's morphology? *Linguistic Inquiry* 13:571–612.
- Anderson, Stephen R. 1992. *A-Morphous Morphology*. Cambridge: Cambridge University Press.
- Andrews, Avery D. 1982. The Representation of Case in Modern Icelandic. In *The Mental Representation of Grammatical Relations*, ed. Joan Bresnan. 427–503. Cambridge, Mass.: MIT Press.
- Andrews, Avery D. 1990a. Case structures and control in Modern Icelandic. In *Modern Icelandic Syntax (Syntax and Semantics, vol. 24)*, ed. Joan Maling and Annie Zaenen. 187–234. San Diego: Academic Press.
- Andrews, Avery D. 1990b. Unification and Morphological Blocking. *Natural Language and Linguistic Theory* 8:507–558.
- Andrews, Avery D. 1996. Semantic case-stacking and inside-out unification. *Australian Journal of Linguistics* 16(1):1–55.
- Andrews, Avery D., and Christopher D. Manning. 1993. Information Spreading and Levels of Representation in LFG. Technical Report CSLI-93-176. Stanford: CSLI Publications.
- Aronoff, Mark. 1976. *Word Formation in Generative Grammar*. Cambridge, Mass.: MIT Press.
- Aronoff, Mark. 1994. *Morphology by itself: Stems and inflectional classes*. Linguistic Inquiry Monographs, 22. Cambridge, Mass.: MIT Press.
- Austin, Peter K. 1981a. Case Marking in Southern Pilbara Languages. *Australian Journal of Linguistics* 1(2):211–226.

- Austin, Peter K. 1981b. *A Grammar of Diyari, South Australia*. Cambridge: Cambridge University Press.
- Austin, Peter K. 1981c. Switch Reference in Australia. *Language* 57(2):309–34.
- Austin, Peter K. 1993. Word order in a free word order language: the case of Jiwari. to appear in *Language*.
- Austin, Peter K. 1995. Double Case Marking in Kanyara and Mantharta Languages. In *Double Case: Agreement by Suffixaufnahme*, ed. Frans Plank. 363–379. Oxford: Oxford University Press.
- Austin, Peter K., and Joan Bresnan. 1996. Non-configurationality in Australian Aboriginal languages. *Natural Language and Linguistic Theory* 14(2):215–268.
- Baker, Mark C. 1985. The Mirror Principle and Morphosyntactic Explanation. *Linguistic Inquiry* 16:373–416.
- Baker, Mark C. 1990. Pronominal inflection and the morphology-syntax interface. In *CLS-26*, 25–48.
- Baker, Mark C. 1991. On some subject/object asymmetries in Mohawk. *Natural Language and Linguistic Theory* 9:537–576.
- Baker, Mark C. 1996a. Notes on dependent-marking-style nonconfigurationality in Australian languages. MS, McGill University.
- Baker, Mark C. 1996b. *The Polysynthesis Parameter*. Oxford: Oxford University Press.
- Berman, Judith. 1997. Empty categories in LFG. Paper presented at the LFG97 Conference, San Diego.
- Bittner, Maria, and Ken Hale. 1995. Remarks on definiteness in Warlpiri. In *Quantification in Natural Languages, Volume 1*, ed. Emmon Bach, Eloise Jelinek, Angelika Kratzer, and Barbara Partee. 81–106. Dordrecht: Kluwer Academic Publishers.
- Bittner, Maria, and Ken Hale. 1996. The structural determination of case and agreement. *Linguistic Inquiry* 27(1):1–68.
- Blake, Barry J. 1977. *Case Marking in Australian Languages*. Canberra: Australian Institute of Aboriginal Studies.
- Blake, Barry J. 1979a. *A Kalkatungu Grammar*. Series B, No. 57. Canberra: Pacific Linguistics.
- Blake, Barry J. 1979b. Pitta Pitta. In *Handbook of Australian Languages, Volume 1*, ed. R.M.W. Dixon and Barry J. Blake. 183–242. Amsterdam: John Benjamins.
- Blake, Barry J. 1983. Structure and word order in Kalkatungu: the anatomy of a flat language. *Australian Journal of Linguistics* 3(2):143–175.
- Blake, Barry J. 1987. *Australian Aboriginal Grammar*. Canberra: Croom Helm.
- Blake, Barry J. 1994. *Case*. Cambridge: Cambridge University Press.
- Bloomfield, Leonard. 1933. *Language*. New York: Holt and Co.
- Boas, Franz. 1911. Chinook. In *Handbook of American Indian languages, Vol. 1*. 599–677. Washington: Government Printer. Bulletin of the Bureau of American Ethnology 40.
- Börjars, Kersti, and Carol Chapman. 1996. Agreement and pro-drop in some dialects of English. MS, University of Manchester and University of Newcastle-upon-Tyne.
- Börjars, Kersti, and Nigel Vincent. 1997. Double case and the ‘wimpiness’ of morphology. Paper given at the LFG97 Conference, San Diego, June.
- Börjars, Kersti, Nigel Vincent, and Carol Chapman. 1996. Paradigms, periphrases and pronominal inflection: a feature-based account. To appear in Geert Booij and Jaap van Marle (eds.) *Yearbook of Morphology 1996*. Dordrecht, Kluwer Academic Publishers.
- Bowe, Heather J. 1990. *Categories, constituents and constituent order in Pitjantjatjara*. London: Routledge.
- Bresnan, Joan. 1982a. Control and Complementation. In *The Mental Representation of Grammatical Relations*, ed. Joan Bresnan. 282–390. Cambridge, Mass.: MIT Press.
- Bresnan, Joan. 1982b. Polyadicity. In *The Mental Representation of Grammatical Relations*, ed. Joan Bresnan. 149–172. Cambridge, Mass.: MIT Press.
- Bresnan, Joan. 1995a. Linear Order, Syntactic Rank, and Empty Categories: on Weak Crossover. In *Formal Issues in Lexical-Functional Grammar*, ed. Mary Dalrymple, Ronald M. Kaplan, John T. Maxwell, and Annie Zaenen. 241–274. Stanford: CSLI Publications.
- Bresnan, Joan. 1995b. Morphology competes with syntax: explaining typological variation in Weak Crossover effects. MS, Stanford University. Written version of paper given at the MIT Workshop on Optimality in Syntax, in May 1995.
- Bresnan, Joan. 1996. Lexical-Functional Syntax. MS, Stanford University. Oct 1996 version.
- Bresnan, Joan. 1996b. Notes on heads, projections, and optimality. MS, Stanford University.
- Bresnan, Joan. 1997a. The emergence of the unmarked pronoun: Cicheŵa pronominals in Optimality Theory. In *BLS-23*. To appear.
- Bresnan, Joan. 1997b. Morphology competes with syntax: beyond the inflectional paradigm. Paper given at the Linguistic Association of Great Britain Meeting, Edinburgh.
- Bresnan, Joan, and Jonni Kanerva. 1989. Locative inversion in Chicheŵa: a case study of factorization in grammar. *Linguistic Inquiry* 20(1):1–50.
- Bresnan, Joan, and Sam A. Mchombo. 1985. Agreement and pronominal incorporation in Chicheŵa. MS, Stanford University and University of California, Berkeley.
- Bresnan, Joan, and Sam A. Mchombo. 1986. Grammatical and anaphoric agreement. In *Papers from the Parasession on Pragmatics and Grammatical Theory (CLS-22:2)*, 278–97. Chicago.

- Bresnan, Joan, and Sam A. Mchombo. 1987. Topic, Pronoun, and Agreement in Chicheŵa. *Language* 63:741-782.
- Bresnan, Joan, and Sam A. Mchombo. 1995. The lexical integrity principle: evidence from Bantu. *Natural Language and Linguistic Theory* 13(2):181-254.
- Bresnan, Joan, and Lioba Moshi. 1990. Object asymmetries in comparative Bantu syntax. *Linguistic Inquiry* 21(2):147-185.
- Bresnan, Joan, and Annie Zaenen. 1990. Deep unaccusativity in LFG. In *Grammatical Relations: A cross-theoretical perspective*, ed. K. Dziwirek, P. Farrell, and E. Mejías-Bikandi. 45-57. Stanford: CSLI Publications.
- Bresnan, Joan (ed.). 1982. *The Mental Representation of Grammatical Relations*. Cambridge, Mass.: MIT Press.
- Butt, Miriam, Mary Dalrymple, and Anette Frank. 1997. The nature of argument structure. Paper given at the LFG97 Conference, San Diego.
- Capell, Arthur. 1956. *A New Approach to Australian Linguistics*. Oceania Linguistic Monographs No. 1. Sydney: University of Sydney.
- Chadwick, Neil. 1978. *The West Barkly Languages, Complex Morphology*. Doctoral Dissertation, Monash University, Australia.
- Choi, Hye-Won. 1996. *Optimizing structure in context: Scrambling and information structure*. Doctoral dissertation, Stanford University.
- Chomsky, Noam. 1970. Remarks on nominalization. In *Readings in English Transformational Grammar*, ed. Roderick A. Jacobs and Peter S. Rosenbaum. 184-221. Waltham, Mass: Ginn and Co.
- Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- Chomsky, Noam. 1982. *Some concepts and consequences of the theory of Government and Binding*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 1986. *Barriers*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 1991. Some Notes on Economy of Derivation and Representation. In *Principles and Parameters in Comparative Grammar*, ed. Robert Freidin. 417-454. Cambridge, MA: MIT Press.
- Chomsky, Noam. 1993. A Minimalist Program for Linguistic Theory. In *The View from Building 20: Essays in linguistics in honor of Sylvain Bromberger*, ed. Kenneth Hale and Samuel Jay Keyser. 1-52. Cambridge, MA: MIT Press.
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, Mass.: MIT Press.
- Chung, Sandra, and James McCloskey. 1987. Government, barriers and small clauses in Modern Irish. *Linguistic Inquiry* 18(1):173-237.
- Corbett, Greville G. 1991. *Gender*. Cambridge: Cambridge University Press.
- Crowley, Terry. 1983. Uradhi. In *Handbook of Australian Languages, Volume 3*, ed. R.M.W. Dixon and B.J. Blake. 306-428. Canberra: A.N.U. Press.
- Dalrymple, Mary, Ronald M. Kaplan, John T. Maxwell, and Annie Zaenen (ed.). 1995a. *Formal Issues in Lexical-Functional Grammar*. Stanford: CSLI Publications.
- Dalrymple, Mary, John Lamping, and Vijay Saraswat. 1993. LFG semantics via constraints. In *Proceedings of the Sixth Meeting of the European ACL*. University of Utrecht.
- Dalrymple, Mary Elizabeth. 1993. *The Syntax of Anaphoric Binding*. Stanford: CSLI Publications.
- Dayley, Jon P. 1981. *A Tzutujil Grammar*. Doctoral dissertation, University of California, Berkeley.
- Demuth, Katherine, and Mark Johnson. 1989. Interaction between discourse functions and agreement in Setawana. *Journal of African Languages and Linguistics* 11:21-35.
- Dench, Alan Charles. 1991. Panyjima. In *Handbook of Australian Languages, Volume 4*, ed. R.M.W. Dixon and Barry Blake. 124-243. Sydney: Oxford University Press.
- Dench, Alan Charles. 1995a. *Martuthunira: A language of the Pilbara region of Western Australia*. Series C, 125. Canberra: Pacific Linguistics.
- Dench, Alan Charles. 1995b. Suffixaufnahme and Apparent Ellipsis in Martuthunira. In *Double Case: Agreement by Suffixaufnahme*, ed. Frans Plank. 380-395. Oxford: Oxford University Press.
- Dench, Alan Charles, and Nicholas Evans. 1988. Multiple Case-Marking in Australian Languages. *Australian Journal of Linguistics* 8:1-47.
- Di Sciullo, Anna Maria, and Edwin Williams. 1987. *On the Definition of Word*. Linguistic Inquiry Monograph. Cambridge, Mass.: MIT Press.
- Dixon, R.M.W. 1972. *The Dyirbal Language of North Queensland*. Cambridge: Cambridge University Press.
- Dixon, R.M.W. 1977. *A Grammar of Yidiny*. Cambridge: Cambridge University Press.
- Dixon, R.M.W. 1979. Ergativity. *Language* 55(1):59-138.
- Dixon, R.M.W. 1980. *The Languages of Australia*. Cambridge: Cambridge University Press.
- Dixon, R.M.W. 1994. *Ergativity*. Cambridge: Cambridge University Press.
- Donohue, Cathryn. 1996. Optimal functionality: an Optimality Theoretic solution to Fore case marking. MS, Stanford University.
- Douglas, W. 1981. Watjarri. In *Handbook of Australian Languages, Volume 2*, ed. R.M.W. Dixon and Barry Blake. 196-272. Canberra: ANU Press.
- Dowty, David R. 1991. Thematic proto-roles and argument selection. *Language* 67:547-619.
- Eades, Diana. 1979. Gumbaynggir. In *Handbook of Australian Languages, Volume 1*, ed. R.M.W. Dixon and B.J. Blake. 244-361. Canberra: A.N.U. Press.
- Evans, Nicholas. 1991. *A Grammar of Mayali*. MS, Melbourne University.
- Evans, Nicholas. 1993. Code, inference, placedness and ellipsis. In *The Role of Theory in Language Description*, ed. William A. Foley. 243-280. Berlin: Mouton de Gruyter.

- Evans, Nicholas. 1995a. *A Grammar of Kayardild: With Historical-Comparative Notes on Tangkic*. Berlin: Mouton de Gruyter.
- Evans, Nicholas. 1995b. Multiple Case in Kayardild: Anti-iconic Suffix Ordering and the Diachronic Filter. In *Double Case: Agreement by Suffixaufnahme*, ed. Frans Plank. 396–428. Oxford: Oxford University Press.
- Evans, Nicholas. 1995c. A-quantifiers and scope in Mayali. In *Quantification in Natural Languages, Volume 1*, ed. Emmon Bach, Eloise Jelinek, Angelika Kratzer, and Barbara H. Partee. 207–270. Dordrecht: Kluwer Academic Publishers.
- Fassi-Fehri, Abdelkader. 1984. Agreement in Arabic, binding and coherence. In *Agreement in Natural Language*, ed. Michael Barlow and Charles A. Ferguson. 107–158. Stanford: CSLI Publications.
- Fukui, Naoki. 1995. *Theory of Projection in Syntax*. Stanford and Tokyo: CSLI Publications and Kurosio Publishers.
- Fukui, Naoki, and Margaret Speas. 1986. Specifiers and projection. *MIT Working Papers in Linguistics* 8:128–172.
- Gil, David. 1987. Definiteness, noun phrase configurationality, and the count-mass distinction. In *The Representation of Indefiniteness*, ed. Eric J. Reuland and Alice G. B. ter Meulen. 254–269. Cambridge, Mass.: MIT Press.
- Givón, Talmy. 1976. Topic, pronoun and grammatical agreement. In *Subject and Topic*, ed. Charles N. Li. 149–188. New York: Academic Press.
- Goddard, Cliff. 1982. Case systems and case marking in Australian languages: a new interpretation. *Australian Journal of Linguistics* 2(2):167–196.
- Green, Ian. 1995. The death of “prefixing”: contact induced typological change in Northern Australia. In *BLS-21*, 414–425.
- Grimshaw, Jane. 1990. *Argument Structure*. Cambridge, Mass.: MIT Press.
- Grimshaw, Jane. 1991. Extended Projection. MS, Rutgers University.
- Haider, Hubert. 1989. θ -tracking Systems – Evidence from German. In *Configurationality: The typology of asymmetries*, ed. László Marácz and Pieter Muysken. 185–206. Dordrecht: Foris Publications.
- Hale, Kenneth. 1967. Some productive rules in Lardil (Mornington Island) syntax. In *Papers in Australian Linguistics No. 2*. 63–73. Canberra: Pacific Linguistics.
- Hale, Kenneth. 1973. Person marking in Walbiri. In *A Festschrift for Morris Halle*, ed. Stephen Anderson and Paul Kiparsky. 308–344. New York: Holt, Rinehart and Winston.
- Hale, Kenneth. 1976. The Adjoined Relative Clause in Australia. In *Grammatical Categories in Australian Languages*, ed. R.M.W. Dixon. 78–105. Canberra: Australian Institute of Aboriginal Studies.
- Hale, Kenneth. 1981. On the position of Walbiri in a typology of the base. Distributed by Indiana University Linguistics Club, Bloomington.
- Hale, Kenneth. 1982a. Preliminary remarks on configurationality. In *NELS-12*, 86–96.
- Hale, Kenneth. 1982b. Some Essential Features of Warlpiri Verbal Clauses. In *Papers in Memory of Lothar Jagst*, ed. S. Swartz. 217–315. Darwin, Australia: SIL:AAB.
- Hale, Kenneth. 1983. Warlpiri and the Grammar of Nonconfigurational Languages. *Natural Language and Linguistic Theory* 1:5–47.
- Hale, Kenneth. 1989. On nonconfigurational structures. In *Configurationality: The typology of asymmetries*, ed. László Marácz and Pieter Muysken. 293–300. Dordrecht: Foris Publications.
- Hale, Kenneth. 1992. Basic word order in two ‘free word order’ languages. In *Pragmatics of Word Order Flexibility*, ed. Doris Payne. 63–82. Amsterdam: John Benjamins.
- Hale, Kenneth. 1994. Core structures and adjunctions in Warlpiri syntax. In *Studies on scrambling: Movement and non-movement approaches to free word-order phenomena*, ed. Norbert Corver and Henk van Reimsdijk. 185–219. Studies in Generative Grammar 41. Berlin: Mouton de Gruyter.
- Halle, Morris. 1973. Prolegomena to a theory of word-formation. *Linguistic Inquiry* 4:3–16.
- Halle, Morris, and Alec Marantz. 1993. Distributed Morphology and the pieces of inflection. In *The View From Building 20: Essays in Linguistics in honor of Sylvain Bromberger*, ed. Kenneth Hale and Samuel Jay Keyser. Chap. 3, 111–176. Cambridge, Mass.: MIT Press.
- Halpern, Aaron. 1995. *On the Placement of Morphology and Clitics*. Stanford: CSLI Publications.
- Halvorsen, Per-Kristian. 1983. Semantics for Lexical-Functional Grammar. *Linguistic Inquiry* 14(4):567–615.
- Halvorsen, Per-Kristian, and Ronald M. Kaplan. 1995. Projections and semantic description in Lexical-Functional Grammar. In *Formal Issues in Lexical-Functional Grammar*, ed. Mary Dalrymple, Ronald M. Kaplan, John T. Maxwell, and Annie Zaenen. 279–292. Stanford: CSLI Publications. Originally appeared in 1988 in *Proceedings of the International Conference on Fifth Generation Computer Systems*, pp. 1116–22, Institute for New Generation Systems, Tokyo.
- Haviland, John. 1979. Guugu Yimidhirr. In *Handbook of Australian Languages, Volume 1*, ed. R.M.W. Dixon and Barry Blake. 26–180. Canberra: ANU Press.
- Heath, Jeffrey. 1984. *A Functional Grammar of Nunggubuyu*. Canberra: Australian Institute of Aboriginal Studies.
- Heath, Jeffrey. 1986. Syntactic and lexical aspects of nonconfigurationality in Nunggubuyu (Australia). *Natural Language and Linguistic Theory* 4:375–408.
- Huang, C-T. James. 1984. On the distribution and reference of empty pronouns. *Linguistic Inquiry* 15:531–74.
- Jackendoff, Ray. 1977. *X' Syntax: A study of phrase structure*. Cambridge, Mass.: MIT Press.

- Jacobson, R. 1958. Morfoloģeskie nabljudenija nad slavjanskim sklonenijem. In *American Contribution to the IVth International Congress of Slavists*. The Hague: Mouton de Gruyter.
- Jelinek, Eloise. 1984. Empty Categories, Case, and Configurationality. *Natural Language and Linguistic Theory* 2:39–76.
- Jelinek, Eloise. 1989. The case split and pronominal arguments in Choctaw. In *Configurationality: The typology of asymmetries*, ed. László Marácz and Pieter Muysken. 117–141. Dordrecht: Foris Publications.
- Johnson, Mark. 1988. *Attribute-Value Logic and the Theory of Grammar*. CSLI Lecture Notes, No. 16. Stanford: CSLI Publications.
- Joshi, Smita. 1993. *Selection of grammatical and logical functions in Marathi*. Doctoral dissertation, Stanford University.
- Kaplan, Ronald M. 1995. The formal architecture of Lexical-Functional Grammar. In *Formal Issues in Lexical-Functional Grammar*, ed. Mary Dalrymple et al. 7–27. Stanford: CSLI Publications.
- Kaplan, Ronald M., and Joan Bresnan. 1982. Lexical-Functional Grammar: A Formal System for Grammatical Representation. In *The Mental Representation of Grammatical Relations*, ed. Joan Bresnan. 173–281. Cambridge, Mass.: MIT Press.
- Keen, Sandra. 1983. Yukulta. In *Handbook of Australian Languages, Volume 3*, ed. R.M.W. Dixon and B.J. Blake. 190–304. Canberra: A.N.U. Press.
- King, Tracy Holloway. 1995. *Configuring Topic and Focus in Russian*. Stanford: CSLI Publications.
- Kiparsky, Paul. 1982. Lexical Morphology and Phonology. In *Linguistics in the Morning Calm*, ed. Linguistic Society of Korea. 3–91. Seoul, Korea: Hanshin.
- Kiparsky, Paul. 1997a. The rise of positional licensing. In *Parameters of morphosyntactic change*, ed. Ans van Kemenade and Nigel Vincent. Cambridge: Cambridge University Press.
- Kiparsky, Paul. 1997b. Structural Case. MS, Stanford University.
- Kiss, Katalin E. 1995. NP movement, operator movement, and scrambling in Hungarian. In *Discourse Configurational Languages*, ed. Katalin E. Kiss. 207–243. New York: Oxford University Press.
- Kiss, Katalin E. (ed.). 1995a. *Discourse Configurational Languages*. Oxford studies in comparative syntax. New York: Oxford University Press.
- Klokeid, Terry. 1976. *Topics in Lardil Grammar*. Doctoral dissertation, MIT, Cambridge, Mass.
- Koopman, Hilda, and Dominique Sportiche. 1991. The position of subjects. *Lingua* 85:211–258.
- Kroeger, Paul. 1993. *Phrase Structure and Grammatical Relations in Tagalog*. Stanford: CSLI Publications.
- Kuno, Susumu. 1973. *The Structure of the Japanese Language*. Cambridge, Mass.: MIT Press.
- Kuroda, S Y. 1988. Whether we agree or not: a comparative syntax of English and Japanese. *Linguisticae Investigationes* 12:1–47.
- Laughren, Mary. 1989. The configurationality parameter and Warlpiri. In *Configurationality: The typology of asymmetries*, ed. László Marácz and Pieter Muysken. 319–353. Dordrecht: Foris Publications.
- Libert, Alan Reed. 1988. Going from the allative toward a theory of multiple case marking. *McGill Working Papers in Linguistics* 5(1):93–129.
- Lieber, Rochelle. 1980. *The Organization of the Lexicon*. Doctoral dissertation, MIT, Cambridge, Mass. (Distributed by Indiana University Linguistics Club, 1981).
- Lieber, Rochelle. 1992. *Deconstructing morphology: Word formation in syntactic theory*. Chicago: University of Chicago Press.
- Maling, Joan. 1989. Adverbials and structural case in Korean. In *Harvard Studies in Korean Linguistics III*, ed. S. Kuno et al. 297–308. Harvard University.
- Manning, Christopher D. 1996. *Ergativity: Argument structure and grammatical relations*. Stanford: CSLI Publications.
- Marácz, László K., and Pieter Muysken. 1989. Introduction. In *Configurationality: The typology of asymmetries*, ed. László Marácz and Pieter Muysken. 1–38. Dordrecht: Foris Publications.
- Marantz, Alec. 1995. Cat as a phrasal idiom. MS, MIT, Cambridge.
- Matthews, P. H. 1972. *Inflectional Morphology: A theoretical study based on aspects of Latin verb conjugation*. Cambridge: Cambridge University Press.
- Matthews, P. H. 1991. *Morphology*. Cambridge: Cambridge University Press. 2nd edition.
- McGregor, William B. 1990. *A Functional Grammar of Gooniyandi*. Amsterdam: John Benjamins.
- Mchombo, Sam. 1984. On the nonexistence of verb-object agreement in Bantu. MS, University of California, Berkeley.
- Mel'čuk, Igor A. 1986. Toward a Definition of Case. In *Case in Slavic*, ed. R. D. Brecht and J. S. Levine. 35–85. Columbus: Slavica.
- Mithun, Marianne. 1992. Is basic word order universal? In *Pragmatics of Word Order Flexibility*, ed. Doris L. Payne. 15–61. Amsterdam: John Benjamins. Originally appeared in Russell Tomlin (ed.) (1987) *Coherence and Grounding in Discourse*, pp. 281–328.
- Mohanan, K.P. 1982. Grammatical relations and clause structure in Malayalam. In *The Mental Representation of Grammatical Relations*, ed. Joan Bresnan. 504–589. Cambridge, Mass.: MIT Press.
- Mohanan, K.P., and Tara Mohanan. 1994. Issues in word order in South Asian languages: enriched phrase structure or multidimensionality? In *Theoretical Perspectives on Word Order in South Asian Languages*, ed. Miriam Butt, Tracy Holloway King, and Gillian Ramchand. 153–184. Stanford: CSLI Publications.
- Mohanan, Tara. 1994a. *Arguments in Hindi*. Stanford: CSLI Publications.
- Mohanan, Tara. 1994b. Case OCP: a constraint on word order in Hindi. In *Theoretical Perspectives on Word Order in South Asian Languages*, ed. Miriam

- Butt, Tracy Holloway King, and Gillian Ramchand. 185–216. Stanford: CSLI Publications.
- Mohanan, Tara. 1995. Wordhood and lexicality: noun incorporation in Hindi. *Natural Language and Linguistic Theory* 13(1):75–134.
- Nash, David G. 1986. *Topics in Warlpiri Grammar*. Outstanding Dissertations in Linguistics. Third Series. New York: Garland Publishing Inc. Published version of MIT doctoral dissertation with the same name. 1980.
- Neidle, Carol. 1982. Case agreement in Russian. In *The Mental Representation of Grammatical Relations*, ed. Joan Bresnan. 391–426. Cambridge, Mass.: MIT Press.
- Neidle, Carol. 1988. *The Role of Case in Russian Syntax*. Dordrecht: Kluwer Academic Publishers.
- Niño, María Eugenia. 1994. A morphologically based approach to split inflection in Finnish. MS, Stanford University.
- Nichols, Johanna. 1986. Head-marking grammar and dependent-marking grammar. *Language* 62:56–119.
- Nordlinger, Rachel. 1990. *A Sketch Grammar of Bilinara*. Unpublished Honours Thesis, University of Melbourne, Australia.
- Nordlinger, Rachel. 1993a. Bound pronouns and nominals in Wambaya: some problems for Jelinek. MS, Stanford University.
- Nordlinger, Rachel. 1993b. A Grammar of Wambaya. M.A. Dissertation, University of Melbourne, Australia.
- Nordlinger, Rachel. 1995. Split tense and imperative mood inflection in Wambaya. MS, Stanford University. Shorter version published in *BLS-21* (1995), pp. 226–236.
- Nordlinger, Rachel. 1996. The 'status' of Wambaya verbal inflection. Paper presented at the Australian Linguistics Society Conference, Canberra.
- Nordlinger, Rachel. In Press. *A Grammar of Wambaya*. Canberra: Pacific Linguistics. Revised version of 1993 MA Thesis, University of Melbourne.
- Nordlinger, Rachel, and Joan Bresnan. 1996. Nonconfigurational tense in Wambaya. In *Proceedings of the First LFG Conference*, 338–352. Grenoble, France.
- O'Grady, Geoffrey, Stephen Wurm, and Kenneth Hale. 1966. Aboriginal Languages of Australia (A preliminary classification). [MAP]. University of Victoria, B. C.
- Payne, Doris, L. (ed.). 1992. *Pragmatics of Word Order Flexibility*. Typological studies in language, Vol. 22. Amsterdam: John Benjamins.
- Pensalfini, Robert. 1992. *Degree of Freedom: Word order in Pama-Nyungan languages*. Unpublished Honours Thesis, University of Western Australia.
- Pensalfini, Robert. 1996. Nonconfigurationality as restrictions on encyclopedic information. MS, MIT. To appear in *Proceedings of ConSOLE V*.
- Pensalfini, Robert. 1997. *Jingilu Grammar, Dictionary and Texts*. Doctoral dissertation, MIT, Cambridge, Mass.
- Plank, Frans (ed.). 1995. *Double Case: Agreement by Suffixaufnahme*. Oxford: Oxford University Press.
- Pollard, Carl, and Ivan A. Sag. 1994. *Head-Driven Phrase Structure Grammar*. Stanford: CSLI.
- Prince, Alan, and Paul Smolensky. 1993. Optimality Theory: Constraint Interaction in Generative Grammar. MS, Rutgers University and University of Colorado, Boulder. To be published by MIT Press, Cambridge, Mass.
- Rizzi, Luigi. 1986. Null objects in Italian and the theory of *pro*. *Linguistic Inquiry* 17:501–557.
- Sadock, Jerrold. 1991. *Autolexical Syntax: A Theory of Parallel Grammatical Representations*. Chicago: University of Chicago Press.
- Sag, Ivan, Lauri Karttunen, and Jeffrey Goldberg. 1992. A Lexical Analysis of Icelandic case. In *Lexical Matters*, ed. Ivan A. Sag and Anna Szabolcsi. 301–318. Stanford: CSLI Publications.
- Schweiger, Fritz. 1995. Suffixaufnahme and Related Case Marking Patterns in Australian Languages. In *Double Case: Agreement by Suffixaufnahme*, ed. Frans Plank. 339–362. Oxford: Oxford University Press.
- Selkirk, Elisabeth O. 1982. *The syntax of words*. Cambridge, Mass.: MIT Press.
- Sells, Peter. 1985. *Lectures on Contemporary Syntactic Theories*. Stanford: CSLI Publications.
- Sells, Peter. 1994. Sub-phrasal syntax in Korean. *Language Research* 30(2):351–386.
- Sells, Peter. 1995. Korean and Japanese morphology from a lexical perspective. *Linguistic Inquiry* 26(2):277–325.
- Silverstein, Michael. 1976. Hierarchy of features and ergativity. In *Grammatical categories in Australian languages*, ed. R.M.W. Dixon. 112–171. Canberra: Australian Institute of Aboriginal Studies.
- Simpson, Jane Helen. 1983. *Aspects of Warlpiri Morphology and Syntax*. Doctoral dissertation, MIT, Cambridge, Mass.
- Simpson, Jane Helen. 1991. *Warlpiri Morpho-Syntax*. Dordrecht: Kluwer Academic Publishers.
- Speas, Margaret J. 1990. *Phrase Structure in Natural Language*. Dordrecht, Holland: Kluwer Academic Publishers.
- Steele, Susan. 1978. Word order variation: a typological survey. In *Universals of Human Language, Vol. 4: Syntax*, ed. Joseph Greenberg. 585–623. Stanford: Stanford University Press.
- Stokes, Bronwyn. 1982. *A description of Nyigina, a language of the West Kimberley, West Australia*. Doctoral dissertation, Australian National University.
- Stowell, Tim. 1981. *Origins of Phrase Structure*. Doctoral dissertation, MIT, Cambridge, Mass.
- Swartz, Stephen. 1988. Pragmatic structure and word order in Warlpiri. In *Papers in Australian Linguistics, No. 17*. 151–166. Canberra: Pacific Linguistics.
- Tan, Fu. 1991. *Notion of subject in Chinese*. Doctoral dissertation, Stanford University.

- Toivonen, Ida. 1996. Finnish possessive suffixes in Lexical-Functional Grammar. In *Proceedings of the First LFG Conference*. Grenoble, France.
- Toivonen, Ida. 1997. The history of the Finno-Ugric possessive suffixes. MS, Stanford University.
- van Steenberghe, Marlies. 1989. Finnish: Configurational or not? In *Configurationality: The typology of asymmetries*, ed. László Marác and Pieter Muysken. 143–157. Dordrecht: Foris Publications.
- Vincent, Nigel, and Kersti Börjars. 1996. Suppletion and syntactic theory. In *Proceedings of the First LFG Conference*. Grenoble, France.
- von Humboldt, Wilhelm. 1836. *On Language: the diversity of human language-structure and its influence on the mental development of mankind*. Cambridge: Cambridge University Press. Translated by Peter Heath, 1988.
- Webelhuth, Gert. 1992. *Principles and Parameters of Syntactic Saturation*. New York: Oxford University Press.
- Wechsler, Stephen, and Yae-Sheik Lee. 1996. The domain of direct case assignment. *Natural Language and Linguistic Theory* 14(4):629–664.
- Wierzbicka, Anna. 1980. *The Case for Surface Case*. Ann Arbor: Karoma.
- Wierzbicka, Anna. 1981. Case marking and human nature. *Australian Journal of Linguistics* 1:43–80.
- Williams, Edwin. 1994. *Thematic Structure in Syntax*. Cambridge, Mass.: MIT Press.
- Woolford, Ellen. 1991. VP-internal subjects in VSO and nonconfigurational languages. *Linguistic Inquiry* 22(3):503–540.
- Wurm, Stephen A. 1972. *Languages of Australia and Tasmania*. The Hague: Mouton de Gruyter.
- Yip, Moira, Joan Maling, and Ray Jackendoff. 1987. Case in Tiers. *Language* 63(2):217–250.
- Zaenen, Annie. 1980. *Extraction rules in Icelandic*. Doctoral dissertation, Harvard University, Cambridge, Mass.
- Zaenen, Annie, and Elisabet Engdahl. 1994. Descriptive and theoretical syntax in the lexicon. In *Computational Approaches to the Lexicon: Automating the Lexicon II*, ed. B.T.S. Atkins and Antonio Zampolli. 181–212. New York: Oxford University Press.
- Zaenen, Annie, Joan Maling, and Höskuldur Thráinsson. 1985. Case and grammatical functions: the Icelandic passive. *Natural Language and Linguistic Theory* 3:441–483.
- Zwicky, Arnold M. 1985. How to describe inflection. In *BLS-11*, 371–386.
- Zwicky, Arnold M. 1986. Imposed versus inherent feature specifications, and other multiple feature markings. *Indiana University Linguistics Club Twentieth Anniversary Volume* 85–106.

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On the Placement and Morphology of Clitics

Aaron Halpern

Using data from a variety of languages, this book investigates the place clitics in the theory of language structure, and their implications for the relationships between syntax, morphology, and phonology. It is argued that the least powerful theory of language requires us to recognize at least two classes of clitics, one with the syntax of independent phrases and the other with the syntax of inflectional affixes. These classes may be diagnosed on the basis of both distributional and morphological differences although there is considerable overlap.

260 p. ISBN: 1-881526-48-8 (cloth); ISBN: 1-881526-47-X (paper)

Context and Binding in Japanese

Masayo Iida

Iida investigates the proper treatment of zibun-binding, reviewing the status of the syntactic subjecthood condition. She proposes a conjunctive theory of zibun-binding in which both a syntactic condition and a nonsyntactic condition apply to every instance of zibun-binding. This approach is contrasted with a disjunctive approach adopted in many theories of zibun-binding, which views the subjecthood condition as a fundamental licensing condition, supplemented by semantic or discourse binding condition to account for nonsubject binding, when the syntactic condition would be violated.

392 p. ISBN: 1-881526-75-5 (cloth); ISBN: 1-881526-74-7 (paper)

Configuring Topic and Focus in Russian

Tracy Holloway King

This work examines word order and the encoding of topic and focus in Russian. As has long been observed, word order in Russian encodes specific discourse information: with neutral intonation, topics precede discourse-neutral constituents which precede foci. The author extends this idea to show that word order encodes different types of topic and focus in a principled manner. The interaction of topic and focus with the syntax and the nature of phrase structure in general has been vigorously debated in recent linguistic literature. This work's in-depth analysis of Russian elucidates this debate since Russian contains both configurational and non-configurational characteristics.

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Phrase Structure and Grammatical Relations in Tagalog

Paul Kroeger

This volume examines the history of the subjecthood debate in the syntax of Philippine languages. Using data from Tagalog, the assertion is made that grammatical relations such as subject and object are syntactic notions, and must be identified on the basis of syntactic properties, rather than by semantic roles or discourse functions. The conclusions drawn entail consequences for many approaches to syntax including the Government-Binding theory.

240 p. ISBN: 0-937073-87-3 (cloth); ISBN: 0-937073-86-5 (paper)

Ergativity: Argument Structure and Grammatical Relations

Christopher D. Manning

This book considers the proper treatment of syntactic ergativity within modern syntactic frameworks, arguing for the decoupling of grammatical relations and argument structure. The result is two notions of subject, grammatical subject and argument structure subject, and a uniform analysis of syntactically ergative and Philippine languages as languages that allow an inverse mapping between these two levels. Argument structure is shown to be particularly well motivated by the examination of ergative languages, and a treatment of binding and control based on argument structure is presented. These phenomena are always accusative or neutral, but if one examines constraints on surface syntactic properties, which are universally sensitive to grammatical relations, then many languages are indeed syntactically ergative. As well as developing a general approach to syntactic ergativity and contrasting this approach with other recent proposals, the book includes in-depth discussion of the ergative language Inuit, as a testbed for the proposals made.

240 p. ISBN: 1-57586-037-6 (cloth); ISBN: 1-57586-036-8 (paper)

Argument Structure in Hindi

Tara Mohanan

Arguing for a conception of linguistic organization, this book involves the factorization of syntactically relevant information into at least four parallel dimensions of structure: semantic structure, argument structure, grammatical function structure, and grammatical category structure. The author argues that these dimensions are co-present, being simultaneously accessible for the statement of regularities.

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Stricture in Feature Geometry

Jaye Padgett

This work represents an in-depth investigation into the pervasive interaction of place of articulation features and constriction degree features (stricture features) in phonological processes. The central claim, a development of Feature Geometry theory, is that place features and oral stricture features like [continuant] and [consonantal] form a phonological unit called the articulator group. This proposal finds motivation in a wide range of empirical areas, including place assimilation processes, complex segment contrasts, dissimilatory effects, spirantization and phonetic considerations. Theoretical topics of particular concern include the organization of phonological features, feature underspecification, feature cooccurrence conditions and structure preservation, the application of the Obligatory Contour Principle, and the phonetics-phonology interface.

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The Geometry of Visual Phonology

Linda Uyechi

This work is based on the premise that a theory of visual phonology must depend only on the properties of the signs themselves to reveal their underlying structure. To that end, drawings of signs from American Sign Language (ASL) are accompanied by written descriptions to allow both non-signers and experts to follow the arguments for each construct and principle adopted into the model. The result is the discovery of the underlying geometry of sign structures in which the manual articulators are modeled as rigid bodies and the signing space as a set of embedded rectangular prisms. The static and dynamic properties of signs are captured by new constructs, the transition unit and cell, that call into question the primacy of the segment and syllable. Unlike previous work that seeks to extend the segment and syllable to signed languages, this work sets the stage for signed languages to provide independent evidence for the general organizational principles of a universal theory of phonology.

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The Semantic Basis of Argument Structure

Stephen Wechsler

A central problem on the syntax-semantics interface is the mapping between semantic roles and syntactic arguments, usually termed 'linking.' This book presents a clear and concise treatment of linking which departs significantly from models employing a problematical intermediate level where roles are classified into thematic role types such as 'agent' and 'goal'. Instead, the connection between a verb's meaning and its argument structure is assumed to be quite direct. This direct connection appeals to fundamental aspects of verb meaning, while more specific semantic relations such as 'goal' are relevant to linking only when such relations

are associated with the meanings of prepositions and similar forms. As a result, the theory is firmly grounded in the semantic content of verbs and prepositions.

Among the topics treated are the dative alternation and preposition selection. The final chapter implements this analysis within a hierarchical lexicon in the framework of Head-Driven Phrase Structure Grammar.

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