

COMPLEX VERB FORMATION

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D. Gary Miller

Complex Verb Formation

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D. GARY MILLER

University of Florida

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D. Gary Miller

Gainesville, Fla., July 1992

ABBREVIATIONS

A	adjective	DUB(IT)	dubitative
A	aspect	DUR	durative
A	noun class agr. (S. Tiwa)	ECM	exceptional Case marking
ABL	ablative	ECP	Empty Category Principle
ABS	absolutive	ERG	ergative
ACAUS	anticausative	Evid	evidential
ACC	accusative	F/FEM	feminine
ACT	active	F	finite (in Expanded INFL)
ADMON	admonitive	FP	finite phrase (Expanded INFL)
AF(X)	affix	FP	functional phrase
ag	agent	Fr.	French
AGR/Agr	agreement	FSP	First Sister Principle
AgrP	agreement phrase	FUT/fut.	future
ALL	allative	G	goal
Anc.	Ancient	GB	Government & Binding Theory
AOR/aor.	aorist	GEN	genitive
AP	adjective phrase	Germ.	German
APASS	antipassive	GF(C)	grammatical function (change)
APPL	applicative	Gk.	Greek
Arab.	Arabic	Gmc.	Germanic
arch.	archaic	HABIT	habitual
ARG/arg.	argument	HMC	Head Movement Constraint
ASP	aspect	I/INFL	INFL = head of S
AUX/Aux	auxiliary (verb)	Icel.	Icelandic
AuxP	auxiliary phrase	id.	[<i>idem</i>] the same (meaning)
B	benefactive/beneficiary	IE	Indo-European
C	COMP	Illoc	illocutionary
CAUS	causative	IMPERS	impersonal
CL/Cl.	classifier	IMPFCTV	imperfective
COMP	complementizer	IMPV/impv	imperative
compl.	complement	INCH	inchoative
COND	conditional	INCOMPL	incompletive
CONJ	conjugation (class) marker	IND	indicative
CP	complementizer phrase	ind. obj.	indirect object
cpd.	compound(ed)	INF	infinitive
D	determiner	infl.	inflection(al)
DAT	dative	INST	instrument(al)
Deg	degree (word)	INTER(ROG)	interrogative
DegP	degree phrase	IP	INFL Phrase (= S[entence])
deriv.	derivation(al)	IRREAL	irrealis
DESID	desiderative	Ital.	Italian
DET	determiner	K	Kase
dial(s)	dialect(s)	KP	Kase phrase
DIM	diminutive	Lat.	Latin
DP	determiner phrase	LF	Logical Form

LFG	Lexical Functional Grammar	PROG	progressive
Lith.	Lithuanian	PROH	prohibitive
LOC/loc	locative/locational	Prov.	Provençal
log	logical	PrP	present participle
LP	lexical phrase	PS	phrase structure
M/MASC	masculine	PTC/ptc.	particle
M	mood	QP	quantifier phrase
MC	modal clitic	QR	quantifier raising
MEDPASS	mediopassive	q.v.	[<i>quod vide</i>] which see
MID	middle	REC/recip	reciprocal
Mod.	Modern	REFL	reflexive
ms.	manuscript	RI	reflexive/reciprocal incorporation
MV	modal verb	Russ.	Russian
N	noun	RV	Rig Veda
N/n	neuter	S	sentence (in some trees)
NEG	negative	S	source (in theta grids)
NI	noun incorporation	S	subject
NOM	nominative	s/sg.	singular
NOMZ	nominalizer/nominalization	SBJ(N)CTV	subjunctive
Norw.	Norwegian	Skt.	Sanskrit
NP	noun phrase	SP	state phrase (passives)
n(t).	neuter	SP	subject prefix (Bantu)
O	object	Sp(an).	Spanish
O.	Old	SPEC/Spec	specifier
OB/obj.	object	STINT	Standard Incorporation Theory
OBL/obl.	oblique	SUB/sub	subject (Marantz contexts)
OCS	Old Church Slav(on)ic	subj	subject
OF	Old French	Swed.	Swedish
ON	Old Norse	‡	trace (of moved X(P))
OP	object prefix (Bantu)	T	tense
OPT/opt.	optative	th	theme (in theta grids)
p/pl.	plural	TNS	tense
P	preposition/postposition	TOP	topic marker
P&P	Principles and Parameters	tr	transitive
partic.	participle	Turk.	Turkish
PASS/pass	passive	UG	Universal Grammar
p.c.	personal correspondence	UTAH	Uniformity of Theta Assign- ment Hypothesis (§3.12)
PERF/PFCT	perfect(ive)	V(B)/vb.	verb
PF	Phonological Form	VI	verb incorporation
PG	Particular Grammar	v.l.	variant (manuscript) reading
PI	preposition incorporation	VP	verb phrase
PN	proper noun marker	WFR	Word Formation Rule
POSS	possessive/possessed	w. lit.	with literature (i.e., references)
POT	potential	X ⁰	word level category
PP	adpositional phrase	XP	phrase level category
PPP	perfect/past passive participle		
Prep	preposition		
PRES	present		
pret.	preterite		
PROB	probable/probative		

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PREFACE

Objectives of the Study. This is not a general treatise on morphology. It is an investigation of complex verb formation that seeks to identify and clarify the way(s) in which a base verb becomes 'complex'. At the risk of circularity, a 'complex' verb will be understood as one that has undergone some sort of derivation to alter the form, meaning, or argument structure of the base verb (or verb 'root'). For the most part, only affixation is treated, although a novel approach to compounding is introduced in connection with certain grammatical principles and the Functional Phrase hypothesis.

This study builds on and tests two specific approaches to morphology. One is the 'Principles and Parameters' syntactic ('Phrase Structure') approach, primarily represented by Sproat, Walinska de Hackbeil, Baker, and Hale & Keyser. Works in this framework maintain that (1) there is no need for Word Formation Rules, (2) a wide array of data can be subsumed under a few general principles and a single rule involving head movement. This study elaborates on that research, but simultaneously shows that (a) there is a range of data difficult to account for, and (b) in most cases (at least) one 'lexical(ist)' approach persistently offers a reasonable alternative analysis. The question raised is why that should be the case. The answer defended may be compared roughly to traditional 'lexicalization' in phonology: what begins as syntactic incorporation becomes 'opacated' and ceases to be derived by incorporation. The dynamics of the replacing mechanism (affixation) are investigated. Thus, the second approach tested here is 'lexical'. Then, since the primary objection by the Phrase Structure (PS) morphologists to lexical approaches is that such approaches are stipulative rather than explanatory, a lexical theory elaborated from work of Lieber and others and based on free affix application and the independently needed principles of licensing and c-command is designed to avoid such potential objections.

Very little empirical evidence for either lexical or PS accounts of word formation has been adduced in the literature. Most analyses consist of a demonstration that the data *can* be treated in one account or the other, freely ascribing to the other domain anything that resists a feasible solution in the area under consideration. Thus, syntactic morphologists generally relegate the 'ad-

jectival passive' to the lexicon, while lexicalists like Di Sciullo & Williams attribute to syntactic composition any Romance compound that cannot be explained by their approach to morphology. Criteria for why a structure *should* be formed in one place or the other are seldom discussed. The argument generally takes the following form: this theory accounts for a wide array of facts; other facts cannot be accommodated by this theory; therefore those other facts must belong to another domain. To complicate the issue, the positions are not mutually exclusive. There are syntactic PS accounts (Walinska de Hackbeil, Baker), syntactic non-PS accounts (of inflection at least: Anderson), lexical PS accounts (Hale & Keyser), and lexical non-PS accounts (most 'lexicalists'). What all of these unequivocally demonstrate is that there is more than one way to derive a word.

This work takes the radical position that it is not accidental that most data admit of either a syntactic or lexical, PS or non-PS, analysis, and that the reason for it is that both are likely to be valid — under different circumstances. Both approaches are therefore consistently defended in an attempt to illustrate the complementarity of the two and ascertain which is the better formulation for a given set of data. In an attempt to broach that question, a number of tests are adduced/applied, e.g., productivity, formal and semantic compositionality, derivational opacity, (in)visibility to syntax (sensitivity to syntactic movement, presence or absence of functional phrases, stranding, etc.), and whether a derived item (however derived) is subject to subsequent morphological processes that are or are not predictable from the stem, the affixes, or a combination of the two. Since it is not intuitively obvious what these criteria mean, considerable discussion is devoted to their elucidation. At the same time, this does not pretend to be a definitive study. Since the very question of how/when incorporation is replaced by lexical affixation has never been asked before, the development of a range of adequate criteria will require substantial research on the properties of syntactic and lexical, PS and non-PS derivations — beyond the scope of this work, which defines the issue.

This study brings together a wide range of data and differing viewpoints into a Principles and Parameters (P&P) approach. At the same time, there is little criticism of other approaches. If no commonality in terms of 'leading ideas' is present, those works are merely referred to as alternative points of view. The important point here is the (re)interpretation (in a P&P framework) of timely issues regarding complex verb formation. Obviously, to present everyone's arguments and analyses, together with counterarguments, and the analysis advocated here, would render this study interminable. Consequently, analyses are presented in the framework(s) investigated here, and the reader is referred to other sources for discussion and alternative analyses.

It is hoped that this somewhat unusual approach will be found justifiable because of the novelty of the ideas and analyses offered. There has been no hesitation to present numerous original and unique analyses (and solutions to long-standing problems) in each chapter. This study raises novel issues that are not raised elsewhere, e.g., on causative-passive interactions, where in fact new theories of the passive and of the causative are combined. It is the first work to investigate the potential significance of the Functional Phrase hypothesis to morphological theory. This hypothesis is explored in some detail and an array of problems are presented and solutions suggested. Perhaps the most unique and important feature of this study is that it is the first to discuss language change within the incorporation framework, and to suggest how and why incorporated structures change. A number of changes from syntactic to lexical derivation are documented, imparting to this study implications for a modified paradigm, one in which language change may be researched in a manner that is beneficial to theoretical studies. Since whatever criteria turn out to determine whether incorporation or lexical affixation is the best analysis for a given set of data will be the same criteria that set the stage for opacation and change, there are important implications for the cooperation of historical linguists and theoreticians toward the common goal of ascertaining the full range of relevant criteria.

Plan of the Book. Five recent theories are combined in this work. First is the extremely valuable contribution of Mark Baker (e.g., 1988a), which will be referred to as 'Standard Incorporation Theory' (STINT). Second is the idea that Functional Phrases (FPs) select Lexical Phrases (LPs), often called the 'DP hypothesis', as elaborated primarily in Abney (1987) and Leffel (1988). Third is the idea that 'logical subjects' are base-generated in <SPEC,VP> (read: 'specifier of VP') position, the core of much recent research. The fourth includes related ideas on 'auxiliation' (e.g., Schwegler 1988) and other recent accounts of the development of modals and auxiliaries (e.g., Pollock 1989; Pearce 1990). And the fifth can be termed the 'Structural Integrity Hypothesis' which disallows structural 'collapses' ('clause union', etc.). It is shown, in a Principles and Parameters framework, that the interaction of these five factors with each other and with other standard grammatical principles can explain simply and elegantly the core facts of complex verb morphology and syntax.

By consistently making use of the Functional Phrase hypothesis, especially AuxP (the FP still regarded as the most problematical), this study demonstrates a number of advantages of the FP framework over alternatives; for instance, (1) clause union is no longer needed; (2) subject/object-to-object raising is no longer needed; (3) various necessary landing sites are provided for verb and

DP/NP movement; (4) the frequent F^0 incorporation and incorporation of L^0 into its FP are neatly accounted for; and (5) a number of previously idiosyncratic properties of compounds are explained. These advantages alone suffice to reveal the potential significance of the FP hypothesis to linguistic theory.

Incorporation is expanded to include more types of verb formation, and simultaneously constrained, both in terms of complement structures for which a given verb/affix subcategorizes, and as a tool of linguistic analysis. In a sense, it is a book about Structural Integrity – of clauses, phrases, and words. Each chapter presents problems for STINT. The suggestion is that what begins as incorporation can become opacated and replaced by affixation (most likely in the lexicon). Syntactic and lexical(ist) theories are consequently viewed as complementary rather than opposed. The question for linguistic theory then becomes, When is a lexicalist account of complex verb formation preferable to a STINT account? Possible avenues of research for answering this question are suggested.

Chapter 1 outlines some basic assumptions about morphology and the lexicon and introduces an affix-type that is neither inflectional nor derivational (by the usual criteria) and has recursive properties associated with syntax. Preliminary morphological and syntactic considerations suggest the need for a ‘level’ of (derivational) word formation prior to the initial string of lexical insertion (traditional ‘D-structure’) — in contrast to inflection, which mirrors post-movement (traditional ‘S-structure’) syntax.

Chapter 2 surveys some theories of morpheme order. Especially relevant are the ‘polysynthetic’ affixes which are freely and recursively combinable. A consequence of verb raising to INFL is illustrated from Polish, where some INFL/AGR elements are ‘stranded’ and appear as clitics. Russian strands a complementary set, implying a close affinity between morphology and syntax.

Chapter 3 clarifies the essential assumptions of this work. It expands on the idea that morphology and syntax are governed by the same principles by surveying a variety of morphological problems for which explanations have been offered in a Principles and Parameters framework.

Chapter 4 discusses some consequences to morphology of positing a (syntactic) distinction between FPs and LPs. It is shown that ‘compounds’ typically involve LPs without FPs, while (noun) incorporation prototypically involves L^0 movement out of DP. F(P)s can also be incorporated; a language is (poly)synthetic to the degree to which it allows (or requires) incorporation of F(P)s, especially those connected with verbal categories.

Chapter 5 shows that Preposition Incorporation (PI) is not likely to be the correct (synchronic) derivation of any of the P-V constructs in Greek or

Latin, even though the UTAH (§3.12) requires it in some cases and historically PI was the origin of the constructs. All of the forms can (and, it is argued, should) be derived by (some version of) ‘inheritance’ of argument structure, so long as other factors (such as default semantic Case relations) are permitted to alter an (otherwise) expected thematic grid. Applicatives and V-P Reanalysis in English (and related phenomena) are also discussed. A problem is raised for the UTAH, which requires that Eng. *-ee* originate as D-structure argument of the P in V-P constructions, which allows no way to account for the category.

Chapter 6 discusses ECM, subject control (subsumed under FP theory), and antipassivization in Eskimo. While it is true that an incorporation account of Grammatical Function Changing (GFC) processes is more ‘explanatory’ than lexicalist accounts, advocates of syntactic accounts are bound to the claim that it is fortuitous that lexicalist accounts should ‘work’ at all, and it is totally unexpected that they should account for the same data in a simple manner.

Chapter 7 ventures a new, non-argument theory of the passive (located in AuxP), which is tested in subsequent chapters. Crucial aspects of middle and ergative formation are also discussed. All three share in common the property of projecting no external argument to <NP,IP> position and allowing an internal argument to become the sentential subject.

Chapter 8 treats ‘inherent’ and morphological reflexives. Typical properties of Reflexive Incorporation include (i) incorporation of only a ‘weak’ reflexive, (ii) strictly local binding, and (iii) ‘dative shift’ phenomena.

Chapter 9 embeds historical morphology in its syntactic context. It is a case study in the addition of RI to the grammar of Old Norse, followed by its opacation and eventual loss in Modern (East) Scandinavian, where its reflex is a primarily passive affix. Empirical evidence is documented for lexicalization of (reflexive) incorporation and the non-argument status of the passive marker.

Chapter 10 reviews languages in which reflexive, ergative, middle, and passive are encoded by the same formative. Passive typically patterns with non-argument functions, supporting the analysis in chapter 7. A problem for the UTAH is that not all formatives which encode the same theta-role functions can be analyzed as arguments in syntax. This supports the evidence in chapters 5 and 9 that ‘affixation’ is a typical synchronic reflex of an older incorporation process.

Chapter 11 adduces (as a minimum) the data claimed by others to require ‘coanalysis’, ‘reanalysis’, ‘clause union’, etc., and shows that such unconstrainable devices are neither necessary nor warranted. New analyses of the Romance and other causative constructions are presented. Causative structures are subdivided into three types, depending on whether or not CAUSE and the lower verb can passivize independently. The variety of causative structures

encountered in natural languages is explained by the selection of alternate complement structures (CP, IP, AuxP, etc.) in conjunction with parameters of Case and 'bounding' theory.

Chapter 12 shows why 'Type 1' causative passives are obligatory in languages with 'clause union' effects, but simply one option in languages without clause union. Clause union is reanalyzed as the 'compounding' of CAUSE and the verb (selection of V(P) rather than AuxP): both CAUSE and the root verb passivize as a unit, and only one passive morpheme appears in the construct. In structures without 'compounding', CAUSE selects AuxP (or V-affix) and both CAUSE and the verb/affix can be c-commanded by a passive morpheme. Finally, some complex derivations in Eskimo provide the strongest evidence that affixation can be a synchronic reflex of earlier incorporation.

A Note on Representations and Tree Diagrams. Although Chomsky (1992) abandons D-structure (as a unique level) and S-structure, going directly from movement to SPELL-OUT, the traditional terms, D- and S- structure, are here maintained simply as convenient labels for the pre- and post- movement structures. In fact, Chomsky's insistence that lexical insertion takes place at various points and that (at least) some functional categories (e.g., auxiliaries) might be inserted at a later point in the derivation is quite congenial to the theory pursued here that Lexical Phrase syntax is different from Functional Phrase syntax. The growing convergence on the nature of the Functional and Lexical Phrases is welcome confirmation of a variety of recent proposals.

The familiar notations for ungrammatical '*' and marginal '?' are used for all languages, including those that are ancient and dead. The warrant for this is the long-standing idea (well expressed in various places by Robin Lakoff, David Lightfoot, A. Machtelt Bolkestein, and many others) that one can have judgments on ancient and dead languages. Realizing the risks in asserting those judgments, I will keep them to a minimum. Where it is important to establish the authority, a quote from an ancient author will be used, or an unattested example (unless indicated as my own) will be marked '(*)'.

It is important to distinguish what is crucial to morphology and what is not. Trees are generally defoliated to their barest essentials, and 'free projection' is used to conserve space. As will be explained in the relevant sections, I assume INFL to be the head of S (but sometimes S is used for simplicity), some version of 'expanded' INFL, and a fully elaborated FP hypothesis. But if every tree contained all of this structure, it would be expositionally confusing and space-wasting. Moreover, trees are customarily given in a 'mixed' structure, i.e., S-structure minus incorporation or, in recent terminology, a post-movement structure, less incorporation. Since incorporation is generally evident, this

practice facilitates comprehension of the point of a tree diagram at a glance. Changes from one tree to another are intended for simplicity and should not be construed as contradictory in any theoretical sense.

A potentially confusing abbreviation in trees should also be mentioned. Again, to prevent every tree from taking up two pages, FPs and their LPs are generally written together, e.g., DP/NP means DP *and* NP, AuxP/VP means AuxP *and* VP, etc., generally when one or the other is null, but sometimes this abbreviation is used even where both are instantiated.

1. GENERAL ASSUMPTIONS ABOUT MORPHOLOGY

1.0. This chapter outlines an array of somewhat disconnected assumptions about morphology. The unifying thread involves the highly disputed position of the lexicon. The nature and location of derivation, inflection, and any other potential process must be considered with reference to a theory of the lexicon. Such consideration reveals only that derivation and inflection have some different properties; it provides no evidence as to where (or how) these affixes are applied. In an attempt to give a preliminary answer to this question and simultaneously illustrate the approach taken in this work, the English adjectival passive is analyzed. A careful separation of the relevant categories reveals that even syntactic approaches to word formation require at least some forms to be derived at a level prior to D-structure (the initial strings of lexical insertion). That still says nothing about where/what that level is, for which additional discussion from subsequent chapters is necessary. This chapter draws a fairly neutral conclusion that there is some level of word formation between the permanent lexicon and D-structure. Whether that level is part of the lexicon or a separate word formation component is left open for now.

Morphology and the Lexicon

1.1. Any form or phrase that does not conform to rules of form or interpretation must be memorized by the native speaker and therefore listed in the lexicon (in all theories). By that notion, then, the lexicon is the repository for the idiosyncratic. But that is not what everyone means by the lexicon. For some, it is also the word formation component, on a par with any other component (Anderson 1991, §7.1). This idea originated with Chomsky's 'Lexicalist Hypothesis' (1970). Many continue to distinguish the (DYNAMIC) LEXICON as word formation component from the PERMANENT/STATIC LEXICON which is not only the list for the idiosyncratic, or "prison for the lawless" in the words of Di Sciullo & Williams (1987:3), but also the register of all existing words (cf. Halle's (1990) 'vocabulary').

The idea that all words are listed is based on at least five arguments:

1. Lexical insertion has (at least in the past) been claimed to insert a fully derived word into phrase structure. Supposedly, a fully derived word is selected from a repository (list) of completely derived words (the LEXICON).

2. Listing has been claimed to capture an intuition that there is a difference between a 'real' (existing) word and a 'possible' word. As emphasized by Kastovsky (1986:592), neologisms are checked against the mental lexicon. Since the output of new word formation may be added to the permanent lexicon, neologisms are checked against the existing inventory of lexical items and are subject to rejection (cf. Aitchison 1987; Rainer 1988:164ff). Suppose a manufacturer were to market a toy *blowfish* (squirt-gun). Productive word formation processes make available a verb-noun combination that means "noun somehow expressing the action of the verb". Semantic interpretation, real world knowledge, etc., specify the range of possible meanings, which will be checked against the permanent lexicon for a preferred ('default') interpretation. A compositional meaning is always a possibility whether or not it agrees with a permanent lexical listing.

3. BLOCKING requires not just idiosyncratic forms to be listed. Various blocking constraints have been proposed.¹ The basic idea is that a more specific case takes precedence over a more general case. In morphology, blocking is usually taken to be lexically defined: properties specified in the lexicon override default forms provided by rule. Thus, **mouses* does not exist (for the basic sense of the word) because it would compete with prespecified *mice* and is blocked by it (cf. Tyler 1988:88). Building on Aronoff's insight that blocking is based on meaning or general pragmatic principles (cf. Aronoff 1988a:767) and that synonyms in general are blocked, Kiparsky (1983c:16), Hofmann (1982, 1983), Sproat (1985:474-480), Zwicky (1986a), Di Sciullo & Williams (1987:10-14), and others, show that blocking is not a specifically morphological principle, wherefore there is no necessary connection between blocking and the lexicon.

4. Listing has appeared to be necessary since even derived words tend to acquire idiosyncratic meanings, e.g. *transmit* : *transmission* (Aronoff 1976).

5. Listing whole words would account for the INHERITANCE of irregularity by a derivative (Aronoff 1976; van Marle 1985: 85-86, 89ff; Booij 1987). An exclusively morpheme-based theory that does not recognize words stored in

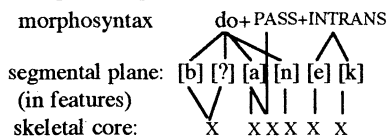
¹ See Aronoff (1976: 43ff, 55, etc.); Kiparsky (1982, 1983c:13-17); Hofmann (1982, 1983). Discussion of these constraints can be found in van Marle (1985, 1986); Zwicky (1986a); Rainer (1988); Carstairs (1988b:88-89); Anderson (1991:129-132). The leading idea of blocking dates back at least to Hermann Paul (1896:704).

the lexicon has difficulty accounting for inheritance (cf. Aronoff 1988a:768). It should be noted that this is a different use of 'inheritance' from that involving the derivation of theta grids (e.g., Lieber 1992). We will also be using the term in that sense. Since the contexts in which the two uses occur are very different, the potential ambiguity should not create any confusion.

There have been no good arguments against the listing of whole words. Even if it does allow (or even entail) the listing of all derived categories, e.g., *up* as a preposition, verb, noun, etc. (cf. Motsch 1990), this is not an insurmountable problem, and does not preclude a derivation by conversion (Walinska de Hackbeil 1986). One could invoke Walinska de Hackbeil's ROOT IDENTITY principle (1986:34: "If a Root R_j is listed in the Root Lexicon with a set L of lexical properties, it may not be listed with a set M , and $L \neq M$.") to prevent the listing of derived categories, but it is not clear that this is either necessary or desirable. A number of examples will be discussed in the course of this work which suggest that (a) the output of productive word formation is subject to listing, and (b) productive word formation is a constant source of new lexically listed words. I will continue to assume, then, a lexicon of ROOTS (word stems and affixes) and words. A root can have a representation on many planes. For instance, an affix may have no phonological form on the segmental plane but may be linked to a timing slot on the SKELETAL CORE, in which case it is realized as lengthening; its only form may be an accent feature; and so on.² This approach substantially unifies 'concatenative' and 'non-concatenative' morphology.

² The literature on nonlinear phonology and morphology, and the interaction between them, is enormous. Since I am taking this interaction for granted here, the reader unfamiliar with these topics is referred to J. Levin (1985); McCarthy (1981, 1982, 1984); Halle & Vergnaud (1987, esp. 79-80); Goldsmith (1990); Spencer (1991, ch. 5); Lieber (1992, ch. 5). To illustrate briefly, the passive affix in Sacapultec (Mayan) is, for one class of verbs, represented by lengthening alone, viz. *b'an*- "do" : *b'a:n-ek* "it was done" (Stevenson 1991). A nonlinear representation of *b'a:nek* might appear as in (i) (substantially simplified).

(i) Multiplanar representation of Sacapultec Passive



While "do", PASS, and INTRANS are all roots, "do" and INTRANS have representations on the segmental plane, while PASS has only a timing slot. Where 'morphosyntax' comes from, and what sort of representation it is, will be a major part of the investigation of this work. Since it is also assumed that association lines do not cross, (i) is considerably abbreviated.

1.2. Di Sciullo & Williams (1987:14ff) present a UNIT-SIZE HIERARCHY which corresponds to a hierarchy of listedness, modified in (1).³

- (1) Listedness Hierarchy
 - (all) morphemes (affixes, roots, and underived stems/word bases)
 - (most) derived stems
 - (many) derived words
 - (a number of) compounds
 - (some) phrases
 - (a few) sentences

Linguistic units in (1) increase in compositionality from top to bottom. Dressler (1988) shows that a hierarchy of this type determines the degree to which derivatives can be made: fewest based on frozen sentences, more based on phrases, and so on. It is also generally accepted that in polysynthetic languages, where words are more phrase/sentence-like, derived words have a higher degree of compositionality, requiring fewer of them to be listed.

Factors Involved in Productivity

1.3. Productivity is directly connected to the problem of the lexicon on the assumption that productive word formation need not be lexicalized. As usual, however, things are not that simple. One problem involves the meaning of productivity. While the main heuristic for determining productivity has always been statistical frequency relative to other constructs (e.g., Baayen & Lieber 1991), a number of factors enter into consideration. Some of the important factors mentioned in the literature include the following:⁴

1. *Automatic formability with a readily interpretable compositional meaning.* Automaticity, of course, is itself relative and subject to phonological, pragmatic, and other constraints, such as system congruity, class stability (Wurzel 1987, 1989), semantic coherence (transparency) or compositionality (Aronoff 1976: 39, 45; van Marle 1988:147-148 etc.), and also 'domain' (see §1.4 below).

³ Compare also the semiotic hierarchy of secondary signs, primary signs, and supersigns in Dressler (1988), and Sadock's classification into stems, words, and superwords (1985, 1988a, 1988b).

⁴ Studies on productivity include Aronoff (1976, 1983), Romaine (1983), Bauer (1983, esp. ch.4), van Marle (1985, 1986, 1988), Kastovsky (1986), Marshall (1987), Rainer (1987, 1988), Tyler (1988), Wurzel (1989), Baayen (1989), Baayen & Lieber (1991), etc.

2. *Applicability to new items introduced into the language* (subject, of course, to form-class constraints). If English introduced a new noun *blark*, one could readily create *blark-ize* “convert into a blark”.

3. *Applicability to all or most of the potential domain* (cf. Anderson 1985a:16-22; Di Sciullo & Williams 1987:7-10). While the fundamental question about productivity involves domain, domain is variously defined. The most thorough investigation of the problem is by van Marle (1985:157-158 etc.; 1986), for whom domain includes the totality of interrelated forms (a network or constellation) and categories to which an affix is (or potentially could be) applied. To define the domain of an affix (or rule that applies it), the status of rival morphological processes and the degree to which they block productive processes must be considered.

1.4. As to the interaction of productivity, blocking, and listedness, it is generally assumed that —

1. Productivity must be defined with respect to a domain of application which determines the kinds of formal regularization that are possible (van Marle 1985, 1986). *Ox* is part of the domain of the sibilant plural, reflected in regularization of derived forms or meanings: the plural of *dumb ox* (applied to people) is *dumb oxes*, not *dumb oxen* (cf. Kiparsky 1974:266ff). Dutch *ezel* “ass”, on the other hand, has only *-s* in its domain (typical of stems ending in a resonant; cf. *lepel-s* “spoons”), and the plural in the sense of “stupid person” remains *ezel-s*, not **ezel-en*, because *-en* belongs to another productive domain. Contrast *ei* “egg” with a plural *ei-eren*, but in the sense of “futile person, dud” the plural is *ei-en*, because *-eren* is a non-systematic and non-productive plural affix in the domain of productive *-en*.

2. Productivity is influenced by such factors as the scope and stability of the morphological process in question and constraints on it (linguistic and extralinguistic). If a category is not very stable, like the dual in Ancient Greek, the productivity of any formal markers must be considered relative to that.

3. Constraints on morphological processes include the number and type of non-systematic (lexically stipulated) exceptions and the degree to which they override/block application of a productive/default formation.

4. Blocking falls into two main categories (van Marle 1985, 1986; Rainer 1988): TOKEN-BLOCKING (*oxen* blocks **oxes*, *thief* blocks **stealer*, etc.), and TYPE-BLOCKING, which involves separate (sub)domains and not always a general/special case (cf. Dutch *lepel-s* /**lepel-en* “spoons” in [1] above), in which *-s* type-blocks *-en*). Token-blocking is affected by productivity (pressure) and frequency (blocking force). All blocking involves synonymy; cf. Kiparsky’s *Avoid Synonymy Principle* (1983c:13-17).

5. Listing is necessary to explain token-blocking, register idiosyncratic meanings, and account for the inheritance (by derivatives) of idiosyncrasies in form and meaning.

6. The larger the SIZE of the linguistic unit and the more productive the word formation devices, the more compositionally transparent the complex derived word is apt to be in form and meaning, entailing less necessity for registry in the permanent lexicon, although lexicalization is always an option for any novel form (cf. Anshen & Aronoff 1988).

7. Since formal and semantic compositional transparency seems to be a relevant consideration for the production and interpretation of novel words, there is a strong suggestion that morphological representations should provide the labeled bracketing necessary for the specification of the word's semantic representation (cf. Botha 1984:110).

Lexicalist and Syntactic Theories of Morphology

1.5. It was traditionally assumed that DERIVATIONAL MORPHOLOGY belonged in the lexicon since lexical insertion depended on fully derived forms and inserted, e.g., *kind*, *kind-ly*, *kind-ness*, *kind-li-ness*, etc., into syntax, but that INFLECTIONAL MORPHOLOGY, which depends on the output of syntax, was to be handled by some sort of (post)syntactic operation. Changes in syntactic theory prompted the idea that inflectional markers are also listed in the lexicon. The idea began with a statement by Chomsky (1970), which was interpreted as a proposal that **syntactic rules cannot make reference to any aspect of the internal structure of a word**.⁵ The position is summarized by Di Sciullo & Williams (1987:49) as follows:

Words are 'atomic' at the level of phrasal syntax and phrasal semantics. The words have 'features', or properties, but these features have no structure, and the relation of these features to the internal composition of the word cannot be relevant in syntax – this is the thesis of the atomicity of words, or the lexical integrity hypothesis, or the strong lexicalist hypothesis (as in Lapointe 1980a), or a version of the lexicalist hypothesis of Chomsky (1970), Williams..., and numerous others.

Although it is generally agreed that morphological formatives reside in the lexicon, there have been different hypotheses of how they are actually applied to make words. The two most common hypotheses, following Scalise (1984:

⁵ Compare Lapointe (1980a), modified in Lapointe (1983); for the formulation, cf. Anderson (1988a:165, 1991:80). Lieber (1992:151ff) gives an updated reformulation.

101ff) and others, can be termed the **Strong Lexicalist Hypothesis** (SLH) and the **Weak Lexicalist Hypothesis** (WLH). Both are representative of what Walinska de Hackbeil (1986:8) calls **Word Formation Morphology**, as opposed to **Phrase Structure Morphology**.

According to the WLH ('Interpretive Morphology'), inflectional operations are applied in the syntactic component (or later), either as actual rules or checking devices, as a way of accounting for the syntactic dependency of inflection. According to the SLH (also called the 'Generalized Lexicalist Hypothesis' or simply, 'Lexical Morphology'), fully inflected forms (provided by rules in the lexicon) are placed in phrase structure by lexical insertion. Naturally, the syntactic dependency of inflection must still be accounted for, and that is accomplished, e.g., by matching concord and agreement features with those of the head. Chomsky (1992) continues the SLH assumptions, despite adopting verb movement to INFL, etc. (§2.26-2.27).

Radical departures from the various lexicalist positions are found in Sproat (1985), Walinska de Hackbeil (1986), Baker (1988a, etc.), and Hale & Keyser (1991). (A less radical position is adopted by Toman (1983/1987), who recognizes a morphological component.) These typify **Phrase Structure Morphology** in that (1) there is no separate morphological component, (2) there are no Word Formation Rules (except for SPELL-OUT RULES at PF), and (3) all morphology is essentially syntactic in the sense that it is governed by grammatical (rather than lexical) principles and parameters (see ch. 3). They differ in important respects. The range of diversity can be illustrated by their treatment of lexical insertion. On most accounts, words are inserted at D-structure.⁶ For Baker, words and affixes are projected as syntactic heads at D-structure. For Walinska de Hackbeil and (less explicitly) Hale & Keyser, there are no words. There are only ROOTS projected as syntactic phrase heads at preD-structure, a syntactic level of word formation. While there are clearly phenomena that can be accounted for in this manner (§1.19), my syntactic representations will be closer to those of Baker in systematically trying to separate out the aspects of word formation that are visible to syntax from those that are not. This of course raises another issue (extensively discussed in Hale & Keyser 1991): what determines visibility or invisibility to syntax, and what does this mean? Various ramifications of these questions will be explored in the course of this work. The other issue, a pre-D-structure level of syntactic

⁶ One notable exception is Anderson (e.g., 1991) who inserts words at S-structure. Problems that appear to suggest the need for lexical insertion at S-structure can be adequately handled by spell-out rules at PF and/or nonlinear linking of syntactic to phonomorphological material (cf. note 2 above). Relevant examples will be discussed in the appropriate places.

word formation, is more germane to our immediate purposes. The remainder of this chapter will seek non-syntactic evidence bearing on such a level.

The Status of Derivation and Inflection

1.6. Part of the issue of where morphology is and how it interacts with other (sub)components hinges on the properties of derivation and inflection. If the two share the same properties, it is likely that they belong to the same system. If their properties are different, they may constitute separate (sub-) systems. Whether or not all morphology can be located in one place is contingent, to some extent, on the properties of derivation and inflection.⁷ The following differences have been noted in the literature:

1. Derivation is semantically based, recursive, and non-suspendable; inflection is syntactically obligatory (automatic), non-recursive (in the sense that all category 'slots' must be filled and no more can be generated) — see especially Scalise (1984:102-115, 1988b) — and suspendable in certain speech styles and with certain illnesses.⁸ The latter property suggests a different psychological and neurological status of inflection and derivation, confirmed by the study of Tyler & Nagy (1987), which shows that inflection and derivation behave differently in acquisition: the automaticity of inflection causes a plethora of overgeneralizations that are sparse with derivation.

2. Derivation and inflection are not necessarily subject to the same principles of grammar, e.g., theta theory (see ch. 3). Moreover, derivation seems never to be affected by S-structure syntax, while inflection (agreement, concord) depends (almost) entirely on S-structure syntax; cf. Chomsky & Lasnik (1991:5), who assume that derivation is internal to the lexicon, while inflection involves computational operations of broader syntactic scope.

3. Phonological rules can depend exclusively on inflection, derivation, and/or compounding (Dressler 1985, 1988; Aronoff & Sridhar 1988; Kiparsky

⁷ This traditional issue (Nida 1946; Matthews 1972, 1974) has been discussed recently in some detail by Plank (1981:8-89), Bauer (1983:22-30), Thomas-Flinders (1983), Scalise (1984:102-115, 1988b), Bybee (1985:81-110), Kiparsky (1982, 1983a, c, 1984, 1985b, 1986a, 1988a), Anderson (1985a, b; 1988a, c), Zwicky (1986a, 1987, 1988), Carstairs (1988b), Badecker & Caramazza (1989), Wurzel (1989), Jensen (1990), Anderson (1991, §4.1, ch. 5), Lieber (1992). This is not to suggest that all of these are in agreement, but most of them take the position that there are differences. For a radically contrary view, see Walinska de Hackbeil (1986).

⁸ Again, the literature is extensive; see, for instance, Lightfoot (1982:185-189), Scholes & Willis (1984), Micelli & Caramazza (1987), Blumstein (1988), Kean (1988), de Bleser & Bayer (1988), Badecker & Caramazza (1989).

[see note 7]; Szpyra 1989; Goldsmith 1990; Spencer 1991; Lieber 1992); cf. Halle (1990), but with more arbitrary definitions of inflection and derivation.

4. If inflection and derivation were not separate subsystems, they could be expected to access one another freely. Derivation seems to feed into inflection, but inflection does not feed into derivation (cf. Hoeksema 1988:135). This is not totally true (see Dressler 1986), but it follows naturally in models in which derivation is lexical and inflection syntactic (e.g. Anderson 1988a/c, 1991). Phrase Structure accounts handle the difference by movement of the verb to INFL where tense, mood, and agreement properties are acquired (§2.26ff).

1.7. Other asymmetries between derivation and inflection include (cf. Dressler 1987a:121): (1) many languages with 'fusional' inflection have more agglutinative derivation (Skalička 1979); (2) derivational affixes are generally shorter than lexical roots/stems but longer than inflectional affixes (Wurzel 1984, 1989); and (3) in language change, derivational affixes evolve into inflectional more frequently than the other way (Panagl 1987).

In summary, inflection and derivation have some different grammatical properties, and these differences are reflected in their psychological and neurological status, as well as in consequences elsewhere in the grammar and in acquisition. Anderson (e.g., 1988a:171, 1988c, 1991) takes inflection to be that morphology which is visible to and/or manipulated by rules of syntax. A glance at Baker (1988a, etc.) or Hale & Keyser (1991) reveals that it is not an easy matter to determine what is or is not syntax-visible/manipulable. All we have found evidence for so far is that (1) there are some differences between derivation and inflection, and (2) derivation generally 'precedes' inflection in that inflection tends to be 'outermost' (see ch. 2) and applies to fully derived words. No evidence so far has suggested any manner of deciding which theoretical apparatus is best suited to account for those observations.

A related question involves the boundary between syntax, derivation, and inflection. Are affixes, Word Formation Rules (WFRs), and/or OPERATIONS (depending on the particular theory of morphology espoused), which involve GRAMMATICAL FUNCTION CHANGING, derivational or inflectional, and by what criteria? What about affixes in a polysynthetic language? It is to these issues that we turn next to inquire whether any evidence is to be found there that could facilitate a decision as to what is (in)visible to syntax or where any of these might be located.

1.8. *Inflectional, Derivational, Lexical, & Syntactic Modes of Expression.* Bybee (1985) views derivation and inflection on a continuum. She distinguishes the following 'expression units' (1985:11):

(2) Expression Units (Bybee)

- (a) **lexical** expression. *Murder* embodies “die” and “agentivity”; cf. Talmy (1985:132): “*die* indicates only an event of death itself, while *murder* indicates that a volitional agent has initiated an action that has caused the event.”
- (b) **inflectional** expression. Each semantic element is realized as an individual unit bound into a single word.
- (c) **syntactic** expression. Semantic elements are represented by separable and independent units: *come to know* is the syntactic expression of “inchoative” plus “know”; *realize* is the lexical expression of the same notions.

Bybee also recognizes FREE GRAMMATICAL UNITS (clitics, particles, and auxiliaries), and places derivation on a continuum between lexical and inflectional expression (1985:12):

Derivational expression resembles lexical expression in that derivational morphemes are often restricted in applicability and idiosyncratic in formation or meaning. It resembles inflectional expression in that the two distinct morphemes are combined in a single word.

Bybee’s continuum is as follows (1985:12):

(3) Continuum of Expression Units (Bybee)

lexical - derivational - inflectional - free grammatical - syntactic

A similar scale/continuum, based on processing at the syntactic end and storage at the lexical end, is given by Dressler & Mayerthaler (1987:6). Bybee’s criterion for syntactic vs. inflectional/derivational is **boundedness**. **Obligatoriness** and **predictability of meaning** distinguish inflection and derivation (Bybee 1985:27). But what has Bybee demonstrated here? The only continuum in (3) is in the statistical probability of expression type. Inflection and derivation are not degrees on a continuum because the language-particular realization is categorical — one or the other, not some percentage inflectional and some percentage derivational. The real demonstration is the implication that there is no difference separating any of the expression units and that any type of expression may or may not be syntactically visible.

1.9. (4) demonstrates the encoding of information in a 50-language sample selected from the world’s major language families (Bybee 1985: 24, 30-31).

(4) Type of Expression (50-language sample)⁹

	VERB INFLECTION	VB. INFL. & DERIV.	LEXICAL
valency	6%	90%	+
voice	26%	56%	+
aspect	52%	74%	+
tense	48%	50%	
mood	68%	68%	
number agreement	54%	66%	(+)
person agr. (subj.)	56%	56%	
person agr. (obj.)	28%	28%	
gender agreement	16%	16%	

While all of these (and with few language-particular exceptions, only these) categories can be inflectional or derivational, they are one or the other (in varying degrees), and only valency (transitive, intransitive, causative), voice, and aspect are ever lexically encoded. Bybee also claims that number is never exclusively lexical in any language.

Observe in (4) that the categories which are sometimes lexical are less likely to be inflectional. Bybee attributes this to their larger and less predictable semantic differences, promoting lexicalization. The decline in inflection (and derivation) at the other end of (4), Bybee claims, is due to those categories being less RELEVANT to the verb (more relevant to the surface structure syntax than to the meaning of the verb per se). The relative absence of tense, mood, number, person, and gender as derivational categories is also significant. It suggests that indeed there is a major split between items associated with INFL/AGR and other categories, confirming the hypothesis that INFL/AGR is applied syntactically.¹⁰ This will be developed in chapter 2. The next section addresses the conceptual basis for the fluctuation between inflectional and derivational for certain categories.

1.10. Number, which is almost universally an inflectional category, is completely irrelevant in some languages. Dryer (1987), in his survey of 307 languages from all families and subfamilies, finds very few languages without

⁹ A '+' indicates that languages exist which mark the item in question lexically (by change in root word); a blank space indicates the absence of lexical expression for a given category. The percentage of languages in the sample that exhibit a particular feature are indicated by the % sign.

¹⁰ Agreement is discussed extensively in the papers in Barlow & Ferguson (1988) and in Anderson (1991, ch. 5). For accounts in the Principles and Parameters framework, see Hale (1990), Speas (1990), Belletti (1990), Lieber (1992).

plural marking of some sort. In the 48 languages with particles (as opposed to inflections), number may be purely semantic, especially where the particles are optional and used only to make plurality explicit, as in Yoruba, Gurung, and Chamorro. Durie (1986) discusses the grammaticization of number as a verbal category, and Mithun (1988, 1991a) shows that in many North American languages number on nouns tends to be irrelevant while on verbs it quantifies aspects of events rather than enumerating entities. Consequently, number is not inflectional in most North American languages (but see Mithun 1991a, for a few changes in progress).

What are the possible features that can be inflectional, and why? Are there clusters of features that pattern together (as a parameter) such that if one is present others will be present also? These are complicated issues that involve language, culture, and our conceptual framework. They deserve much more attention than they have so far received. The idea of LINGUISTIC POSTULATES (Hardman 1978, 1986) makes inflectional categories culturally relative. This is an interesting approach which goes far to explain idiosyncratic inflections, but does not account for why certain features are so frequently inflectional (§1.9). What cultural categories are possible or impossible inflectional categories, and why? Some seem more obviously motivated grammatically (non-‘oblique’ Cases) and others more cultural, like the PEJORATIVE DIMINUTIVE in Fula (Anderson 1982a:586-587, 1985b:117). The fact that so many languages agree on the EVIDENTIALS that can be grammaticalized¹¹ suggests that these are most likely conceptual, allowing again for cultural idiosyncrasies.

Number also seems conceptual in the sense that enumerating entities is a cognitive process. (All languages have numerals!) That would explain its very widespread status as an inflectional category (cf. Anderson 1985b:174), but simultaneously makes it difficult to account for those languages in which it is linguistically irrelevant, such as Japanese and the Jaqi languages of the Andes. Can culture ‘cancel’ a conceptually expected category? Or is it just that number can be conceptualized differently, e.g., not just as enumeration of entities but as quantification of events? *Beat*, for instance, can be conceptualized as ‘plural’ (frequentative) of *hit/strike*; cf. Lat. *pell-ō* ‘I strike’: *puls-ō* ‘I beat’. In the IE languages, since it is the enumeration of entities that is important, that is inflectional, whereas frequentative is lexical or derivational (Kuryłowicz 1964, ch.3). Nouns (certain types, at least) can be enumerated but do not typically possess (quantifiable) events. Thus, verbs and nouns can be classified by separate criteria of what PLURALITY means, as in many North American

¹¹ See the papers in Chafe & Nichols (1986), especially Lloyd Anderson’s contribution; Willett (1988), Hengeveld (1989), etc.

languages, and it is only where nouns and verbs share criteria that number is inflectional.

It can be concluded then that what is derivational or inflectional is a matter of language-particular selection. It has no bearing on the question of how inflection or derivation is accomplished in a grammar, nor does it resolve the issue of what inflection and derivation are.

1.11. In spite of Bybee's detailed discussion (1985:81-110), it is not always clear what is inflectional or derivational. Part of the problem is her indeterminacy on derivation. She accepts two types of derivational morpheme (Bybee 1985:82-83), those that do, and those that do not, change syntactic category. The latter, Bybee claims, exhibit large meaning changes; valency, for instance, is frequently derivational. For Bybee, *-er* is derivational even though it may not change syntactic category: *garden* and *garden-er* are both nouns but have entirely different referents and exhibit her 'large change' in meaning. What is fundamentally missing, however, is the idea that *-er* still **contains category features**. Whether the syntactic category changes (*sing* : *sing-er*) or not (*garden* : *garden-er*) is irrelevant to the fact that *-er* derives actor(-type) nouns and therefore bears the category features [+N,-V].

An appropriate criterion of derivation is that the affix in question must bear syntactic category features (cf. Scalise 1988a). This simple condition solves several of Bybee's classification problems; e.g. 'gerundial' *-ing* has category features and is therefore derivational, not inflectional as Bybee imputes (1985: 85, 97). Further, Bybee (1985:167) notes that Turkish has a necessitative and "all indications are that this is an inflection." By what criterion? Is the Turkish verb obligatorily inflected for [+Necessitative]? A similar confusion is found in Anderson (1985b: 189, 199). The next section will explore the possibility that many affixes cannot be classified as either derivational or inflectional.

A (Poly)synthesis/Auxiliation Parameter?

1.12. While Sapir (1921:128) included 'degrees of synthesis' in his typological classification, the necessity of such a classification has been questioned (e.g., Anderson 1985a:11) on the grounds that "nothing appears to follow from it." Similarly, Baker (1988a:437) maintains that there is no single 'Polysynthesis Parameter'; a language "will appear polysynthetic if, in addition to general typological properties which allow a range of incorporations, it has a fairly large number of elements which may be affixed in the syntax." All this remains to be tested.

It is well known that some languages do with affixes what others do with free words or auxiliaries. Because of the presence of auxiliaries in ANALYTIC languages, the latter process has been termed AUXILIATION by Benveniste (1968). There is frequently a trade-off between (poly)synthesis and auxiliation in language change. A well-known example of auxiliation (see Schwegler 1988) is the shift from a synthetic to an auxiliating perfect in Romance.

(5) Romance Perfect

Lat. <i>vol - u - ī</i>	:	Fr. <i>j'ai</i>	<i>voul - u</i>	"I (have) wanted"
want-PERF-1SS		I-have	want-PPP	

The Romance future exhibits a double shift from synthetic to analytic and back to synthetic. See Benveniste (1968) and Schwegler (1988) for details.

(6) Romance Future

Lat. <i>cant - ā - b - ō</i>	:	<i>cant-ā-re hab-e-ō</i>	:	Fr. <i>chant-er-ai</i>
sing-CONJ-FUT-1SS		sing - INF have-1SS		sing-FUT-1SS
"I will sing"				

One can claim (with Schwegler 1988) that there is no such thing as an auxiliating language because individual constructions may or may not involve auxiliation. However, SYNTHETIC languages like Ancient Greek and Latin have characteristics of both polysynthetic and auxiliating languages, while the one fact that seems consistent in polysynthetic languages is that there are very few (if any) auxiliaries (cf. ch. 4). For this reason, it may be useful to maintain (and test) Benveniste's auxiliation even though other features typically cluster around the presence or absence of AuxP (see ch. 4), and the differences might constitute a parameter in the true sense: from the syntactic realization or incorporation of AuxP stems a cluster of prominent characteristics of analytic or polysynthetic languages.

1.13. One typical characteristic of polysynthetic languages is that different meanings can be attained by different affix orders, as in West Greenlandic Eskimo (Sadock and Olsen 1970:221).

(7) Polysynthetic Affix Reversibility: Eskimo

- (a) *inu - ršū - angu - aq* "little giant"
person-big-little-N
- (b) *inu - ngu - aršū - aq* "big midget"
person-little-big-N

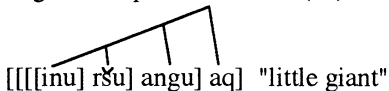
In her discussion of the forms in (7), Bybee (1985:96) states that “these suffixes would probably be considered derivational.” Since the only affix with category features is $-aq_N$, it is not clear why the others should be considered derivational. But if they are not derivational, what are they? Are they necessarily inflectional, or is there another category for semantic markers that do not fit the inflectional criteria of obligatoriness and/or syntactic relevance, nor the derivational requirement of bearing a category feature?

Affix reversibility provides for different logical scope relations. With (7), compare the English equivalents in (8), where **small person** is substituted for “midget” and **big person** for “giant”.

- (8) Syntactic Expression of (7): English
 (a) a <small <big person>>
 (b) a <big <small person>>

The affixes in (7) have the same logical scope with reference to each other and the noun(-stem) as the free words in (8) do. In both, the modifier closer to the noun(-stem) serves to delimit the meaning of the noun(-stem), while the more distant modifier has (wider) logical scope over the inner (nuclear) constituent consisting of noun(-stem) plus closer modifier. The scope relations can be represented as in (9).

- (9) Logical Scope Relations of (7a)



In languages like Eskimo, affix reversibility abounds on both nominal and verbal constructs (Fortescue 1980, 1984). Observe (10) from West Greenlandic (Fortescue 1984:313).

- (10) Reversible Verb Affixes: Eskimo
 (a) [[[[[urnig] sinnaa] nngit] la] ra] (*urnissinnaanngilara*)
 approach- can - NEG - IND - 1sS/3sO
 “I am not able to approach her/him”
 (b) [[[[[urnig] nngit] sinnaa] va] ra] (*urninnngissinnaavara*)
 approach- NEG - can - IND - 1sS/3sO
 “I am able not to approach her/him”
 (i.e. “I can refrain from coming to her/him”)

Crucial in (10a/b) is the different scope of the NEG affix *-nngit-* (the transitive indicative marker *-va-* appears as *-la-* after this affix [Fortescue 1984:289]).

1.14. Another language that allows some affix reversibility is Kwakiutl (Anderson 1985a:33). Even in languages like Quechua in which logical scope relations are mostly determined by different affix orders (Muysken 1979, 1981, 1986), there are a number of fixed orders (Muysken 1988). This will be developed in chapter 2. Possible differences between (poly)synthetic and analytic languages make it entirely reasonable to suppose that there might be (POLY)SYNTHETIC affixes, which are neither inflectional nor derivational. Observe the West Greenlandic verb form in (11).

(11) Eskimo Verb Form¹²

[[[[[[[Nuu] liar] niar] aluar] nir] pi] si]
 Godthaab-MAKE-INTEND-FACT-DUBIT-INTERROG-2ps
 “are you (pl.) possibly genuinely thinking of going to Godthaab?”

Note that the order of affixes is mirror-image of the order of words in the English translation (allowing for ‘Aux-inversion’ in English). That the order of affixes obeys the same principles that govern sentence formation can hardly be coincidental (cf. Schultz-Lorentzen 1945:90). Chapter 2 develops this; our task here is solely to ascertain the status of the relevant affixes.

1.15. Each added affix in (11) yields a new lexical item, as illustrated in (12) — with intransitive indicative *-pu-* instead of interrogative *-pi-*.

(12) Constituency of (11) (Modified)

- (a) [[[Nuu] liar] pu] si] “you travel to Godthaab”
- (b) [[[[[Nuu] liar] niar] pu] si] “you intend to travel to Godthaab”
- (c) [[[[[[[Nuu] liar] niar] aluar] pu] si] “you really intend...”

The constituents are genuine affixes, not compounds, or words; some are not even possible words, e.g., *liar* “MAKE”: in Schultz-Lorentzen’s dictionary (1927), there is not a single native Greenlandic word beginning with *l* (for the sources of word-internal [l], see Rasmussen 1979:43-54).

¹² A distinction is usually made between *-liar-/liur-* “go to” and *-liur-/liar-* “make” (cf. Fortescue 1980:274-275), but the formal identity of the two (cf. Schultz-Lorentzen 1927: 283-284) is striking, especially in light of the parallel use of English *make* (“we should make Atlanta by noon”).

What is significant for our purposes here is that there is no evidence the affixes in (11/12) are either derivational or inflectional. They are semantic markers which perform the function of modal and aspectual words, auxiliaries, adverbs, etc., in a more analytic language. Inflectional material (*-pu-si*) is easy to recognize because, wherever the derivation stops, it must be applied. Yet, Eng. [[[nomin]_{Nal}]_{Aize}]_Vation]_N is a different kind of derivation because in Eskimo no lexical-syntactic categories are being derived from other categories. Even the Facturative *-liar-* “MAKE” does not have verb features; cf. the noun *pi-liaq* (underlying /pi+liar/) “thing made”.

The affix *-pu-* (underlying /-vu-/) is further divisible into [v]_V plus [u] “intransitive indicative” (contrast the interrogative [i] of *-pi-*). In the string *-pu-si*, *-p-* /-v-/ is derivational (bears the category features [+V,-N] and makes a word into a verb), *-u-* marks indicative mood and intransitive valency, and only *-si* is strictly inflectional (obligatorily indexes surface structure subject agreement). The other affixes correspond to words (modals, adverbs, etc.) in the corresponding English sentence(s), and do not obey any of the criteria for inflectional/derivational status, wherefore it is reasonable to regard them as a separate class.

Incidentally, polysynthetic affixes are not the only problem for the customary classification of derivation and inflection. There are also ‘borderline cases’, and situations where one and the same form seems to be both derivational and inflectional (cf. Plank 1981; Dressler & Mayerthaler 1987). Perhaps the most notorious example of this type is the ADJECTIVAL PASSIVE (discussed below). It should be evident that classification (insofar as it is even possible) does not solve the problem of what inflection/derivation might mean with respect to the grammar.

In summary, the class of polysynthetic affixes might be considered to consist of formatives with purely cultural or semantic content (evaluatives, evidentials, degree indicators, adverbials), or grammatical function markers of valency (causative, transitive, etc.), modality, aspect, and other things that in an analytic language are separate words, phrases, or clauses. Other researchers have made similar proposals. Denny (1989) uses the term POLYSYNTHETIC for affixes which (a) are members of major lexical categories, (b) constitute open classes, (c) do not effect category changes, (d) are high in formal and semantic compositionality, (e) border on explicit (as opposed to implicit) knowledge. Compare the SYNTACTIC MODE affixes of Muysken (1986:639) “involving affixes with a separate meaning and often with a variable order. The affixes in this mode are closest to syntactic elements, freely and recursively combinable.” Also, Sadock (e.g., 1988a, b) separates out INCORPORATING affixes from inflectional and derivational.

All we have established so far is the likelihood that INFL/AGR inflection is visible to syntax and separate from derivation, and that polysynthesis has unequivocal syntactic properties, also suggesting syntactic visibility. Since classification fails, grammatical status must be determined otherwise.

The Adjectival Passive

1.16. The problem with Eng. *-ed* is that, as a past passive participle (PPP) marker on passive verbs, it is inflectional (the same verb used in a different syntactic context – passive), but as an adjectival formative it is derivational.¹³ Part of the problem arises from the traditional view of the same PPP forms used adjectivally, as in *a heated argument, the very reduced prices, a married man*. As adjectives, they should have a deverbal (derivational) structure something like [_A[_V **heat**] **ed**]. As shown in (13), the adjectival passive contrasts with the inflectional PPP structurally and in semantic interpretation.

(13) Verbal Passive and Adjective in English

(a)	the dinner was (*very) heated by the chef	PPP
(b)	the argument was/sounded (very) heated (*by us)	A
(c)	Leslie was married by the captain at sea	PPP
(e)	Leslie was married to a good person	ambiguous
(f)	Leslie was/appeared unmarried (*by the preacher)	A
(g)	Antarctica was inhabited (by humans)	ambig./PPP
(h)	Antarctica was uninhabited (*by humans)	A
(i)	Carmine was known to be a reactionary	PPP
(j)	Carmine was unknown to be a reactionary	A
(k)	the boat was sunk to collect the insurance	PPP
(l)	*the boat was sunken to collect the insurance	A
(m)	the vase seems (quite) broken/remains unbroken	A

The A has a [+state] interpretation while the PPP in the passive has a [+process/event] reading (cf. Wasow, Allen, Scalise, etc. [references in note

¹³ Cf. Matthews (1974:53-54), Allen (1978), Williams (1981a), Bauer (1983:40-41). This problem is one of the most discussed in linguistics, with incredibly little agreement. A variety of differing points of view can be found in Wasow (1977), Allen (1978), Lieber (1979, 1980, 1981, 1983), Bresnan (1980, 1982a), Scalise (1984:127-131), Fabb (1984, 1988), Borer (1984b, 1989, 1990), Levin & Rappaport (1986), Jaeggli (1986), Hoekstra (1986:575ff), Zubizarreta (1987:94-107), Grimshaw (1990:124-129), Belletti (1990), etc. See also the related discussions of the passive (ch. 7).

13])). To account for the syntactic and semantic differences, Allen derives the A forms by WFRs and the passive forms by Inflectional Rules. Lieber (1980:230, 1983:276) rejoins that this analysis (a) implies that there is no relation between the two, and (b) fails to explain why the verbal and adjectival forms are always identical despite the different allomorphs used for both. Compare Lightfoot's criticism (1981:95) of Wasow's split lexical vs. syntactic analysis of the two. To account for the usual formal identity, Lieber derives the adjective by ZERO AFFIXATION from the PPP (cf. Bresnan 1982a; Selkirk 1982:41). The analyses of Lieber, Bresnan, Selkirk, Levin & Rappaport, though differing on details and ramifications (e.g., derivation vs. conversion) can be sketched as in (14).

(14) Adjective Derived from PPP

[_A [_{V_{PPP}} [_V construct]_V ed]_{V_{PPP}} ∅]_A

That is, the PPP is an affix on the verb and the A derived from the PPP. One potential problem with this derivation is that the derivational A is built on the inflectional PPP. As noted by Scalise, this is a difficult problem for the theories that require a strict ordering of derivational before inflectional rules. Other problems include: (a) suppression of the external argument does not carry over to the adjectival passive, (b) numerous adjectival passives would have no source under the conversion hypothesis (Grimshaw 1990:124-125), and (c) what is conversion? This last issue will be considered below (§1.21).

1.17. There have been several main responses to the type of derivation proposed in (14).

(i) Feature accounts. For Williams (1981a) and Borer (1984b, etc.), a change of [+V,-N] to [+V,+N] is stipulated in the rule that converts a verb to an adjectival passive participle. This approach is criticized as taxonomic by Levin & Rappaport (1986:624). Hoekstra (1984) simply leaves PPPs unspecified for the feature [N]; being [+V], they may occur in verbal or adjectival contexts. Scalise (1984:130-131) seeks to account for the 'ambiguous nature' of the PPP by the feature system developed by Aoun (1981) for Arabic: PPP is [+N,+V]; the feature [+V] accounts for its verbal behavior and [-N] for its adjectival behavior. Apart from the fact that the feature complex [+N,+V] already has a meaning (Adjective) in Chomsky's feature system (e.g., 1986b:2; cf. Chomsky & Lasnik 1991:15), it is somewhat bizarre to claim that PPP is a whole separate category, on a par with N, A, V, and P. Moreover, these features leave present participles unaccounted for, when there is a similar problem there (e.g., Borer 1990). Finally, Scalise gives no indication of how syntax is to distinguish the two. If both the adjective and the participle have the same syntactic features,

there is no principled way to differentiate their syntactic behavior. Clearly, a feature account (based on those features, at least) is inadequate.

(ii) Lightfoot (1981:104ff) proposes to derive the participial use from the adjective. In other words, he takes the adjective as the only relevant form and offers the following passive derivation (simplified):

- (15) Verbal Passive Based on Adjective
 the bread_i was [_A [_V steal]_V en]_A _i

Since adjectives supposedly externalize an internal argument (Levin & Rappaport 1986), *bread* receives the appropriate theta role (theme) from the adjective *stolen*. In Grimshaw's system (1990:125-126), conversion adds an external argument, the consequence being that adjectival passives can be derived from verbs without an external argument. One problem with (15) is that only the stative meaning should be present. The difference is in fact contingent on the syntactic position of *was*, whether a main verb (adjectival passive) or an auxiliary (syntactic passive) [§1.19-1.20]. Another problem is stressed by Chomsky & Lasnik (1991, §4.3): passive is neither [+N,-V] nor an adjective since inherent genitive Case does not get assigned.

The main putative advantage of (15), or something like it, is that it avoids the inflection/derivation problem since there is no 'PPP'; the illusion of a PPP follows from the use of an adjectival passive in a syntactic passive. Something on this order would explain the fact that all of the IE languages have deverbal adjectives and, of those that have the participial use (passive system of the verb) at all, it is based on the prior existence of the deverbal adjective (cf. Kuryłowicz 1964, ch. 2; Flobert 1975: 479-504, 566ff), even maintaining adjectival concord and lacking tense, mood, and person, which are marked on the AUX ("be"), as in Latin *portātus sum* "I (masc) have been carried", *portāta essēs* "you (fem) would have been carried", etc. It thus appears as though derivation provides a set of (de)verbal adjectives which the inflectional system is free to utilize, e.g., as part of the passive system.

1.18. A minor problem for all of these theories is that there are formal differences between the PPP and the adjectival passive. Note, for instance, the split between *learnèd* (A) and *learned* (PPP), *burnt/burned*, *joint/joined*, *proven/proved* (cf. Lieber 1980:223). Asymmetries of this type have been noted in other languages as well, e.g. Swedish (Platzack 1980:52ff): *tömd* "emptied": *tom* "empty"; *öppnad* "opened": *öppen* "open"; *tvingad* "forced": *tvungen* "forced"; etc. Moreover, the adjectival suffix, as one might expect, attaches to nouns and compounds: *horned*, *bearded*, *striped*; *broad-shouldered*,

hard-hearted, *goodnatured* (cf. Marchand 1969:266; Bauer 1983:93-94; Hoeksema 1985:175-187; Walinska de Hackbeil 1986:371-378). On the other hand, there is neutralization with *un-*: PPP *sunk* / A *sunken* : A *un-sunk(en)*; PPP *opened* / A *open* : A *un-opened* (**un-open*). (Some of these problems are treated in Borer 1989, 1990.) In every one of the asymmetries, the PPP has the productive form, but the adjective is split, depending on syntactic context: *the unsunken* (**unsunk*) *treasure remained unsunk* (**unsunken*), illustrating a three-way split (analyzed below).

Since adjectival passives do not have the implicit argument structure of syntactic passives [contrast (13L) with (13k)], the customary conclusion is that adjectival passives are formed in the (dynamic) lexicon in contrast to the syntactic passive.¹⁴ However, since there are three structures to distinguish, another analysis and conclusion will be sought in the next section.

A Principles and Parameters Account of Adjectival Passives

1.19. This section explores a syntactic analysis, within the Principles and Parameters framework. The analysis is preliminary because many of the necessary assumptions have not yet been presented. In that sense, the analysis can serve as an introduction to the framework to be explored. As noted above, there are (at least) three structures to be distinguished: (i) stative passive (participle), (ii) adjective, (iii) passive. In many Indo-European languages all three tend to be encoded the same morphologically, which has contributed to the confusion. Consider (16) and (17).

- (16) Participle (a) and Progressive (b)
 - (a) the queen is (in the parlor) [_{IP} e eat+ing bread and butter]
 - (b) the queen is eating bread and butter
- (17) Stative Participle (a), Passive (b), and Adjective (c)
 - (a) the bread is on the counter [_{IP} e (**un-*)smear+ed e with butter]
 - (b) the bread is (being) smeared with butter
 - (c) the (un-)smeared bread is on the counter

I assume that non-auxiliary *be* is a raising verb and that the e subject of the lower clause in (16a) is PRO. In (17a), I assume that the first e is PRO, base generated in thematic object position (§3.12), and that the second e is trace.

¹⁴Wasow (1977), Borer (1984b, etc.), Levin & Rappaport (1986), Jaeggli (1986); Roeper (1987); Baker (1988a:319-320), etc.