THE INDO-EUROPEAN LEXICON

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THE INDO-EUROPEAN LEXICON

A Full Synchronic Theory

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To Kathleen and LaVerne Beard–

who saw me the better part of the way

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ABBREVIATIONS AND SYMBOLS

Abbreviations

-A	/a/ → ∅, if followed by a syllable, e.g. *pisac, pisca, piscu*
Ab	Ablative
Acc	Accusative
Adj	Adjective
Adv	Adverb
Ag	Agent
APAdj	Active potential adjective, e.g. *constructive*; see pp. 178, 205
BE	Proverb stem = English *be*
C-	Categorial (component)
COMP	Nominal complement (relative clauses, etc.)
-D	*-ed* in English
Dat	Dative
Des	Desinence, inflectional ending; see p. 156
DET	Determiner
Fem	Feminine gender
Gen	Genitive
GL	Generative lexical (this theory)
GS	Generative semantic

HAdj	Possessional adjective, e.g. *grassy*; see pp. 178, 205
Instr	Instrumental
IE	Indo-European
L-	Lexical
-L	/l/ → /o/, if not followed by a vowel, e.g. *pisao, pisala, pisali*
Loc	Locative = $Place_1$, $Place_2$
M-	Morphological
Mas	Masculine gender
MAdj	Material adjective, e.g. *wooden*; see pp. 178, 205
MOG	Monolingual grammar
MUG	Multilingual grammar
-N	*-en* in English; /n/ → ∅, in the direct singular cases among Scr N-stem nouns, e.g. *ime, imena, imenu*
Nom	Nominative
NP	Noun phrase
-O	/o/ → /e/, after palatal consonants
Obj	Object
OED	Oxford English Dictionary
OOR	'Once-only rule'
P	Preposition
P-	Phrase, e.g. P-marker; phonological
PAdj	Possessive adjective, e.g. *man's*; see pp. 178, 205
Pl	Plural; place
$Place_1$	= 'in'
$Place_2$	= 'on'
$\overline{\overline{\overline{\overline{POSS}}}}$	(Negative) possession
POTENT	Potential (= 'can')
PP	Prepositional phrase

PPAdj	Passive potential adjective, e.g. *drinkable*; see pp. 178, 205
Pro	Pronoun; proform
QAdj	Qualitative adjective
RAdj	Relational (relative) adjective
RED	Reduplication
RR	Redundancy rule
S	Sentence
S-	Semantic
SAdj	Similitudinal adjective, e.g. *boyish*; see pp. 178, 205
Scr	Serbocroatian
Sg	Singular
SIMIL	Similitude
Sub	Subject
T	Terminal, see p. 156
T-	Transformational
-T	/t/ → ∅, in the singular direct cases of Scr T-stems, e.g. *ćebe, ćebeta, ćebetu*
TG-	Transformational generative
TOT	'Tip of the tongue' (phenomenon)
V	Verb
VP	Verb phrase
Yg	Young, filial

Symbols

Δ	Abstract dummy for subcategory features and lexeme position marker
□	Affix position
→	General derivation rule symbol: 'is replaced by'
⇒	Transformational rule symbol: 'is replaced by'
*	Ungrammatical
(*)	Ungrammatical in pertinent sense
?	Marginally if at all grammatical
=	Prefix boundary; 'is semantically equivalent to'
≠	'is not semantically equivalent to'
o̿	(Double macron) variable length (Appendix)
#	Phonological word boundary; vowel ~ ∅ (Russian only)
~	'Alternates with'
-	General morpheme boundary
–	Stem boundary (only desinence may follow)
X ⊃ Y	If X then Y
| |	Morphonemic (lexical phonemic) script
/ /	Phonemic script
( )	Optional
[ ]	Lexical-semantic feature; syntactic branching (pp. 230-231 only); phonetic script (pp. 42-43 only)

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INTRODUCTION

It is fairly easy to solve the problems of one's own selection. The common procedure is to stumble upon a solution during research, then re-search the data for a problem which that solution fits. The practice is widespread in all sciences and not all bad, for it does provide solutions to problems. The difficulty resides in the fact that the science is thus assembled in a haphazard fashion rather than consequentially, and many such solutions must ultimately be undone or redone in the face of subsequent discoveries.

The lexicon has been treated in this way historically. In the past decade it has become a convenient rug under which the problems of all other grammatical components have been swept. Without any convincing argumentation, it has been stipulated as the source of the past passive participle, phonemic distinctive features, semantic features, syntactic features and many other properties and functions which on the surface seem incompatible with the theoretical function of the lexicon. No attempt thus far has been made to develop a theory of the lexicon on its own terms, assuming only a categorial component of some sort and without attempting to solve the problems of the transformational, morphological and phonological components. It is easy to approach the lexicon 'solution-first'.

This book began with my University of Michigan master's and doctoral theses as an attempt to explain via strictly predictive rules, the lexical derivations of Russian and Serbocroatian. Thus it began when

Robert B. Lees' *The Grammar of English Nominalizations* had just expanded the syntactic explanations of what Kuryłowicz had called 'syntactic derivations', to even Kuryłowicz's 'lexical derivations'. By 1967, when Paul Chapin's dissertation appeared, most American TG grammarians agreed that not all lexical extensions could be explained syntactically and Chomsky's 'Remarks on nominalization' returned us to Kuryłowicz's (1936) position.

The 'lexicalist' approach advocated by Chomsky in 1970 and developed by many linguists–semanticists, phonologists, syntacticians–since then, has suffered from an unfamiliarity with the work of Kuryłowicz and that of the European linguists with whom he was familiar, especially Karcevskij, Bazell, Belić. These linguists raised what most consider to be the crucial questions of lexicology: morphological asymmetry, syntactic and lexical derivation, zero-morphemes, morphological truncation, the relation of meaning to reference. These penetrating questions, which our elder generation discovered for us, have more recently been abandoned in favor of interest in which morphological, phonological and syntactic problems can be solved by juggling the status of the lexicon. For this reason, there is no lexical tradition in the new school of generative linguistic theory.

By the time the first version of this work reached its defense, it was clear that syntactic and lexical derivations had been (re)confused and that these two types of derivations must be separated before further work on the lexicon would be productive. In the meantime, I had begun to teach Slavic languages and discovered the terrible difficulties met by students of these languages when they reach the third-year level, where their primary task is to build vocabulary: there are few cognates, not even an appreciable body of compounds, to assist them in rapidly increasing their usable word stock. On the other hand, the Slavic languages have far richer lexical derivational capacities than the western European languages. Yet there is no explanation of what lexical derivation is, let alone a catalog of rules which students might take advantage of at this point in their language learning. The system of 'dynamic glossing' (Beard 1975), which had been developed to facilitate the mastery of derivation in Russian, was slowed down by the lack of a rational

description of the lexical rules themselves. This brought me back to the dissertation, Lees' classic monograph and the questions raised by Karcevskij, Kuryłowicz, Bazell and Belić.

A few works have issued from Chomsky's 'Remarks', but after ten years, nothing so exciting as *The Grammar of English Nominalizations* has appeared as a result of the turn toward 'lexicalism'. In fact, at least as much doubt has been cast upon that article as was cast upon Lees' work. Meys (1975) has shown that Chomsky's analysis of *self* + Adj constructions is faulty; it will be shown in this work that the 'irregular' meaning of *readable* (e.g. *readable book*) is, in fact, a regularity of great generality. The claim that such derivations as *honorable, charitable, knowledgeable* are everywhere irregular because their suffixes represent a subclass, has been discredited (Beard 1977). Yet no one has seriously challenged the lexicalist position as it is now emerging, even as it becomes clear that it is no more than an adaptation of traditional structuralist lexicology, with its assumption that lexical derivation is a synchronically redundant, diachronic process. Nor has anyone reconsidered Lees' monograph, the last major breakthrough in lexicology, to ascertain whether the baby had, perhaps, been tossed out with the bathwater.

One of the reasons why Lees' work has not been reexamined despite the general failure of non-generative rules in solving the problems of lexical derivation, is the split of the generative semantic (GS) branch from the TG-grammar movement in the 70's. The fundamental implication of GS-theory is that there is no syntactic deep structure, that deep structure is wholly semantic; there is no lexicon, and lexical items are inserted at various points along the derivational pathway, i.e. whenever their structural descriptions are met. Gruber (1976) produced a detailed lexical theory for GS-grammar, but failed to present any concrete rule models as did Lees for English nominalization. His theories work only by reproducing all semantic deep-structure relations throughout the lexicon in the lexical entries themselves, a procedure, as is shown in Chapter 1, which makes semantic and syntactic deep structure rules redundant, but also makes grammar impossible. Thus, to the extent that Gruber's theory is valid, it proves only that a GS theory is conceivable, but it does not provide any concrete evidence for the theory

or any basis for judgments of adequacy or insights into lexical functions. And now it seems that TG- and GS-theories are at best notational variants of each other, with the perhaps significant difference that GS-theory by definition makes no distinction between competence (language) and performance (speech act). The present work will demonstrate that such a distinction is an essential factor in any theory claiming to explain all aspects of lexical derivation.

The present book represents a return to the work of R.B. Lees in an effort to reevaluate it and see what, in the light of recent advances in TG-grammatical theory, might be salvaged from it. Kuryłowicz's distinction will offer a starting point. Lees' rules must be restrained to application in the T-component on phrase structures. There must be a way of distinguishing between syntactic and lexical derivations. Once this is found, an important implication of Lees' work takes on new significance: affixation in many of Lees' formulations is either partially or fully a process separate from derivation. Many of his derivations which fail, do so because he was not consistent in making this distinction. Once this distinction is maintained, and the search for derivational patterns is removed from the examination of affixes, the questions raised by the European linguists can be answered.

There are new questions to be raised. There are fundamental assumptions which must be questioned. What are lexical derivations? Where do they come from? Why are there lexical derivations and why the ones found in IE languages rather than others? What determines these derivations? Why do they remain the same in all IE languages despite great changes in the affixes which mark them? What are their relations to compounds and the analytic constructions which paraphrase them? One question which has been discussed by many linguists recently was originally raised by Belić (1959), but has been misinterpreted since him. Belić and his students first noticed a correlation between the meanings of the case system and the L-derivations. The question of the relation of derivational to inflectional morphology was thus intended to lead to an explanation of certain deep grammatical relations, but recent discussions of the relation between these two systems have misplaced themselves to superficial issues having to do with the behavior of the

various affixes in question, e.g. is the suffix *-ju* in the Russian word *noč'ju* 'at night' an instrumental case ending or a derivational adverb suffix? These attempts generally lead to largely unmotivated conclusions as to whether the two systems are the same or not, rather than to any insights into the exact nature of their relation.

Aleksandar Belić's work has also been grossly underestimated. He is generally known as the best grammarian of the Serbocroatian language. His lectures on general linguistics were set to be published in 1939, just 10 years after Karcevskij's key article on morphological asymmetry, but the Second World War delayed their publication 20 years. Thus Belić's insights were relatively contemporary to those of Karcevskij, Kuryłowicz and Bazell. They show a linguistic thinker seriously committed to establishing grammatical systems far deeper than most of his contemporaries, European and otherwise.

If Karcevskij and Jakobson found asymmetry to characterize inflectional morphology, Belić found it in lexical derivational morphology. For instance, his example *sedm-ak* (Belić 1958: 154-161) raised serious doubts as to the possibility of the suffix *-ak* bearing fixed meaning at all. This word is derived from the ordinal number *sedm-i* 'seventh' (*sedAm* 'seven') and may refer to a seven-year-old domestic animal or child, a bill or coin of seven monetary units, a pupil of the seventh grade, a kind of carpet woven from yarn grouped in seven strands, a soldier belonging to the seventh division and certain types of potatoes and beans. The important question for Belić is how a single morpheme, *-ak*, elsewhere identified as having several classes of referents, when attached to this particular stem, can have such a wide and ostensibly unrelated range of meanings. He also noted that a given semantic value may be reflected by a wide range of 'originally empty final word particles'. To Belić, these two facts were clearly related and fundamental to understanding lexicology.

The *sedmak* example also raises the question of levels of consciousness in speech and the boundary between language and speech. Belić noted that a listener has no difficulty in figuring which of the various referents is intended by the speaker, given the context of the sentence in which the word is used, or the physical or geographical

setting of the speech event. Thus if oxen are the topic of conversation, *sedmak* is assumed to refer to an ox; if the talk is of rugs or if a rug is visible, the word is taken as a reference to a carpet. "Words are always signs of representations and always in the representations of the object itself there are very many different features. It is fully within the spirit of language to specify an object with one independently utilized determinative to distinguish it from another; both objects are understood; but that one which is referred to in the given situation fills out that word['s meaning] with its contents." Further, "it is the case that *sedmak* 'ox', *sedmak* 'pupil', *sedmak* 'money', *sedmak* 'carpet' belong to different milieus: these words come from their milieus like labels of the referent and expand themselves."

Belić broke with the Jakobsonian branch of the Prague School tradition in assuming an *indirect* relation between form and meaning. Thus, the maxim 'every change in form implies a change in meaning; every change in meaning implies a change in form', did not appeal to him. Instead, he claimed that " a word, therefore, is not meaning; it is only the connection between our representations and concepts, and individual integral referents." For Belić, there was no question as to whether there are formal distinctions among the various uses of *sedmak*; clearly, one word may have several meanings and any one meaning, several phonological realizations. The first issue to be solved in a lexicological theory is that of the relation of words to meaning and reference. Belić made it clear that this relation is complex and not to be taken for granted.

Perhaps Belić's greatest insight, however, was his perception of the connection between the semantic classes of the IE case system (syntagmas) and those of lexical derivation. Beginning by noting the semantic relation between possessive adjectives and the genitive and dative cases (the Russian third person possessive pronouns *ego, eë, ix* are genitive pronominal case endings but which correspond to derivations in Serbocroatian: *njeg-ov, nje-n, njih-ov*), he went on to suggest that this connection is not coincidental but consistent. ". . . the noun, verb or any other word is preserved in a derivation, in a recognized relation to the object which is more closely defined by these nouns,

verbs or other words. For example, *bradat* 'with a beard', 'with a large beard'; *drven* 'from wood'; *ritav* 'in rags'; *cvetni* 'in bloom'; *krvav* 'spattered with blood', 'in blood'. . .; *čvorav* 'with knots'; *broćast* 'like madder [reddish]'; *ždrebna* 'with colt' etc. As is evident here, each of these adjectives derived from nouns signifies a syntagma in which the noun is preserved in a recognized relation to that word which it more closely defines. . . ." (Belić 1958: 43; cf. also 148-161). Again, Belić offered no explanation but simply raised the issue. Yet, to the extent that the relation of the lexicon to syntax is an issue crucial to the theories of both these components, it must be explained before a clear picture of even the basic components of language can be established.

It is fairly easy, to repeat, to solve the problems of one's own selection. To stipulate 'productivity' or 'semantic drift' as the major lexicological issues and provide a theory which avoids them has become an accepted approach to the lexicon recently. However, if Bazell, Belić, Karcevskij and Kuryłowicz are right, and morphological asymmetry is the fundamental problem facing a theory of the lexicon, then attempts at dealing with 'semantic drift', for example, are at best premature. That is, until the question of asymmetry is solved, and the relations holding between words, meaning and reference are defined, there is no way to determine whether any semantic drifting has occurred. All the rules must be known before any deviation from them can be determined. In fact, there is no way to establish which derivations are productive until a clear definition or set of definitions of these relations are written.

This book will attempt to begin at the beginning by distinguishing and defining various types of lexical and morphological entities inherent in lexical processes, then it will proceed to the definition of various types of relations holding among these entities, including types of meaning and reference. Nothing will be assumed; not even the existence of words and lexicons. Once the basic classes, categories and relations are established, attention will be directed to the nature of lexico-syntactic processes, including those of lexical derivation and affixation. A new fundamental lexicological question will then be raised: What determines lexical derivation? At this point Belić's intuition will prove invaluable.

Issues recently treated as elementary–semantic drift and productivity–become secondary and, in the long run, we will find ourselves in a position not merely to avoid them or accommodate them in our theory, but to explain them: what they are, how they arise, how they are related to the fundamental issues of lexicology.

I

THE LEXICOLOGICAL FRAMEWORK

In the beginning was the Word, and the Word was with God, and the Word was God.

—St. John

CHAPTER 1

Evidence of Words and Lexicons

1.0 Finding a Beginning

The word is an assumption running deep and wide across the gamut of philosophical occupations. Since man began using his language to discuss language, he has consistently perceived it as coded assemblages of 'words'. All languages seem to maintain a word for 'word', which, among IE cultures, has taken on substantial metaphorical duties. 'Word' has been used synecdochically for the language entirely, the written literature and, especially, the sacred books and their laws. Presocratic philosophers considered words come from the gods; indeed, Socrates himself would seem to have seriously entertained such an idea. The original function of Indian grammars was to guarantee the immutability of the uncreated and eternal words of Brahmanic holy writ. From Plato's *Cratylus* on, the study of language in western Europe has consisted in the main of classifying words in terms of their structure and relationships in disregard for the need of a definition of the term or, perhaps, in the hope that a complete classification will render such a definition. To this day, word classes and categories have defied definitive analysis, yet few doubt that 'word' is a central element of language.[1]

Perhaps the most pointed evidence for the existence of words is the dictionary. Implicit in the occupation and product of lexicography is the assumption that a definable concept 'word' exists. But dictionaries

further reflect the conviction that there exists somewhere a list, a store of words–a 'lexicon'–from which we select items for insertion into the sentences we speak and write. Of course, dictionaries come only with the advent of a writing system. Still, their structure closely corresponds to our intuitions as to the nature of our mental lexicon. A further implication of dictionaries is that the actual lexicon of a language is far greater than can or need be maintained in the general memory of any individual speaker, even though he may speak the language flawlessly. Dictionaries bear testimony to the fact that there is a substantial amount of linguistically unpredictable information in the lexicon, information that all native speakers cannot keep constantly on the tips of their tongues. Thus the lexicon seems to be a steadily expanding list of words and restrictions on those words. The former trait allies the lexicon with the syntactic component of grammar via a shared open-endedness; the latter, unique trait is the great mystery of the lexicon: why are lexical derivations so much more constrained than syntactical ones?

Since so much importance has been historically accorded to the store of words in grammar, it is surprising that until now no satisfying theory of lexicology has been brought forth.[2] Lexicology is, in fact, a new subfield of grammatical theory which has moved hardly beyond the handful of basic assumptions which can be gathered from the sorts of superficial observations just offered: there are 'words'; they are stored in a 'lexicon'; they are inserted into sentences as sentences are generated. The field of lexicology is so new that any attempt at constructing a basic theory must still begin with an examination of the fundamental assumptions. Since the lexicon appears to be a dual-function component for storage and item-insertion into sentences, we will approach these basic assumptions from two directions initially: from observations about the nature of lexical memory and from current theories of lexical function in syntax.

1.1 The Lexicon and Memory

Since the lexicon is generally taken to be the inventory of words to be inserted into sentences which is stored as an interrelated subset of general memory, one way to get at a first approximation of the nature of the lexicon and the word might be to examine the nature of memory. The nature of memory itself circumscribes the theoretically possible range of lexicons in that whichever lexical model we ultimately decide upon must be adaptable to a theory of memory via a theory of linguistic performance. One must bear in mind, of course, that the purpose of this work is to explain certain formal aspects of the ideal speaker-listener's knowledge of linguistic systems rather than what non-ideal speaker-listeners do with their specific knowledge. Just as the output of the syntactic components far exceeds the memory capacity of any individual, so is it conceivable that the linguistically possible lexicon far exceeds that capacity. Indeed, as noted above, the existence of dictionaries points in that direction. However, there is good reason to agree with Miller (1972: 337).

> **A description of what a person knows tells us very little about the uses he can or will make of that knowledge. It would be unfair, therefore, to fault the linguist or semanticist for not being a psychologist; the most we might ask is that he be willing to accept responsibility for the psychological implications of his semantic analyses. If, for example, he analyzes the meanings of words into components. . ., he should tell us whether. . . he regards these components as mental concepts or not, and, if not, just what psychological status should be assigned to them: habits, unconscious inferences, associations, conditioned reflexes, or whatever.**

Reference to psychological evidence and theories in this work is not intended to imply that linguistic arguments rest ultimately on psychological justification. Not only is the psychological evidence still by and large inconclusive, but the relation between a theory of linguistic knowledge (competence, grammar, language) and a theory of access to that knowledge (performance, speech acts, language usage) is

largely unexplored terrain. There are two reasons why the psychological literature must be kept in mind. First, all of the empirical data upon which a lexical theory must be based are fundamentally psychological. The raw data of performance involve not only linguistic knowledge, but strategies of access, mnemonic restrictions, errors and the like, as well. In order to be able to factor out the nonlinguistic functions of the performance data from which our competence theories are derived, we must maintain an acquaintance with nonlinguistic performance constructs and functions. Second, any adequate theory of lexical competence ultimately must be compatible with the data of performance. As the results of efforts to develop a workable hypothesis of linguistic performance accumulate, the theoretician becomes more and more obliged to accept the responsibility for the psychological implications of his analyses as mentioned by Miller. This is taken to mean that if the output of a lexical theory is, in performance, other than it is in competence, the theoretician is obliged to demonstrate how performance factors account for the difference.

There is ample psychological evidence for the existence of significant subphrasal elements very much like 'words' in the traditional sense, which are stored in a hyperorganized segment of long-term memory resembling a 'lexicon'.[3] Much if not most laboratory experimentation in verbal recall is based on this assumption. A good deal of such research now supports the claim that the initial response to a wide range of experiential information which a person might wish to retain mnemonically, is to encode it according to an articulatory name or address. Thus if a person sees a cow or the written word 'cow', and wishes to retain a recollection of that experience, he assigns this episodic information to a stable semantic category which has the articulatory address /kæw/. Recalling a specified list of auditory or visual verbal cues is then a matter of associating the items on that list with "stable linguistic response categories" (Crowder 1976: 38), so that retrieval is facilitated by the item's being associated with more or less permanent mental categories, each with innumerable, cumulative associations with other categories. The categories themselves seem to be predominantly semantic–which is to include visual, auditory and other

sensory representations, and thus the interassociations are in the main semantic.

The hyperorganization of the lexicon is borne out by the fact that organized information is more easily retained and recalled than unorganized information. When a person is presented with unorganized information to internalize, he immediately begins searching for some basis for organization before committing it to memory. Apparently conscious memorization takes advantage of lexical interrelatedness by associating the material to be memorized with stable lexical items which can be quickly and efficiently recalled due to their higher degree of interrelatedness and established familiarity. The greater the interrelatedness of stored information, the greater the range of cues capable of stimulating recall.

The most ubiquitous and enduring model of lexical memory remains the associative network theory. In recent years the original assumptions of lexical association have been materially refined in the face of something of a data explosion in psycholinguistics. However, few fundamental changes have been made. Basically, most contemporary theories of lexical memory posit unitary lexical items (locations, nodes) comprising sets (bundles) of features (properties, characteristics): phonological, syntactic, semantic including multisensory. These items are named by the articulatory phonological information incorporated with them. Much if not most of a lexical item's meaning derives not from its directly related properties, but is inferred from its semantic associations with other nodes. These inferences, internodal pathways, can be quite strong, stronger even than the weaker intranodal relations, say, between a single item's semantic and phonological features. Thus in the case of the 'tip-of-the-tongue phenomenon' (Brown & MacNeil 1966), people given a recognizable semantic concept infrequently encountered, may be able to make several semantic associations without being able to recall the word or give any morphological information about it.

The higher proportion of semantic associations in comparison to morphological and phonological ones in the psychological lexicon would suggest that the semantic associations may be stronger. This conclusion is corroborated by the evidence of free association, where recall is almost

exclusively based on semantics, and by that of blending slips of the tongue, e.g. the conflation of *mostly* and *mainly* into *mownly* during speech (Fromkin 1971). In the latter case particularly, the semantic classes underlying the two words must be identical or at least overlapping, with this fact predominating the sound-meaning relation and superseding the dictate that only one lexical item be inserted into an ultimate sentential (delta) node.

All this implies that human beings can access meaning given the word more efficiently than they can access the word given the meaning. This, in turn, implies that passive knowledge is greater than active knowledge of the lexicon. In fact, there is hard evidence that people can interpret far more than they can actively express (Tulving & Pearlstone 1966). There are two implications of this state of affairs with potential interest for the lexicologist. First, the data on which a lexical theory must be based will probably be distorted by problems of access. That is, a linguistic theory of the lexicon cannot be based on the generative capacities of actual speakers as is syntactic theory, but instead must be based on their ability to recognize as grammatical, words projected by the theory. It is possible to explain restricted occurrence of acceptable forms among specific speakers in terms of access constraints, but it is not possible to explain it in these terms unless potential forms are predicted by the theory. Second, these data suggest that there is a significant difference between the non-ideal speaker's strategy and that of the non-ideal listener; the latter's job may be easier. If so, we should be aware of indications that competence might play a role in this distinction, for that would undermine the assumption that the ideal listener merely reverses the speaker's rules.

Another type of evidence for words is found in the speech production errors discussed most recently by Fromkin (1971, 1975). Speech errors are a particularly rich source of information as to the nature of words, for they point up the limits of substitutability. Speech errors consistently substantiate the existence of word classification. For instance, in cases of anticipatory word transposition and misinsertion, verbs replace verbs, nouns replace nouns. Very significantly, there is no evidence of items of one class even erroneously replacing those of another.

1a a laboratory in our own computer (a computer in our own laboratory)
1b nationalness of rules (naturalness of rules)
1c bottle of page five (bottom of page five)

Even when occurring in a derivation (1b), only words of the same class can be misinserted . Moreover, the erroneous insert is frequently also semantically related to the target item, e.g. a synonym or antonym of it, or an item sharing a generic feature with it.

2a I really like to–hate to get up in the morning.
2b This room is too damn hot–cold.
2c the singular, sorry, the present time

The blends of (3) below represent not only a commonplace speech error, but one which repeatedly in the history of English has resulted in acceptable neologisms. One of the interesting aspects of blends in speech errors is that they suggest that the word and its position in the sentence are separate phenomena, as theoretically postulated by Chomsky (1965). Blends apparently are the results of attempts to insert two items into the same ultimate P-marker node (cf. 2.12).

3a My data consists mownly–maystly of. . . (mostly/mainly)
3b a tennis athler (athlete/player)

If the substitution of nouns by nouns, verbs by verbs, etc. indicates that these classes are independent, then the fact that stem and affixes are never switched must be an indication of the independence of these two concepts. One may confuse stems attached to an affix (***mownly, athler, nationalness***) or the affixes attached to the stem (cf. Fromkin's ***groupment, intervenient***), but no errors regularly occur involving the transposition of an affix with a stem (****ablelaugh, *lymost, *nessly***). If such errors are prevented by the absence of semantic relatedness such as mentioned in connection with (1), this might indicate a significant semantic difference between lexemes and affixes. Errors like *groupment,*

intervenient, however, suggest further independence of affix from affix position. For in these instances, speakers seem capable of distinguishing between affixation in the abstract and any specific affix. The speakers making these two errors correctly identified (1) the stem, (2) the fact that a suffix is required (position) and (3) the class feature of the suffix (+Noun). Certainly one explanation of this is that these facts represent independent bits of lexical knowledge.

The psychological evidence confirms the mental reality of the basic lexical concepts, and even provides some notion of their nature. For sure there is a hyperorganized store of lexical items which are in some sense inserted into sentences. Stems and affixes are discrete entities, and possibly distinct from the class of positions which they occupy in sentences. The nature of the organization is another question altogether. First, it is not clear that the organization is linguistic. The predominance of semantic associations suggests that the organization is semantic if not encyclopedic. But there are also phonological speech errors (switched syllables, spoonerisms, rhyme errors) which suggest some sort of phonological-morphological organization. The picture is further complicated by the question of access strategies. Certainly it is possible that consistencies in speech errors could reflect the strategies by which we search for words semantically organized rather than the way in which words are actually organized. The data would substantiate the existence of mental 'access programs', e.g. search by rhyme, first letter, final sound, affixes, syntactic class. Failure of these programs could result in the same sorts of speech errors as those just discussed.

Once we have assumed that there exists one lexicon, we must ask whether there is only one, or whether there might be more than one component involved. There have been suggestions that two separate components are required (Katz & Postal 1964) and that two subcomponents of the lexicon are required (Hudson 1976). Katz & Postal postulated a dictionary in a semantic component which lies wholly outside grammar, with a set of semantic matching rules which assign the proper dictionary reading to each lexical item inserted into deep sentences by the lexicon. This approach is consistent with the fact that only the phonological features of words are ever uttered; semantic interpretations are in no way externalized. This approach is also con-

sistent with the performance model suggested in Fromkin (1971) which has separate semantic and 'vocabulary' subcomponents with address instructions relating the two. Fromkin's model was designed to explain normal speech and the sorts of speech errors discussed above, specifically, to explain selection errors based on semantic, lexical and phonological classifications. To explain these different types of errors according to Fromkin, we might consider lexical selection a series of ordered stages. First, a semantic description is chosen. An error at this point will result in the misselection of an entire item. If no error occurs, the semantic description refers the speaker to an address elsewhere in the lexicon (the 'total vocabulary') for a phonological structure. The organization of this section of the lexicon is quite different from that of the semantics. An error here results in the selection of a word phonologically or morphologically similar to the word sought: *present* for *pressure*, etc. Adapting the Katz-Postal competence model to Fromkin's performance routine would seem a simple matter.

Another suggested separation in lexical storage has been brought forth by Reibel (1963) and Halle (1971, 1973). Reibel's 'feed-back control' and Halle's 'filter' operate in much the same fashion: they both contain a list representing the memorized lexical derivations which have actually occurred in a given language and which have been lexicalized. This filtering device would add any unpredictable semantic information usually borne by the derivation. For example, *transmission* can be used as a regular nominalization of the verb *transmit*, or as a lexicalized noun unpredictably referring to the mechanical device which varies gear ratios. While it may be possible to posit an underlying lexical item *transmit* and derive the regular nominalization from it via a rule of considerable generality, such is not the case for *transmission*$_2$. The special meaning associated with it would have to be provided by the filtering device. If words are derived by generative rules, therefore, some provision must be made for lexicalized items and a second component is certainly one possibility.

The problem of lexicalized forms which are structurally orthodox implies that several different types of storage (memory) comprise what has generally been referred to as the lexicon. The meaning of *transmission*$_1$ is stored in a regular lexical rule which linguistically represents the

fact that its meaning does not have to be memorized. But since *transmission*$_2$ displays only structural relations to the verb, there must be more than one way to associate meaning to structural derivations. (The subnumerals refer to meaning only; they do not imply structurally distinguishable words.) Either the lexicon itself is capable of more than one type of derivational process, or the processes traditionally attributed solely to the lexicon are in fact shared with some other cognitional function. There seems little reason to believe that there could be any semantic regularity existing between *transmit* and *transmission*$_2$, *fend* and *fender*$_2$, *suspend* and *suspension*$_2$ as these nouns apply to automobile parts, which might be captured in a lexical rule. Thus we must be prepared to examine the possibility that nonlexical if not nonlinguistic processes might have a hand in these irregularities. There is no a priori reason to assume that nonlinguistic processes cannot operate on the physical output of grammar. Linguistic regularities are social, not physical, laws and like other social laws can be violated by the beings which create them, although the reasons for such violations certainly interest us and therefore will be the center of attention in Chapter 10.

1.2 The Lexicon and Syntax

In the preceding section the lexicon was considered as a function of memory. The lexicon also has duties to the syntactic component of grammar. Observation of this process has provided considerable insight into what sorts of information are associated with lexical entries. The fact that some nouns occur normally in the plural while others do not (or only with a different meaning) indicates that our linguistic knowledge includes the fact that some nouns are count nouns while others are not. The fact that direct objects are inserted after some verbs but not after others would seem to indicate that we store information concerning the transitivity of verbs in their lexical entries. There is little question but that lexical items are determined by catalogs of features used in deciding whether and where items may be inserted into sentences. But much lively discussion remains as to (1) what kind of information is actually

stored in lexical entries and what is encyclopedic, and (2) what the relation is between the various types of information, i.e. phonological, morphological, syntactic and semantic. Is it all stored together? Is some separated from the remainder in independent components or subcomponents related by rules? Is the entire entry theoretically inserted into sentences or only the phonological features?

Not only is there a strong lexical contribution to syntax in terms of lexical insertion, there is a syntactic contribution to lexical items. Specifically, there are lexical derivations occurring only in certain types of syntactic structure and also syntactic relations detectable in certain types of lexical derivations (especially compound nouns). To draw again on the example just introduced, the nominalization of *transmit* is used perhaps less in isolation (*The problem of transmission discussed here. . .*) than in complex NP structures corresponding to complete sentences (*the station's nightly transmission of the news*). Moreover, compound nouns can be paraphrased by relative clauses which seem to represent, consequently, a likely source for compounds: *an oil field = a field which produces oil*. On the basis of such examples as these, R.B. Lees (1960) made the claim that compounds, nominalizations, agentives and the like are syntactic variants of base words and phrases, generated by transformation rules. This approach has much appeal, for not only does it explain the syntactic properties of neologisms, it avoids derivation rules in the lexicon, concentrating all structural change rules in the transformation (T) component.

In the criticism which followed this ground-breaking work, the derivation of words was shown to be of a nature distinctly different from that of sentences. In order to generate compound nouns, for instance, Lees proposed a T-rule which would delete any verb, verb-preposition or preposition in a relative clause and raise the remaining noun to the dominating NP-node (cf. *oil field* above). This type of rule was criticized first because Lees could not justify the choice of *produce* rather than, say, *have, contain, provide*, etc. as the verb to be deleted. Chomsky (1965) argued that any item deleted by a T-rule must be semantically insignificant or recoverable; otherwise, a semantic interpretation would be impossible. Thus a transformational origin for com-

pounds must provide for recovering the semantics of the deleted verb and/or preposition. Since Lees' rule allowed for the deletion of any verb or preposition, it could not explain how speakers know the specific relationship of each noun pair in compounds, e.g. that a *windmill* is a mill powered by wind rather than producing wind, while a *steel mill* is a mill producing steel rather than one powered by steel.

Lees' T-rules were also faulted for being constrained in ways other T-rules are not. The relative clause transformation, for example, operates regardless of the complexity of the syntactic structure of the subordinate phrase. Noun compounding can occur, however, just in those cases where the attribute noun to be transposed is single, perhaps modified by a single adjective. Thus the phrase *a field which occasionally produces small amounts of oil* is a perfectly normal relative clause from which no compound **occasional small amount oil field* may be generated. The constraints on noun compounds, nominalizations and other lexemic derivations are strikingly different from those on even closely related transformations in that they constrain the number of lexical items which may be present for the rule to operate. This makes transformational origin of even syntactically characterized lexical derivates unlikely.

After Lees the question remained: can any lexemic derivations be explained by T-rules? It was to this question that Chapin (1967) directed his doctoral thesis. In order to avoid ad hocness in his formulation of a rule generating passive potential adjectives (PPAdj) and guarantee semantic recoverability, Chapin proposed deriving PPAdjs from underlying sentences containing the modal adjective *able*, e.g. *the water is able to be drunk* → *the water is drinkable.* Chapin's approach is ingenious, but totally dependent upon the synchronically coincidental similarity of *able* to the suffix *-able*. Although his approach avoids some of the pitfalls in Lees', it is inapplicable to other types of productive lexemic extensions, where no lexical correlate is available. Moreover, Chapin had little argument to offer toward the problem of the non-transformational constraints on his rule. *The water is able to be drunk by giraffes* is as acceptable as *the water is able to be drunk*, but *the water is drinkable by giraffes* is nowhere near as felicitous as *the water is*

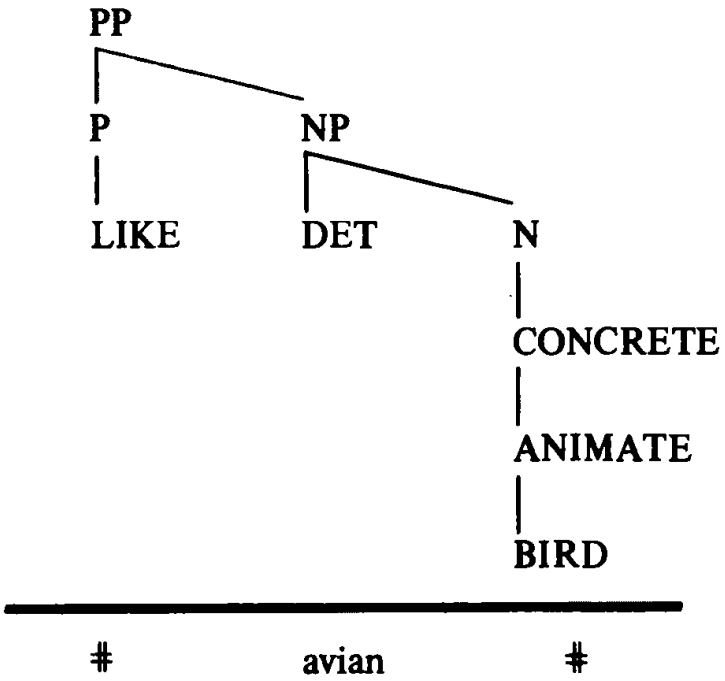
drinkable. There are strong constraints against subordinate modifiers attached to lexemic derivations which we do not find in syntactic derivations.

Lees' and Chapin's work led Chomsky (1970) to advocate more strongly what he calls 'the lexicalist position', namely, that only those lexemic extensions which are constrained like syntactic derivations can be treated in the T-component. His candidate for transformational treatment is the English gerund: *John's arriving at half past ten*. He argues against treating nominalizations as transformations (e.g. *John's arrival at half past ten*) on the basis that the latter as a class (1) have unpredictable meanings, (2) have unpredictable affixation (*arrival* vs. *derivation* but **arrivation*, **derival*); (3) many verbs have no nominalization at all, (4) while others have several (*receipt*, *reception*). Chomsky's position is that lexemic derivation may be treated syntactically when it is as regular and unconstrained as syntactic derivation, and when no semantic manipulations are involved.

The response to Chomsky's remarks bifurcated into those of the interpretive semanticist and generative semanticist schools. The former (Jackendoff 1975, Aronoff 1976) posited the 'independent entry' theory: only words independently entered in the lexicon may be inserted into sentences. By this theory it is impossible for a speaker to derive a neologism and insert it directly into a sentence by linguistic means. According to Aronoff, one may derive a word by productive lexical rules, but it must be assigned a lexical position from which it may be entered into a sentence. Assigning a neologism an independent entry is the theoretical equivalent of the speaker's memorization of the new word, a process in which unpredictable meaning can in some cases be added. Jackendoff allows no creativity in the lexicon. Instead, his rules are all 'redundant', i.e. they merely mark relationships existing among previously memorized items. Lexical creativity is, according to this theory, a strictly diachronic operation of usage. Individuals may in fact create neologisms, but this activity in no way influences the nature of any lexicon other than their own. Words, in short, according to the interpretivist lexical theory, are inserted into sentences already derived; there is no derivation between lexical entry and sentence insertion.

The generative semanticist lexical theory has been developed in greatest detail by Gruber (1976). Since he assumes a semantic base, his lexicon differs from the Chomskian model in that to 'attach' a lexical item to a base configuration, it does not match subcategorization and selectional restriction features to the base configuration, but matches actual lexically stored syntactic configurations to the base P-markers. Thus Gruber's lexical entry for *avian* (Gruber 1976: 277) would be:

4



Gruber's 'translational' lexicon would replace the entire configuration of any base P-marker matching (4) with the phonological equivalent of *avian*. Alternatively, just the N column might be replaced with the phonological equivalent of *bird*. In this case, DET would have to be replaced with *a* or *the* and LIKE with some lexeme conforming to the structure under P.

Gruber's approach reflects his recognition of a major problem for lexical theory which the interpretivists have not broached. To quote Gruber (1976: 261-262),

> **The meaning of a word must be formalized in terms of the same sort of structure as we have in syntactic construction, i.e., in terms of a tree of elemental semantic categories. An unstructured list of features is not sufficient to account for the distinctions in meaning that can be accounted for by the use of elemental categories in different relative positions in a tree-structure. The point can be exemplified by such pairs of words as *native* and *fatherland*, which must be respectively analyzed as 'a person from a particular country' and 'the particular country from which some person comes'. Both of these expressions must contain the same categories: those referred to by the nouns 'country' and 'person' and the preposition 'from'. But the former two relate to each other as head and attribute for *fatherland*, and the other way around for *native*.**

Gruber goes on to argue that such an arrangement is required by any adequate semantic theory to account for such anomalies as **he doesn't come from his fatherland; *the natives of New York are indigenous to Paris.* Lees' treatment of noun compounds and nominalizations was an attempt to capture intrinsic and extrinsic syntactic relations among derived lexical items. He accounted for this by allowing lexical derivations to be generated via syntactic rules from underlying base syntactic structures. Lees would presumably be interested in the fact that *father* and *land* in *fatherland* are related as they are in *land which is like a father* (cf. also *motherland, homeland*). Gruber points out that such syntactic relationships hold among the semantic features of such ostensibly underived lexical items as *native* (cf. also *king*).

In fact, Gruber's problem may be related to Lees'. There is a possibility that the *native-fatherland* relationship reflects a productive lexical derivation, e.g. *Russian-Russia, American-America.* If so, Gruber's example may be explained in terms of that derivation, perhaps as a case of suppletion.[4] The problem is whether syntactic relations like these or like those of the agent and patient derivations (*employer/employee*), instrumentals (*cooker, scraper*), etc. can be excluded from the lexicon. Lees' solution was to remove lexical derivation to the T-component; Gruber's approach is to bring syntax into the lexicon. This implication of Gruber's theory makes it unappealing: he would have the lexicon the

origin of prior syntactic configurations identical to those generated in the base. However, while base rules presumably would at least define the configurations that they generate, there is no explanation of the origin of the lexical syntactic configurations.[5] Unmotivated syntactic structure in lexical entries would allow speech production via the concatenation of lexical items and a few order rules, circumventing the base rules altogether. There are many reasons for believing that such a possibility does not exist. Still, the fact remains that at least derived lexical items contain syntactic as well as semantic information. Moreover, there are morphologically unrelated words displaying the same relationships. These facts must be accounted for either within lexical theory or outside it.

Approaching the lexicon from the standpoint of syntactic structure yields two problems. First, how do words enter sentences? This problem is related to the question of neologization. Are neologisms derived first, installed in the lexicon from where they may be entered into sentences or are they, at least in a theoretical sense, derived as they are entered from underlying bases? There has been some speculation that neologization is not a lexical process at all, but simply a type of analogization carried out by extra-linguistic operations. This problem is directly linked to the second question, namely, that of syntactic relations in lexical items. Is syntactic structure restricted to derived words, permitting suppletives, or is it found in base forms, too? Hopefully, the description of syntax can be restricted to the syntactic components of the theory of language, so that it spills over neither into the lexicon nor into performance theory; otherwise, the justification for separating these components is lost. To accomplish this, the relationship of the lexicon to the syntactic component(s) will have to be carefully specified.

CHAPTER 2

The Functions and Properties of the Lexicon

2.0 Having and Doing

The preceding chapter dealt with two extrinsic approaches to the question 'what is the lexicon': one from the standpoint of the psychology of performance, the other from that of syntax. We found evidence that stems and endings are discrete classes, distinct also from their syntactical positions. Stems in storage are semantically related, but in speech, phonological, morphological and other relations are discernible. This led to the question whether perhaps more than one component is involved in lexical processes. The lexicon's relation to syntax raised questions as to the manner in which lexical items are inserted into sentences, in particular, whether all inserts are prederived or derived simultaneous to insertion. The origin of syntactic structures in some lexical derivations also emerged as a crucial issue. In this chapter the original question will be approached intrinsically. The first intrinsic question one may ask is 'what can the lexicon do'. The question of function here is the intrinsic correlate of the question of neologization and insertion. The other approach is via the question, 'what does the lexicon have' i.e., what are its component parts and how are they related? This is the question of what is stored in the lexicon and how. One must keep in mind, that if there are lexical rules, they are also storage devices which maintain an inventory of the regularities of the lexicon. The question

of neologisms is, therefore, part of both approaches, i.e., they could be both properties and functions of the lexicon. If rules of neologization exist, it must be determined whether they are to be the repository of all lexical regularities, partial and complete, or whether there is some lexically nonarbitrary cutoff point for deciding what is stored in rules, what in entries. For example, can 'unrestrained productivity' serve as such a criterion?

2.1 The Functions of the Lexicon

There are two apparent salients to the issue of lexical functions. One may ask 'what can the lexicon do' as distinguished from the perspective of performance, where one might better ask 'what can be done to the lexicon?' This distinction is the direct result of the observation that neologization may in fact be only a special case of expanding mental constructs by analogy. Keeping these questions separate though related will be no simple task, for there is a good deal of interplay between competence and performance, but no dependable device for separating the phenomena of one from those of the other. Further, there seems to be good evidence that both aspects of speech behavior are rule-governed (cf. esp. Bever, Katz & Langendoen 1976). No lexical theory can stand in the absence of some means for disambiguating competence and performance phenomena and these, moreover, from all other mental phenomena. For example, a large segment of American youth uses the verb *dig* in their argot as a synonym for *understand*. Clearly, the overwhelming majority of English-speaking peoples do not recognize this usage in their own speech, thus the meaning 'understand' cannot be part of the lexical structure of *dig*. Instead, slang must be explained in terms of what may be done to the lexicon, rather than what the lexicon can do. In order to explain this phenomenon in terms of the lexicon, one must be able to establish a class of such relationships governed by a lexical rule. In this case we are clearly dealing with spontaneous behavior, at best a secondary performative recoding.

2.11 Expansion of the Lexical Stock vs. Extension of a Lexemic Base

There seems little question that the introduction of the word *laser* into the English lexicon relied but faintly on rules of competence. The initial letters of the nouns and verbs in the phrase (as written) *Light Amplification by Stimulated Emission of Radiation* were extracted and assigned a pronunciation according to the rules associating pronunciation and spelling in English. All this follows logical or sociological rules external to language, since it is highly dependent upon the customary usage of the writing system, especially the custom of producing new lexical naming words by combining the initials of words in phrases. This process seems to be comparable to other means of introducing new unmotivated words into the lexicon, i.e., borrowing, loan translation and the like. The word arrived at in this manner, */leizer/*, phonologically implies a 'silent e' base (*lase*) which, in turn, implies the suffix *-er.* Since the word originally refers to an instrument, and since the final *-er* is easily mistaken for the suffix regularly marking deverbal instrumental derivations, the word has been absorbed into the competence system at two points. First, it was analyzed as V + *er*, an instrumental deverbal, and the perceived stem *lase* was entered in the lexicon as the base form (cf. *Webster's New Collegiate Dictionary*). In terms of how the verb arrived in its position in the lexicon, we must assume the process was 'back-derivation'. But in terms of the lexical theory itself and the permanent relations characterizing it, *laser* must now be considered an instrumental derivate of *lase* in just the same sense that *shaker* is the instrumental derivate of *shake, breaker* of *break* and *cutter* of *cut.*

The distinction here, then, is between what the lexicon can be expected to do and what we must assume is done to the lexicon by extralinguistic influences. Lexical relations by definition are regular; the instrumental derivate always has the meaning 'instrument for V-ing' and the suffix is regularly *-er.* 'Back-derivation' at first glance seems irregular. In addition to locating spurious verbs in instrumentals, it extracts them from agentives (*pedlar* → *peddle*), from regular adjectives (*lazy* → *laze*) and nominalizations (*aviation* → *aviate*). Back-derivation

is, of course, a capturable generalization—a single one at that. It is predicated on the assumption of the existence of a system of arbitrary lexical rules (agentive, instrumental, participle, nominalization, etc.) and a structure phonologically compatible with an associated affix rule. Back-derivation, then, is a single process for extracting a linguistically spurious base form by intentionally operating these lexical rules more or less in reverse. The existence of the base form begins only when it is inserted among the permanent stock of the lexicon, i.e. when speakers of the language can recognize and accept it in speaking.[6] Not only is it impossible to explain all neologisms in terms of such performative analogization, such processes in fact prove the existence of lexical rules, since any form of analogization depends upon some prior regularity. Back-derivation can, therefore, be accepted as proof of the existence of lexical rules and strong evidence for their unidirectionality.

It is a fact that the lexicon can derive verbs from instrumentals. However, this derivation differs from back-derivation in several essential ways. (1) It is not predicated on the existence of prior rules. (2) Its meaning is regular, roughly, 'employ N in its characteristic way', as is (3) its zero affixation in English: *(to) fork, spoon, knife, gun, hoe, plow, harrow, pen.* Interestingly, this description fits even those instrumentals accidentally ending on *-er: (to) hammer, filter, buffer, trigger.* This is the second point at which *laser* has been entered into our common lexicon, as a base instrumental noun, for many English speakers do, indeed, derive a deinstrumental verb: *the surgeon lasered the incision shut.*

It would be convenient if competence could be defined in terms of the regularities of speech behavior and performance as a catalog of kinds of exceptions to these rules. However, this brief examination of one recently incorporated lexical item shows that performance is characterized by rules, too, although by rules of a nature different from that of competence rules. Since performance phenomena must be distinguished from competence phenomena in developing a lexical theory, some sort of methodological device will be required which discriminates between the two types of data. Judging from this one example, such a device would seem possible. Since performance is the use of language,

performance rules will be parasitic. That is, (1) performance rules will depend on the existence of lexical rules and will have no linguistic value in and of themselves. (2) Given the input of lexical rules, the output is fully predictable by definition and that without reliance on extralinguistic criteria. The performance rules examined here require intentional decisions which are selective on the basis of extralinguistic criteria. One of the functions of these performance rules seems to be the adaptation of extralinguistic information to the format of the lexicon, so that regular lexical processes can operate. (3) Since the insertion of a base into the lexicon itself is marked at some specific time and place, these performance rules are diachronically conditioned. Rules inserting lexical items into sentences are both atemporal and aspatial.

The fourth distinction between competence and performance rules affecting the lexicon is that while the former specify relations among various paronyms of a given base, e.g., *transform: transformer, transformative, transformation, untransformable,* the latter expand the lexical stock of base words. Thus *laser* is not a conjugate of any base item already in the lexicon, but a new base added to the lexicon from which lexical extensions can be generated, e.g. *las(er): las(er)ing, las(er)able, laserish, las(er)age.* This is an important difference,for while it is normal for a grammatical component to expand its output over its input, it is difficult to conceive of a theoretical device increasing its own input except in the trivial way explained by recursive rules. Expansion rules like loan translation and back-derivation are not recursive however; they are secondary rules often predicated on extension rules.

If we assume two sets of L-rules with the characteristics just described, we may then assume the lexicon to be basically stable like other grammatical components. Its rules are synchronic rules of competence, i.e., linguistic rules which operate on base words or lexemes, however defined, generating a predictable range of potential lexical extensions. The number of such potential lexical extensions actually used in speech and their referential behavior will be determined by synchronic performance rules such as those discussed in Chapter 10. The number of bases upon which extension rules operate, however, is determined by a secondary system of diachronic performance rules such as those discussed

in Chapter 11. These will be the hypothetical assumptions upon which the body of this book will be based. The term 'L-rule' henceforth will, therefore, refer strictly to lexical extension rules as described here.

Distinguishing performance rules from competence rules in this manner is not to claim that performance is of no concern to the theoretical linguist. Quite the contrary, the theoretical linguist must explain all speech act phenomena that he wishes to exclude from his theory and the basis of their exclusion. The practice of relegating troublesome exceptions in linguistic theory to performance without justification is no longer acceptable. The position adopted here will provide that while performance facts are not to be confused with competence facts, and while a performance theory will comprise rules sometimes conflicting with competence rules, performance elements nonetheless may be factored out of a lexical analysis only with sufficient accompanying justifications and proofs.

2.12 Lexical Copying and Insertion

Another lexical function is the insertion of words into sentences. The precise nature of this process has not yet been scrutinized. Chomsky proposed that prelexical terminal P(hrase)-markers are provided with a complex symbol or delta-node (after the Δ symbol used to denote them). This symbol represents the syntactic position and specifications of the lexical item itself with its inherent properties. (We have seen above that there is some psychological support for such a distinction.) Chomsky (1971: 184) goes on to suggest that we think of "each lexical entry as incorporating a set of transformations that insert the item in question, that is, the complex of features that constitutes it, in phrase-markers. Thus

> <2> a lexical transformation associated with the lexical item I maps a Phrase-marker P containing a substructure Q into a phrase-marker P′ formed by replacing Q by I".

Chomsky goes on to explain that "theories of grammar may differ in the conditions on Q, and more generally, on the nature of these operations". In fact, the nature of the operations themselves is far from clear. Notice that Chomsky himself is fundamentally reformulating an earlier position (Chomsky 1965: 84):

> If Q is a complex symbol of a preterminal string and (D, C) is a lexical entry, where C is not distinct from Q, then Q can be replaced by D.

It is not obvious that even a radical shift from a single lexical entry transformation operating over the entire range of lexical items to individual T-rules contained in each item and operating on P-markers gets at the heart of the problem of lexical insertion. Much depends upon whether the operation of the insertion and the conditions on insertion materially differ from case to case. In either event, the concept of 'lexical transformation' diverges sharply from that of 'syntactic transformation' or 'expansion rule', in that it is neither self-generating nor does it rewrite. Both formulations lack a formalism for returning the lexical item to its original location after the sentence is uttered, assuming 'insertion' in its literal sense. The question is whether the inevitable complexity of a theory for returning items to location need be pursued, or whether a theory of lexical copying holds more promise for success.

The fact that we do not forget a word upon uttering it compels us to explain lexical insertion in terms more complex than any heretofore presented. If we assume that speakers underive sentences once uttered, as listeners do, a complex, noninterpretive theory for undoing phonological modifications of base forms will have to be developed, morphological, lexical and syntactic markers such as *-s, -ing* will have to be properly detached and returned to their original locations. Suppletives and subregularities such as *worse* and *taught* will have to be restored to their proper relations among the lexical stock. The entry location will have to be marked for the performer to remember, for at least in performance, the lexicon is ordered. This will require a theory of return tagging independent of that of retrieval tagging. It hardly seems

worth the effort to develop a lexical theory requiring such extensions if a viable alternative exists, since there is nothing available in the linguistic or psychological data hinting at a knowledge of such operations.

There is, in fact, no evidence that lexical items move at all—phonologically, syntactically or semantically. The sounds human beings make in speaking are physical tokens of 'sound-image' types—to mix Saussurian terminology with that of Pierce—which are more or less permanently installed in our lexical memory. A theory of lexical copying, therefore, explains speech errors much better than any theory of lexical return. Copying theory must provide for a complex process involving (a) the search for an appropriate item, (b) the decision as to whether it is compatible with the syntactic environment, (c) the copying of the relevant features from the item and (d) the insertion of the copy into the delta-node. It is possible that (c) and (d) may be conflated by copying directly into the delta-node. All of these issues will be examined in greater detail in Chapter 11. For now let us simply be reminded by the fact that we do not forget the words we 'insert' into sentences, that syntax requires only that the lexicon provide copies of certain lexemic features rather than insertion of the whole.

2.13 The Location of Neologization

The questions of copying and the number and nature of lexical components are critical to another fundamental subject of lexicology, a subject related to the character of both lexical functions and properties. That subject is one already touched upon briefly: what are neologisms? In 2.11 we saw that there are two types of word formation: base extension and base stock expansion. Since the latter seems to involve extralinguistic processes, only the former needs to be considered here. The basic question is: how are lexical neologisms generated? Is this a lexical problem, a morphological or syntactic one; or can base extensions also be treated as a performance operation?

Interestingly enough, situating the process of lexical derivation in the lexicon only recently occurred to linguists (Chomsky 1970,

Jackendoff 1975, Aronoff 1976). The most widely held attitude still would have 'word formation' a separate component of grammar, with as yet unspecified ties to morphology, syntax and the lexicon (cf. Dressler 1977 for this approach in a TG-framework). Most work on lexical derivation has been conducted in Europe, especially East Europe, where the major point of contention now is whether 'word formation' comprises one component with inflectional paradigmatics (cf. Kiefer 1970 for this approach in a TG-framework), or whether morphology concerns only inflectional processes. East European morphologists are convinced that lexical derivation is somehow related both to the lexicon and morphology, but no one has made clear just how. Dokulil (1962: 221), for instance, reasons that

> **On the one hand, the study of word formation is a part of lexicology, examining the whole of the word stock; on the other hand, however, as far as word formation in the proper sense of the word is concerned, it necessarily belongs to morphology as well, because it employs morphological methods. If it should be asked whether word formation, regarded as morphology of naming units or lexical morphology, is to be regarded as forming part of the grammar [syntax], the answer will naturally depend on how one conceives the term 'grammar'.**

Dokulil thus skips over the question yet claims that 'word formation' represents an independent component. Kubriakova (1974: 217) also skirts the issue of these interrelationships in claiming that 'word formation' and morphology should be separated.

> **In our opinion, word formation and morphology, representing interacting and, therefore, intersecting systems in every aspect involving the *structure of the derived word*, nonetheless are not identical. The interdependence of these systems, frequently causing the description of either one without reference to the data of the other to be incomplete, does not obviate the necessity of a consistent separation of morphology and word formation.**

The issues raised by Dokulil and Kubriakova are essential ones which cannot be circumvented since they determine the very nature of the component to be explained. However, the fact that these issues were not dealt with could explain the failure of East European linguists to seriously consider situating 'word formation' in the lexicon. The ultimate problem of the East European school is its lack of any integral theory of language to which these components may be related. The difficulty faced in assigning 'word formation' a place in a grammar where it obviously has connections to several components, is that no one has specified the relation of the various components to one another in the first place. Until this is done, little can be expected from arguments as to whether lexical derivation belongs to one component or another, or forms an independent component unto inself.[7]

One of the first real insights into the problem of 'word formation' was made by Kuryłowicz (1936), who noted that perhaps 'word formation' does not belong to only one component. Kuryłowicz was the first to distinguish between 'syntactic' and 'lexical' derivations. Among the former are those nominalizations which involve no semantic expansion of the underlying lexemes such as *John decided to go: John's deciding to go/John's decision to go.* In extending Kuryłowicz's description of this distinction, Marchand (1967) suggests including agentives as well, e.g. *John smokes heavily: John is a heavy smoker.* Kuryłowicz's 'lexical'–Marchand's 'semantic'–derivations are those which involve the addition of some semantic feature(s), such as the IE possessional adjectives, e.g. *beard-ed, grass-y, modul-ar.* These adjectives are derived by expanding the semantic feature inventory of their base by at least one feature, POSS, marking the base as the second argument and the modifying noun as the first (e.g. *bearded cop*). The additional semantic freight is evident in comparison with *beard's,* e.g. *the beard's growing,* which is merely the structure underlying *the beard grows* inserted under an NP-node. There is no semantic valence added either to *beard* or *grow* by the affixation of *-s* or *-ing.* The arguments since Marchand have been mostly over where to draw the line between lexical and syntactic derivations (Chomsky 1970); no one has questioned the validity of the distinction.

The distinction presents certain problems, however. Let us assume, along the lines laid down by Babby (1973) for Russian, that the present active participle is a syntactic variation of a verb triggered by prenominalization (adjective-fronting) and that prenominalization applies to all verbals, i.e. to adjectives and verbs alike.

5a dogs which are black → black dogs
5b dogs which bark → barking dogs

A theoretical problem arises for such cases as (6-7), (1) if we assume that derivation is a process of concatenating morphemes with bases and (2) if this process is divided between two independent components of grammar.

6a women who calculate$_1$ very much (break their nails) → women calculating$_1$ very much
6b *women who are very calculating$_1$ → *very calculating$_1$ women

7a women who calculate$_2$ very much (get their man) → women calculating$_2$ very much
7b women who are very calculating$_2$ → very calculating$_2$ women

In (7) we see that two derivational possibilities exist for *calculate* in the metaphoric sense: (7a) normal participle prenominalization in which the verb retains most of its verbal characteristics (i.e. requiring *much* to be added to *very*), and (7b) lexical adjectivization, in which the verb becomes a qualitative adjective (i.e. accepts the intensifier *very* and occurs predicatively). (A) would seem to reflect a straightforward syntactic process in the sense just discussed, while (b) has been semantically expanded so that the resultant adjective applies just where metaphorical 'calculatingness' is a characteristic capacity, not an actually occurring activity. The problem here is that if (b) represents a lexical process qualitatively different from (a), which is a syntactic process, then assuming each affix to be associated with a rule, a large number of rules must

apply twice, at two points in the grammar and with different effects. The same difficulty is visible in English with the *-s* of *John's umbrella* and *John's running,* the *-ed* of *beard-ed* and *rant-ed,* and others. Although this problem might be overcome by extending the definition of homophony to cover these examples, i.e., by positing theoretical constructs like $-ing_1$, $-ing_2$, . . ., $-ing_n$, such an approach would be ad hoc without further evidence. Lexical homophony is a strictly lexical issue; (6-7) represent an intercomponential problem. There is no obvious evidence that lexical properties such as homophony also occur in the syntactic components (see 5.2 for further discussion).

Kuryłowicz's distinction of syntactic and lexical word derivation seems to complicate the question of the location of word-formation processes. In 2.11 and elsewhere we observed how some new words originate outside the purview of competence itself. In instances like (newspaper) *clipping, transmission* there is reason to believe that regular affixational procedures are part of this unpredictable, quasi-linguistic process. Now we have seen the same suffixes participate in lexical and syntactic derivation. These considerations demonstrate that not even competential neologization is a single, homogeneous process, but several processes, some involving class shifting without semantic enhancement, others involving semantic enhancement with and without class shifting—all this in addition to the unpredictable semantic permutations of neologization in base stock expansion. Most perplexing, however, is the fact that none of these significant differences are marked by differences in the modes of affixation, and this has led to considerable confusion on the part of linguists attempting to develop lexical theory. Lees and Chapin sought to account for all these types of derivation in the syntactic components. European lexicologists have tried to account for them in the morphology. Aronoff and Gruber have attempted to account for them in the lexicon, while Jackendoff argues that they are all derived in performance.

None of these homologous approaches are apt to succeed, since the phenomena they address are heterologous. There is a relevant distinction to be made between neologisms which expand the lexical stock of a language and those which extend a given lexical base; the

former contain unpredictable semantic elements even when they are formally regular.[8] Among the neologisms clearly within the purview of competence, some seem to arise in syntax, while others emerge in the lexicon. All neologistic classes are characterized in some way by syntactic structure. A complex web of interrelations emerges, to which further scrutiny will be devoted.

2.2 The Properties of the Lexicon

The other intrinsic approach to ascertaining the nature of the lexicon is through the question 'what does the lexicon contain'. The lexicon, following this approach, consists of the elements which make it up, their properties, plus any generalizations which might hold between the lexical elements. The obvious candidate for the role of central lexical element is the 'word'. However, since the derivation of words seems more complex than anticipated, there is reason to believe that this response might not be as transparent as commonly thought. For it to be a useful concept the nature of the word must be defined more explicitly. Without an explicit definition of 'word', it will be impossible to define its classes, categories and interassociations.[9]

2.21 Word?

Of the three elements thus far considered by linguists as potentially the central element of the lexicon (word, morpheme and lexeme), there are data indicating that 'word' has the weakest claim on the position. First, there is the obvious, if difficult-to-accept fact that, despite unrelenting efforts over several millennia, no one has successfully defined 'word' in any linguistically useful way. Surprisingly, this gross failure at defining what most linguists still contend is the basic unit of language, has in no apparent way obstructed progress in linguistics over the same period. All of this is highly suspicious at first note, but is in and of itself unenlightening, since this failure could simply be a function of the

complexity of the concept. But our suspicions must be heightened by the fact that other concepts have been invented, defined and honed on the way to linguistic theory, even concepts which are theoretical properties of 'words', e.g. 'morpheme', 'lexeme', 'phoneme', 'semantic feature'—even 'minimal feature'. One can with fair accuracy define phonemes in terms of minimal features, morphemes in terms of phonemes with definable types of boundaries, and so forth. Yet no definition can be established for the linguistic element which comprises these subelements. Chomsky's deep structure categorial component provides at least a theoretical definition of an abstract sentence, but still there is no definition of the element which stands between the morpheme and the phrase.

The last assertion needs qualification in two minor though by no means trivial ways. One may define a word as any series of letters occurring between two spaces on a written or printed page of acceptable English or other language. Initially, this definition may seem trivial since linguists generally ignore the written forms of language in deference to the spoken. Many of the world's languages possess no writing system and there is some psychological evidence indicating that the first step in processing incoming written information is to translate it into phonological code. But these observations cannot be called on as evidence for excluding orthographical information from the lexicon. The lexicon is a deep structure component, thus wholly abstract. Yet it determines the surface mode of realization of its items, whether it be phonological or orthographical or signing. Thus part of lexical entries must be some visual image of how that item is written, particularly in languages like Chinese, where writing is marginally if at all related to phonetic output. Oral games like 'Geography' where one must name a river, town or country whose name begins with a certain letter that may refer to several phonemes, e.g., *Cincinnati, Cleveland, Charleston, Cherbourg* are correct responses to the demand for a name beginning with 'c'; tip-of-the-tongue phenomena such as the recollection that a word begins with a 'c' when trying to recall one of the above names—all point toward the necessity of allowing orthographical information in lexical entries.[10]

The other successful definition of 'word' is the stipulated phonological one (cf. Chomsky & Halle for a recent example). This definition relies on an accent counter and/or postulated boundary types beyond which certain types of morphological rules (cyclic, according to Chomsky & Halle) do not operate. This stipulated phonological definition, of course, speaks not at all to the issue of the properties and functions of the lexical items and is therefore restricted in its usefulness to phonology. It is, after all, the relation of sound to meaning which is critical to the design of a lexicon, indeed, of a theory of language in general. A viable definition of 'word' must speak not only to its function in sentences, but also to its properties and function in storage, for it is not at all clear that these two are the same.

The difficulties of extending the phonological definition of 'word' to a fully specified definition of the basic lexical item are well known. De Saussure was well aware of them when he chose to use the term 'linguistic unit' to designate the concrete subphrasal minimal unit (de Saussure 1959: 105-106).

> As soon as we try to liken concrete units to words, we face a dilemma: we must either ignore the relation—which is nonetheless evident—that binds *cheval* to *chevaux*, the sounds of *mwa* and *mwaz [mois]*, etc. and say that they are different words, or instead of concrete units be satisfied with the abstraction that links the different forms of the same word. Besides, many words are complex units, and we can easily single out their sub-units (suffixes, prefixes, radicals). Derivatives like *pain-ful* and *delight-ful* can be divided into distinct parts, each having an obvious meaning and function. Conversely, some units are larger than words: compounds (French *porte-plume* 'penholder'), locutions (*s'il vous plaît* 'please'), inflected forms (*il a été* 'he has been'), etc. But these units resist delimitations as strongly as do words proper, making it extremely difficult to disentangle the interplay of units that are found in a sound chain and to specify the concrete elements on which a language functions.

There is still no agreement on how to treat phonological variants (*cheval: chevaux, /mwa/: /mwaz/*), but the disagreement here results from a surfeit of theories, centering around the 'abstract' phonological position, claiming that there is but one abstract stem plus a system of cyclic rules, and the 'natural' phonological position, claiming that two stems need be posited to avoid 'unnatural' abstractions and cyclic phonological rules. The other two problems mentioned by de Saussure, those of clitics (*il a été*) and compounds (*porte-plume*), still impede progress toward a definition of the lexical word. To these two the issue of discontinuous morphemes may be added to complete the list of recognized impediments to a lexical definition of 'word'. Only if these latter three problems are surmounted is there any possibility of constructing a lexical theory based on 'words'. Thus before continuing under the assumption that the lexicon does in fact contain 'words', we must see our way clear to solutions to all these questions.

Enclitics and discontinuous morphemes are two sides of the same problematic coin: the noncoincidence of phonological and semantic word boundaries. Enclitics combine with major class stems to form a single phonological word with two distinguishable semantic descriptions. The discontinuous morpheme represents two phonologically distinct words conveying but one meaning. The classic example of the enclitic dilemma is the Latin enclitic coordinative conjuction *-que* (e.g. *arma virumque cano* 'I sing of arms and the man'). Semantically it is distinguishable from *virum*; it is synonymous with *et.* Yet it apparently lacks one of the major defining characteristics of phonological words: accent. Russian prepositions of less than two syllables lack not only accent but, like all underived prepositions, the other distinguishing feature of phonological words: the power to invoke word-boundary rules at their boundaries. In Russian word-final voiced consonants are devoiced. But prepositions not only do not exhibit the effects of this rule, they do exhibit the effects of morpheme-boundary rules whereby morpheme-final obstruents assume the voicing of the consonants following them:

8a [*iz dóma*] 'out-of the-house'
8b [*is tóma*] 'out-of the-volume'

8c [*ad zóny*] 'away-from the-zone'
8d [*at samá*] 'away-from the-catfish'

In this respect Russian proclitic prepositions behave like prefixes.

Discontinuous morphemes are those which are not semantically independent from the stem with which they are associated, but are phonologically independent.

9a	cajole the cat in	10a	look a friend up
9b	put the fire out	10b	track the sucker down

The particles in (9) differ from those of (10) in that they are generally predictable structurally and semantically from their underlying constituents. *In* and *out* correspond to morphemes which can be used as predicates, e.g. *the cat is in, the fire is out* (cf. Lipka 1972). The particles of (10), however, seem to be by and large unmotivated, certainly in the sense that those of (9) are motivated. Both, however, are problematic.

Both stem and particle in (9-10) are phonological words in that they bear their own accent and display word boundaries in the Chomsky-Halle sense. Yet they reflect but a single semantic unit each, cf. *extinguish the fire, find a friend*. Phonological word boundaries are thus only partially relevant to the definition of lexical words. The German case makes this point even more poignantly.

11a	ausmachen	ausgemacht	Er macht das Feuer aus.
11b	einführen	eingeführt	Er führt das Katz ein.

Here a firm decision as to what is a word and what is two words becomes impossible without resorting to ad hoc rules which transform affixes into lexemes and vice versa. The infinitives have accent on the 'prefix'; the discontinuous present tense exhibits accent on stem and 'prefix'. In fact, the definitions of terms like 'prefix' and 'verbal particle', perhaps even 'preposition' and 'adverb', break down in this instance. If *aus* is to be listed independently in the lexicon (cf. *das Feuer ist aus, das Licht*

ist aus) based on sound-meaning identity, but it can function either as an unbounded, unaccented prefix or as a bounded, accented 'verbal particle', not only is the usefulness of the phonological definition of 'word' brought under question, but the quest for a definition of 'word' itself was enervated.

Obviously, the lay concept 'word' does not fit the facts; what seems needing is a closer definition of the types of associations between sound-images, including boundaries, accent and meaning. The classes of morphemes range in content along a progression from unparadigmatic lexemes to the most highly paradigmatic inflectional affixes: lexemes, clitics, derivational affixes, inflectional affixes. Very little difficulty is encountered in defining any one of these classes, but insuperable difficulty arises in developing a theory of the word based on stem + affix, which also somehow includes an integral definition of clitics and discontinuous morphemes. Any attempt at such a definition immediately runs into conflict with the definition of a morpheme or word as a minimal structural unit with meaning.

The final problem facing any attempt at defining 'word' is the productive compound noun. How much of *Russian teacher, baseball player, highschool principal, elevator operator* is a single word? Even in the case of lexicalized words like *blackberry,* can we argue that the compound is a member of the same class as its members? It is a difficult case to argue unless we assume Aristotle's position that, in the case of compounds, the members are irrelevant. This approach will not work in the case of productive compounds and is questionable in the cases of the majority of lexicalized compounds like *blackberry,* where a partial relation is detectable (cf. 3.2).

Pursuing solutions to these highly perplexing problems would seem profitable only were it evident that further progress in lexicology is hindered by the lack of a clear definition of 'word'. One of the more bewildering aspects of the entire quest for a definition of this term is that there would seem to be no aspect of linguistic theory dependent upon such a definition. No theory of the lexicon is conceivable without a definition of the major class stems (N, V, Adj, Adv), minor class stems and affixes. Whether there exists an equivalency between a major

class with or without affixes and a minor class would seem to be without impact on lexical theory itself. So long as lexical insertion predicts all the possible combinations of lexical, morphological and phonological elements of possible sentences in a given language and no impossible ones, so long as the theory captures all the universal characteristics of the lexicon in general, there is no theoretical or a priori reason for pursuing a definition of 'word'. At the very least, we must abandon our conviction that the 'word' is the basic element in any definition of the lexicon due to the obvious and sustained failure to define it.

2.22 Lexical Relations

Having discarded the term 'word' as a usable linguistic term in defining the lexicon, we find ourselves facing the original question: 'what elements does the lexicon contain and what relations hold among them?' Presumably lexicology must rely on notions like 'morpheme' and 'lexeme', though more clearly specified. Indeed, such specification is the fundamental aim of the following chapters. Rather than raise the issue of defining lexemes and morphemes with the consequent wholesale importation of examples such a step would entail, let us for the time being revert to a neutral term, 'lexical item', and finish this section of the introductory chapters with an examination of the second question raised by the existence of 'lexical items', namely, what relations hold among them. This question returns us to the issue of lexical derivation, now from the point of view of the relationship between lexical items rather than from the point of view of lexical functions. Of course, there will be substantial overlapping.

Among lexical items one can observe interconnecting pathways on such a grand scale as cannot be ignored even should a theory of independent lexical entry be ultimately adopted. It is also difficult to ignore the similarity between this type of circuitry among stored lexical items and the internodal pathways characterizing the associative network theory of memory. There seems little doubt that lexical derivational relations are used for mnemonic storage. Lexical items function

not only to convey meaning in sentences, but to store meaning in the human mind. This dual function of the lexicon distinguishes it from other components of grammar, which have only linguistic functions. Of course, only the linguistic function concerns lexicology directly. But it bears repeating that a lexical theory must be amenable to memory theory. For this reason, it is interesting to note a parallel between the sorts of arborizations of associative network theory and lexical derivational families:

12 TRANSFORM–
transform-er, transform-er's
transform-at-ive, transform-at-iv-ity
transform-able, transform-abil-ity
transform-at-ion, transform-at-ion-al(ly)
transform-at-ion-al-ism
-istical(ly)

The lexical family in (12) contains a dozen actual and potential, regularly associated extended items, united by an identical base. The derivations imply a 'movement' from that base, a movement that is sometimes linear, sometimes ramiform. By 'regularly associated' is meant that there are copious examples of similar families emanating from other bases with corresponding lexical and syntactic relations, e.g. *educ-ate: educ-at-or, educ-at-or-'s; educ-at-ive, educ-at-iv-ity; educ-able, educ-abil-ity; educ-at-ion, educ-at-ion-al-ist-ic-al(ly)*, etc. Comparing such classes of derivation shows us that the same classes of affixes tend to be attached in the identical order to different base items: *transform–, educ(at)–, gener(at)–, toler(at)–, perme(at)–, perturb–*, etc. All of these possibilities are automatically available for any meaning accruing to the lexical stem *transform–*. Moreover, as soon as any new stem with the lexical characteristics of *transform* enters the English lexicon, all the derivations exemplified in (12) are automatically available to it. This does not imply, of course, that all of the available derivations are actually in use, any more than all the possible sentences have been said. However, all T-rules of English are available to each

sentence derived, except as constrained by the descriptions of those rules. This has led many linguists to believe that these families are generated by rules of competence similar to T-rules, that is, rather than by performance rules. The evidence indicates that we are dealing here with extensions of lexical bases, rather than with expansions of the lexical stock of bases.[11]

Several major impediments to the characterization of these relations in terms of competence rules have been noted, however. First, there seem to be numerous gaps among both the actually occurring and potential derivations in all IE languages. For example, transitive verbs are generally subject to two potential adjective derivations, an active (APAdj) and a passive (PPAdj), e.g. *construct: constructive/constructible; disturb: disturbing/disturbable; infect: infectious/infectible.* Yet many ostensibly transitive verbs resist one or the other derivation: **interestable, *resemblable, (*)carrying, (*)composing/*composive.*[12] There is a deadjectival causative verb derivation, e.g. *dark: darken, light: lighten, short: shorten; formal: formalize,* but it does not even potentially cover all derived and/or underived qualitative adjectives (QAdjs). *heavy: *(en)heavy; tall: *tallen, old: (*)olden.* There is secondly a problem of ostensible derivations and putative derivations without underlying forms, e.g. *portable, viable, impregnable; perdition, condition.* Some researchers are troubled by the fact that *the ruler of England* appears to be derived from an underlying *X rules England,* but no parallel underlying form corresponds to *the King of England*, even though the relationships of the respective noun pairs are identical. Third, unpredictable semantic interpretations frequently turn up in otherwise predictable derivations: *transmission, woodpecker, gooseberry.* Fourth, there is the problem of unpredictable affixation. Assuming Bloomfield's definition of the morpheme as the minimal linguistic unit with meaning, how do we explain the fact that the nominalization of *transform* is *transformation,* but *perform* produces *performance* and *conform, conformity*? To these problems, we must add those previously discussed: the presence of syntactic relations in derivations; the omission of verb-preposition nexus in noun compounds, the distinction of base extensions and base stock expansion.

There are no obvious theoretical advantages in having a single transformational component for all competence rules and a lexicon which is the repository of all irregularities in the language. However, since the subregularities associated with the lexical nests just discussed are radically different from constraints on sentence transformations, it would seem that Lees' and Chapin's efforts were doomed from the outset. Language simply has several different types of regularity. Still, with the distinction between lexical and syntactic derivations, and the distinction between the extension of a base and the expansion of the base stock, hope remains that lexical regularity may be captured in a theory compatible with the standard transformational generative grammar theory. The evidence, however, does not point clearly to generative rules. Although regular relations exist among items in the lexicon, it is not obvious that they must be expressed through generative rules, which would imply that all the forms of (12) are predictable on the basis of the semantic interpretation of *transform* plus the generalizations of the rules which would be involved in deriving those forms. Two interesting alternatives have been tendered.

Jackendoff (1975) assumes Chomsky's redundancy rule as a point of departure and develops it precipitously toward special, separate, semantic and morphological rules to be situated in the lexicon. The rules are not generative, although in the speech act they may be used generatively, but mark mutual relationships existing between two classes of lexemes, i.e. point out equivalences which exist among entered lexical items. Thus all derived lexemes must be entered in the lexicon independent of the rules which reflect equivalences of meaning and form among them. Neologisms are explained by a generative usage of redundancy rules during performance which is irrelevant or only marginally relevant to language theory. According to this theory, the nominalization *John's decision to go* would not originate in an underlying sentence *John decides to go,* but would be a deep structure sentence developing under an NP-node via Chomsky's X-bar convention. Rather than inserting the verb *decide* directly or through a derivational rule into the P-marker, however, the lexicon inserts the complete noun *decision* under the N-node. The 'redundant' relationship between *decide* and

decision is statically marked by the presence in the lexicon of separate morphological lexical rules and semantic lexical rules such as (13) (Jackendoff 1975: 650).

13a [M 1]: $\begin{bmatrix} /y + \text{ion}/ \\ +N \end{bmatrix} \leftrightarrow \begin{bmatrix} /y/ \\ +V \end{bmatrix}$

13b [S 1]: $\begin{bmatrix} +N \\ +[NP_1\text{'s} \_ ((P)NP_2)] \\ \text{ABSTRACT RESULT OF} \\ \text{ACT OF } NP_1\text{'s Z-ING} \\ NP_2 \end{bmatrix} \leftrightarrow \begin{bmatrix} +V \\ +[NP_1 \_ ((P)NP_2)] \\ NP_1\ Z\ NP_2 \end{bmatrix}$

The verb *decide* would contain a 'referral feature' in its lexical entry designating it to be 'lexically related' to both these rules; *decision* would contain a similar feature. In this manner, (13a-b) would mark the relation between the verb and noun without deriving either one from the other. The entries of both forms themselves certify their existence ergo acceptability, and the potential existence of similar forms is accommodated in performance theory. The rule M1 marks the morphological relationship between *decide* and *decision* (nominalization) and refers as well to any redundant information such as phonological changes regularly associated with the suffix *-ion*. The rule S1 marks the semantic regularity obtaining between verb and noun. No regular relations between M-rules and S-rules are credited by Jackendoff's account, only the particular relations which may hold between a given M-rule or S-rule via two otherwise discrete lexical entries.

As it stands, Jackendoff's theory makes no distinction between base extension and lexical stock expansion; indeed, his theory makes the distinction theoretically irrelevant, since all neologization occurs during performance. However, relegating neologization to a component outside the lexicon raises for this theory the same problem facing Reibel's control: how do neologisms reenter the lexicon after generation or

modification outside the lexicon and find the proper entry address? If performance behavior differs from linguistic knowledge, there is no a priori reason to believe that performance neologisms will conform to lexical rules. We have seen that this is in fact true in the case of base stock expansion, where borrowing, loan translation, blending, lexemicization of abbreviations and other extralinguistic operations occur. But it is precisely these problems that Jackendoff's rules neglect; they concentrate rather on the more predictable lexeme base extensions. Nonetheless, if these weaknesses were attended to and the double-headed arrow specified–it is vacuous as it stands–Jackendoff's theory would gain appeal, since it reflects the static relations of phrase structure rules and the network associations of memory.

An active version of the independent entry theory of the lexicon has been proposed by Mark Aronoff (1976). Aronoff does distinguish between base extensions and base propagation, but he confines his hypothesis to the former, purely lexical issue. Productive base extensions Aronoff would derive with 'once-only' rules, which apply to a lexical entry that may be a simple or extended base (word). These rules operate on lexical entries, i.e. their inputs and outputs are independent lexical entries, for Aronoff assumes that only independent lexical entries may be inserted into sentences. These rules operate only once, which is to say that although the rules themselves are active, their outputs become stable before they can function in sentences. This allows for the 'persistence' required to explain 'semantic drift', the ability of derivations to shift their meanings in unpredictable ways over a period of time. In this respect, Aronoff's 'once-only' rule is an alternative to Reibel's and Halle's filters, which provide unpredictable semantic content extralexically.

The actual rules which Aronoff proposes are elaborations of traditional word-formation rules as (14) demonstrates. A phonologically and syntactically specified affixal morpheme, replete with meaning, is simply attached to the base word selected on the basis of the fully specified list of positive morphological conditions accompanying each rule. Detailing the forms of the base subject to the operation of the rule in terms of a list of the final morphemes it may contain, accounts for

the order in which affixes apply (cf. 12 above). This avoids the question of cyclicity among lexical rules raised by Chapin (1970).

14a $[X]_{Adj} \rightarrow [un\#[X]_{Adj}]$
Semantics: (roughly) un#X = not X

14b Forms of the base

1. $X_V$en (where *en* is the marker for past participle)
2. X_V#ing
3. X_V#able
4. X + y (worthy)
5. X + ly (seemly)
6. X#ful (mindful)
7. X - al (conditional)
8. X # like (warlike)

These brief sketches of Aronoff's and Jackendoff's theories of the lexicon will inevitably do some injustice to the full explanations they represent. The purpose of mentioning these theories here is not to provide full descriptions of them, but to introduce them as the most promising ways of representing lexical relations. Taken together, they suggest three approaches to such a representation. (1) Redundancy-rule (RR) lexicalism: lexical relations are purely static; speakers know the relations exist and take advantage of them for purposes of memory storage, but they have no inputs or outputs. The lexical inventory may be expanded only during performance by real speakers and with the consent of the community. (2) Once-only rule (OOR) lexicalism. The relations according to this approach are active but only in a diachronic sense. A base may be extended by active rules, but the outputs of these rules immediately enter storage where they are subject to (a) further extension, (b) lexicalization and (c) insertion into sentences. A third position is implicit in these two approaches, namely, the position both reject: (3) generative rule (GR) lexicalism. This is the hypothesis that most derivational extensions are fully rule-determined; they may

be specified by the description of the underlying bases plus a set of rules which directly translate those bases into derivations occurring immediately in sentences. This latter position has not been elaborated except under the additional assumption that such rules are syntactic rules. By assuming generative lexical rules, the problems of semantic involvement and heavy lexical constraints are obviated. Many of the problems of lexicalization can be removed by the distinction of lexical base extension and lexical stock expansion. Therefore, GR lexicalism remains a viable alternative. The crux of GR lexicalism is the question of whether T-rules and L-rules differ *qualitatively*, i.e.,in their generative capacity.

The problems of lexical idiosyncrasy addressed by both independent entry hypotheses are best resolved by the RR approach, wherein all derivation is accomplished by performance, which is characterized by departures from linguistic norms. This approach has the disadvantage of claiming that lexical regularities are accounted for in performance as cases of analogy applied to linguistic knowledge. Unfortunately, this leaves open the question of the origin of the linguistic regularities which serve as the basis of the analogy. The OOR approach has the double advantage of providing for the addition of derivatives to the lexicon either directly, by hearing them, or by filling empty nodes in lexical families via active rules. OOR theory not only provides theoretical correlates for the 'stable linguistic response categories' of the associative network of memory, but also for the automatic derivations such as (12). Thus there would seem to be little motivation for pursuing the GR lexicalist hypothesis unless shortcomings should turn up in the OOR theory.

CHAPTER 3

The Sound-Meaning Relation

3.0 Having Meaning

All of the issues raised in the previous sections revolve around the central question of lexicology: the sound-meaning relations of original and derived lexical items. Frege's distinction between 'meaning' and 'reference' as reflected in his famous *morning star/evening star* example (Frege 1892) made clearer the bounds of this lexicological task. The choice and use of the terms *eye doctor, ophthalmologist, ophthalmician, ophthalmic physician,* for example, must be mental functions independent of the intensional meanings of these expressions and independent of the relations among those meanings. Although the referential class may be the same for all these terms, their derivational origins and thus meanings are different as are the contexts in which each is properly used.

Lexical theory deals primarily with the internal relations of lexical items plus the relations of lexical items to memorized concepts associated with them and only secondarily with the extensional referents of these items. Certainly extensional usage helps define intensional meaning. Observing the class of referents for *eye doctor* can be useful in completely understanding the meaning of the term; however, little is added to what is predictable from our knowledge of the meaning of *eye, doctor* and the compound rule which determines their relation in the phrase. Moreover, the absence of any class of referents for *star doctor* does not

disconfirm any theory of compounding which predicts it, for the ultimate interest of the lexicologist (e.g. in contrast to that of the psychologist) is in the 'output potential' of rules, rather than with speaker 'familiarity' with individual outputs (Meys 1975). Certainly there will be lexical rules generating derivates with no referents and referents for which no descriptively suitable derivates can be generated via existing lexical rules. Reference seems to be a matter of performance while intensional meaning seems the stuff of lexical grammar.

The aspect of 'reference' relevant to the lexicologist's task can be specified further as 'denotation' (Lyons 1977) or 'type reference' (Katz 1980). Assuming that the items of the lexicon are types which are spoken as tokens, the kind of reference which interests the lexicologist, i.e. the kind which will provide direct insight into meaning, is the class of real referents with which the lexical type is normally associated. Lyons and Katz contrast this 'type' reference with the individual 'token' reference which a lexical item has when it is actually spoken in a specific context. In actual usage, a lexical token may be used exceptionally as well as grammatically in specific utterances since it is supported by the deictic and encyclopedic information of context.

The distinction of type and token reference allows us to avoid positing an intensional meaning 'greedy human' for some lexical type *hog* to account for the occasional sentence like *John is a hog*. Such usages are no reason to think that the class of animals generally referred to by *hog* includes humans, since this metaphor must inevitably be explained in terms of the relations holding between the speaker's knowledge of the behavior of the token referent of *John* and the meaning of *hog*. Not all humans may be referred to as hogs, though all hogs in the grammatically determined literal sense, may. Only tokens of the lexical type *hog* are applicable to humans, since only certain members of the class 'human' are proper referents of *hog*. Of course, just as type reference will be useful in determining meaning, token references will be necessary in establishing type reference. It is the case, however, that the farther from intensional meaning we move, the less the lexicological relevance.

Meaning, too, has been subcategorized to some extent. The distinction between 'grammatical' and 'semantic' meaning is well established. Roughly, grammatical meaning is that significance wholly defined by the language itself, the completely arbitrary categories such as 'genitive', 'past', 'feminine', 'perfective' and so forth, determined by the grammatical system itself. Semantic meaning derives from the ability of a unit to refer outside the linguistic system to all areas of knowledge as do lexical items like *herring, red, concept.* Grammatical meaning is usually conveyed by a closed class of affixials, clitic particles, prepositions, quantifiers, auxiliaries, conjunctions and the like, while semantic meaning is the business of the open class of lexemic stems, i.e. nouns, verbs and adjectives.

This dichotomy tends to break down at certain points. For example, most lexical affixials seem to bear semantic meanings, but the meanings they bear are determined by the grammar. One may say *he has a beard*, using the major class lexeme *have*, or *he is beard-ed*, using the suffix *-ed* to convey the same sense. Grammatical meaning seems to be simply a subset of semantic meaning which is expressible via an arbitrary paradigm. This being the case, it has been assumed that the sound-meaning relation of grammatical morphemes and lexemes is identical: direct, as in the sign theory of morphemes. Affixials are still frequently perceived as 'having' meaning in the same sense in which lexemes do, despite difficulties in maintaining such a characterization.

In fact, closed-class morphemes cannot be represented in the same terms as open-class lexemes in a linguistic theory that adequately accounts for the psychological and neurological facts. There is now ample evidence that not only are these two types of linguistic units processed differently, but that they are typically stored in different parts of the brain (cf. Dressler 1977, Geschwind 1970, 1979; Zurif 1980 for recent summaries). For example, recognition time for lexemes correlates with the frequency of the item presented for recognition: the more frequently a lexical item is encountered, the more rapidly it is recognized as a legitimate item in the language. This is not true of grammatical morphemes; their recognition time is independent of their frequency of use (Zurif 1980). This strongly suggests that grammatical morphemes are processed

unlike lexemes since their retrieval from memory is not conditioned by the same factors.

More convincing evidence comes from aphasic studies. Greatly simplifying the results of a century of research into this class of medical symptoms, one may divide the types of aphasia into two linguistically interesting groups. Broca's aphasia is the result of lesions in that area of the lower left frontal lobe adjacent to the motor strip controlling the lips, tongue, jaw, palate, vocal cords and diaphragm, i.e. the articulatory organs. Broca's aphasics who can speak at all characteristically have difficulty perceiving and expressing grammatical relations, that is, those relations conveyed by grammatical morphemes. Their speech is marked by a consistent lack of grammatical morphemes like those just listed. A Broca's aphasic, for instance, might say: *yes ... Monday ... Dad and Dick ... Wednesday nine o'clock ... 10 o'clock ... doctor's ... and ... teeth,* if asked about a dental appointment. It is almost impossible for a Broca's aphasic to even repeat *no ifs, ands or buts* according to Geschwind.

The other type of lexically relevant aphasia is Wernicke's aphasia, caused by lesions in the upper region of the left temporal lobe adjacent to the auditory area. Wernicke's aphasics, with Broca's area intact, speak rapidly and effortlessly in grammatical structures with fluent intonation but without semantic content. Wernicke's aphasics seem to have difficulty retrieving lexemes. They may speak anything from 'jabberwocky', *the galick is tacking all bittle* to paraphasias with misselected or mispronounced lexemes, *the butcher is gleaning all of his bruches* (for *the painter is cleaning all of his brushes*). There is little doubt that syntactic morphemes and lexemes in general are two significantly differing kinds of items psychologically and that the preferable lexical theory will capture this difference.

The status of derived lexemes is clearly different from that of derived sentences. Derived lexemes are stored independently if encountered, as OOR theory predicts. However, these lexemes are treated no differently from underived lexemes in this respect; that is, there is no evidence that they are derived by the speaker then memorized. Rather, they seem to be memorized when heard or read, like underived lexemes. Productively derived lexemes do differ from underived lexemes in that

they may be reconstructed in cases where Wernicke's area is damaged and the speaker cannot recall the memorized item. In fact, Dressler (1977) found evidence that Wernicke's aphasics reconstruct lexicalized lexemes transparently, e.g. *pflanzlich → pflanzig, stürmisch → sturmig, schläfrig → schläfig* with the unproductive suffixes being replaced with the highly productive *-ig*. Dressler comes to the conclusion that the processes of lexical derivation are closely related to those of syntactic morphology, but separate from the actual storage of lexemes. We will return to this point later, but for the moment let us simply accept the solid psychological evidence that grammatical morphemes and lexemes must be accounted for separately in a lexical theory and that lexical derivation is probably related somehow to syntactic morphology.

3.1 Sound-Meaning Asymmetry

The assumption of a direct relation between morpheme and meaning is as deeply ingrained in linguistic science as is that of the usefulness of 'word'. Yet Karcevskij as early as 1929 pointed out the difficulties in maintaining such a proposition. Karcevskij's point was that morphology and semantics are 'asymmetric', i.e. the same 'sign' may mark several senses, e.g. */a/* in Russian marks nom. sg. fem. (*žena* 'wife'), gen. sg. mas.-neu. (*stola* 'of a table'), nom.-acc. pl. neu. (*okna* 'windows'); while the same function may be marked by several morphological signs, e.g. gen. sg. is marked by */a/* (*stola*), */y/* (*ženy*), */u/* (*čaju* 'of tea') and so forth. Since none of these grammatical concepts exist as nonarbitrary objects or relations outside the language, we could not be dealing with multiple reference as in the case of *morning star/evening star.* The solution to this problem obviously revolves around the question of context, but how is a theory of context incorporated in a theory of grammar?

There have been two approaches to this problem. The most widely accepted is, oddly enough, the least plausible–homophony. That there are several affixes involved here seems reasonable enough initially: the case endings vary in meaning according to the gender of the stem to

which they are attached. Thus independent, homophonous morphemes $/a/_1$, $/a/_2$, ..., $/a/_n$ may be posited, where the subscripts correlate case functions to gender classes. The reason for postulating independent morphemes is to maintain linguistic self-sufficiency, i.e. so that there will be a one-to-one correlation between distinguishable sounds and distinguishable meanings and context can be eliminated from consideration. No extralinguistic considerations need enter the theory. However, the homophony theory of phonologically identical morphemes is ultimately self-contradictory in that it must depend upon an extralinguistic process, deduction, in order to work.

There are several morphemes $/a/_i$, such that
$/a/_1$ occurs only in all contexts C_1;
$/a/_2$ occurs only in all contexts C_2;
⋮
$/a/_n$ occurs only in all contexts C_n.
This is context C_1.

$\therefore$ $/a/_1$ must be present.

Without assuming the application of logical processes ancillary to linguistic ones during speech interpretation and, conversely, the ability of the speaker to assume the application of such processes, it would be impossible to establish the fictitious structural distinctions between $/a/_1$, $/a/_2$, etc., which are requisite for retrieving the proper semantic interpretation, on the basis of distribution. The implication here is that the identification of the morpheme is a logical rather than a phonological process as it is in the identification of nonidentical morphemes.

The conclusion that language is not self-sufficient but must in fact depend upon external mental processes for full semantic interpretations contradicts the original motivation for positing the homophony hypothesis. Moreover, if we must now assume that morphological distinctions may be aided by concomitant logical processes, the postulation of the phonemic fictions $/a/_1$, $/a/_2$, etc. becomes superfluous. We have already noted that subscripts refer strictly to semantics. We have also just noted

that there is no phonological differentiation among the various forms of $/a/_i$. Therefore, we may eliminate the middle step of identifying the proper fictitious variant of $/a/_i$ by allowing the same deductive process to guide the listener directly from a single morpheme */a/* to its various contextually determined meanings.

There is a single morpheme */a/*, such that
/a/ means x_1 only in all contexts C_1;
/a/ means x_2 only in all contexts C_2;
⋮
/a/ means x_n only in all contexts C_n.
This is context C_1.

$\therefore$ */a/* must mean x_1.

Here the need to resort to homophones is removed. One may simply assume that the same morpheme 'has' several meanings and the interpretation varies with context. This explanation is simpler in its elimination of the middle step of associating the fictions to meanings and theoretically more solid in its elimination of the phonological fictions themselves.

In 5.2 we will see further evidence for the need to assume that logical processes impinge not just upon syntactic interpretations, but also upon fundamental morphological distinctions. Although the process described here is performative, it is important to a competential theory for its suggestion that no competential theory will be totally self-sufficient. It will contain gaps which are filled in logically during performance. There is no linguistic means for distinguishing the various functions of */a/* when used morphemically as there is to distinguish */a/* say, from */u/* or */i/*. This hypothesis will be pursued in more detail further along. Here let us conclude by noting that the arguments against homophony do not lead to a hypothesis of polysemy. The reasons for this will also be covered in 5.2, but they are generally evident in Jakobson's alternative explanation of morphological asymmetry.

Roman Jakobson (1936, 1958) attempted to explain asymmetry in a theory of binary (marked-unmarked) semantic features. Jakobson's interest in doing this was to get beyond the morphological relativism of the case system to the invariants he felt must underlie it. Although this approach has worked quite well in explaining phonemes, Jakobson met major difficulties in adapting it to morphology, since his semantic features cannot be physically measured as can minimal phonological ones. Even if both the phonological and semantic components are interpretive devices, their relations to morphemes differ.

According to Jakobson, */a/* can be nom. sg., gen. sg. and nom. pl. simultaneously only relative to three variants of the same abstract paradigm–the case category system. At an abstract level there exists a linguistic consciousness of an 8-case system (Jakobson included the Genitive II and Locative II which are available only to a handful of Russian nouns). Various lexical items are associated with one of several variations of this paradigm. Beneath this second, invariant, abstract level, there are four semantic features which determine the limits of applicability of the cases plus the relationships holding among them. The features are DIRECTION (*Bezug, napravlennost'*), QUANTITY (*Umfang, ob"ëmnost'*), MARGINALITY (*Rand, periferijnost'*) and ASCRIPTION (*Gestaltung, nadelitel'nost'*). These features are far more subjective than minimal phonological features. For example, Jakobson defines QUANTITY in relation to the genitive case in the following terms (Jakobson 1958): "In the G[enitive] an orientation toward the limits of the participation of the indicated object in the contents of the expression is constantly present. The G always signals the degree to which the object is manifested in the given context, and only the context will suggest, specify, precisely what these limits are".[13] In stipulating that this statement defines morphological 'quantity', Jakobson makes the unjustified leap from the assumption that invariance underlies the Russian case system, to the conclusion that this invariance is to be found in the same kind of semantic features associated with lexical items.

There are alternative conclusions which may be drawn from Jakobson's analysis. The invariance might reside in semantically interpretable underlying syntactic relations such as subject, object, goal,

instrument, manner, source—more or less the classic case functions. There is considerable independent motivation for these concepts found elsewhere in the grammar. The problem with this approach is that it posits a level of variance beneath that of the paradigm, for any one case can refer to several of these functions, e.g. the instrumental may indicate agent, instrument and manner.

Another explanation of the case system is that the first level of abstraction, the category system itself, is the only level of invariance necessary. Even if semantic or logical invariants could be established, they would be irrelevant, since linguistic systems are by definition arbitrary. There is certainly no obvious reason to believe that the genitive relations in (15) could be drawn together in any logical class.

15	son Ivan-a	'*Ivan's* dream'
	ubijstvo Ivan-a	'*Ivan's* murder'
	vlijanie Ivan-a	'*Ivan's* influence'
	dom Ivan-a	'*Ivan's* home'
	daleko ot Ivan-a	'far from *Ivan*'
	bojus' Ivan-a	'I fear *Ivan*'
	ždu Ivan-a	'I am waiting *for Ivan*'
	syn Ivan-a	'*Ivan's* son'
	otec Ivan-a	'*Ivan's* father'
	uezžaet 5-go maj-a	'is leaving on the 5th *of May*'
	4 časa utr-a	'at 4 o'clock *in the morning*'
	mnogo piv-a	'much *beer*'
	obraz penij-a	'way *of singing*'

We must at least explore the possibility that a phonologically variant system can reflect an abstract invariant system which, in turn, reflects a deeper, variant, linguistic system. Not only is it dubious that there exists a deeper, semantic explanation of the case system; under the present definitions of language, such an explanation would have to be linguistically accidental.

IE inflectional systems seem but marginally related to lexical properties and functions. However, Jakobson's three-stage explanation of

morphological asymmetry in the inflectional system is quite germane to the interests of this book, since the same sort of asymmetry is prevalent in lexical derivation systems. Of particular interest is Jakobson's claim that the sound-meaning relation is indirect, mediated by an abstract invariant paradigm. This approach has not been explored in connection with lexical derivation though it appears promising.

3.2 Description, Naming and Idioms

Idioms present particularly thorny problems for lexicology since they contain unavoidable, explicit syntactic structure. Most lexicologists ignore them, but Gruber and Meys treat idioms as complex lexical items bearing syntactic templates like that of *avian* above (4). An idiom by this interpretation is basically a regular item except that it is characterized by extrinsic syntactic structure which may be that of a complete sentence, e.g *the early bird gets the worm.* If the lexical theory already includes syntactic structure in its lexical items, there is little loss of explanatory power in adding idioms to the lexicon. However, it is not at all clear that the lexicon has the power to generate syntactic structure, let alone assign it to lexical items with phonological formatives, aside from its power to assign items to normal sentences. If there is doubt as to the capacity of the lexicon to assign syntactic structure, then an alternative means must be sought for distinguishing multilexemic idioms from the lexemes which they contain.

16a *red herring*$_1$ = 'any herring which is any shade of red'
16b *red herring*$_2$ = 'any smoked herring'
16c *red herring*$_3$ = 'any misleading issue'

The first question raised by these examples has to do with whether *red herring*$_{2\text{-}3}$ are in any way related to *red* and *herring.* The grammatical evidence indicates that there is a relation, but in certain respects it is equivocal. Phonologically, there can be no doubt that we are dealing with

individual lexemes: the double stress, vowel quality, the preservation of the otherwise medial */h/*, the morphological boundary–all indicate two phonological items, *red* + *herring*. The morphological evidence in this example is unclear, but while idioms in general seem to be constrained from some syntactic rules, they are treated normally by morphological ones. Thus the past tense of the verbal idiom *fly off the handle* is neither **fly off the handled* nor **flied off the handle* but *flew off the handle*. In English there are no morphological rules applying to *red* (although note 17a) and the pluralization rule which produces *red herring(s)* would apply in the same manner regardless of whether this is a regular or lexical compound. However, languages with declensional systems show that such adjectives are subject to regular inflectional rules, e.g. Serbocroatian *medeni mesec, medenog meseca*, etc. 'honeymoon'. The syntactic support is equivocal. It is a fact that one must use normal attributive + N word order: *red herring* but not **herring red*, but in the case of (16b-c), one may not say *herring which is red*, although this is synonymous with (16a). While such phrases as (16b-c) seem to have syntactic structure, there is no evidence that it arrived via T-rules. Thus we find two separate words, possibly in syntactically determined order, but removed from their normal semantic reading and provided with a new one.

The following facts must be accounted for here. (1) Lexical items *red, herring* exist in lexical memory with their normal semantic readings. (2) The phrase *red herring* is part of our consciousness when we speak, but with three different readings (16). Only the first of these is directly related to the readings of the two elemental items. (3) In all three instances of *red herring* there is an association with *red* and *herring* phonologically and morphologically. (4) All multilexemic idioms are also characterized by fixed syntactic relations identical to those regularly determined by the categorial and transformational components of grammar, but their treatment in a synchronic lexical theory is unclear. Since these syntactic relations are the same as those otherwise determined by the regular syntax–and for a priori theoretical considerations–it would be preferable to avoid dealing with them in the lexical component and restrict all syntactic explanations to the syntactic components.

Let us begin with the common assumption of a lexicon with lexical items defined in terms of a semantic reading directly and indissolubly associated with a set of phonological properties. What would be the options for treating (16)? We might attempt to define *red herring*$_{2\text{-}3}$ as independent lexical entries, disregarding the phonological and morphological data and assuming a semantically based lexicon. Disregarding the structural evidence not only violates the general mandates of theory-making, it neutralizes performance theory's ability to explain the frequent jokes based on playing the idiomatic meaning of such phrases against the direct meaning. For if *red herring*$_{2\text{-}3}$ are unrelated to *red* and *herring*, they must also be unrelated to *red herring*$_1$.

17a A redder herring I have never seen.
17b He couldn't carry a tune in a bucket.
17c I don't know what he's on, but it is not the wagon.
17d He couldn't catch a cold.

If the *red herrings* of (16) were not linguistically related and related to the lexical items they contain, mixed metaphors like (17) would be inexplicable. On the other hand, the inclusion of *red herring*$_{2\text{-}3}$ in a lexicon containing *red* and *herring* would lead to the paradox of *red herring* being a single set consisting of *red* and *herring* yet simultaneously belonging to the same set of types to which *red* and *herring* belong.

Apparently we must argue that *red herring*$_{2\text{-}3}$ have become by virtue of some linguistic or related process perceptibly different from *red* + *herring* or *red herring*$_1$. By this approach, the idiomatic pair might be seen as type copies of *red herring*$_1$ tokens (since *red herring*$_1$ is not a stored type) reinserted into the lexicon via diachronic performance but with new meanings (cf. 2.11 above). This performance process cannot be a regular lexical copying process, since it makes types from tokens rather than tokens from types (cf. 2.12). It cannot be a normal copying process, therefore, yet it must be one in order to maintain the structural relationships necessary to explain the possibility of conflating idiomatic and regular meanings in mixed metaphors like (17). Thus even if we are willing to allow syntactic structure into the lexicon, there are many

questions left open if we assume names and idioms like (16b-c) are lexical items. Were we to allow a dual-level lexicon, a deeper, asyntactic device and an upper, syntactiferous one, a real definition of the lexicon would become impossible for the definitional criteria distinguishing lexical and syntactic structures would be lost. The preferable linguistic explanation would place a second level for idiom storage elsewhere in the theory of linguistic behavior. There must be a copying rule which copies structure perfectly, changing only meaning. But the new structures must not be returned to the purely linguistic lexicon.

There seem to be two problems at this point: (1) the restrictions on syntactic permutations and (2) the semantic variance from the absolutely regular meaning of descriptions (16a) to accidental regularity in common class names (16b), to the purely idiomatic meaning attached to the apparent output of the T-component in (16c). The interpretive process which explains these two situations must be able to (a) read syntactic conditions, i.e. the presence of *red herring* (never *herring which is red*, etc.), (b) countermand the directly associated semantic reading and (c) substitute those readings of *red herring*$_{2\text{-}3}$. This is a 'once-only' process in the sense that at one time and place a connection between a *red herring* and a 'misleading issue' was made which crystallized future idiomatic usage. Loss of the intervening metaphor since is probably a linguistically insignificant accident. On the other hand, however, this is not a 'once-only' process. It must occur each time the phrase is uttered; otherwise, the floating option of intermixing regular and idiomatic levels in (17) would not arise. If there were two types of performance theories, one synchronic and the other diachronic, we would be interested primarily in the first, since it is obvious that people use language glibly and without reference or recourse to its history or the history of its performance. Thus linguistic history does not rescue the synchronic theoretician from this dilemma.

The frequency and enjoyability of jokes such as (17) indicate that speakers of English are constantly aware of (1) the individual words in the idiom, (2) their 'direct' or 'regular' meaning, (3) the cumulative meaning they convey when conjoined in a regular structure corresponding to that of the idiom and (4) the meaning which may replace this regular

cumulative meaning when the idiom is intended. The key to this problem must lie in our preconceptions of the sound-meaning relation, for (17) shows that the 'direct' meanings of the items in an idiom remain accessible even when the items are used idiomatically. If the speech situation is such that both meanings appear appropriate, both are available, not by repeating the two different phrases, but by the mere adaptation of one. This, in turn, implies that the idiomatic and the normal phrases are one and the same structurally, yet they must have two different meanings. Since we have already seen the impossibility of entering such phrases into the lexicon, we would be hard pressed arguing idioms to be instances of polysemy. Only lexical polysemy is viably defined. The regular phrase *red herring*$_1$, does not even have an independent existence which might make it comparable to its idiomatic counterparts.

Let us return to (16) and see what sort of relations exist among the semantic variations of the descriptive phrase (16a): the common class name (16b) and the idiom (16c). *Red herring*$_2$ is a class of herring turned russet from being smoked.[14] Thus to know the difference between a herring which is indeed (unnaturally) red from one which is smoked, and to use this term correctly, one must know something about the processing of herring. In the case of *red herring*$_3$, whether one knows that *red herring*$_2$ were at one time used to divert hunting dogs away from farmers' fields is irrelevant to modern usage. One simply must have had a special experience, similar to that of learning a new item, in which the derived term and some misleading issue were associated. The difference between this type of experience and the learning of, say, *red* and *herring*, is that these two terms must already be known in connection with two stable semantic readings at the time the idiom is assimilated; otherwise, the idiom will be misassimilated as a single lexical item and the normal idiomatic potentialities exemplified in (17) will not materialize. The important point here is that the idiomatic meanings are learned *in addition to* the more basic meanings of the component items. One cannot properly learn idioms without knowing the lexicon; one can learn the lexicon without prior knowledge of idiomatic structures.

There seems to be an opportunity here to characterize the situation as one in which *red herring* MEANS 'any herring which is any shade of red', but under certain circumstances may be USED TO REFER to a misleading issue. This, in turn, implies that 'misleading issue' is a different kind of meaning in relation to *red herring* than is the direct, regular interpretation. The arrangement depends upon a more pointed definition of the distinction between reference and meaning, plus the use of this distinction in distinguishing names, descriptions (using names to describe), and idioms. It also involves the use of the distinction between linguistic knowledge (competence) and the use of that knowledge (performance). None of these concepts is new; all have been found requisite in other contexts. However, they have never been collectively applied to the problem of idiomatic usage.

Let us begin with a close examination of names. We will assume that proper names like *Jeff, Faye, Owen, Smoketown, Turtle Creek, Moscow,* in terms of competence, are 'empty' lexemes in that they have potential referents but no meaning. They are, in effect, 'wild card' lexemes which may be filled with perceptual and other significance by the individual, non-ideal speaker-listener for validity in his own immediate community. *Red herring*$_2$ (like *blackberry, popcorn, blue jay, woodpecker*) is also a name, but it is a name of a class of referents. The facts that it is a name of a class of herring and the lexeme *herring* appears in the name are linguistically coincidental. Not even a majority of subspecific names contain the name of the species, e.g. *fruit: apple, fish: herring, berry: currant, table: desk.* Moreover, it is possible to name subspecies with lexemes otherwise naming totally unrelated classes, e.g. Greek *hippopotamos* 'river horse', Serbocroatian *morski pas* 'sea dog = shark', French *pomme de terre* 'ground apple = potato', English *silverfish, seahorse,* German *Augapfel* 'eye-apple = eyeball', *Froschhaut* 'frog skin = raincoat'. Common names may or may not partially describe the class they name, whereas *red herring*$_1$ is an impromptu class name which simultaneously wholly describes the class it names. That is, all herring characterized by any shade of red are *red herring*$_1$. More than a name, *red herring*$_1$ is a complete description in that all objects to which it may refer are definable in terms of the meanings of the underlying lexical

items. Because the relation between sound and meaning in strict names cannot be defined in terms necessary and sufficient, they must be taken together with idioms unless they can be construed as single lexical items (e.g. *smog*) which are susceptible to further lexical and syntactic rules. The partial correlation of meaning and sound in the case of syntactically determined common names, e.g. *red herring*$_2$, must nonetheless be explained, presumably in quasi-linguistic terms.

This leads us to a position where lexical items are those subject to lexical derivation rules, e.g. *fog, smoke, smog, red, herring, lase.* These are names of abstract and perceptual objects, actions, conditions, qualities and characteristics, i.e. nouns, verbs and adjectives. But there are other names and idioms which are not subject to lexical and syntactic but only morphological and phonological rules, e.g. *red herring*$_{2\text{-}3}$, *flew off the handle,* which cannot be subject to lexical and syntactic rules because certain such relations are part of their structural definition and thus cannot be altered. These items and phrases must be accounted for in such a way as to preserve the relationship with the regular meaning which each item also has. Although there may be a hazy transitional area, e.g. items like *transmission*$_2$, between quasi-lexical and lexical names, there is good reason to believe that these forms differ from lexical items in that the meaning which they bear is not directly associated with the extended lexeme or phrase. Rather, these meanings form an area of general memory aside from the basic lexicon and are added to utterances independent of lexical competence rules during performance.

This solution is similar to the one proposed by Reibel and Halle. They suggest that such items with unpredictable information but which are structurally consistent be treated in a separate component of grammar which has access both to the lexicon and to phonology. Such a special component or level would represent Meys' 'familiarity' condition. But 'familiarity' is a concept more akin to a psychological theory of episodic memory than a competence theory of grammar. The obvious criticism of Reibel's and Halle's filters is that the information which they must add to the output potentials of lexical rules is precisely that information which is linguistically unpredictable, i.e. added like new lexemes by diachronic performance. What is needed is a component that

is autonomous, but which has access to all levels of grammar, not just the lexicon. Syntactic idioms and lexical idioms are essentially the same The description of such a component would very neatly fit that of a performance theory which includes the power to override, under certain conditions, any semantic reading based on elemental lexical meanings with discretely learned interpretations.

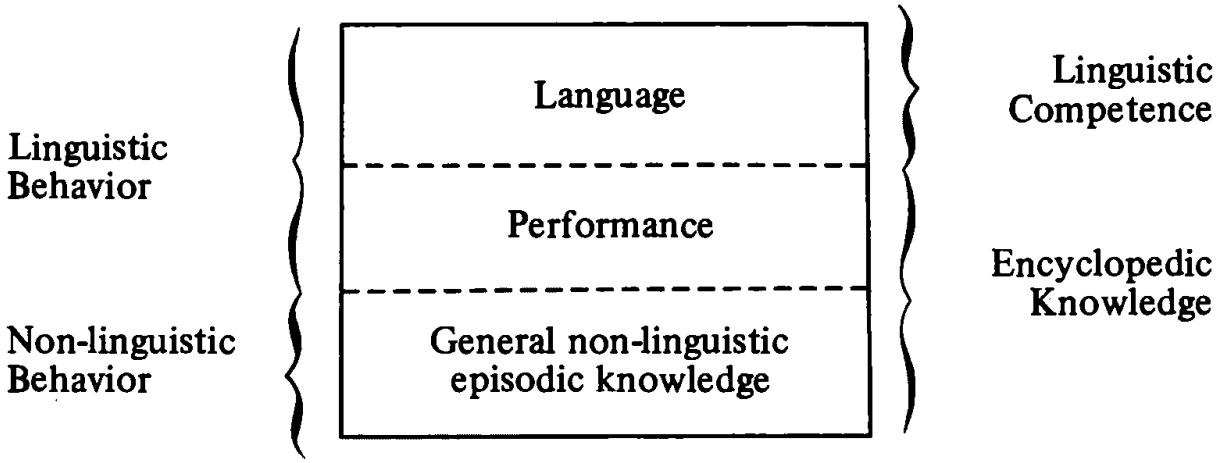
3.3 Conclusions

In the following chapters, a relatively unconstrained model of TG-grammar such as Chomsky (1965) will be assumed. However, a complex performance theory will also be assumed, a theory along the lines of Bever, Katz & Langendoen (1976). A hypothesis for a lexical component of such a performance theory will be suggested along with several types of evidence supporting it. In addition to lexical and T-rules which automatically generate *red herring* in this competence model, it will be assumed that any given speaker can remember that this construction is grammatically generable not only in situations where the referent is a species of herring not necessarily red, but also where the NP must necessarily be abstract. He remembers, separate from his linguistic knowledge, perhaps as a part of what Tulving calls 'episodic memory', that when *red herring* occurs in a context demanding an abstract NP it is grammatical if interpretable as 'misleading issue'.

There is no reason to assume that this knowledge is a part of linguistic competence. People certainly memorize facts aside from linguistic facts. There is no reason why linguistically unsystematic lexical information should not be a part of extralinguistic general memory. This approach avoids introducing syntactic configurations into the lexicon and explains how syntactic structures can be polysemous in the same sense lexemes are. The various readings of *herring* cannot be explained as lexical polysemy, for *herring* is not ambiguous between 'type of fish' and 'issue' and *red* is not ambiguous between 'color X' and 'misleading'; nor do several syntactic relations underlie the readings of this phrase as in the case of *flying airplanes can be dangerous.* The brain

must remember things *about* lexical items as well as remember lexical items, and store this information differently.

The model under discussion might be visually depicted thus:



Admittedly, this explanation is more promising for idiomatic phrases with syntactic structure than single naming items and doublets like *transmission*$_2$, *blueberry*, *transform*$_2$. But then these are less a problem. Since they would not introduce unmotivated syntax into the lexicon, we may tentatively assume that they move there via lexical expansion rules, becoming lexical base items themselves. A detailed discussion of these relationships will be be presented in Chapters 10-11.

CHAPTER 4

Lexical Issues and Indo-European Languages

4.0 A Summary with a Note on Approach

This chapter represents an attempt at summarizing the essential questions of lexicology. A few illusory answers have been dispensed with in order to refine the questions and reduce the number of potential approaches to them. In this chapter it would seem pertinent to review and succinctly present those questions, now that some of the red herrings have been netted and the genuine issues brought into focus. The theory presented herein hopefully arises from linguistic, philosophical, anthropological and psychological evidence of the function of lexical items. It has already been mentioned that the lexicon may serve a two-fold function, storage, which is further used for memory tasks, and lexical insertion. The former is not strictly linguistic, of course, and the difficulties posed by the lexicon's being the interchange of linguistic and general knowledge certainly have slowed approaches to a complete lexical theory. But if it is indeed the case that general knowledge is indexed by the lexicon, then this is an interesting function which must be accommodated in a complete speech behavior theory. Performance theory is the logical location for such an explanation. It has already been mentioned that a complete theory of lexical phenomena will be the objective of this book; thus, while performance phenomena will for sure be a secondary interest here, they will nonetheless be an important one.

4.1 A Summary of Essential Questions

The questions associated with the lexicon seem fairly clear. No claims can be made for a complete theory unless some consideration is accorded to each. The fundamental question of lexicology for sure is

1. *What is/are the relation(s) of meaning to sound?*

The lexicologist must have a clear definition of sense and reference and the relation between the two in order to hypothesize the nature of the lexicon. Whether a potential derivation is actually used depends upon the existence of potential referents in the real world. Its sense gives away its derivational heritage. Karcevskij, Bazell and Jakobson's work has shown that the relation of meaning to inflectional morpheme is indirect. Jakobson's interpretation of the Russian case system postulates an abstract, intermediate paradigm between meaning and sound, which reflects a deeper level comprising only a few semantic features. The function of such intermediate paradigms must be explored for possible contributions to understanding the lexicon. We have already seen evidence for the elementary separation of lexemes from affixials. Part of the support for such a distinction is the fact that lexeme-meaning relationships (2.11) and affix-meaning relationships (3.1) are radically different. Only by coming to grips with all these sound-meaning relations can we hope for a full understanding of lexical functions. This implies a thorough clarification of those areas most widely discussed over the past 50 years in morphology-lexicology: sound-meaning asymmetry, zero morphemes, empty morphemes, affix over- and underdetermination, truncation, reduplication and the like.

2. *What is stored in the lexicon?*

We have argued that however a lexical unit is defined, it should not be called a 'word' because of the confusion over the referent of this term. We will be concerned in the following chapters with open-class base items and affixials, where the latter term refers to affixes and

stem mutations serving the same functions as affixes. We will be particularly interested in the question of whether both classes can be stored in the lexicon. That closed-class items (conjunctions, prepositions, articles) are stored in the same component as base items seems out of the question in light of the psychological evidence discussed in Chapter 3. Where then are lexical affixials stored? That meaning is stored elsewhere than in the lexicon remains a possibility. If this is the case, the nature of the relations discussed in 1. should elucidate this question. We should also not lose sight of the fact that rules themselves are storage devices, so that 2. is related to the question of lexical rules. Do they exist? What are they? Where are they located–inside the lexicon? Outside the lexicon? If we accept lexical rules as a fact of competence, we must provide explanations for the gaps in derivational arborization, 'derivations' without underlying bases, semantic parallels without concomitant structural regularities, lexicalization, the functioning of idioms as discussed above. Moreover, the question of lexical storage implies the question: How are lexical items stored, i.e. what associations exist at which level? Are derived lexical items–extensions and expansions–stored in the same way as lexical primes?

3. *How do neologistical processes of competence (and performance) operate?*

We have seen above that neologization is several qualitatively different processes. The question of expanding the lexical stock has to do with issues related less to the orderly extension of lexical bases than to the use of the resultant derivations in speech. Here we will explore the possibility of the latter being a lexical function; the former, not, as discussed in 2.11. But in performance there seems to be a large repertory of semantic variations and vagaries in the selection of available forms which must be accounted for. Prior to such an accounting, we must develop criteria for distinguishing rules of lexical competence from those of performance, as well as a measure for what serves as reliable evidence in making such decisions.

4. *How is lexical copy-insertion accomplished?*

It is clear that lexical insertion is a complex process in and of itself. It is possible that the insertion process is qualitatively related to what have generally been taken to be lexical derivation rules and may even include lexical rule conflation (Sussex 1974: 117) or simultaneous multi-rule operations. There is also the possibility that some or all of these are common IE processes—not just the item copy-insertion process, which should be linguistically universal, but even the operations of specific rules. This would have notable ramifications for theories of second-language instruction.

5. *How is the lexicon related to general knowledge?*

Without a clear view of what is total lexical behavior, we will not be able to determine what must be included in a theory of competence, and what, in a theory of performance. Some sort of answer must be produced for the question of the location of lexical hierarchies raised by Bever & Rosenbaum (1971), Beard (1976b) and Collins & Quillian (1969, 1970). Either these hierarchies are linguistic phenomena or they are otherwise closely knit to linguistic performance. In either case hierarchies must be explained in the sort of complete theory of lexical structures toward which this work is aimed. A theory of idioms and naming has already been articulated: it postulates language behavior as a complex process involving several mental levels, not all linguistic. Specifically, idioms are a function of performance in that they represent the extraregular usage of structures otherwise normally derived.

These five questions with their implications will be taken up in approximately the order presented here, in Books II and III. Obviously, they are interrelated so that some overlap can be expected in the discussions there. Yet clear and explicit answers to these five questions in the framework of a theory of total linguistic behavior should constitute a workable theory of lexical processes.

4.2 The IE Languages

It would be presumptuous at this stage of the development of a lexical theory to propose this first draft as a model for all languages. However, to constrain our remarks to one language would materially jeopardize their validity in that there would be no criteria for distinguishing the language-particular from the language-shared at all. The description of the lexicon of any specific language must be compatible with universal lexical theory. However, rather than attempt anything so audacious as a general lexical theory at this point, especially under the assumption which has foiled so many recently, that English must be a typical language, the aims of this work will be more modest. The theory presented herein will specifically explain only the lexicon(s) of IE languages. Collectively, however, they should reflect the major universals of lexical theory when ultimately compared with other such expanded theories.

Obviously, one cannot begin with a thorough analysis of even all western IE languages taken together simultaneously. For this reason, the approach here will be to select only one IE language for an in-depth analysis to be then compared with similar analyses of other IE languages. There is a surprising amount of lexical variety among these languages, speaking in terms of lexical functions, despite a solid core of identity. Of the IE languages, English seems the least suitable vehicle for a tentative lexical theory to serve as such a central basis of comparison, due to the peculiarities of its evolution. The availability of a writing system to a language over a period of years provides for systemic aberrations in the language. Writing systems make possible dictionaries, i.e. the infallible storage of lexical items external to the organism. The literate speaker of a written language will inevitably have far more lexical items at his disposal at any given moment than speakers of unwritten languages. The speaker may also use these external devices for learning new vocabulary items. Once several geographically contiguous languages have written lexicons, it becomes simpler to canonize even interlingual borrowing. In English, for various historical and political reasons, this has occurred with far-reaching effect on the nature of the lexicon. Not only does

English possess separate classes of phonological rules corresponding to the respective Germanic, French and Latin-Greek origins of its vocabulary, it also possesses great areas in its lexicon characterized by lexemic base suppletion. These areas, relatively abnormal for IE languages, reflect the suppletion of Germanic bases with those from the Latin and Greek lexicons. But English phonological rules are nonetheless applied.

18	nose: nasal	mouth: oral
	ear: aural	eye: ocular
	skin: cutaneous	flesh: carnal
	bone: osseous	finger: digital
	hand: manual	foot: pedal
	cow: bovine	pig: porcine
	horse: equine	goat: caprine
	bird: avian	bee: apian
	sheep: ovine	egg: oval, ovoid, ovate
	raven: coracoid	snake: serpentine
	root: radical	crown: coronal
	tree: arboreal	branch: ramous, ramose
	city: urban	country: rural
	gold: auriferous	silver: argentiferous

The Latin stems are less frequently used than are the Germanic in these cases, of course, though the two are generally felt to be related. It is possible, also, to avoid most of the derivational suppletives, either by supplying infrequently heard Germanic derivations: *cowy, cowish; catty, cattish; horsy, horsish,* using compounds or avoiding derivation altogether. In fact, education is a precondition to learning the system of Latinate stem suppletion.

This situation is aberrant in comparison with other IE languages, where adjectives derive via productive rules from the underlying stem and Latinate classes of stems show no regular correlation to native stems. Not only is lexicological analysis complicated in English by this situation, it is highly unlikely that a significant number of the conclusions drawn from an analysis of the English lexicon would be generally applicable to a

universal theory of the lexicon. This is the result of a series of extra-linguistic factors: the forced spread of literacy, political and social pressures in English history, the high impact of science and technology on the language in modern times. There is no reason to suspect that this nest of factors will ever again accumulate with similar results. This situation requires English speakers to store an unusually large number of base items and depend less on derivational regularities and generalizations. Speakers of Serbocroatian (Scr), on the other hand, need store fewer bases, for there is a high correlation between formal and semantic generalizations among Scr lexical items.

19

ovca:	*ovč-ji*	*krava:*	*krav-ljі*
sheep:	ovine	cow:	bovine
konj:	*konj-ski*	*ptica:*	*ptič-ji*
horse:	equine	bird:	avian
mačka:	*mač-ji*	*pas:*	*pas-ji*
cat:	feline	dog:	canine
grad:	*grad-ski*	*selo:*	*seo-ski*
city:	urban	village:	rural
kost:	*košt-an*	*ruka:*	*ruk-at, ruk-ast, ruč-ni*
bone:	osseous	arm:	armed, arm-like, brachial
grana:	*gran-at*	*nos:*	*nos-at, nos-ast, nos-ni*
branch:	ramous	nose:	nosed, nose-like, nasal
koren:	*koren-ski*	*oko:*	*ok-at, ok-ast, oč-ni*
root:	radical	eye:	eyed, eye-like, ocular

In languages where morphological integrity is maintained, derivational relations are more transparent. It is dubious whether the majority of American English speakers even know that *ovine* is the RAdj related to *sheep;* in fact, it is not clear that this is the case. Structurally these two lexemes are unrelated; semantically, they are related. The relative frequency of noun and adjective in English diverges sharply, making the relationship even more difficult to maintain. Yet the semantic relation

is strong and the same one found in Scr, where there are structural parallels. Unless we succumb to the structuralist bias which has dominated linguistics this century, we cannot overlook the fact that parts of a common IE generalization are in English split between native bases and Latinate derivations—a highly unusual circumstance, making English an unpromising candidate for a lexical theory of any generality. To explain English in terms of a mixture of other IE lexicons would seem to be much more promising.

There are three linguistic means for expressing concepts of intermediate complexity, inexpressible by a single base lexeme: (1) analytic constructions, (2) compounds and (3) lexical derivations. All IE languages possess all three means; however, the frequency at which each is used varies relative to the given subfamily. Thus the Germanic languages display an overdeveloped system of compounding even though most IE lexical derivations and analytic constructions are available. The Romance languages, however, are inclined toward analytic constructions, while the Slavic languages are characterized by a rich complement of highly complex lexical derivations (cf. also Ullmann 1972: 105ff).

20

brick house	maison en/de briques	cigl-an-a kuća
oak table	table de chêne	hrast-ov sto
living standard	niveau de vie	život-ni standard
love song	chanson d'amour	ljubav-na pesma
water mill	moulin à eau	vod-en-ica
madhouse	maison de fous	lud-n-ica
horsemeat	viande de cheval	konj-et-ina
goat pen	étable à chèvre	koz-ar(-ic)-a
plum grower	producteur de prunes	šljiv-ar
plum production	production de prunes	šljiv-ar-stvo
parking lot	parc de stationnement	park-ir-al-ište
corn field	champ de maïs	kukuruz-ište

(20) demonstrates how Slavic languages in general and Scr in particular have preserved most if not all the IE lexical derivations, perhaps even

developing them further. French and English, on the other hand, have lost many and restricted the usage of others. (20) represents several classes of instances where lexical extension, compounding and analytical construction are possible in all three exemplar languages, but one form or the other has come to dominate or tend to dominate in usage relative to the particular language family. In some cases, derivations from lexical items of the same base classes are in fact in use, e.g. English material adjectives *woolen, wooden* or French place nouns *chenil* (*chien*) 'kennel', *porcherie* (*porc*) 'pigpen', *poulailler* (*poule*) 'henhouse'. For this reason, the only claim one can make apropos (20) is that it reflects tendencies of usage which are in the process of changing the nature of lexical operations in English and French. This, in turn, would seem to indicate that performance and the diachronic features of these languages presently becloud the nature of their lexicons, making them unlikely exemplars for a first approximation of a theory of IE lexicons. As elsewhere in linguistic theory, it is simpler to first describe a lexicon of maximum richness, then explain related but more impoverished lexicons in terms of loss of capacities than to explain richer lexicons in terms of their having ancillary functions. This is particularly true here since in the impoverished lexicons we find remnants of operations which are still totally productive in the richer Slavic lexicons.

It is possible that the Scr lexicon has not only retained all the IE lexical derivations, but has elaborated on them. For this reason, we may be assured that of all the IE lexicons, Scr has the richest in terms of the number of productively used rules. The derivational paradigm represented in (21) is available and is used for all bases referring to domestic fruit trees and their fruit .

21

jabuk–a	Base: 'apple'
jabuč-ic–a	Diminutive-affectionate
jabuč-et-in–a	Augmentative-pejorative
jabuč-n–i	RAdj: 'apple-' e.g. *jabučni sok* 'apple juice'
jabuk-ov–	PAdj, MAdj: 'apple-, apple's, of apple'
jabuč-ast–	SAdj: 'applish, apple-like'

jabuk-ov-in–a	N_{Mat}: 'applewood'
jabuk-ov-ač–a	N_{Sub}: 'apple juice, brandy, cake'
jabuč-njak–	N_{Sub}: 'apple cake'
jabuč-njak–	N_{Pl}: 'apple orchard'
jabuč-ar–	N_{Pl}; N_{Ag} (Mas): 'apple-grower, -dealer, -lover'
jabuč-ar-ic–a	N_{Ag} (Fem)
jabuč-ar-sk–i	Generic RAdj of N_{Ag}: 'apple-growers' '
jabuč-ar-stv–o	Deagentive abstract N: 'apple-growing'
jabuč-ić–	N_{Yg} 'young apple tree'

Enormous derivational nests like (21), which characterize Scr much more than they do other IE languages, assure us that no IE lexical theory need accommodate more than the processes of the Scr lexicon. Such evidence speaks strongly in favor of choosing Scr as an exemplar for an initial theory. Any theory of lexical derivation for IE languages must accommodate the greatest derivational potentiality–what a lexicon *can* and *must* be–rather than strictly attend the performance of lexical items. Halle's and Jackendoff's contention that the 'normal mode' of words is memorization and the 'normal mode' of sentences is spontaneous generation is not without basis, certainly for English. But the fact that people memorize most of the words they use in speaking–insofar as this is a fact–nowise negates the availability of lexical rules, that is, unless lexical rules are strictly rules of usage. We must incorporate in our theory of the lexicon all that one *must* know in order to use items in speaking, not what they actually *do* know in specific non-ideal cases. The former may represent considerably less knowledge. Unless this approach is adopted, there is little hope that our theory will help in distinguishing between language and the ways in which people take advantage of it.

For these reasons, the primary exemplar language will be Scr.[15] Since there will be an attempt to separate competence from performance factors here, and since the performance of lexical rules may differ in yet unknown ways across various IE languages, comparisons will be

regularly drawn with English, German, French and other IE languages. In fact, a constant random comparison with English will be available in the glosses of the Scr. The ultimate hope is that distinctions between the capacities of the lexicon to generate lexical items and regenerate itself, the capacity of the human mind to extralinguistically regenerate the lexicon, and between lexical potential, on the one hand, and the alternatives available to the individual for taking advantage of that potential, on the other, will be more clearly defined.

4.3 A Note on Argumentation

Sadock (1976) notes that the assumption that general solutions to questions are always correct is patently false. He uses the phlogistonist hypothesis of a common substance given off during combustion and the possibility of positing a common underlying abstract phoneme for [h] and [ŋ] in English as counterexamples. The latter counterexample is not at all obvious. Fromkin (1975: 50) has shown that the even more ostensible explanation of /ng/ underlying the velar nasal, suggested by the writing system, is a clearer explanation of this sound's phonemic origin. But this example may be replaced by many others: rising and setting as an explanation of the sun's relation to the earth, stupidity as an explanation of dyslexic behavior are two such. Sadock's point, therefore, is well taken; simplicity cannot be either the sole or even the primary criterion for judging competing theories.

It does not follow from this argument, however, that language is not characterized by generalizations which may be captured in rules or that these rules may not be judged on the basis of their simplicity. True, the lexicon seems to be a repository of linguistic idiosyncrasies, but we have observed evidence showing that what have heretofore been interpreted as partial regularities or subregularities are frequently the result of the effects of extralinguistic regularities applying independently to lexical regularities. So hope remains that the best description of the lexicon and its neighboring components, linguistic and extralinguistic taken together, will still be the simplest.

Sadock concludes that 'independent motivation' holds the key to successful arguments. But Perloff & Wirth in the same volume (cf. also Botha 1973: 236ff.) propose that the value of arguing 'independent motivation' is unclear. They point out that it is not the independence of the motivation that is important. All such motivation is simply ancillary, additional. An independently supported hypothesis is stronger than competing hypotheses because it explains more than they. Thus not only must lexical theories strive for generalizations, but those of the greatest generality will be preferable to those of less: this irrespective of the proximity of the theory to observable facts of performance. So long as the theory of how this segment of human knowledge is structured is ultimately relatable to speech performance, so long as it represents that structure in terms of the greatest generalization, the theory will be presumed valid and preferable to others failing in any of these aspects. Should psychological testing not generate evidence of any such linguistic generalization in speech behavior, if the linguistic evidence holds and the rule for the generalization is the simplest, it will be assumed that speakers fail to take advantage of that generalization, which nonetheless is present in the language. Moreover, such a failure on the part of speakers is itself a relevant generalization which must be represented in the overall theory of language behavior.

All generalizations must be explained by rule and only idiosyncratic items may be listed independently. Although this is clearly the goal of lexical theory, it is not at all clear what this means. It will be initially assumed that partial regularities are combinations of regularities and irregularities which require further scrutiny and analysis. The idiosyncrasies seem more accessible to extralinguistic tinkering: the addition of borrowed, logically concocted, defectively derived base items to the lexicon can be accomplished by any individual. Changing the rules is a process of centuries. The focus of this work will, therefore, be these generalizations. It is, after all, by virtue of these generalizations that a child can create his grammar, that that grammar changes as his perceptions of these generalizations change. In capturing these generalizations, the chief criterion will be simplicity. A lexical theory captures what a speaker has available to him in speech, not what he actually does use. The latter

may be a maximal figure; the former must be a minimal one.

Simplicity of statement as applied to the broadest generalizations will be the only internal argumentation used here. External arguments will be raised only infrequently but not as a last resort. Ultimately, explanations must be given for the history of languages, their synchronic relations which may be exploited in second-language learning, their acquisition, their interaction with encyclopedic knowledge, especially in the storage of verbalized and nonverbal memory. To the extent that extrinsic data is evidence of related language behavior systems with which a lexical theory must be compatible, it need not be omitted from consideration. Thus, while intrinsic evidence and arguments will serve as the key to the argumentational battery of this work, not only will the integrity of extrinsic arguments go unimpeached, they will be considered a *sine qua non* of that battery. That is to say, if there are no extrinsic arguments supporting the intrinsic ones, it will be assumed that the theory suggested by intrinsic evidence will ultimately be incompatible with diachronic and performance theories, perhaps with theories of general knowledge and memory as well. In fact, both types of arguments will be used to lay the groundwork for theories of lexical performance, diachrony and the synchronic lexicon's relation to these two. No phenomenon may be removed from the realm of synchronic lexical theory to performance or diachrony without both types of evidence to support such a switch. Too long performance and diachrony have served as an uninspected rug under which theory violations have been swept for no more reason than the fact that they do not fit the theory.

NOTES TO BOOK I

1. One hindrance to word classification has been the confusion of grammar with semantics—a confusion traceable to the Greeks. For instance, Plato and Aristotle classed Greek adjectives with verbs on semantic grounds while the Stoics, using strictly grammatical criteria, classed them with nouns. The separation of grammar from semantics in recent theory has shed little light on the classification of adjectives. Lakoff (1970: 115-133) merges adjectives with verbs while Ross (1969) argues that adjectives must originate as NPs in IE languages. Functionally, adjectives seem to be closely related to verbs, particularly to verbs taking patient subjects, but more closely related to nouns structurally, especially in inflectional languages.

2. Throughout this work a clear distinction will be drawn between 'lexicology' and 'lexicography'. The former refers to the linguistic study of spoken vocabulary: the storage and processing of a segment of language. The latter will refer to the compilation of printed dictionaries.

3. The 'hyperorganization' of the mental lexicon may include multiple locations for individual 'words', i.e. lexical items may be memorized more than once and stored multiply in the brain. If the early evidence for this holds, the description of lexical items in the chapters to come must be taken as cumulative representations of all the pertinent information a speaker maintains for any given linguistic unit, however that information may be neurologically distributed. Recent reviews of the psychological literature from various biases include Clark & Clark (1977), Crowder (1976), Fodor, Bever & Garrett (1974), Kintsch (1974), Klatzky (1975) and Norman (1970).

4. Compound suppletions for single-stem derivations (e.g. *native/fatherland: German/Germany*) are not unusual. There is a tendency to use compounds to fill paradigmatic gaps among lexical derivations, e.g. the use of the compounds *gold-bearing* (Latinate *aur-i-fer-ous*), *silver-bearing* (Latinate *argent-i-fer-ous*), *iron-bearing* (Latinate *ferr-i-fer-ous)* in place of possessional adjectives (HAdjs) derived from mineral nouns, cf. Scr *zlat-ovit*, *srebr-ovit*, *želez-ovit*, respectively. The following chapters will bring more on 'designated compounds'.

5. Jackendoff (1975) has also incorporated this problem into his theory in barely veiled form. His 'ABSTRACT RESULT OF THE ACT OF NP_1's Z-ING NP_2' (13b) depends as much on the syntactic structure of the semantic phrase as semantic categories for its meaningfulness, e.g. *-'s*, *-ing*, *of* all mark syntactic, not semantic, relations.

6. This widely held Sassurian tenet is encumbered only by the problem of lexical reentry: how to define (or detect) the exact moment of emergence of a lexical base in the lexicon. Here it is important to keep in mind that the problem relates only to the expansion of the stock of lexical bases, i.e. the insertion of a new base. Once a base becomes an operative item in the lexicon, its extensions are automatically

defined by rules of the lexicon. Failing to make this distinction leads us inevitably to the possibly false conclusion that lexical extension rules are 'once-only' rules. This position implies a special state of being for recently derived but as yet unaccepted words, i.e. that of 'occasional words' (cf. Lykov 1976). However, this state of being suggests that there is a special test which a word must pass in order to become a 'normative' word. In some, especially East European theories, this test is acceptance by linguistic authorities. Unfortunately, normativity is not measurable if taken as determined democratically, and strictly prescriptive if taken as determined by authorities. Thus while 'normativity' may be relevant to the question of whether the base of *laser* is *lase*, it is totally inadequate in determining whether *laser's*, *lasering*, *laserage*, *lasable* are legitimate derivations. Even in the more restricted usage, however, it sheds no light on the real problem, which is how to handle the reentry of lexical items into the lexicon after they have been idiomatized extralexically.

7. Shaumyan (1965 and elsewhere), of course, is an exception to this description. His 'word generator' is a semantically based component operating within a complete theory of 'applicative generative grammar'. However, the theory itself is based more on mathematical than linguistic modeling and remains ill-defined and wholly unconstrained. Not only has it solved none of the critical lexical problems outlined in this book, it is difficult to see how it could be effective in solving lexical problems.

8. This distinction may be a function of the distinction between bases and affixials, which will be discussed in Book II. Bases are generally extended by affixes, which, as will be demonstrated further on, are meaningless and thus qualitatively different from bases. The meaninglessness of affixes allows them to be used as one means of stock expansion; however, this use of affixes differs qualitatively from their use as lexemic extenders, as will be shown in Chapter 10.

9. Matthews (1975) provides a splendid analysis of all the major difficulties in considerable detail; cf. esp. Chapter II. See also Juilland & Roceric (1972) for a recent survey of attempts at defining 'word'.

10. It is also the case that various types of base stock expansion processes such as the one involved in producing *laser*, *radar*, etc. are dependent upon the lexical item's orthography.

11. To test the automaticity of lexemic extensions, consider the hypothetical alternative that Zellig Harris might have chosen *permutation* rather than *transformation* to attach his new concept to; *permutational*, *permutationalism*, *permutationalist*, *permutationalistically* all would have been immediately available via the same rules that are under discussion here, from the new sense of *permute*. A further aspect of this example not without interest is that insofar as it contains a system of lexemic derivations which can be generated in the abstract, i.e. without a specific type referent, the lexicon is far more creative than performance takes advantage of. Here we have abstract potential derivations awaiting a function in order to enter P-markers and speech. While there are certainly experiences for which there

are no lexemes, forcing extralinguistic expansion of the lexical stock, there may be more cases where lexemes without real referents are available.

12. The term 'ostensibly' refers to the fact that many verbs which seem to be transitive, i.e. demand a second, postverbal NP, are, in fact, not transitive. For example, verbs like *resemble*, *weigh*, *cost* have often been quoted as transitive verbs which undergo neither the passive transformation nor the passive potential adjective derivation (**resemblable*). However, the subjects of these verbs are patients of the action and therefore the claim of transitivity here is weak. Verbs like *cost* and *weigh* demand quantifier phrases, not objects, constraints that we do not find normally among transitive verbs. The 'objects' of these verbs rather resemble the adverbial modifiers of such intransitive verbs as *stand*, *run*, *walk*, e.g. *John stands five feet tall; John ran three miles.* (The symbol (*) indicates that the given form is grammatical, but not in the sense called for.)

13. *V R[oditel'nom] postojanno nalico ustanovka na predely učastija označennogo predmeta v soderžanii vyskazyvanija. R. vsegda signalizuet stepen' ob"ektivirovanija predmeta v dannom kontekste, i tol'ko kontekst podskažet, utočnit, kakovy že sobstvenno èti predely.*

14. The term 'red herring' referring to 'smoked herring' derives from the fact that when smoked over willow branches, the herring and certain other fish species turn red. Today, of course, they are dyed if any attempt at the original redness is made at all.

15. For the purposes of this work, no distinctions will be made among the central dialects of Croatia, Serbia, Bosnia, Hercegovina and Montenegro. The dialectal differences between these areas in no way hinder mutual intelligibility. Although there are no doubt rules for deriving all these dialects from some theory of mutual competence, since no such theory is at present available and in the absence of a central literary norm, the spelling throughout this work will arbitrarily follow the Serbian norm for reasons of economy: *reka* 'river' is shorter than *rijeka*, etc. These dialects do not seem to vary significantly among themselves as to major rules of the deep or surface structure. Variation seems to be a matter of preference at the surface levels, e.g. wider usage of the agentive-instrumental suffix *-telj* and the full mas. sg. gen. pronominal *-ogo* in Croatia (the Serbs prefer *-aL-Ac* and the shorter *-og*). However, all of these alternatives are available everywhere. In Book II our interest will be restricted to lexical potentiality. It will be assumed that any lexeme coined according to yet productive rules in any Scr-speaking area over the past 200 years and recorded in any major dictionary is at least a potential lexical form. Remaining gaps have been tested with questionnaires.

II

DERIVATION AND AFFIXATION

Spoken sounds are symbols
of affections in the soul.
—Aristotle

CHAPTER 5

The Separation of Derivation and Affixation

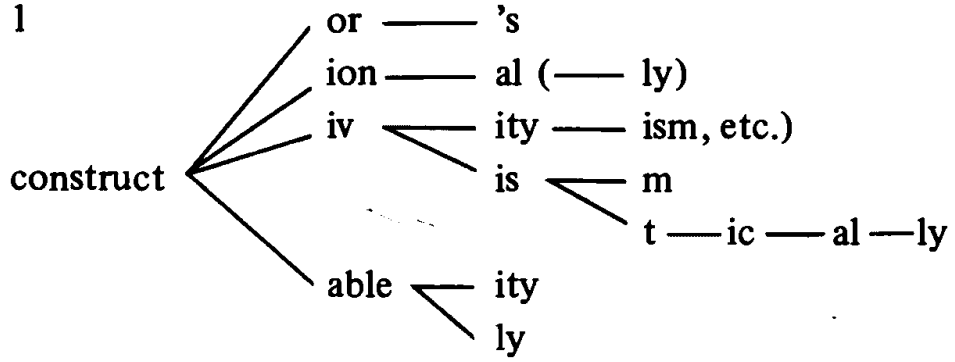
5.1 Assumptions and Methodology

On the basis of the evidence presented in Book I, it will be assumed that rules of some kind exist in the lexicon. The purpose of Book II will be to ascertain, to whatever extent justified by the data, their nature. The assumption of the existence of L(exical extension) rules in no way denies the possibility of lexical extensions resulting from syntactic rules (Kuryłowicz's 'syntactic derivations'; Marchand's 'asemantic derivations'). In fact, since the lexicological theory to be presented here will be based on the 1965 Chomskyan theory of grammar, which posits the lexicon as a deep structure component, the assumption of L-rules in no way prejudices the issue of whether syntactic rules subsequently apply to lexically reoriented structures. One needs of lexicology a stricter means of discriminating between syntactic and lexical rules and a purer description of the relation between the two.

Two presuppositions as to the basic nature of L-rules will be assumed. First, Kuryłowicz's and Marchand's contention that they are distinguished from syntactic rules in terms of bearing some arbitrary semantic extension will be assumed. Second, it will be tentatively assumed that lexical rules are directional ('successive' in the terminology of Guilbert 1975: 177ff.). The term 'directional' is used here to avoid

prejudicing the question of whether L-rules are intrinsically or extrinsically ordered, transitive or conditioned, until significant bodies of data can be thoroughly analyzed. We can tentatively assume, however, that lexical derivations are characterized by some sort of 'directionality' on the basis of the following observations. First, there are more lexical base items than derivational families. Such bases as *hippopotamus, eye, pullet, garage, lamp, caramel, canteloupe* in English, or Scr *rokoko, paradajz* 'tomato', *non-stop, frišak* 'fresh', *kornet* 'ice-cream cone', *ajkula* 'shark' are extremely resistant to lexical derivations where any are possible at all. This state of affairs suggests a set of rules which extend bases by building from the base outwards (1), rather than in the opposite direction, i.e. by reducing lexical items to bases or operating in no order.

Derivational branching is even stronger evidence of lexical directionality. Since both MacKay's tests and Fromkin's error analysis confirm the psychological reality of morphological boundaries, and since this, in turn, implies the existence of lexemes and morphemes, if we assume that derivations are constructed by rule, it must be the case that a derivational family like (1) is derived by rules some of whose outputs are the inputs of others. This is confirmed by the fact that some of the rules which apply in deriving (1) apply equally to lexical bases and derivates, e.g. *construct-iv-ity*: *viabil-ity*; *construct-iv-ist-ic-al-ly*: *superb-ly*.



Even if independent-entry theory proves viable, it will not follow that each lexical entry suggested by (1) is totally independent, i.e. independent of any rules of composition. Thus the question of the nature of directionality is distinct from the issue of what happens to the output of the L-rules responsible for (1).

One might wish to argue that blending at minimum indicates that base reduction is one sort of lexical process of 'baseward' directionality. The conflation of *smoke* and *fog* into *smog*, for example, seems to be a lexical derivation moving from two bases to one simpler base. Blends, however, like acronyms and back-derivation (2.11), cannot be explained without recourse to individual acts of human will and intention. In addition to the fact that blending is a frequent form of speech error, we find no evidence supporting a linguistically relevant boundary between *sm* and *oke* of *smoke*, or *f* and *og* of *fog* upon which regular linguistic rules in a competence theory could operate to generate *smog*. *Sm* would have to bear the full meaning of 'smoke' and *og*, the full meaning of 'fog' in *smog*, yet *og* occurs in no similar derivations with this meaning as does the full form: *fog-gy, fog-gish, fog-ged, de-fog-ging.* Further, the new derivate, *smog*, behaves not like a lexeme extension, but like a new base, subjected to the same derivations and affixes as the donor lexemes: *smog-gy, smog-gish, smog-ged, de-smog-ging (agent).* Thus blending seems to be a performance process not for lexemic extension, but for the expansion of the lexical stock with lexemes upon which L-rules may subsequently operate.

(1) is not intended necessarily to imply a direct relation between derivations and affixation. The assumption of directionality does not speak to Jakobson's theory of the indirect relationship between morpheme and meaning in any way. The suffixal array in (1) is not assumed to reflect a number of underlying L-derivations equal to the number of suffixes, although it will be assumed that L-derivates are associated with the base in relatively the same order as are the suffixes. The adverb marker *-ly*, for instance, merely marks an adjective base occurring under an Adv-node rather than the operation of any meaning-additive derivation. In the specific case of (1), however, most of the affixes do coincidentally correlate to the operations of various L-derivations. It will become evident later, however, that not all derivations are marked by affixes, nor do all affixes mark derivations.

The claim was made in 2.22 that derivational relations like those of (1) are 'automatic' in that they are immediately available to a base once it is specified in the lexicon. Now it has been claimed that these

relations are 'directional' in that they are generated by rules whose outputs can be the inputs of other rules—rules which also operate on underived bases. Since the psychological evidence would indicate that lexical rules may be used but are not necessarily used for generation, no claim can be made here that any lexical form is chronologically prior to any other. But a theoretical priority must be claimed, for without such a concept, data like (1) cannot be explained. References to actual time and place, to actual speakers only becloud the issues. The fact that a speaker does not inevitably derive each lexical derivate each time he uses it is not a basis for excluding consideration of cyclicity (Aronoff 1976: 56) any more than this is the case for T(ransformation) rules. It is quite likely that human intelligence permits the construction of T- and L-derivates by the operation of rules at several levels simultaneously. Certainly human beings can memorize vast numbers of derivates which could just as easily be derived by rules: if the derivate is frequently used, simple storage can provide quicker access. The fact that people *can* derive lexical derivates demands generative L-rules of a linguistic theory; this does not imply that they are used everywhere they could be. The priority discussed here, therefore, is the same as that of syntactic rules, as that of C(ategorial) rules to L-rules, L-rules to T-rules, T-rules to M(orphological) rules. That is, it is a theoretical priority demanded by the simplicity principle of scientific theories to explain the relations among lexical items such as those exemplified in (1). Beyond this stipulated function, no claim is made as to the nature of theoretical priority.[1]

The directionality emerging in the relationships of (1) implies that arguments for morphological truncation within a theory which assumes a direct relation between derivation and affixation must be theoretical rather than empirical. (2-5) represent a selection of examples of what is generally taken to be morphological truncation. (2) is taken from Stankiewicz (1962) for Russian, (3) are Spanish examples taken from Coseriu (1966), (4) is from English and (5) is a Scr example taken from Table I.

2a *student* 'student'	*student-ka* 'coed'
2b *vdov-ec* 'widower'	*vdova* 'widow'

3a *falso* 'false'	*fals-edad* 'falsity'
3b *verdad-ero* 'true'	*verdad* 'truth'
4a sad	sad-ness
4b sorrow-ful	sorrow
5a *bena* 'fool'	*ben-av* 'foolish'
5b *mudr-ac* 'wise man'	*mudar* 'wise'

Stankiewicz argues that since the overwhelming majority of masculine/feminine agentives reflect the relation (2a), we must conclude that (2b) represents a case of derivation by morphological truncation. If this is true, it is evidence that the decomposition of lexemic bases is a lexical process.

However, the argument is strictly theoretical, based on the premise that lexical rules operate on semantically determined lexeme classes, i.e. $N_{Mas} \rightarrow N_{Fem}$. Evidence such as (1) and Table I weighs against this in favor of rules operating on bases and moving them from any lexical subclass to all other lexical subclasses in the lexicon of a given language, i.e. Base → Base + Affix. This would imply, in turn, either that many rules are reversible (Jackendoff 1975) or that for many categorial relations such as N_{Mas}: N_{Fem}there are two rules whereby B → A, A → B. It is difficult to see how a reversible rule, e.g. $N_{Mas} \leftrightarrow N_{Fem}$could operate. Since all Slavic languages have masculine nouns which refer to females and feminine nouns referring to males, it is clear that two features will be required for a lexical description of gender. Deriving a feminine from a masculine form, therefore, would involve a change in the value of the masculine feature from [+] to [-] and a change in the value of the feminine feature from [-] to [+] (cf. 9.1). While it is possible to stipulate that such a series of steps constitutes lexical 'reversibility', this definition would not then apply to the derivation of an agentive from a verb vis-à-vis the derivation of a verb from an agentive. The process of inserting [+Noun, +Agent] is not the reverse of subtracting [+Noun] leaving [+Agent] and adding [+Verb]: *rule → ruler; butcher → to butcher.* Mutually reverse operation of rules cannot be assumed, therefore; so as a working hypothesis we might best assume that lexical rules are 'automatic', 'one-way' rules shifting a base or, in special cases,

extended bases, from one lexical-semantic class to another. If the operations of the rules relating two lexical classes should ultimately turn out to consist of the same processes applying in mutually reversible order, it will be a simple matter to conflate the rules later. The first problem is to establish the function and nature of some specific rules in any one given direction.

Table I demonstates what is meant by 'lexical-semantic' classes and the mutual access to them provided by lexical rules for an analyzed set of data for Scr. The semantic classes marked by rows are lexical subclasses: 'agentive' is a nominal subclass; 'behavior' is a verbal subclass; 'quality' is an adjective subclass. This particular table was constructed from especially complete derivational families, yet there are still a few probable gaps. The lexically conditioned gaps in the paradigm will not disturb us initially, since regular lexical constraints on lexical derivations are of no more theoretical consequence than syntactic constraints on syntactic derivations. However, a good deal of this book will be devoted to explanations of the different types of constraints on lexical derivational families.

Perhaps the most striking aspect of Table I, assuming that derivations emanate from lexical primes (indicated here by bullets: *ben*– [N], *mudAr*– [Adj], *misAL*– [V]), is less the multidimensional complexity of it (cf. subclassificatory items 1-5), than the relationships between the subclasses which serve both as derivational origins and destinations.[2] The multidimensionality is the natural result of the tabular presentation of the data. The vertical and horizontal classes represent fixed syntactic and lexical categories registered in the lexicon by these features occurring in a given base item. A lexical item can apparently contain more than two features pertinent to derivation, thus the tabular representation must resort to the enumeration of the additional relevant feature combinations. Given a regular underived base verb such as *misliti* 'think' (stem *misAL*–), which denotes a form of animate behavior, there is a rule which will derive a noun indicating an agent characterized as the subject of that activity, *mislilac* 'thinker'. This is probably the same rule which produces the deadjectival agentive, e.g. *mudrac* 'wise man' from the underlying *mudar* 'wise'. On the other hand, there are rules by

which a regular underived base noun denoting an agent may be transformed into a corresponding verbal–adjective or verb–e.g. *bena* 'fool': *benav* 'foolish' (Bosnian); *budala* 'fool': *budaliti* 'fool around' (Serbian).

The possibility of adjectives becoming verbs provides for *benav* 'foolish' becoming *benaviti* 'fool around', making a verb from the noun semantically redundant. We may tentatively assume that this results from performative choices rather than systemic constraints pending further scrutiny. Note that the reverse movement is also possible: verb of behavior, *misliti* 'think', to adjective of quality, *misaon* 'thinking, thoughtful'. Thus we can associate syntactic and semantic features in classes and see that lexical derivation rules operate between them. A priori there is no reason to believe that any combination of these specially designated features is accessible to any other combination via rules; however, no substantive examination of the rules themselves in the context of these observations has been thus far conducted, so it would come as no surprise to discover that the actual paths are determined by grammar. Of course, the actual number of such feature combinations is much larger than demonstrated by the selected examples in Table I, so the interrelations must be much more complex.

The arguments for lexeme-based derivation are contradicted by some of the arguments of Lakoff (1970: 64), who suggested that since constructions like *the king of England* and *the ruler of England* reflect the same surface syntactic relation, they ought to share the same deep structure provenience (cf. also Gruber 1976: 254). He suggests the postulation of a nonoccurring, 'hypothetical' verb, *to king,* which would not occur in a well-formed surface sentence unless that sentence undergoes the agentive derivation. Lakoff himself, however, observes that many writers including the Bard himself have used the verb *to king,* e.g. 'Shee [France] is so idly King'd, Her Sceptre so phantastically borne' (*Henry V*, II, iv, 26); or the causative-inchoative 'Then crushing penurie, Perswades me, I was better than a King: Then am I king'd againe' (*Richard II,* V, v, 36). Samuel Harsnet (*The Golden Law* 1656: 24) has shown just how productive the derivation can be: 'It un-king'd him, and King'd his un-kingers in point of power'. The OED mentions no archaicity about these derivations; for they are surely available to modern

TABLE I

Selected Derivational Relationships

	NOUN	ADJECTIVE	VERB	ADVERB
AGENT	*BEN-A* ● a fool	[1] *ben-in* a fool's [2] . . .	*biti ben-a* be a fool	*ben-av-o* foolishly
AGENT	a. *mudr-ac* a sage	[1] *mudr-ač-ev* a sage's [2] *mudr-ač-ki* sages'	*biti mudr-ac* be a sage	*mudr-ač-ki* like a sage
AGENT	b. *mudr-ijaš* a know-it-all	[1] *mudr-ijaš-ev* a know-it-all's [2] *mudr-ijaš-ki* know-it-alls'	*biti mudr-ijaš* be a know-it-all	*mudr-ijaš-ki* like a know-it-all
AGENT	*misl-il-ac* a thinker	[1] *misl-io-č-ev* a thinker's [2] *misl-il-ač-ki* thinkers'	*biti misl-il-ac* be a thinker	*misl-il-ač-ki* like a thinker

QUALITY

ben-av-ost foolishness	***ben-av*** foolish	***biti ben-av*** be foolish	***ben-av-o*** foolishly
a. ***mudr-ost*** wisdom	***MUD(A)R*** ● wise	***biti mudar*** be wise	***mudr-o*** wisely
b. ***mudr-ijaš-tvo*** 'know-it-all-ness'	***mudr-ijaš-ki*** smart-alecky	. . .	***mudr-ijaš-ki*** smart-alecky
misao-n-ost thoughtfulness	***misao-n*** thoughtful	***biti misao-n*** be thoughtful	***misao-n-o*** thoughtfully

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ben-avlj-enje acting a fool	***ben-av*** foolish	***ben-av-iti*** act a fool	***ben-av-eći*** acting a fool
a. ***mudr-ov-anje*** acting wise	. . .	***mudr-ov-ati*** act wise	***mudr-uj-ući*** acting wise
b. ***mudr-ijaš-enje*** acting smart	. . .	***mudr-ijaš-iti*** act smart	***?mudr-ijaš-eći*** acting smart
	[3]***mišl-jen*** thought (PPP)		
mišl-jenje thinking	[4]***misao-n*** thinking	***MIS(A)L-ITI*** ● think	***misl-eći*** thinking
	[5]***po-mišl-jiv*** thinkable		

QUALITY

BEHAVIOR

speakers of English, but as behavioral and causative-inchoative derivations from the noun *king* (cf. *to doctor, chauffeur, referee, quarterback*). Thus the 'hypothetical' verb prime does not 'block' any derivation from the N_{Ag} derivation, even where semantic identity is produced.

The verb *king* is secondary to the noun, just as the noun *ruler* is secondary to the verb *rule*. The semantic limit of *ruler* is determined by the lexical description of *rule*. The lexical range of *to king* is determined by that of the noun. One cannot resort to suppletive procedures based on a semantic description as does Gruber. *King* is not semantically determined by any underlying verb such as *rule*. Dictators, despots, regents, princes, dukes, czars, kaisers and pashas all rule; but their definitions are much more specific than can be accommodated by the basic semantics of *rule* plus any capturable generalization. There is, therefore, no reason to prefer either a derivational origin for *the king of England,* nor a lexical origin for *the ruler of England.* All evidence indicates that *king* is a lexical prime and that *ruler* is a derivate of *rule*. How then to explain the similarity of these syntactic structures in which both prime and derivate appear in semantically identical relations?

The answer to this question resides in the nature of genitive constructions. Genitive constructions cover a wide range of relations. It is difficult to define them: *the streets of New York, standard of living, spring of 1969* (cf. also 15, Chapter 3). Subject, object, possessor and possession may be denoted by the genitive. The genitive is then a relational case, a 'wild card' case, whose unambiguous interpretation depends upon the lexical meanings of the two nouns involved, plus the no doubt encyclopedic knowledge of the normal relation holding between their referents. Nouns containing the specification of a relationship within itself can automatically be used unambiguously as the head of a PP_{Gen} : *the son of the king* and *the father of the king* in a sense indicate opposing relations, yet they are unambiguous due to the fact that *son* and *father* are by definition nothing more than kinship relation nouns. The same characterization applies to *edge of the table, middle of the road, head of a department, manner of a patriarch* and, incidentally, *king of England,* for *king* is no more than an animate noun specifying a social relation.

If *king* and *ruler,* then, are members of the same lexical class, they are not of identical provenience; *king* is a lexical prime, while *ruler* is a derivation from *rule,* just as intuition nudges. But nouns, like verbals, may have complements, and, just like verbals, noun complements may be sentences or PPs. This assumption does not imply that all occurrences of genitive PPs are originally identical any more than the occurrence of deep and surface structure instrumentals is evidence that all of them are of the same origin. There are unquestionably deep and surface PPs sharing origins but not case markings and vice versa. There is no evidence that L-rules or T-rules invent structure; therefore, no surface structure can exist except that it reflect some deep or lexical structure (cf. Emonds 1970). Derivation rules only multiply deep and lexical structures, shift them around, reassign them. The theoretician is thus called upon to explain merely why a certain case relation is chosen over others made available by the deep grammatical structure. In the case at issue: why is the genitive case chosen to mark PP complements of the lexical agent *king*?

The agent lexeme, derived or underived, is specified for animacy and subjectivity. Just as a ruler must be ruler of something, a king or father must be king or father of something. The primary agents contain their own definition of the relationship they represent within their lexical specifications. But since verbs are the primary relation specifiers of languages, it should come as no surprise that they represent a rich source of secondary agents. The genitive case is unique in its capacity to represent subject and object relations just as do the nominative and accusative cases. That is, the genitive can represent 'possession', a concept requiring both a subject and a direct object. The genitive must, therefore, have two basic possessional functions: (1) the denotation of subject-of possession and (2) the denotation of object-of possession, e.g. *honor of a man* vs. *a man of honor.* Genitive is for this reason the logical choice of cases to mark subject-of and object-of relations when no verb is present (cf. 9.3 for more discussion of the genitive).

6a the king who rules England = the king of England
6b the king who drives a Cadillac ≠ the king of a Cadillac

7a the chauffeur who drives a Cadillac = the chauffeur of a Cadillac

7b the chauffeur who rules England ≠ the chauffeur of England

Notice that *chauffeur of a Cadillac*, just as *king of England*, is much more specific than the paraphrase: it is clearly understood that the chauffeur drives the car for someone else. This is the definition of *chauffeur.* The choice of *rule* and *drive* in the respective paraphrases is, therefore, ad hoc and the paraphrases cannot be derivational proveniences. No verb works perfectly, for queens, grand dukes, princes, emperors, chiefs, shahs, and others all rule, dominate, head and lead their respective territories.

Subject-of would seem to be a possible deep structure relation holding between lexical nouns as well as between nouns and verbs. This possibility allows for the emergence of nominalizations such as *ruler of England*, for if there were no deep case marker reflecting subject-of/object-of relations among nouns, the T-component would have to invent one to generate constructions like *ruler of England, employee of INA.* There is no evidence that the T-component has the capacity to expand the catalog of case functions for a language, only to shift syntactic branches from one case to another. The assumption underlying the postulation of 'hypothetical stems', namely, that if some NP + NP_{Gen} constructions are transformationally derived, all must be, does not follow from the data. In fact, it leads directly to the conclusion that the T-component can contain otherwise unmotivated syntactic constructs of its own—a capacity it does not seem, in fact, to have. Constructions paralleling derived constructions but containing only lexical primes, therefore, cannot be viewed as presenting any sort of obstacle to a theory of generative lexical rules such as the one which will be developed in this and succeeding chapters.

Table I suggests that rules such as $V \rightarrow [V + L + Ac]$ will ultimately prove inadequate. Derivations do not operate on class descriptions such as 'nounness' or 'verbness' alone, nor on any specific lexical class such as 'agent', 'quality' or 'behavior' alone (see the Epilogue for the reasoning behind this). The point of origin of lexical derivations in

theory must be the intersection of syntactic and lexical categories and their destination may be any other such intersection as described by L-rules; that is, assuming all present definitions of syntactic relations and lexical categories. The lexicon would seem to delimit the kinds of derivations possible, but in conjunction with the syntax. All subclasses are simultaneously potential inputs and outputs of derivational rules. Any actual restrictions on this theoretical potentiality must be claimed and proven.

The omnidirectional access provided by L-rules within the Scr lexical derivational system is subject to several observable restrictions. As a system, these rules are not characterized by the open-endedness which identifies T-rules. This results first from the absence of any recursive rules in the L-system.[3] But there is, further, a prominent performance restriction on the repetition of the semantic value of an earlier derivational stage of the stem. For example, since *sreća* means 'good fortune' and *srećan* means 'fortunate', *srećnost* is rarely if ever encountered since it would mean 'good fortune', too. Note the same restriction seems to apply to *fortunateness* in English. This restriction is not grammatical, so the traditional concept of 'blocking' is hardly to be considered a linguistic one, for many such duplicative forms are in use: *joyfulness, meaningfulness;* Scr *ben-av-ac* 'fool', *zlob-n-ost* 'maliciousness' (= *zloba* 'malice').

There is one kind of strictly confining restriction on the range of operation of L-rules: terminal and preterminal derivations and affixes. For example, deverbal gerunds such as *mišljenje* 'thinking', adjectival nominalizations like *mudrost* 'wisdom' and relational adjectives (RAdjs) like *ručni* 'hand, manual' are terminal derivations with or without terminal suffixes. This means that their underlying syntactic configuration is constrained from undergoing an L-rule if it is embedded in a configuration which is susceptible to another L-rule. The fact that the adjective suffix *-An* allows further suffixation (cf. *srećnost, zlobnost, misaonost* above) clarifies the fact that we are not dealing here with a terminal suffix, but a terminal derivation. The suffix *-sk*, on the other hand, is itself a terminal operator, for with very few idiomatic exceptions (*ženskost* 'femininity', *muškost* 'masculinity'), no other suffix may be

added beyond it, even when it is attached to derivations otherwise susceptible to further derivation: *bena* 'fool', *benav* 'foolish', *benavost* 'foolishness' but *mudrac* 'sage', *mudrački* 'sagacious', **mudračkost/ *mudraštvo* 'sagacity'. There may be morphological means for circumventing terminal suffixes, e.g. omitting them altogether, *mudr-ijaš* 'know-it-all', *mudr-ijaš-ki* 'like a know-it-all', *mudrijaš-tvo* 'know-it-allness'. Ostensibly, the only method of circumventing a terminal derivation is by lexicalizing its derivate and reinserting it as an expansion of the base stock in the lexicon. Some of the subtleties of this issue will be taken up in more detail further along.

It would seem that lexical rules are one-way, though not necessarily one-time, rules. They operate on arbitrary combinations of syntactic class and semantic features and are capable of providing a base with any such combination other than that which it originally possesses. Obviously, the constraints and restrictions on these rules are legion, but the only clearly lexical restriction is the arbitrary terminality characterizing certain derivations and affixes. That this quality characterizes derivations and affixes independently, i.e. not all terminal derivations are marked with a terminal suffix nor do all terminal suffixes mark terminal derivations, is an inconsistency which will gain interest for us in the following sections. Rules must be able to generate both the linear and branching output configurations depicted in (1). In capturing this capacity, however, for reasons laid out by Chapin (1970) and Aronoff (1976), we would like to avoid cyclically ordered rules. But before positing a hypothesis of lexical rules which accounts for these capacities yet avoids the pitfalls of the other approaches discussed in Book I, there is a major problem which must receive attention.

5.2 Derivation vs. Affixation

In the case of problematic derivations such as (2-5), observation reveals that, semantically, *pamet* 'intelligence' and *mudr-ost* 'sagacity, wisdom' are related in much the same way *pamet-an* 'smart, intelligent' and *mudar* 'wise' are. But morphologically, *pamet* and *mudar* are

related as unsuffixed lexical primes, as are *pamet-an* and *mudr-ost*, which are suffixed lexemic derivations. There is a disjuncture of morpheme and meaning identical to Karcevskij's 'asymmetry' of morpheme and meaning found among inflectional endings. This 'asymmetry' of morphological form and meaning is demonstrated in more detail in Table II. Table II is in fact a 'close-up' of two lexical-syntactic junctures such as those represented in Table I: the adjective/object and the adjective/behavior axes. It shows that within these classes, there are overlapping semantic and morphological classes which are misaligned, asymmetrical. The overlap is a two-way one in that not only are there semantic classes conveyed via several morphological ones, but any morphological class can reflect several of these same semantic classes.

In discussing asymmetry among the inflectional morphemes of Russian, Karcevskij (1929: 88) first formulated the problem thus:

> **Le signe et la signification ne se recouvrent pas entierement, leurs limites ne coincident pas dans tous les points: un meme signe a plusieurs fonctions, une meme signification s'exprime par plusieurs signes.**

This two-way overlap of form and meaning found in inflectional and derivational morphology cannot be explained as synonymy or polysemy, for these are strictly lexemic characteristics. The misalignment of form and meaning in lexemes goes only one way, i.e. EITHER a single form has multiple meanings (polysemy) OR several forms share the same meaning (synonymy). Never do lexemes form integrated systems like that of Table II where the same set of meanings recurs in associations with the same set of affixes and vice versa. The three meanings of *run*, for example, 'locomote fast', 'flow' and 'operate', as in *John runs, water runs* and *John runs a store*, do not recur systematically elsewhere among lexical primes. No other lexeme in the English vocabulary has any combination of similar meanings. In fact, only one or two share any of these meanings. A semantically related lexeme is *walk*. One may say *John runs* or *John walks*, but not both *water runs: *water walks;* one may say *John runs a store* but not **John walks a store.* Thus to claim that the

TABLE II

Morpheme and Meaning				
Suffix	HAdj *'Having X'*	SAdj *'Like X'*	APAdj *'X-es'*	PPAdj *'Can be X-ed'*
-av	*guš-av* goiterous	*gar-av* soot black	*brblj-av* loquacious	*golic-av* ticklish
	grb-av hump-backed	*ben-av* foolish	*blist-av* shining	*(cepk-av)* splintery
	gub-av leprous	*lik-av* bast-like	*lask-av* flattering	*(kal-av)* splintery
-ast	*šap-ast* pawed	*bab-ast* old womanish		
	griv-ast maned	*budal-ast* foolish	. . .	. . .
	rog-ast horned	*jaj-ast* oval (egg)		
-ljiv	*buv-ljiv* flea-ridden		*ćut-ljiv* reticent	*cep-ljiv* splittable
	crv-ljiv wormy	. . .	*govor-ljiv* talkative	*čit-ljiv* readable
	svrab-ljiv scabietic		*bod-ljiv* prickly	*drob-ljiv* frangible
-Ovit	*brd-ovit* hilly	*plin-ovit* gaseous		
	bar-ovit puddly	*glin-ovit* clayey	. . .	. . .
	šum-ovit forested	*bič-evit* whip-like		

suffixes of Table II are polysemous would not explain them but simply expand the meaning of 'polysemous' in an unjustifiable manner.

Neither can it be claimed that the suffixes of Table II are synonyms in the same sense that lexemes are synonymous. *Build, construct, make* – all share the same central intension: 'cause to be (from material M)', but not in the same sense that the suffixes *-ast, -at, -av, -ljiv, -Ovit* share the meaning 'having X', for this meaning is part of a principled set shared by this set of suffixes, i.e. 'like X', 'X-es', 'can be X-ed'. Neither *build, construct, make* nor similar synonymous lexemic sets share meanings of other principled semantic sets like those, for example, associated with *run.* Thus lexemic synonymy is wholly independent of lexemic polysemy; we find unprincipled classes of one or the other but never find them together forming two interrelated systems.

In fact, it is precisely when we do begin to discern systematic patterns among lexemes as in (8) that we begin to suspect that an L-derivation is at work, even in the absence of any morphological markings. It is the L-rules which maintain the systematicity of the lexicon.

8	The horse runs	John runs the horse
	The horse walks	John walks the horse
	The horse canters	John canters the horse
	The horse swims	John swims the horse
	The plane flies	John flies the plane
	The baby washes	John washes the baby

To claim that the suffixes of Table II are homophonous would also be to redefine 'homophony'. Extrinsic evidence such as spelling and other diachronic data convince us that *pair, pear* and *pare* are homophones in English (as opposed to the polysemy of *run*). But the three meanings associated with these three lexemes, as in the case of the synonymous *build, construct* and *make*, do not consistently recur either with or without structural parallels. In (9), other than where the homophone is replaced by a true synonym, substitution is possible only accidentally, e.g. *they ate a duo; they ate a peel.*

9 *Lexical Homophony in English (/pēr/)*

They are a pair!	**They are a duo!**	***They are a bosc!**	***They are a peel!**
They ate a pear	**They ate a duo**	**They ate a bosc**	**They ate a peel**
They pare a peach	***They duo a peach**	***They bosc a peach**	**They peel a peach**

We are not free to analogize from lexemes and argue that suffixes are synonymous, homophonous or polysemous. Extrinsic evidence precludes homophony as an explanation of the phenomena of Table II. Only English *-able/-ible* show evidence of homophony, but as Aronoff (1976) shows, there is no principled semantic distinction maintained in these L-derivates by spelling. The historical pattern is quite clear: suffixes arrive in the derivational system via borrowing, conflation and delexemization, productively associated with but one meaning. The suffix is subsequently generalized within the derivational system to mark other meanings of the appropriate set. Linguistically, choosing the synonymy-homophony hypothesis loses the structural generalization (that each suffix is a unique structure), while choosing the polysemy hypothesis loses the semantic generalization (that each meaning represents a semantic unity). Both the morphological and semantic regularities must be explained by rules, not by enumeration. But since neither the meanings predict the suffixes, nor the suffixes the meanings, lexical theory must provide two independent sets of rules for capturing the generalizations of each sphere.

Recall now Jakobson's approach to the problem of asymmetry in the Russian nominal declension (3.1). Jakobson claimed that a single morpheme can mark several cases while any given case may be reflected in several different morphemes without loss of comprehensibility only relative to an invariant, abstract paradigm intervening between and correlating form and meaning. In inflectional systems, it is the *category* which has meanings, not the morphemes designating those categories. In Russian, for example, the instr. has the same functions regardless of whether it is designated by *-Oj, -Om, -ju,* or *-im.* Since the L-derivation asymmetry of Table II resembles in most respects that of the Slavic inflectional systems, it is logical to conclude that L-derivation is characterized by some sort of paradigm intervening between its semantic and

structural sides (cf. also Guilbert 1975, Zemskaia 1978 plus the authors they cite). That is, the L-rules must form a memorizable paradigm and the affixation of L-derivates must be based on this paradigm plus considerations of context (stem subclass). We will see in Chapter 7 more clearly that this is, in fact, the case. For the present, suffice the first argument for the separation of derivation from affixation to rest with the observation that the explanation of morphological asymmetry, paradigmaticity, implies an abstract system intervening between semantics and affixation which, in turn, implies that the two functions are in some sense independent.

The second argument for the separation of derivation from affixation can be seen in the use of the so-called 'zero' and 'empty' morphemes to mark L-derivation. There can be no 'zero' or 'empty' lexemes as a result of the necessary direct relation of sense and form which lexemes represent. In fact, Jakobson (1939), again, explains that 'zero' morphemes are possible only relative to an abstract, intervening paradigm and only in contrast to 'real' morphemes in the same system. In this respect, too, L-derivation resembles inflectional morphology and derivational suffixes resemble inflectional endings, not lexemes. 'Zero' morphemic marking is possible only where meaning is carried by the categories of the paradigm, not directly by the morpheme itself as in the case of the lexemes. If the sound-meaning relation is direct, the absence of the one definitionally entails the absence of the other. But in the case of inflection, where most category markers are real morphemes and the categories carry meaning, it is possible to omit morphemic markers in a few contexts and still allow the listener to deduce the category from the absence of 'real' morphemes plus the context. If L-derivation resembles inflectional morphology in the ability to be marked with 'zero' morphemes or 'empty' morphemes, a paradigm must intervene; thus, the semantically determined derivations must be independent of affixation.

The separation of semantics and structural rules in L-derivation has also been suggested by Jackendoff (1975), but both sets of his 'redundancy' rules would be located in the lexicon (cf. Beard 1977 for arguments against 'redundancy' rules in the lexicon). The third argument for the separation of L-derivation from affixation strongly suggests that the

affixational rules are located in a M(orphological)-component situated after all lexical and syntactic rules. In all IE languages there are always several highly ambitious multifunctional affixes which mark (1) deep structure morphological relations like category, (2) syntactic transformations like participles and gerunds and (3) L-derivations. In Scr, for example, the suffix *-i* may categorially mark the imperative (*piš-i!* 'write!') as well as the gen., dat., voc. sg. and nom., acc., voc. pl. of fem. I nouns (*stvar-i* 'thing(s)'). It may syntactically mark adverbs derived presumably via T-rule from adjectives containing the suffix *-sk*, e.g. *hrvātsk-ī jezik* 'Croatian language': *govoriti hrvātsk-i* 'speak Croatian(ly)' and functions as a mas. pl. agreement morpheme for the perfect tense: *muškarc-i su pital-i* 'the men asked' (vs. *žen-e su pital-e* 'the women asked'). Finally, it is used in denominal verbal L-derivations, e.g. *besposlič-i–* 'be idle' (*besposlic-a* 'idleness'), *crn-i–* 'blacken' (*crn* 'black'), *jagnj-i–* '(to) lamb' (*jagnj-e* 'lamb'). In fact, this morpheme has several other functions as well, but the important point is that either we must prove several homophones here in the face of the synchronic and diachronic counterevidence just discussed or follow the imperative of Ockham's razor and assume one *-i* morpheme with categorial, syntactic and lexical functions. This is possible only if affixation is separate from the functions of these other levels and, further, carried out posterior to all categorial, lexical and syntactic operations. One finds the range of functions for the suffixes *-en*, *-L*, *-O*, *-j*, *-a* and *-Ov* similar.

This characteristic is not limited to Scr; it is visible in the behavior of the suffix *-en* in German, *-ī* and 'eẓāfe' *-e* in Persian, *-ing*, *-s* and *-ed* in English. The suffix *-ing* in English, for example, marks the progressive 'aspect', a categorial relation: *is walking, was talking;* the syntactic participles and adverbs like *the boy annoying his father, he cut his finger clipping the newspaper* and several L-derivations including the resultative nominalization: *a clipping, carving, cutting* and the active deverbal adjective: *a (very) charming/annoying/stimulating person.* The fact that a single morpheme can mark functions at all three grammatical levels as well as several functions at any given level again suggests that affixation is separate from these functions. A grammar which separates affixation from all these other functions could theoretically specify

these functions, L-derivations among them, strictly within their proper component and in their own terms, marking each function abstractly. Then only one M-rule per suffix would be required for the insertion of the proper morphological marking late in the grammatical processes. The only morphological complication lies in the many conditions on the insertion of multifunctional affixes, but these seem warranted by the facts: multifunctional affixes are single, unique morphemes conditioned by varying contexts to mark functions of various grammatical levels.

The fourth body of evidence that derivation is separate from affixation is diachronic. Table III attests to the fact that the rate of diachronic change for agentive L-derivations is remarkably slower than that of their affixes. (The Urdu data are from Platts 1967.)

TABLE III

English	*French*	*Serbocroatian*	*Russian*	*Urdu*
deceiv-er	tromp-eur	varal-ica	obman-ščik	bhulā'-u
coax(-er)	cajol-eur	(laskav-ac)	ugovor-ščik	phuslā'-u
read-er	lis-eur	čital-ac	čita-tel'	paṛhne-wala
writ-er	écriv-ain	pis-ac	pisa-tel'	likhne-wala
seek-er	cherch-eur	tražil-ac	iska-tel'	joy-anda
go-er	(all-ant)	hodil-ac	hod-ok	rav-anda

While all IE languages exhibit an agentive derivation, only the more closely related share affixes. The agentive L-derivation is perhaps the most ubiquitous of all L-derivations, remaining over the millennia the most productive. Similar tables for the possessional, possessive, material, active and passive deverbal adjectives; the nominalizations: perfective, imperfective, resultative, patientive, instrumental, locative, mercedive; the adverbalizations; the transitive and intransitive denominal and deadjectival verbalizations, would show even greater divergence in the phonological form of the affixes marking them. In fact, it is remark-

able that while only the most closely related languages share any affixes, all IE languages since the earliest recensions of Sanskrit have shared and still share the same basic set of abstract L-derivations.

The list of IE L-derivations just mentioned contains what have become standardized names for derivations found in reference grammars and word-formation studies of the various IE languages. Standard structuralist works of this kind usually list derivations according to affix, assigning each affix several regular meanings. Only rarely has there been comment on the fact that the meanings of these affixes all belong to the same interlingual set. A semanticist grammar, of course, would list all the affixes according to generalized semantic category (cf. Levi 1978 for suggestions). But we have already seen that either approach loses one set of generalizations; what is needed is a combined approach, i.e. a semanticist approach to derivation and a structuralist approach to affixation. Each set of functions should be defined in its own terms; neither set should be defined in the terms of the other. This way, each L-derivation meaning will be listed but once while each affix marking it will be inserted by no more than one rule.

Derivations remain stable in number and nature for millennia, contributing no doubt to speaker retention of lexical semantics; while affixes change, shift, conflate, diverge, develop from lexemes in designated compounds within a few hundred years, providing new, diverging dialects and languages. The diachronic conditions for change in the semantics of L-derivation must be distinct from those determining the morphological development in affixes. This diachronic distinctiveness parallels the synchronic one to be discussed in 7.2 in that both speak to the issue of discrete conditions on derivation and affixation.

In addition to demanding the separation of derivation from affixation, the four arguments presented here, along with the fifth one implicit in 7.2, project in broad outline the relationship between the two. First, the fact that a single affix like Scr *-i*, Persian *-ī*, English *-ing* or German *-en* can mark categorial relations, L- and T-rules, suggests that affixation is a process carried out posterior to all grammatical rules except the phonological ones. The L-rules themselves must be abstract rather than directly associated with local affixes, since IE languages share

derivations without necessarily sharing the affixes marking them. Moreover, asymmetry and 'zero' markings demonstrate that the L-rules must stand in some sort of paradigmatic relation to each other while the stability of the derivations in comparison to the changeability of derivational affixes implies that the paradigm is deeply rooted in the grammar.

The hypothesis of derivation in the lexicon and affixation in the M-component presents a host of important implications for linguistics since it represents a radical departure from the sign theory of lexical affixes. It establishes a range of derivation-affixation relationships which the sign theory of morphemes does not and it would have to account for the absence of any of them in IE languages, i.e. (1) derivations without affixation, (2) affixation without derivation, (3) multiple derivations marked by a single affix, (4) multiple affixation marking a single derivation, (5) asymmetry of derivation and affixation, (6) morphological symmetry. Notice that this sixth relationship, the only one predicted by sign theory, is not excluded by the separation hypothesis. If affixation is a process applying after all L- and T-rules, (7) we would expect to find the same suffixes applying to both types of rules. (8) The possibility of T-rules operating on L-derivations but not vice versa also arises.

In fact, not only do all these relations occur in IE languages, they constitute a catalog of the ills besetting structuralist sign theory. The separation hypothesis sets the stage for the solution of all the problems of structuralist lexicology without any great shift of assumptions about the nature of L-rules: we must simply surrender our hope of defining derivational affixes in a class with lexemes in favor or defining them in a class with inflectional endings.

CHAPTER 6

The Indo-European Possessional Adjectives in Serbocroatian

6.1 A Tentative Derivational Rule

In Scr as in other IE languages, the possessional adjective (HAdj) derivation applies to a wide range of stems including animate, vegetable, geographical and abstract nouns (cf. Stevanović 1964: 579, 588, 590-592, 599-600, 602). It may well be a fact that there are no constraints on this derivation in the grammar, but there are surely widespread restrictions on its usage. For the purposes of this chapter, a small subgroup of HAdjs will be examined: those derived from a closed subset of noun lexemes referring to 'salient animal body parts' and suffixed with *-at*. The members of this subclass are monosyllabic, underived, Slavic concrete nouns referring to normal 'salient' (i.e. visible, with clear borders and/or with clear functions) body parts.

A closed subset has been intentionally chosen because of the inherent difficulties it will present. This particular subset exhibits the full range of lexical problems discussed recently by lexicologists excepting only that of reduplication. Since it is by no means clear that a necessary and sufficient definition of this stem class is possible, it will be assumed that the class is lexically marked and a full list is appended.[4] No special marking is required for derivation, however, assuming the sort of hierarchical lexical ordering suggested by Bever & Rosenbaum (1971) and Beard (1976b) somewhere in the overall theory of language behavior.

The HAdj derivation does operate on nouns beyond this class, but the suffixes accreting to them do not include *-at*; they are instead *-An, -av, -ast, -ljiv, -Ovit.*

A good deal has been written lately about HAdjs, so that there remains little problem in explaining their semantic idiosyncrasies in Scr. It is clear that the relationship of all lexemes undergoing this rule to the head noun it will modify is usually that of an *inherent characteristic* to the object it partially defines. *Glava* 'head', *oko* 'eye', *nos* 'nose', *uvo* 'ear', *brada* 'beard', *brk* 'moustache', *ruka* 'arm'; hand', *noga* 'leg; foot', *trbu(h)* 'belly' all bear such a relationship to *čovek* 'man' or any member of that semantic class, i.e. [±Human]: *studenat* 'student', *žena* 'woman', *profesor* 'professor', *cinik* 'cynic', *udova* 'widow', *djak* 'pupil'. Keeping this relation straight is important not only to prevent such constructions as **đakata noga* 'pupiled leg', **profesorata brada* 'professored beard' in favor of *nogat đak* 'leggy pupil', *bradat profesor* 'bearded professor', but also to prevent potential properties which are not inherent to the modified noun from entering the derivation, e.g. *Brod ima dva motora* 'The boat has two engines': *Brod je dvomotoran* 'The boat is twin-engined', but *Nebojša ima dva motora* 'Neboisha has two engines': **Nebojša je dvomotoran* 'Neboisha is twin-engined' (cf. Hirtle 1970). This reservation removes a large number of putative derivational gaps in usage from our agenda of explanations. More will be said as to the nature of this reservation later.

The provision defining the relationship of inherent characteristics to their whole noun lexemes remains beclouded. The obvious approach would be to assume a lexical convention ordering all noun lexemes referring to whole entities before any nouns referring to their parts in the lexicon along with an INHERENT CHARACTERISTIC CONVENTION (Beard 1976b: 52):[5]

> *Any lexical feature which also appears later in the lexicon as the heading of an independent lexical entry ascribes that independent entry, with its entire semantic feature inventory, to the entry under which it occurs as a feature.*

Thus the whole-part relationship is marked by the occurrence of the name of each part of a whole, both in the lexical inventory of the whole and simultaneously as an independent lexical entry. The lexical entry for *glava* must include reference to *oko, uvo, nos, brada, brk* and, by convention, their semantic content as listed elsewhere in the lexicon.[6]

Significantly, this convention also explains another problem associated with HAdjs as well as other Adj and N derivations: the variation in their semantic interpretation between 'HAVING X' and 'HAVING PRONOUNCED X', i.e. between an unintensified and an intensified sense. For instance, *nogati vodozemci* 'legged amphibians' does not attribute any size, length or number to the legs in question. *Nogata devojka,* on the other hand, means 'a big-, long-legged girl'. This variation is a function of whether the part in question is an inalienable, definitional part of the whole or an optional one. Some amphibians have legs while others do not; but all girls by definition have them, so to say the equivalent of 'legged girl' results in semantic redundancy.[7] If each whole-item lexeme contains the name of its parts (implies its parts), should a part-item become the basis of an HAdj modifying it, the semantic content of the part item is by convention repeated. Whenever semantic features are repeated in attribution, the semantic component regularly interprets the repetition as intensification, cf. *vrlo, vrlo lep* 'very, very beautiful'; *velika, velika kuća* 'big, big house'. Since amphibians come with and without legs naturally, *nogati vodozemci* does not necessarily repeat the concept of *noga*, but *devojka* is defined in terms of necessarily possessing two legs, thus *nogata devojka* duplicates the semantic features for *noga.* The significance of this convention for the theory of all possessional derivations is that HAdj rules thereby are relieved of any obligation to provide for this semantic variation: it will automatically be assigned by a semantic convention.

There are particulars of this phenomenon which will not be treated in detail here. For example, the existence of a special term referring to the absence of a body part will interfere with the operation of this convention in the case of derivations referring to that part's presence. Thus the availability of *šut* 'hornless', *kus* 'tailless' in addition to the productive *bezrog* 'hornless', *bezrep* 'tailless', reduces the oper-

ability of the convention in the case of *rogat* and *repat*, presumably because the special words consistently reinforce the perception of, say, cows and dogs having horns and tails only optionally. In any event, native speakers consistently interpret *rogata krava* simply as 'horned cow' and *repat pas* as 'tailed dog' (although not always). Facts like these raise suspicions as to the actual nature of lexical intensification and for this reason it will be reexamined later in light of certain interesting data of performance.

Regardless of the mental level at which lexical intensification occurs, however, there is no denying that it is an important factor in the interpretation of lexemic derivations. It operates very noticeably among English agentives.

10	He is a snorer.	11	He is a talker.
	He is a smoker.		He is a dreamer.
	He is a commuter.		He is a thinker.
	He is a sniveler.		He is a doer.

These agentives seem to fall into two semantic classes. Those in (10) denote a subject who merely engages in the activity referred to by the provenient verb. Thus a snorer is anyone who snores at all; a smoker is anyone who smokes at all. But those in (11) denote persons who engage in the activity referred to in the underlying verb to a degree greater than do most human beings—all of whom are characterized to some extent by the performance of the activity. Here again the operative factor is whether the modified form, in this case the [+Human] subject pronoun, is positively or optionally inherently characterized by the activity of the underlying verb. If the feature is positively marked, the resulting agentive derivation reflects an intensified meaning, much the same as it does in the HAdj derivation and in the case of repeated modifiers.

One final instance of derivational intensification in English might be mentioned, both for additional support and to clear up a putative issue of lexicology. Chomsky (1970) mentions a second reading of *readable*, *readable*$_2$, as evidence of inexplicable lexicalization among

seemingly productive PPAdj derivations, using the example *readable book*. In fact, it is a simple matter to find a whole class of passive potential adjectives (PPAdjs) in English which vary from the semantics of the basic derivation in precisely the same way: *drinkable wine, singable melody, drivable car.* A recent advertisement for pianos touted its product as 'the most *playable piano* in the world'. Initial examination of this class discovers the same suspicious element found among the HAdjs and N_{Ag}: the 'exceptional' meaning occurs only when the adjective is used with a noun which makes the adjective redundant. That is, all wine can be drunk and all melodies can be sung; their sole or principal (generic) function in each case is represented in the verb from which the PPAdj is derived. Therefore, *drinkable wine* should be a redundant phrase. Since we have seen that when lexical redundancy is allowed in IE languages, the semantic interpretation of it is intensification, e.g. 'very much able to be drunk', it should come as no surprise that this is the interpretation of *drinkable wine* (cf. *drinkable water, singable poem, readable handwriting*). Not only does the semantic convention of derivational intensification remove this subclass from suspicion of lexicalization, it emphasizes the apparent fact that there are conventions which range over wide areas of derivation, applying to large numbers if not to all rules simultaneously. In Chapter 10 these conventions will be shown to be inappropriate to the lexicon and better situated in performance theory.

There are further restrictions on the HAdj derivation in Scr which will be surveyed further on. For the time being, however, let us assume that the removal of these putative exceptions from the data renews hope for L-rules which do not qualitatively differ from other rules of grammar, i.e. which are generative.

The data to be examined in this and suceeding chapters will reveal that there are several different types of lexical derivations, some of which require not only shifts in the markings of lexical features, but require markings for internal and external syntactic relations. The latter two types of marking will be necessary to maintain the relation of the derivation to the rest of the syntagma in which it occurs. Since all of the relations requiring such marking will be identical to those already

occurring in certain types of syntactic structures, and since their semantic interpretation will be the same as the semantic interpretation of these structures, it will be argued that such structures remain, despite much recent criticism, the logical source for lexical derivations. For this reason, the HAdj rules immediately facing us will be based on the syntactic configuration underlying relative clauses, even though the full force of evidence will not be brought to bear until Chapters 8-9.

The derivation of adjectives from underlying relative clause configurations has several powerful advantages which should not be abandoned until every last effort has been made to resolve difficulties. The relative clause presents a perfect structural and semantic paraphrase for all derived adjectives. That is, once the head noun of a relative clause is marked to become a relative pronoun, the proper relation between a derived adjective and its head noun has been established. If no more than one additional noun (or, in the case of compounds, two) occurs along with some consistent, derivationally relevant verbal element, e.g. POSS(ession) or SIMIL(itudinal), the HAdj or SAdj derivation may operate, generating a basically perfect derivation. The relative clause provenience, moreover, allows for the neat distinction of qualitative adjectives (QAdj) from RAdjs: RAdjs may only be derived in relative clauses and obligatorily attributivized. QAdjs, on the other hand, may be derived either in a main clause in predicate position, e.g. *The man has a beard: The man is bearded,* or in a relative clause where it may be optionally prenominalized as are lexical QAdjs: *the man who has a beard: the man who is bearded: the bearded man.* Note that no claim is made that these actual surface structures are derived in this order from each other, and certainly not by T-rules. The claim here is merely that if all these forms could be derived from the same deep structure, the resultant theory would be of considerable explanatory power. It would explain the choice speakers have among these forms, the reason that the internal and external structural and semantic relations are the same among them even though the surface structures vary greatly.

The objections to this approach raised especially by Winter (1965) have been answered variously by Motsch (1967), Babby (1975a), Sussex (1974) and others. Adjectives which occur only predicatively, e.g.

ill, subject to X, or which are semantically restricted, e.g. *The girl is right: (*)the right girl* vs. *the answer is right: the right answer,* need only be lexically marked; they are few in number and none is derived. The few adjectives which occur only in attributive position, aside from RAdjs, tend to be idiomatic or idiomatically derived, e.g. Sussex suggests that *the former minister* is probably derived from a construction also underlying *X was formerly a minister.* The parallel here with the prefixed derivation *ex-minister,* suggests that this latter problematic construct may even be a compound. In any case, there is no dearth of natural explanations. These examples are, however, so few in number that they may all just as well be treated as exceptional idiomatizations in the sense that *red herring*$_3$ seems both structurally normal but semantically unpredictable. For example, it would seem that the multilingual construct *the poor man* (Russian *bednyj čelovek,* German *der arme Mann,* French *le pauvre homme,* etc.) results from a performative knowledge that if *poor,* whose meaning is 'impecunious', is derived in attributive position before an animate noun, it can refer to a person whom the speaker feels is misfortunate, without any connotation of poverty whatsoever.

A separate question is that of derived RAdjs which occur only in attributive position. As Levi (1973) has pointed out, they are derivationally the same as 'attributive noun' compounds except for suffixation. The separation of derivation from affixation explains how this can be. RAdjs and NN-compounds present the problem of lost 'verb nexus' (Marchand 1965a, 1965b; 1966). This led Schachter (1961) and others in reviewing Lees' (1960) treatment of them as transformations to point out the fact that the meaning of transformationally derived RAdjs is not recoverable linguistically. Chomsky (1965) had established the demand that any deleted structure must be recoverable at the surface level for an interpretive semantic theory to work. This has been generally taken to mean 'linguistically' recoverable, implying that the relation uniting the two nouns of NN-compounds are fully linguistically determined at the surface level. The problem is evident in (12).

12

ulj-ana pogača	oil cake	(made of oil)
ulj-ano polje	oil field	(where oil is/was located)
ulj-ano gorivo	fuel oil	(consisting of oil)
ulj-ana lampa	oil lamp	(operating on oil)
ulj-ana palma	oil palm	(producing oil)
ulj-ana slika	oil painting	(made of paints with an oil base)
ulj-ana ptica	oil bird	(name)
(uljanica)	oil can	(for holding oil)
(mazalica)	oil box	(for receiving oil)
ulj-o-mer	oil gauge	(for measuring oil)

Lees (1970a, 1970b) and Levi (1978) attempted to reduce the number of verbal relations to a predictable number by resorting to high-level semantic categories like CAUSE, HAVE, BE, MAKE, USE, IN, FOR. Such categories are so general, however, as to present little advantage over the traditional approach, which is to assign to RAdj and NN-compound derivations a semantic interpretation of ultimate generality: 'is related to'. They still require additional information of two sorts for full semantic specification: (1) information upon which to base a decision as to which of these seven or so meanings is intended and (2) further specifics, for we know that oil is 'in' a palm, can, box and field in very different ways. We also know that radically different kinds of oil are referred to by these various compounds: vegetable oil, mineral oil, crude oil (= unrefined oil), refined oil.

Oil refers to all these different types and therefore cannot provide the distinguishing criteria necessary to specify the referents of the examples in (12). The specification must come from elsewhere. Someone well aware of the uses of *oil* and *box* and the NN-compound rule(s), but unfamiliar with machinery would have difficulty in perceiving the referent of *oil box*. Or consider an example provided by David Reibel (personal communication): *push bike*. Does this term refer to a bike which one pushes or a bike used to push something? As Levi argues, the information required for such decisions always comes from outside

language; there simply are no linguistic facts upon which to base the decision.

Zimmer (1972: 4-5) furnishes a pertinent example in *hamburger plate.* Logically, this compound might refer to a plate for shaping hamburgers, for assembling hamburgers, for holding hamburgers, on which hamburgers are cooked (i.e. a hot plate), with a picture of a hamburger on it and so forth. But it was used at a picnic which Zimmer attended where people had been grilling hamburgers and piling them on one plate. When someone approached with hotdogs and asked where to put them, he was told, "Put them on the hamburger plate". The 'classificatory relevance' required to perfectly interpret the speaker's imperative came from pragmatic information from the token referent itself, i.e. the required ancillary information came from outside the entire linguistic experience. Generically, the compound refers to far more than the speaker had in mind. To identify the specific object within the classificatory range of *hamburger plate,* the listener had to refer to performance data. So it is with compounds and RAdjs in general: they mean no more than can be recovered from the lexemes involved and the syntactic relation implied by attributive noun compounding. All other information must be assumed to be idiomatic, i.e. originating, as is the case with *red herring*$_3$, elsewhere in the mind.

Another problem facing the derivation of RAdjs from relative clauses in English is the Latinate RAdjs like *civil* and *civic* in *civil rights* and *civic duty.*[8] Most probably these forms are part of the suppletion problem in English discussed in 4.2. The frequent absence of corresponding compounds like *state rights, state duty* offers further support of this interpretation. Positing lexical items like *civ-* is not the same as positing 'hypothetical stems', for these stems are not hypothetical, just 'bound'. We have already seen that the difference between lexemes and affixes does not hinge on 'boundness', thus there is no reason not to assume the existence of bound lexemes. There must be some means developed, however, to relate them to the appropriate Germanic stem. There is undoubtedly a complex problem to resolve here. But since the theory developed in this book disavows that lexical entries are fundamentally phonological 'formatives', the problem is not an essential one

for us here. If lexical entries can contain two number features, two gender features, there is no reason why they cannot contain two phonological spellings. Thus we will pass over this problem simply noting that it begs attention.

One final difficulty in deriving adjectives and relative clauses from the same underlying structure has been noted by Chvany (1977: 293-4). Chvany claims that some native speakers "object to the derivation of such normal NPs as *krasivaja devuška* 'the/a beautiful girl' via the rather unnatural relative clause in *devuška, kotoraja krasiva* 'The/a girl who is beautiful', even as they fully accept the semantic and syntactic parallels between the constructions...." Chvany goes on to propose a more sophisticated model of such a derivation in which there would be two types of nominal complements, one with a relative pronoun (COMP) stem in the deep structure and one without it. The former would generate the relative clauses while the other would generate attributive adjectives. Her strongest claim, however, is that deriving the attributive adjective from a predicate adjective via relative clause reduction is 'counter-intuitive'. She offers no explanation of her native informants' reactions.

Chvany's exception may be overlooked on at least two accounts. First, while intuition is a useful heuristic device in deciding grammaticality and accept bility, there is no way to incorporate it into a lexical theory. Thus unless intuition leads to some insight into the structure of nominal complementation which may be formalized, an explanation of this intuition of unacceptability should be sought elsewhere. The advantages—including the explanation of a wide range of linguistic facts—of deriving lexical and secondary adjectives, and relative clauses from the same underlying syntactic configuration via similar L- and T-rules cannot be overlooked. Second, one must not confuse the concepts 'is derived from' and 'is identical with'. Even if attributive adjectives are derived from relative clauses, this does not imply that they are identical with them. For sure there are structural differences, differences which may be manipulated during performance for referential advantage. It would seem that here, again, what is wanting is a clearer distinction between competence and performance, aimed at determining what can be predicted on structural grounds alone and what must depend on external

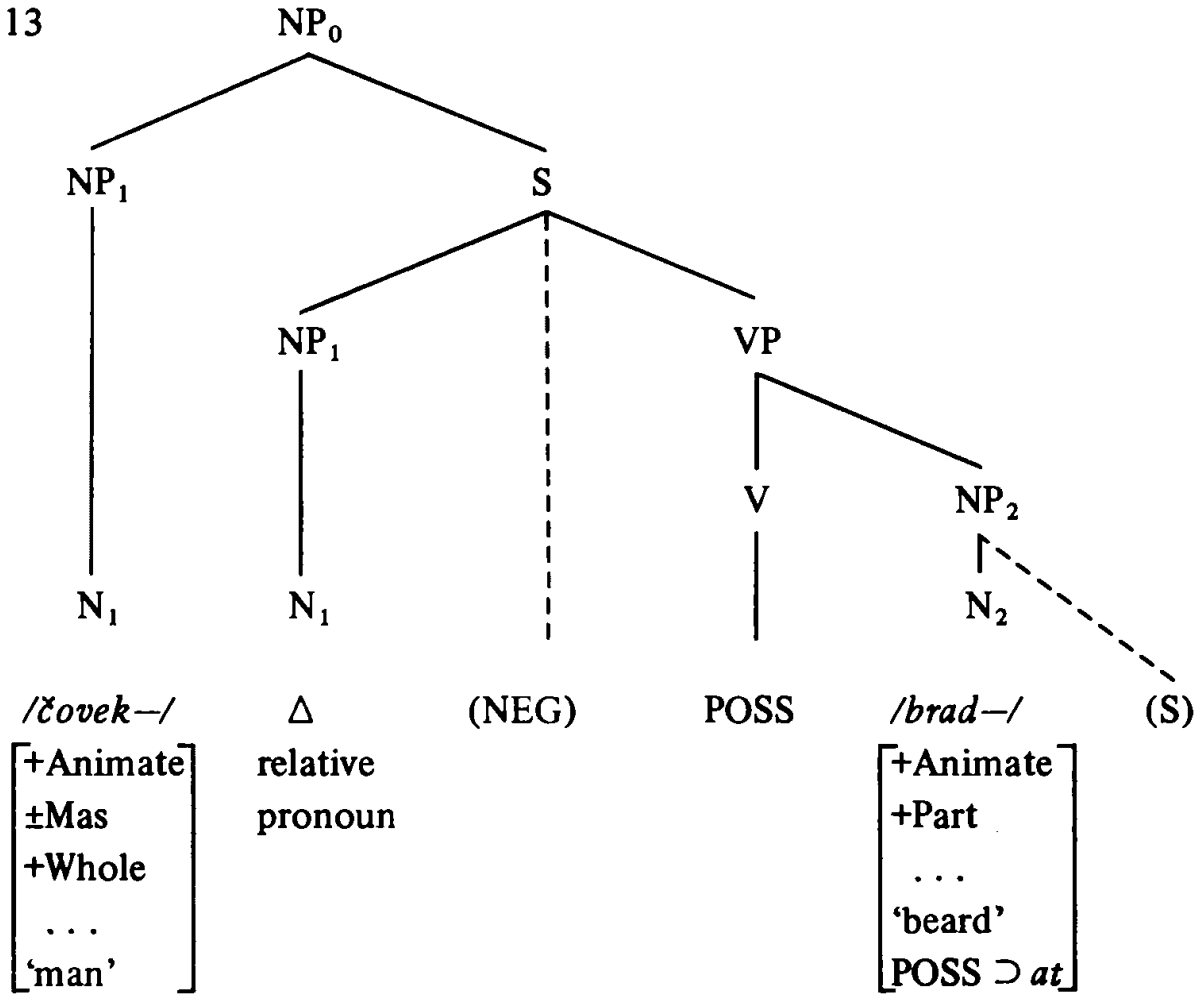
facts, including facts of how structures are used. Certainly, Chvany's suggestion of slightly different types of nominal complements is amenable to the theory presented here. Nonetheless, it is not at all clear that even this small adjustment is called for in the competence theory.

This remark sets the stage for a final caveat before examining the nature of L-rules in detail. L-rules in this work are not perceived as representations of actual mental operations undertaken during speech. The function of a competence theory of lexical relations is to explain how people *can* use lexical items; how they know that what they speak is lexically grammatical. Even if a speaker memorizes a lexical derivation, it can be interpreted by the listener only if certain rules of form are observed. Whether or not individual speakers use the rules is one question; whether the derivations conform to the rules is a separate question. If derivations conform to rules, the rules *can* be used and probably are in some instances. This does not rule out the possibility that there might be other strategies for coming by the output of these rules without actually operating the rules themselves; the mind is full of strategies which operate in several mental areas. It is clear that items are assembled as they are spoken. Prefixes are uttered first, then stems, followed by suffixes and endings. The articulatory organs create a new copy of internalized items each time they are spoken, following memorized features, rules and patterns. It is very difficult to ascertain which rules are used and which circumvented during which speech acts. It is much easier to discover the rules and test whether any individual copy conforms to the rules. It is this process which will occupy our attention up to Chapter 10, where performance strategies will be examined.

What are the major entailments of generative L-rules? A generative HAdj L-rule will differ from T-rules in two major ways: (1) it will transfer at least one semantic categorial feature from one ultimate deep-structure categorial node to another and (2) it must have the power to rename the node under which the derivation evolves. Both of these issues are crucial and must be thoroughly justified or abandoned. Their implication that lexical derivations operate on syntactic configurations (P-markers) rather than simple lexical bases, demands clear and convincing argumentation.

To provide such argumentation, let us begin by assuming that a speaker of Scr has the option of saying *čovek sa bradom* 'man with a beard', *čovek koji ima bradu* 'man who has a beard' or *bradat čovek* 'bearded man', when his intent is to express the same meaning. To explain language's ability to provide three different grammatical structures reflecting the same semantic content, we would like a rule which operates on some common, underlying form, optionally producing *bradat*, properly constrained, only when specific conditions are met. The obvious candidate for the underlying structure of *bradat čovek*, then, is (13).

13



For the present we will not worry about the exact nature of the lexical inventories of items permitted through this rule. Neither the features [±Mas] nor [±Animate] are critical, for nouns such as *glava* 'head' undergo the derivation even in conjunction with inanimate head nouns,

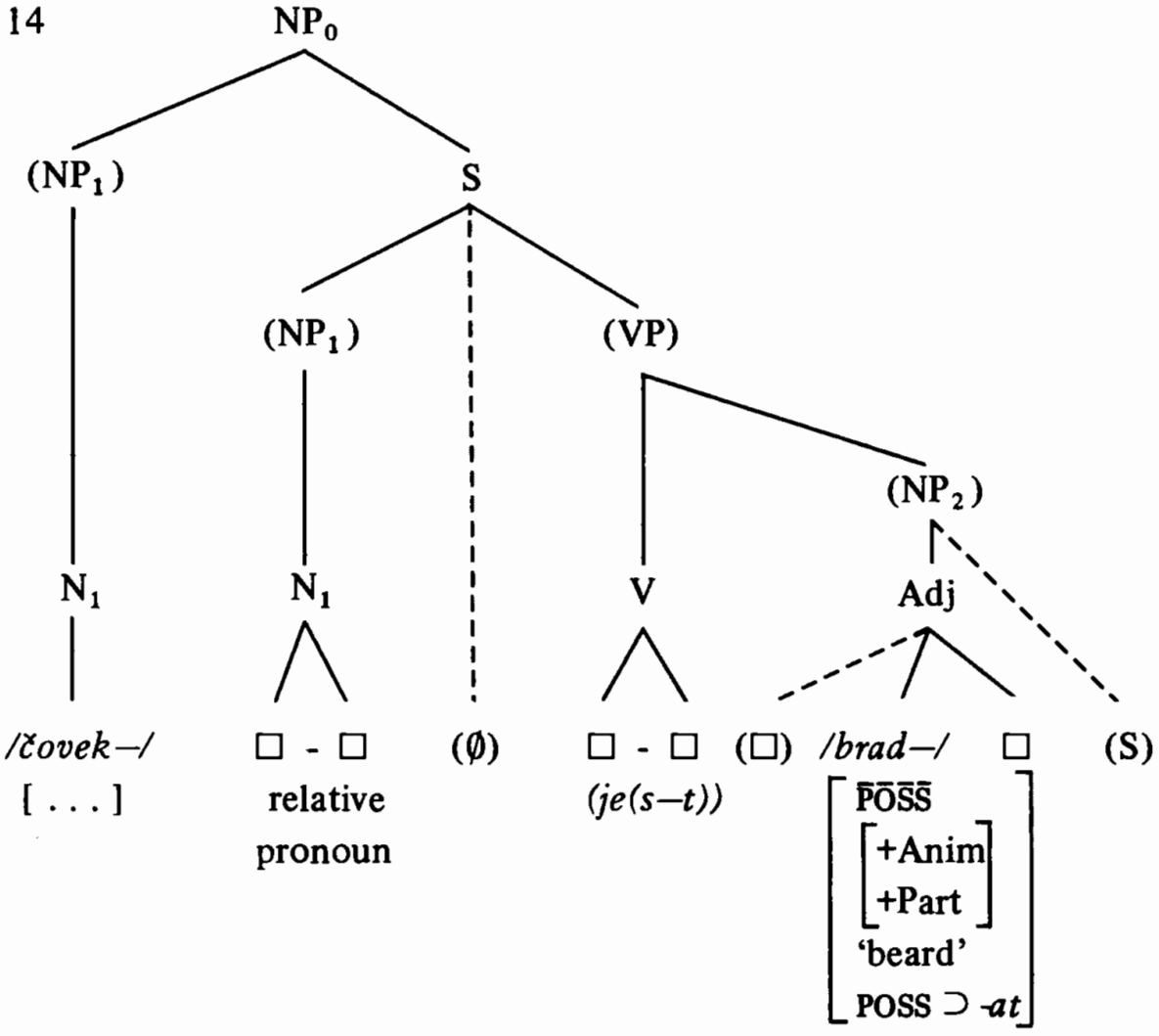
e.g. pin, cabbage, nail. Here primary interest lies in the fact that (13) explains the identity of syntactic relations among the three possible surface manifestations mentioned above, without introducing any new grammatical apparatus into our theory and without mixing levels, as would be the case if syntactic structure were allowed in lexical entries. Once this point is made clear, the remaining questions of irregularity may be broached.

Before reaching either the nominalization or comparative rules, the stem *brad–* must be under an Adj-node, for these transformations will generate *brad-at-ost* 'beardedness' and *brad-at-iji* 'more bearded' only when permitted by the superjacency of such an Adj-node. In order to accomplish this, a good deal of syntactical pruning must be carried out in addition to the renaming of the lowest V-node. If it is undesirable to have syntactic structures in lexical entries, it is equally undesirable to have T-rules operating in the lexicon. Yet only T-rules have been proven to have the power to effect such massive syntactic changes. It is not clear that T-rules have the power to rename nodes, however, and for sure they are incapable of inserting new semantic material into lexical entries as is required of lexical derivations. But close examination of the operations required of the HAdj rule in order for it to convert (13) into (14), reveals that, in light of post-Leesian developments in TG-grammar, lexical rules may operate within syntactic configurations without affecting them. If this is possible, it would lead the way to a lexical derivational theory which preserves the advantages of Lees' transformational approach, the preservation of syntactic relations without introducing syntax into the lexicon, while retaining the advantages of the lexicalist approach, i.e. freedom to construct semantically based rules. Specifically, assuming a universal operation of 'tree-pruning', we may now conceive of a lexically based generative rule (another advantage of Lees' approach) which is sensitive to syntactic structure, but which does not need to change that structure in order to achieve its ends.

In order to insert a derived adjective into a syntactical structure such as (13) so as to permit the operation of further deadjectival rules, the HAdj rule must accomplish the following. First, it must insert after

the stem *brad–*, a dummy symbol, say, □, to be filled later by M-rules if conditions warrant. It must then attach this symbol to the syntactic node immediately dominating the stem undergoing the derivation and reassign *that node only* the newly appropriate class marker, Adj. That is, the HAdj rule need affect only the immediately dominating node (N_2) of the syntactic configuration, even though it must be able to read the entire configuration. Assuming for the time being that the broken-line branching does not occur, all intervening, nonbranching nodes will automatically be eliminated by pruning rules. Finally, the HAdj rule must incorporate the categorial feature, POSS, under the noun stem *brad–*, so that the noun's semantic reading, 'beard', becomes the second argument of it and the head noun (N_1) becomes the first. The output of the rule must resemble (14).

14



The exact nature of POSS will not be resolved at this point. There are at least four equally feasible possibilities for its origin. First, it may be a semantically interpretable categorial marker, marking a category of derivation, which is an expansion of the V-node in the categorial component (cf. Esau 1973), or second, a subcategorial lexical feature (cf. Chomsky 1965: 184-185). One of the fundamental questions of lexical derivation is: What determines the number and nature of the lexical derivations in a given language? If lexical derivations are arbitrarily determined as are lexical categories, a natural origin for them might be the prelexical deep structure. TG-theory assumes deep structure to be arbitrary, while surface structure is determined by deep structure. Thus whether L-derivations are deep structure phenomena, T-rules or something in between, ultimately depends on the degree of their arbitrariness. This will be the focus of Chapters 8-9.

Another explanation has been offered by generative semanticists (McCawley 1968, Gruber 1976, Kastovsky 1977), who maintain that lexical insertion is a two-stage process determined by the relationship of meaning to lexemes. According to this theory, POSS would be a semantic-category feature node. Later, if all lexical conditions are met, the feature will optionally trigger the HAdj derivation. When the HAdj rule is not engaged, POSS will be replaced by some specific verb matched to this semantic category, e.g. *imati* 'have', *posedovati* 'possess', *sadržati* 'contain'. Finally, POSS may represent a specific lexical semantic feature contained in such a class of verb lexemes as these. All of these approaches avoid the question of ad hocness raised by Schachter in connection with compounds. The first two approaches have the disadvantage of marking semantic features twice: in the categorial component or in the early lexical insertion rules, then again in the lexical inventories themselves. The fourth approach has the disadvantage of demanding that the HAdj rule delete actual verb stems just inserted, retaining only one feature from the entire inventory. In any case, no choice will be made at this point; since all four alternatives appear viable, this loose end in no way encumbers the business immediately at hand.

Chomsky (1965) has argued for the inclusion of a dummy symbol (Δ) in syntactic configurations to allow lexical insertion to take into

account complex symbols consisting of sets of syntactic features devolving from low-level categorial expansion or early lexical processes. Although the introduction of subclassificatory syntactic symbols by the lexicon is dubious, the implication that there is a distinction between a lexeme position and any given lexeme implied by the delta-node convention seems valid, even if for no other reason than while any position is strictly determined, a great number of different lexemes may fill it. There is support for this distinction, however, in the speech-error data presented earlier. But this distinction between lexeme position and lexeme applies equally to derivational and inflectional morphemes. The box-nodes correspond, therefore, to abstract paradigm markers, as opposed to specific affixes. Arguments for inserting pronouns and the proverbial BE (*biti*) into morphological rather than lexical nodes will be presented further on.

If, in fact, morphemes are not directly related to meaning as are lexemes, then these box symbols will be required to mark all the intermediate paradigms required to explain the indirect relation between meaning and sign, as Jakobson has outlined such paradigms for inflection. In this case, the boxes will no doubt form classes of their own: declensional, conjugational and derivational. Perhaps the most persuasive argument for the separation of morpheme position is the issue of reduplication. Reduplication is wholly a matter of morpheme position, for the phonological form of the morpheme itself is reduplicated from the lexical stem.[9] Thus the theoretical basis provided by (13) and (14) establishes a sharp distinction between lexemes and morphemes (affixes, prefixes, clitics and, perhaps, clitic prepositions), on the one hand, and on the other, between these classes and the positions they occupy in a syntactic configuration.

6.2 On the Way to Morphology: Transformations

The node NP_2, like NP_1, will be pruned out, or will simply wither away if it does not branch. It has been left in (14) to show how the separation of derivation from suffixation allows us to draw together

into one HAdj class, several derivations previously treated separately. We may now treat semicompound HAdjs like *bezbrad* 'beardless', *bezglav* 'headless', *beznog* 'one-legged, legless' and compound HAdjs like *belobrad* 'white-bearded', *jednorog* 'one-horned', *dugokos* 'long-haired' with the same rule that generates simple HAdjs.[10] This rule apparently accommodates optional modifiers as indicated by the dotted lines and parentheses of (13) and (14). Of course, there are several conditions on the modification. First, the negative and compound modifications are mutually exclusive, i.e. there are no constructions such as **bez-bel-o-brad* 'white-beardless', **bez-jedn-o-rog* 'one-hornless' or **bez-dug-o-kos* 'long-hairless'. Second, the modifying sentence must be of a rigidly prescribed nature: A-*je*-B 'A-is-B' in form, where B is an underived adjective lexeme and A is identical in form and reference to the main derivational lexeme.

The feature NEG is incorporated into the derivational stem in relation to POSS. Since POSS is a semantic category feature, the effect of NEG's conjunction with POSS is indicated in (14) with a broken negative scope line (POSS). This indicates that POSS is negated only if NEG is incorporated into the stem along with POSS. If the stem is modified by a conditionally adequate adjective, the L-rule still operates, but only on the feature POSS and the main stem, not on the modifier; lexical rules simply do not have the power to permute syntactic structures and the prenominal position of modifying adjectives in compounds reflects the influence of a powerful permutation. Lees (1960), Chapin (1967), Botha (1968) and Meys (1975) have argued that the interdependence of such lexical and syntactic rules can be explained in an ordered grammar only by placing the lexeme derivation rules after the transformations they are related to. The prenominal position of the adjectives and numericals in compound HAdjs would have to be determined by the prenominalization (fronting) T-rules if this parallel between the lexical and syntactic structures is to be captured. But we have seen that L-rules are in at least two ways distinct from T-rules; moreover, they are conditioned by different sorts of constraints. The common quality they share—although an important one it is—is their generativity. Thus many structural and semantic distinctions, however predictable, do

in fact emerge in the analytical construction *bela brada* 'white beard' and the synthetic *belobrad* 'white-bearded'. In short, there are real reasons for keeping L-rules and T-rules separate, even though both share generativity as their fundamental characteristic.

In point of fact, however, the order of the application of the HAdj L-rule and the prenominalization T-rule is irrelevant,assuming derivation a process separate from affixation; the same results are achieved by the application of the prenominalization rules after the HAdj rule has applied. The HAdj rule transfers POSS to the main derivational stem and attaches the dummy symbol regardless of the presence of the stipulated modifier. The derivation enters the T-component, where the relative clause is prenominalized along with all other unmodified predicate adjectives. The transformed lexical derivation then enters the M-component where it is suffixed on the basis of the stem, by rules insensitive to the origin of the stem or its features. The only adjustment required is a slight amendment to the conditions on prenominalization to make it obligatory if □ is present in the P-marker.

The HAdj compound, therefore, is a good example of a derivation which is by every measure lexical, but upon which T-rules nevertheless operate–and that before the application of M-rules. But if affixes were added by the lexicon, it would be impossible for compound derivations to receive interfixes such as the Slavic *-O-* (*O* = *o* ~ *e*); first, because it is an inflectional ending which must be added only after all syntactic rules have played out (see arguments below), but also because the position it is to occupy is not available until after prenominalization. Thus IE compound interfixing represents a strong case for M-rules–derivational and inflectional–located in an M-component which follows the T-component. Only if the derivational rules occur before the T-component, however, can we maintain the structural and semantic distinctions between *bela brada* and *belobrad* without introducing a new rule distinct from the HAdj rule, while simultaneously capturing the adjective movement generalization: fronting without semantic effect, the modifier-head relationship and so forth.

It is clear that the negative and compound HAdj derivations will require at least one extra rule to provide a syntactic position in the

P-marker for the prefix or interfix. Since there is no adjective suffix for negative and compound HAdjs of this class (cf. Appendix), it would be possible for the lexical rule or some T-rule to simply swing the HAdj suffix dummy around to the front of the stem (cf. 14). But this subclass is in fact unusually marked to receive no suffix; most negative and compound adjectives have both a prefix or interfix and a suffix, e.g. *bez-briž-An* 'carefree', *bez-vod-An* 'waterless', *bez-det-An* 'childless', *zl-o-namer-An* 'ill-intentioned'. Therefore, since in the majority of cases the HAdj rule must accommodate affix positions on both sides of the derivational stem, we must find an alternative provenience for the prelexemic affix position or abandon the single HAdj rule theory.

In fact, the addition of the negative semantic feature to the lexical contents of stems like *brad–* constitutes a separate rule in any event. There is no a priori reason to assume that a derivation rule can transport more than a single semantic feature. Moreover, negation is certainly not restricted to HAdjs and clearly lexical derivation will require a separate negation rule by any account. It is interesting to note that in Scr this rule always adds a symbol to the front of the derivational stem regardless of the affix involved, i.e. all derivational negation in Scr is marked by prefixation. In addition to the negative HAdjs on *bez-* already introduced, we find such examples as *ne-znanstv-en* 'unscientific', *ne-izbriš-ljiv* 'inerasable', *ne-zakon-it* 'illegal', *ne-jak* 'not strong', *ne-dug* 'not long'. Since the negational L-rule is thoroughly justified outside the operational domain of the HAdj rule, and since it provides the proper position for the HAdj negative affix, no special rules or conditions will be required for predicting meaning or prefixation in any negative HAdj. So long as HAdj conditions pass negated configurations otherwise compatible with HAdj derivation, the (optional) NEG-rule will quite normally follow suit, providing both the proper semantics and affix position. The result of the application of the two rules is a double derivation doubly affixed.

This leaves the question of the origin of the compound interfix, for the compound is the result not of two L-rules, but of an L-rule operating in conjunction with several T-rules, and we have no justification for providing the latter with the power to assign morpheme positions. In

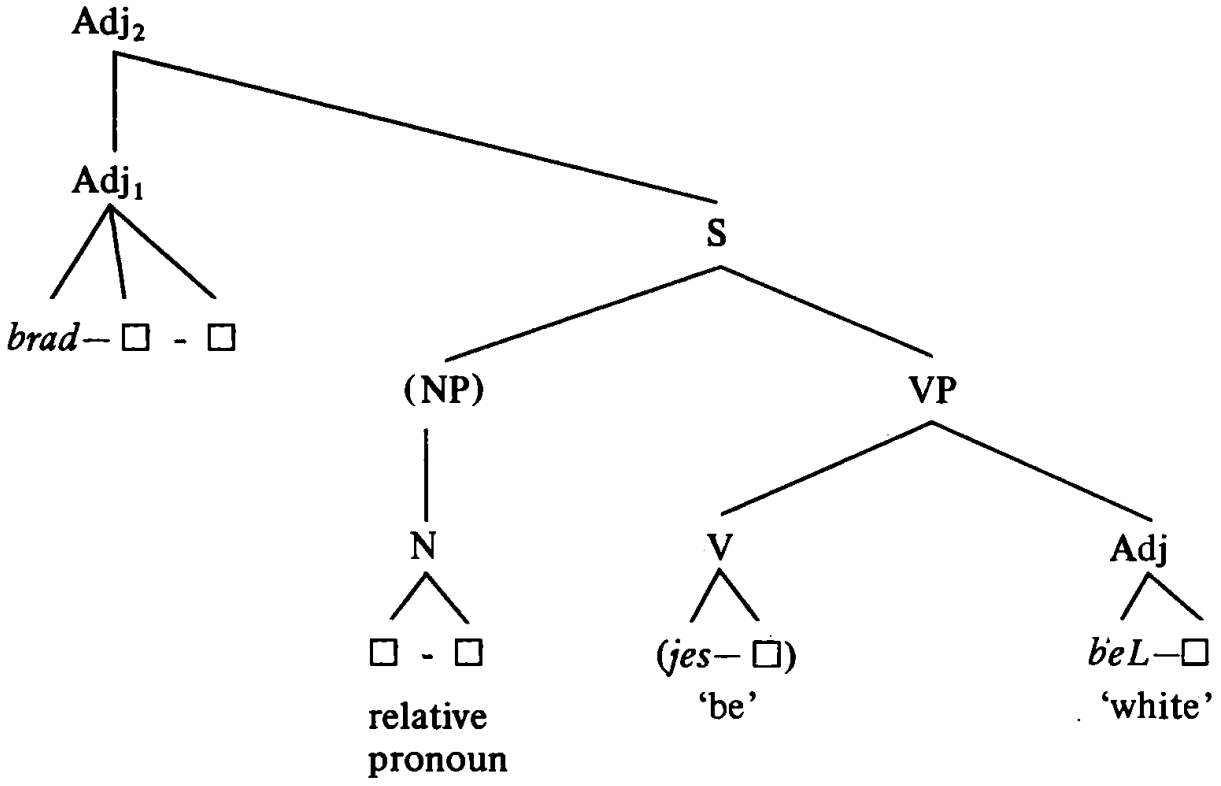
fact, this morpheme explains itself. *-O* is the absolutely unmarked inflectional ending in Slavic languages.[11] It is used to mark the neuter singular of nouns, adjectives and verbs and to mark the adverb function of half the adjectives. It morphologically completes verbals (all Adjs and past tense Vs) which have not been marked for agreement by syntactic rules: *živeti je težk-o* 'To live is difficult'. In short,*-O* is an inflectional morpheme just as *-(e)s, -(e)n, -e* are desinences used as interfixes in German: *Kalb-s-leder* 'calf leather', *Tag-e-buch* 'diary', *Seif-en-fabrik* 'soap factory', *Schwein-e-fleisch* 'pork'. In fact, the strength of the interfix seems to vary with the strength of the desinental system in any given IE language. Thus in the Slavic languages, which tend to be markedly desinental (5-8 cases in the languages outside the Balkans), the interfix is everywhere obligatory.[12] In German, where the inflectional systems are still effective but comparatively reduced, the effectiveness of the interfix is also reduced, so that besides the examples above, we find as many compounds without the interfix; *Kalb-fleisch* 'veal', *Mond-schein* 'moonshine', *Abend-mantel* 'evening coat', *Geld-gurtel* 'money belt'. In English, where inflectional endings have all but completely vanished, there are no interfixes at all: *houseboat, tablecloth, carport, knee socks.*

If the compound interfix is a desinence, its position must be accounted for by the rules which introduce the positions for desinences. There are two possible sources of these. The categorial component, which introduces lexeme positions by expansion, could expand each major category node into stem + desinence dummies. This would mean that the lexical derivation rules would have to insert their morpheme dummies between stems and desinental dummies, rather than simply expand stems from either side. Such an approach would also equate lexemes and desinences but not derivational morphemes at the categorial level. Since inflectional and derivational morphemes seem more similar than different, the M-component is the more appropriate place to differentiate them.

It is also possible that the lexicon automatically adds a dummy to each (final derived) major category stem as it leaves the lexicon.[13] The lexicon, as we have seen, must in any event have the power to insert morpheme dummies—a power we wish to restrict to deep structure. This

latter approach would consolidate the designation of all affix positions in the lexicon, just as all lexeme positions will be designated by the C-component. It supports the important distinctions already noted between syntax and lexemics, and between lexemes and morphemes. Furthermore, it will allow the categorial components and lexicons of inflectional and noninflectional languages to be pretty much the same. English and Scr, for instance, could be seen as having qualitatively identical categorial components and lexicons, distinguishing lexemes from derivational and inflectional morphemes. Nearer the surface, however, we find that the English M-component is considerably more impoverished than that of Scr. Scr has three classes of morphemes sensitive to the combinations of features [+Genitive, +Plural], [+Dative, +Plural], [+Accusative, +Plural], for example, while English has only one: the plural suffix.[14] That the position is marked in English, however, is clear from the fact that in all these situations most English nouns do receive a suffix, although one which just marks the plural. Unfilled dummies, of course, are not phonologically realized.

15



Taking the latter premise, then, as a working hypothesis, the complete postlexical, pretransformational form of (14) from NP_2 down, in cases where compounding occurs, will be (15). NP_2 has been changed to Adj_2 to reflect the broader domain claimed by the compound HAdj. The prenominalization T-rules, recognizing that the direction of modification may be preserved by fronting the Adj, and that there is no verb or subject noun with lexical content, and that the head noun is repetition, will prenominalize the Adj *beL*– □ 'white', or any other unmodified, underived Slavic adjective, with its assigned desinental position. The meaningless structure and the morphonemics between the dotted lines will be deleted and the extreme Adj-node will be reattached as a left branch at Adj_2. The output of the prenominalization rules will be roughly

16 $$_{Adj}(_{Adj}(bel– \square)_{Adj}(brad– \square - \square))$$

The only notation of *brada*'s nouniness will, in fact, be in its lexical feature store; the syntactic marking will be pruned.

(16) then enters the M-rules, where most of the morpheme dummies will be filled. There will be no word boundaries between Adj and N lexemes, because they occur under an Adj- rather than an NP-node; thus, no case agreement will be assigned. As a result, the desinence entered for the dummy after *beL*– will be the totally unmarked *-O*.

At least two alternative treatments of the negative HAdjs present themselves. The assumption that they are the natural results of an adjectival negation rule operating on top of the HAdj rule would seem to imply that their form should be **ne-brad-at, *ne-glav-at, *ne-nog-at* or **ne-brad, *ne-glav, *ne-nog*, for *ne-* is the regular prefix marking negative adjectives in Scr: *(ne)-čist*, '(un)clean', *(ne)-vid-ljiv* '(in)visible', *(ne)-odluč-An* '(in)decisive', *(ne)-pis-an* '(un)written'. Rather, the prefix assigned to negative HAdjs is *bez*, which also functions as the preposition meaning 'without, not-having'. This presents problems for sign theory in that not only must *bez* be described twice, but as a prefix it assumes a greater semantic role than do other affixes. If *-An* 'means' 'having', it would seem to lose its function if *bez-* in *bezbrižan* 'means' both 'not'

and 'having'. Assuming that the M-component assigns morphemes independently of derivational origin, not only is the theoretical difficulty facing structuralists circumvented, but an explanation of this deviance readily emerges: the morpheme *bez* is assigned to mark grammatical relations semantically equivalent to 'not having', regardless of lexical or syntactic origins. Since this is precisely what the combination of the HAdj and adjectival negation L-rules amounts to, we have the reason for the M-component's choice of *bez* to mark both the L-derivation and the 'negative possessional' case function.

An alternative would be to derive the negative HAdjs from prepositional phrases, e.g. *On je bez brade* 'He is without a beard': *On je bezbrad* 'He is beardless'. (Remember that in order to account for all the positions QAdjs appear in, they must be derived or initially inserted in predicate position.) This origin is quite appealing, for it is possible that *sa* 'with' and *bez* 'without' are prepositions marking syntactic derivations from some underlying POSS-construction. However, negative HAdjs are strictly constrained for no modifiers; the prepositions are not. Also, such a post-transformation rule would be asymmetrical in that there would be no corresponding positive derivation with *sa: On je sa bradom* 'He is with beard': **On je sa-brad(at)* 'He is bearded'. If the negative HAdj is derived with all other HAdjs, it will be part of a symmetric system much more characteristic of language in general. Finally, such a derivation would be an isolated case among Slavic languages, for in other IE languages it would be impossible. For example, in English one may not say *?He is less a beard* in the same sense as *beardless*, even though the negative HAdj derivation is among the most productive in the language.

If the negative HAdj rule could, in fact, apply to such a derivation, it would provide an example of a lexical rule applying to the output of T-rules and offer counter-evidence to the theory being advanced here. But there simply is no persuasive reason for presuming such an order of rules other than the phonological identity of the prefix-preposition, and we have seen elsewhere that the use of the same morpheme to mark lexical and syntactical derivations is commonplace. To include negative HAdjs

in this explanation not only avoids difficulties of order, but explains the otherwise deviant prefix *bez-*.

6.31 Derivations within Derivations

The theory sketched thus far seems to work well on first-order derivations such as *brada: bradat,* but derivations also occur within derivations, e.g. the comparative *brad-at-iji* 'more bearded' and the nominalization *brad-at-ost* 'beardedness'. Three solutions have been suggested for this complication. Chapin (1967, 1970) has proposed rule cyclicity as a solution, i.e. an extrinsically determined order in which lexical derivational rules may be applied. He was intrigued by such seemingly paradoxical orderings as the following (1) *-ation* precedes *-al* (*organizational*), (2) *-al* precedes *-ize* (*industrialize*), but (3) *-ize* precedes *-ation* (*organization*). Chapin's switching lexemes (*organize* ~ *industrialize*), leaves the impression that the situation is impossible. However, it is not difficult to find authentic derivations where such a suffixal ordering in fact can occur: *coeduc-ation-al-iz-ation* '[THE PROCESS OF [TO CAUSE (X) TO BEGIN [TO HAVE [THE PROCESS OF [TO COEDUCATE]]]]] '. The process nominalization has apparently applied twice in this derivation and clearly the order in which the rules apply here is nonrandom. Although such derivations are infrequent, the fact that they are possible demands a theory explaining the order of derivations and their possible reiteration within a single lexical extension. Once-only rule theories have the advantage of requiring neither ordering nor cyclicity of application. Transformationalist approaches, where lexical derivation *in arbore* originated, have been plagued by the sorts of problems faced by Chapin. It is worth noting, however, that the problem facing the generative lexicalist theory is materially simpler than those facing all competing theories of whatever ilk: we need only to explain the ordering of derivations, without regard for affixes.

Preliminary to answering these questions, we must know under what circumstances derivational reiteration is possible. To better understand these circumstances, affixational reiteration must be clearly distinguished

from derivational. In English, for example, it is possible to reiterate an affix that no longer functions as an affix, i.e. which has been idiomatized: *nationalization, rationalization.* But *coeducationalization* is an unrecorded coinage which ostensibly works, however stylistically awkward it may be; and, if it is grammatically legitimate, lexical theory must account for it. In fact, since nominalization applies both to adjectives and verbs, and since there are both verb and adjective derivations in IE languages, nominalization–which is a class name for several independent derivations–is more likely than other derivations to find its conditions for application at several junctures along a derivational lineage. It will be applicable to any underlying verb (*coeducate: coeducation*), any QAdj derived from that nominalization (*coeducational: ?coeducationality*), and to causative-inchoative verbs derived from the QAdj (*coeducationalize: coeducationalization*). All of these derivations strike me as applicable to conceivable circumstances. Thus it would seem possible for the same derivation to apply multiply along both branching and linear derivational histories, yet such repetition is remarkably rare and examples like *coeducationalization* are exceptionally awkward. This example, of course, is not in use. In fact, it is virtually impossible to find a lexical derivation which has undergone more than three rules in general, unless one is negativization.

This observation correlates with the extreme rarity of repeated affixes in IE languages. Kiefer claims that it is impossible to repeat an affix in Swedish. Scr, like English, allows repetition only with intervening idiomatization, and then there are only a handful of cases involving the most ubiquitous suffix, *-An* e.g. *vred-An* 'worthy; valuable': *vred-n-ost* 'value': *vred-n-ost-An* 'valuable'. In performance, the two adjectives are employed to distinguish the meanings 'worthy, worthwhile' and 'valuable, of value'. Although the relation between derivation and affixation is not direct, the avoidance of affix repetition indirectly supports the parallel such absence of derivational iteration among extensional histories. Until conclusive evidence to the contrary is made available, therefore, we shall assume that cyclicity is not a characteristic of lexical derivations. This leaves the question of what determines the order of lexical derivations before us.

Extrinsic ordering, in fact, is not a real issue. A lexeme's capacity to enter a derivation rule is determined by its internal structure. Its ability to be affixed is determined by local morphotactic conditions, i.e. the presence of terminal affixes (Chapter 7). Lexical rules apply whenever their input conditions are met without any obvious external influence on their order. The question then remains as to whether intrinsic ordering is an issue. How is the fixed order of derivations determined? Recent lexicalists have avoided the issue by stipulating that all lexemes, derivates and primes, are entered at independent addresses in the lexicon. Input to redundancy lexical rules is from any acceptable independent entry and the output is any other empty entry, pretty much in keeping with Table I, excepting only no accounting is made for the consistent classification of the outputs. The classes of outputs correspond to the classes of inputs. Independent-entry theory thus posits three types of lexical insertion: (1) insertion into lexical rules, (2) insertion into independent lexical entries and (3) insertion into sentences. The second process, according to Jackendoff, corresponds to the performative process of memorization.

Since the outputs of redundancy-rule lexicalist derivations are independent lexical entries, the derivations do not explain the consistency of lexical-syntactic classifications of inputs and outputs. Patently or latently, syntactic structures are incorporated into the entries themselves, as we have seen (1.12). *Employer* and *employee* are derivations marked with the subject-of and object-of syntactic relations, respectively, in addition to markings of animacy which determine that they are agent and patient rule outputs. *King* and *subject* are lexical rule inputs with the same characteristics. If lexical rules do provide each type of lexical-syntactic class with a rule input and output, then the number and types of lexical rule outputs are determined by the number and types of inputs—a characterization which seems to hold. There are agents, objects, patients, locatives, instruments both entering and exiting derivation rules.

Notice that these classes correspond to the various 'case' semantic interpretations of deep syntactic structure, but with additional lexical specificity. The fact that there are no purely syntactic L-derivates,

is itself indication that syntax alone does not determine L-derivation. However, it does seem to provide necessary conditions for it. As Chapter 9 will show, there are few IE lexical derivations which do not correspond to some deep-structure syntactic relation observable in the language. There can be no L-derivations operating on vegetable nouns producing derivates meaning 'parts of X growing underground'; or operating on animate nouns and distinguishing animals which fly or walk from those which swim, for no syntactic structures exist whose semantic interpretation makes these distinctions. Syntactic structure, by determining the range of relations semantically interpretable, seems to determine the basic nature of lexical derivation rules in IE languages.

The two types of relations involved in lexical derivations would seem to be syntactic and lexical. If we assume that L-derivations are generated *in arbore,* that they can interpret arborization in ways similar to the semantic component in fact, either directly or via the semantic component, we have an explanation of how the same relations that occur in syntax and lexical primes come to be in L-derivates without resorting to the introduction of syntax in any way into the lexicon. The stability of these relations in the deep-structure syntax and the lexicon becomes a function of lexical extension rules which supply language with class variants based on underlying lexical subclasses and syntactic relations. The lexicologist's task is to explain how the derivates, *ruler* and *ruled,* come to have the same relational meanings as syntactic subjects and objects, on the one hand, and lexical primes like *king* and *subject,* on the other. There would seem to be parallels between certain lexical prime relations and the basic relations of syntax.

The theory must explain this relational parallel in the context of an explanation of lexical ordering, of 'derivations within derivations'. The third argument for L-derivation *in arbore,* therefore, is that it provides an explanation of lexical ordering. The order of application of L-derivations is prescribed by the order of embedding in normal deep structure syntactical configurations. This approach avoids the question of inexplicable syntax in the lexicon without removing L-rules to the syntax. The authority of L-rules can be restricted to the delta-nodes serving as their inputs, the box-nodes characterizing their outputs and

the class marker (N, V, Adj, Adv) presumably dominating them. This represents no more than the lexicon's ability to determine the lexeme derivate class which will be marked with an appropriate affix by the M-component. Where lexical restrictions prohibit the operations of L-rules, the syntactic arborizations may be filled with pronouns and lexical primes which ultimately generate a denotatively exact syntactic paraphrase.

In this respect the present theory is, again, an adaptation of Lees' highly original approach, changing only the nature and location of the derivation rules. Rather than T-rules, L-rules with generative capacity are assumed. These rules have the capacity to incorporate certain semantically interpretable deep-structure features whose specific origin remains undetermined; perhaps, where their semantic interpretation corresponds to relations of the dominant, cardinal lexical classes, e.g. agent, patient, subject- and object-possession, instrument, place, material, etc. These rules cannot alter phrase structure other than the name of the node immediately dominating the box-symbol they insert. (Even this weak bit of syntactic tinkering will be eliminated by modifications introduced in Chapter 9.) The superfluous nodes are eliminated by later pronominalization and pruning rules. The only way to strengthen the arguments for *in arbore* L-derivation would be to relate the features incorporated by L-rules to deep syntactic relations. Some of the 'lexical' classes just mentioned suggest this might be a possibility.

The theory so far points to an L-derivation system which eliminates excess syntactic trappings when they outweigh the lexical substance, especially when realization of the syntactics would result in a generic meaning. The syntactics swept away by L-rules may be marked either by (1) the mere shift of the lexeme from one class to another, e.g. English *narrow: to narrow, police: to police, wounded: the wounded, a salmon: salmon* (color), *a chicken: chicken* (meat), or (2) displacement plus affixation. The necessity of the latter complication seems to be both a structural and semantic issue. If we can see L-rules operating on syntactically determined relations, we will have a more convincing hypothesis which claims that no lexical derivation can reflect any relation other than one generated by the base component – an empirically

testable hypothesis. This claim, of course, rests on shaky evidence for the time being; it will be argued definitively after the general workability of the basic theory of rule operations has been demonstrated. But the hypothesis is highly appealing in its offer of hope for a criterion against which competing theories may be measured. Of all the missing pieces of lexicological theory today, none is so crucial as this: a theory of factors determining L-rules which is empirically testable and which can therefore be used in deciding between competing theories of L-rule operations.

6.32 The Possessional Agentive Derivation

The agentive derivations in Scr are generated from both classes of verbals, i.e. verbs and adjectives: *star* 'old' *star-Ac* 'old man'; *pamet-An* 'smart': *pamet-nik*; *vaš-ljiv* 'lousy': *vaš-ljiv-Ac*; *grb-av* 'hunch-backed': *grb-av-Ac*; *prost-O-duš-An* 'simple-hearted': *prost-O-duš-nik*; *mir-O-ljub-iv* 'peace-loving': *mir-O-ljub-iv-Ac*; *tvrd-O-glav* 'hard-headed': *tvrd-O-glav-Ac*. Since derivations receiving *-at* are restricted to stems of no more than two syllables unless the third syllable is one of the terminal suffixes *-ost* '-ness' or *-ij* 'er',[15] we would expect the nonterminal agentive derivation to be blocked. Sure enough, except for sporadic naming items identifying biological species such as *glavatac* (plant), *glavatica* (fish), *okatac* (grape), *rukatac* (grape) and *zubatac* (fish), the productive suffixes *-Ac/-ica* are not attested adjoined to body-part HAdjs.[16]

There is, however, an ostensibly unrelated class of nominal agentives on *-onja* referring to males, especially men and oxen, which fill the function of possessional agentive in many instances. Several characteristics of these nouns suggest that they are, in fact, related to HAdjs, particularly to the subclass suffixed with *-at*. First, the definitions of these nouns contain the definition of the corresponding positive HAdj, e.g. *nosonja* = *nosat čovek* 'large-nosed man'; *glavonja* = *glavat čovek* 'large-headed man'. Second, the inherent characteristic and semantic intensification conditions hold among agentives exactly as among the HAdjs. Thus *grbonja, gušonja* denote men who have any hump or goiter at all, while *glavonja, nosonja, kosonja, plećonja* refer to men with

pronounced heads, noses, hair and shoulders, respectively; *bradonja, brkonja* fluctuate between these two interpretations. Perhaps the most convincing evidence is the fact that even the idiomatic usages of the HAdjs turn up in the agentives. For instance, *rog* 'horn' is the symbol of cuckoldry, so that *rogat človek* usually means 'cuckold' rather than 'horned man'. This is precisely the usual sense of *rogonja. Repat človek* may refer to a man born with a tail-like vertebral extension or, with the noun usually deleted, i.e. *repati* 'the tailed one', it means 'the devil'. Precisely these two unusual meanings are borne by *reponja.*

In each of these cases of idiomatic semantic readings, the idiomaticity is traceable to a special feature in the lexical inventory of the lexical prime. It is therefore possible to derive the agentives and HAdjs independently from the underlying lexemes with the same results as would be obtained from the linear scheme, lexeme → HAdj → HAgentive. But the greater part of such independent derivations would be identical; the exceptions and semantic eccentricities, parallel. Not only would this approach be redundant and uneconomical, since the agentive rule would merely be the sum of the HAdj and normal agentive rules, it would lose an important generalization, namely, that these agentives in no way differ from all others derived from adjectives.

Assuming the separation of derivation from suffixation, however, the agentive nouns receiving *-onja* may be derived without positing any new rules. They will be the result of the normal agentive rule applying after the HAdj rule. Again, *suffixational* differences may be treated discretely in terms of strictly morphological rules. The results of the agentive derivation's operation on the structure of (13) as already modified by the HAdj derivation (14) are outlined in (17). The rule has transferred those semantic features which define the agent to the feature inventory of the adjective stem, interpreting the subject-verbal-object relation in propositional terms. Although it has renamed the lowest node 'N' after attaching the box-node to it, it is interesting to note that, in the case of the agent, this is unnecessary. All the structure to the left of the broken line will eventually be pruned away (pronominalization rules are shown having already emptied the superfluous nodes), so that the agentive is destined to become NP_0. Constraints aside, the rule

operates on all verbals, derived or underived, in the same way.[17] No modification is required to account for the basic semantic characteristics of the agentive on *-onja*.

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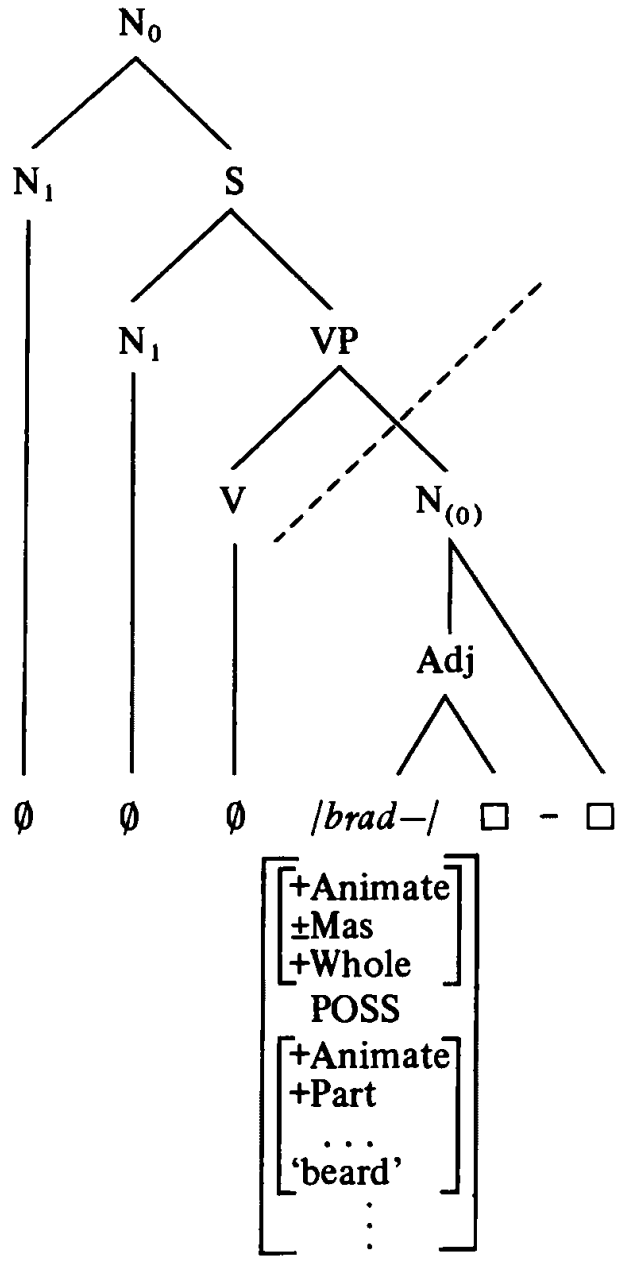


An unusual aspect of the *onja*-agentives is that they would seem to have no corresponding feminine form as do other agentives, e.g. *-Ac/-ica, -ač/-ač-ica, -telj/-telj-ka*. The *onja*-agentives are a recent Scr innovation; the suffix does not occur in other Slavic languages as does *-at*. The 1818 edition of Vuk's dictionary (Karadžić 1818) lists only 5 possessional agentives on *-onja*; the 1852 edition adds just 2 more, but subtracts

one. The most recent attestation is for *kosonja* 'long-hair' from a 1959 edition of *Politika*. This explains the greater marginality of the *onja*-agentives in comparison to the *at*-adjectives, but makes the absence of a feminine counterpart even more striking, since it points up the aggressive spread of agentives generally in Scr. The Appendix shows, however, that there are over 20 sporadic attestations of feminine possessional agentives in the major lexical sources and, with the exception of a handful with the dialectal variants, *-eša, -oša, -ulja*, all display the same suffix: *-ača*. Certainly, there are few speakers today who feel these agentives to be an integral part of their personal lexicons. Yet even sporadic attestations of almost 50% of the projected paradigm cannot be overlooked. The question is, of course, how to treat them. Specifically, what are the arguments for including rarely occurring elements in a linguistic system?

First, let us look at the option of not including the feminine variant of the possessional agentives in the derivational paradigm. If this tack were adopted, the sporadic occurrences of the feminine forms must be taken for accidents: the facts that the derivation is identical to the possessional agentive, that the feminine form parallels the availability of that option among all other agentives, the persistence of one suffix, *-ača*, or the phonetically similar variants *-eša, -oša*—must all be accepted as linguistically coincidental. If we accept such a strongly suggested generalization as coincidence, any linguistic generalization may be argued coincidental—unless linguistic generalizations are to be determined by frequency of occurrence. The latter option is blocked by the fact that frequency of occurrence or usage is a performance, not competence factor. To satisfy the demands of a linguistic theory, we need know only that the feminine forms can occur, that they are formed scrupulously according to rules observable elsewhere within the system and that they fit what would otherwise be a gap in the system. This is enough to establish the validity of the system itself. The *-ača* feminine agentives fulfill all these requirements. The real issue here, then, is not whether these feminine forms are a part of the competence paradigm, but how to explain the rarity of their occurrence, given the fact that they are linguistically generable. In fact, the masculine forms are relatively rare in

contemporary speech as well; the feminine forms are simply rarer yet. In Chapter 10 this question will be taken up in detail and resolved.

The function of lexical derivations by the present hypothesis is syntactic simplification: the reduction of superfluous syntactic arborization where the function of that arborization is predictable on other bases. Lexical derivation is clearly predicated on the assumption of the existence of certain general syntactic processes such as pronominalization, prenominalization (the reduction or elimination of redundant lexical items sharing the same referent), and pruning. Since affixes are not consistently attached to stems when derivation occurs, let alon 'have' the meaning of that derivation, the listener's ability to decode derivations encountered for the first time must rely on nonlexical means for semantic recovery.

In addition to his knowledge of all the T-rules, L-rules and M-rules to which the speaker might have resorted, the listener also has encyclopedic knowledge as to the range of objects to which the underlying stem may refer, as well as to the range of relations possibly existing between the underlying stem and stems to which it is associated in the sentence. He may also have knowledge of performative tendencies in the use of such derivations. Any speaker of Scr knows that the range of objects which may be characterized by a *brada* is limited to humans and a few animals like goats. The relationship of a beard to this class of animals is normally restricted to that of the former growing on the latter's chins. Thus with the knowledge that beards grow on the chins of some animals, that there are two QAdjs in Scr, SAdjs and HAdjs, a Scr listener encountering *bradata koza* 'bearded goat' for the first time will have no difficulty in choosing the correct interpretation. Even where HAdjs are not distinguished from SAdjs by affixation, e.g. *dim-ast* 'smoky', there is little risk that the listener will misdeduce the proper sense. The involvement of deduction in interpreting lexical derivations is an intriguing proposition which will be the subject of closer scrutiny in the conclusion of the book.

At this point our hypothetical system depends upon syntax, in that L-rules must rename the immediately dominating node of the main lexical entry; it depends upon semantics, in that it must incorporate a

mysterious semantic feature (POSS). Both of these operations are questionable and highly suspicious lexical operations. We will have to return to them after examining the nature of morphological rules.

CHAPTER 7

The Morphological Component: Affixation

7.1 The General Range of the M-Component

The evidence for a separate morphological component with the capacity to insert grammatical morphemes has been mounting in many quarters lately. Lees (1960) originally assumed that some affixation was a process independent of derivation, but he never developed the implications of the idea. Fillmore (1967) argued that the lexicon only inserts major class words while the minor class items must be inserted after the operations of the T-component. Babby (1975), Chvany (1975), Halle (1973) and Kiefer (1968) have demonstrated support on various grounds for this position. Even McCawley (1968) rests his case for GS lexical derivation on 'a later suffixation rule' which assigns order to transformationally inserted derivational affixes. To all this we may now add the arguments of the preceding chapters. The evidence of IE lexicons would seem to indicate that lexemes, phonological formants with extralinguistic referents, are copied and inserted into sentences by the lexicon at the approximate point of semantic interpretation according to standard TG theory. Morphemes, on the other hand, phonological formants with only intralingual grammatical reference, are copied and inserted by a morphological component which must operate after all grammatical relations have been established, i.e. following all T-rules.

The extent of the copy-insertion operations of the M-component is not yet clear. Here we wish only to demonstrate that affixes and lexeme permutations with affix functions (stem mutations) are carried out by the M-component. But if stems with purely grammatical functions, such as the copular *be*, are also inserted by the M-component as recent studies of IE predicate adjectives suggest, it is certainly possible that all items with strictly grammatical or grammatically determined reference are M-component copies. This would explain the similarity of prefixes and prepositions, the functional identity of emphatic, interrogative particles, etc. and semantically corresponding intonation patterns. Affixation surely is a function of a post-transformational M-component. Such a positioning of the morphology allows one and the same suffix to mark categorial, lexical and syntactic functions in cases such as those discussed in 5.2 (English *-ing*, Slavic *-Ov*, Persian *-ī*).

The conditions and features which determine affixation are independent of those which determine derivation. Lexically significant semantic categories play an important role in determining the affix of a derivation: geographical and 'elemental' nouns, nouns referring to vegetation, animals, organizations, names of repugnant conditions as well as strictly lexical subclasses such as 'concrete', 'count' and the like. None of these typologies is of any relevance to derivation except as we shall see in the following chapter.

The independence of M-rules from derivation rules allows for a clearer explanation of a morphological phenomenon found in older IE languages and which has proved troublesome to previous theories: reduplication. Since reduplication is not a productive synchronic IE phenomenon, there is no motivation to move far off course to explicate it in terms of the theory outlined here. However, since it is a problem which this theory must ultimately face, and since Aronoff and others have devoted a good deal of thought to it already, a few brief comments would not be out of place here.

Aronoff (1976: 73-78) raises the problem of reduplicated morphemes which undergo phonological rules vs. those which do not. Since he assumes 'word-formation' to be an essentially diachronic process ('once-only' rules) and, further, that these rules add both form and

meaning to fully specified 'words' in the lexicon and return their output to the lexicon, there is little common ground upon which to compare this theory with his. For this reason we can only note that the GL theory can handle the problems he mentions, explaining more and without internal contradictions. The fact that some reduplicated morphemes undergo phonological rules and others do not, does not necessarily reflect the need to order morpheme insertion rules both before and after P-rules. If the phonological component is an interpretive device whose output is linear utterances, post-phonological M-rules are out of the question.

In fact, the existence of morphemes which do not undergo phonological rules is restricted to reduplicative morphemes. These morphemes are by definition more abstract than phonemically defined morphemes and, therefore, are more apt than these morphemes to lose their identity. One way to mark them, to accentuate their 'morphemicity', might be to restrict them from certain or all phonological rules. Remember, too, that lexical stems undergoing derivation are tokens of lexical types, 'copies' in our terminology. A reduplicated morpheme is, therefore, a second generation copy, a copy of a copy. There is no a priori reason to assume that first and second generation copies are subject to the same operations. The phenomena noted by Aronoff may well be reflective of this circumstance.

In the preceding chapter we witnessed evidence for maintaining a clear theoretical distinction between the position of a morpheme and the morpheme itself. Combining both these aspects of morpheme assignment in one rule may be possible, but it is a simplification requiring justification lest it turn out to be an oversimplification. Another advantage of separating the concepts of morpheme and position is that it facilitates the description of reduplicative morphemes. It characterizes the fact the people seem to know the positions of morphemes independent of their knowledge of their structure. Clements (1975) discusses the fact that it would be convenient to originally mark a larger number of nominalizations for a reduplicative morpheme than actually receive them in Ewe. He goes on to suggest the possibility of introducing an abstract symbol, RED, which would be replaced by a reduplicative morpheme if not

deleted by T-rules under various definable circumstances. Assuming the present theory, however, no abstract symbol need be introduced. Nominalization, which will inevitably have to be a derivation separated from the method of affixation marking it, will be assigned an affixational position, a box-node. Then independent M-rules will either fill that node or not depending upon the contextual features under which Clements suggests the RED-symbol would be deleted.

The crucial point here is that the M-component of a grammar is an independent component. The structure of the morphemes it contains and inserts via M-rules is determined by the M-component alone, not by lexical, syntactic or phonological elements. The same morphemes are used to mark syntactic derivations as mark lexical ones, but since some phonological alternations are determined by morphological considerations, yet no strictly morphological alternations are regularly determined by phonological considerations, the morphology of a grammar is most probably situated between the T- and P-components. Since the P-component is an interpretive device like the semantic component, the implication here is that the morphology is the last abstract component of the grammar, a point to which we will return in 7.3.

The items inserted by the morphology are simple, but they reflect a complex of features associated with the stem to which they are attached, features which collect in the stem from various sources. Some of the features to which morphemes respond and which they reflect would seem to be copied from the verb stems onto nouns under certain prescribed syntactic conditions, e.g. Subject, Object, Means, Sociative; while others are inherent features of the stem with optional and/or fixed markings, e.g. Declension I/II, [±Plural, ±Singular, ±Masculine, ±Feminine]. There are no individual morphemes corresponding to any one of these features. The features are consistent within their own system, as are the morphemes within theirs (Declension I, II, etc.), but the relation between the two systems has to be contextually variant and not direct. That is, the context determines the relation between the feature system and morphemic system in any given utterance, as Jakobson aptly pointed out in his two fundamental articles on the Russian case system. The verb *šetati* (*se*) 'take a walk' frequently assigns a sociative

function to one of its secondary objects. If that object is *prijatelj* 'friend', which has been optionally marked [+Sg, -Pl, +Mas, -Fem] during lexical copying and insertion, it will be prefixed with the preposition *sa* 'with' and suffixed with *-Om* by the morphology: *šetati sa prijatelj-em* 'walk with a friend'. If the stem is marked [+Pl], the preposition will remain the same, but the suffix will be *-ima: sa prijatelj-ima* 'with friends'. If the stem is marked [+Sg, -Pl, -Mas, +Fem], the original affix paraphernalia, *sa + Om,* will be inserted along with an additional morpheme, *-ic,* which switches the stem from masculine to feminine Declension II: *sa prijatelj-ic-om* 'with a lady friend'.[18]

Not only do both prepositions and affixes share the identical descriptions in their paradigmatic reflection of collections of individually unexpressible features, so do several types of stems which receive prepositions and endings. Chvany (1975) has shown convincingly that of the two functionally distinct forms of *byt'* 'to be' in Russian, the copular and the existential, the former functions merely as a vehicle upon which to attach verbal endings corresponding to tense, mood and person features accruing to the VP-node under Auxiliary. Copular *be,* therefore, is a type of proverb, empty except for reference to the grammatically determined features of verbs. It is in this aspect akin to other proforms: pronouns, proadjectives, proadverbs—all of which accumulate features in moving through the T-rules and thus must surely be affixed in the M-component. However, since *be* and several other proforms, e.g. the personal pronouns, are highly suppletive, and since this suppletion is bound to the variations of these same grammatical features, if the morphological endings reflecting these features must be inserted in the M-component, so must the stems to which the endings are attached. An interesting implication of this is that there must be at least two levels of morphemic insertion: one for proform, stems, plus a later one for inflectional endings. Since derivational morphemes, like the *-ic* mentioned above, subsequently receive inflectional endings, they must also precede the insertion of inflection. Derivational morphemes may be inserted by the same rules which spell out proforms such as *č-ij-i* 'whose', *m-oj* 'my, mine', *k-ak-o* 'how, as', *t-ak-o* 'so, thus', *k-ak-av* 'what kind of, such', *t-ak-av* 'that kind, such'.

7.2 Affix Copying and Insertion: The HAdjs

Affixation in Scr and other IE languages seems to be largely a function of features of the stem as a whole, and the surrounding phrase structure; they are not directly related to derivation rules. Of course, the lexical stems will have undergone derivation(s) by the time they reach the M-component, so that features added by derivations will be available to condition M-rules, but in many cases they simply do not do so. It is easy to find examples like *med-en* from *med* 'honey', which is an MAdj: *meden kolač* 'honey cake'; an SAdj: *medene reči* 'honeyed words'; an HAdj: *medeno vino* 'honeyed wine' and an RAdj: *medena zajednica* 'honey (producing) association'. In such cases, the features added by derivation are not reflected at all by affixation. On the other hand, we find plenty of derivational distinctions reflected in affixation, e.g. from *riba* 'fish', we get *rib-An* and *rib-ljiv* for HAdjs: *ribno/ribljivo more* 'fish-filled sea'; *rib-olik* for the SAdj: *ribolika ruka* 'fish-like hand' and *rib-lji* for the RAdj: *riblji restoran* 'fish (seafood) restaurant'.

There is no direct relationship, therefore, between derivations and the morphemes which mark their operation. Instead, morphemes respond to various combinations of features in the stem regardless of the origins of those features.[19] For example, the combination of features [POSS: [+Animate, +Whole]], usually triggers the suffix *-ljiv*: *buv-ljiv* 'flea-infested', *crv-ljiv* 'wormy', *hajduk-ljiv* 'outlaw-infested', *rib-ljiv* 'fish-filled, *vaš-ljiv* 'lousy'. But if this same combination occurs with a formative containing *-ič-*, the suffix *-av* is regularly added: *sten-ič-av* 'bedbug-infested', *gusen-ič-av* 'caterpillar-infested', because *-ič-* attracts *-av* more strongly in general when POSS is present: *brad-av-ič-av* 'warty', *bubulj-ič-av* 'pimply', *grozn-ič-av* 'feverish', *pahulj-ič-av* 'flaky', *rup-ič-av* 'holey', *trep-av-ič-av* 'eye-lashy'.

The suffix *-av* with persistent regularity is added to noun stems containing POSS which refer to undesirable physical states.[20] Although this latter qualification ostensibly belongs to the realm of performance, it may justifiably be included in a competence theory since it has repercussions at the linguistic level if the final selection of affixes is a linguistic process. Moreover, 'undesirable' is not meant here in an individual-

istic sense, but in terms of class desirability extending certainly throughout Yugoslavia and generally throughout the IE world. Examples of this class are *gnoj-av* 'suppurative', *gub-av* 'leprous', *kil-av* 'having a hernia', *metilj-av* 'having liver fluke', *mrlj-av* 'stained', *osp-av* 'broken out, having a rash'.

Both *-ljiv* and *-av* occur very frequently with verb stems. The former suffix is the most active marker of the PPAdj (cf. English *-able*) in Scr: *top-ljiv* 'meltable', *uoč-ljiv* 'noticeable', *usvoj-ljiv* 'adoptable', *uračun-ljiv* 'accountable'. In other words, it is active in marking the head noun as the object of a transitive verb featured for potential meaning, i.e. [+Verb, +Transitive, +Potential, +Object]. Both suffixes are used to mark the subject of intransitive potential adjectives again, with *-av* tending to mark undesirable behavior, though somewhat less regularly than in the case of the HAdjs: *govor-ljiv* 'talkative', *drem-ljiv* 'drowsy', *plač-ljiv* 'given to crying', *plaš-ljiv* 'shy, fearful'; *bang-av* 'lame', *vrsk-av* 'lispy, lisping', *brblj-av* 'blabbery', *muc-av* 'stuttery', *prg-av* 'irascible', *vrištav* 'shrieky'.

Unmarked compounds and negative Adjs of all origins in the overwhelming majority of cases receive the suffix *-An* in addition to the interfix or prefix. Despite a sprinkling of phonologically determined deviations like *bezakonski* 'illegal', subregularities like the subclass under consideration here and outright exceptions like *miroljubiv* 'peace-loving', marking negatives and compounds is one of its major functions. This may be, however, the result of this suffix's being the completely unmarked adjective suffix which accretes to stems bearing the features of any derivation not otherwise marked. In fact, as the most active marker of RAdjs, it may suffix noun stems which have undergone no derivation, but which merely end up under an Adj-node (cf. Babić 1963; Levi 1973). If this is the case, *-An* will probably be inserted by the final adjective suffix or allomorphy rule, without any conditions, after all other rules have applied, much the same as *-O* is inserted when no other desinence is inserted into a box-node requiring a desinence.

Since stems acquiring *-at* must be specially marked, we now have the conditions, roughly, for the insertion of the morphemes *-av*, *-ljiv*, *-at* and *-An* (cf. Beard 1966 for more details). These suffixes vividly

exemplify the independence of the conditions on the morpheme insertion rules from those on the derivation rules. It is true that distinctions are frequently made on the basis of POSS, SIMIL and other features inserted by the derivation rules, but never on the basis of these features alone – always in conjunction with other features.[21] Since L-rules have already inserted the appropriate derivational features, no reference need be made to the lexical derivations in order to predict the potential affix morphemes in Scr. The rules themselves, in fact, are exceedingly simple:

18a $$\square \rightarrow \textit{-av} \;/\; \left(\left\{ \begin{matrix} \mathrm{X} \\ \begin{bmatrix} \left\{ \begin{matrix} \begin{bmatrix} \mathrm{POSS} \\ \mathrm{+Noun} \end{bmatrix} \\ \begin{bmatrix} \mathrm{SUBJ} \\ \mathrm{POTENT} \\ \mathrm{+Verb} \\ \mathrm{-Trans} \end{bmatrix} \end{matrix} \right\} \\ \mathrm{-Good} \end{bmatrix} \\ \begin{bmatrix} \mathrm{POSS} \\ \mathrm{POSS} \supset \textit{-av} \end{bmatrix} \\ \begin{bmatrix} \mathrm{SIMIL} \\ \mathrm{SIMIL} \supset \textit{-av} \end{bmatrix} \end{matrix} \right\} \right) \left(\begin{matrix} \textit{-ic} \\ \begin{bmatrix} \mathrm{POSS} \\ \mathrm{+Noun} \end{bmatrix} \end{matrix} \right) - \_\_\_$$

18b $$\square \rightarrow \textit{-ljiv} \;/\; \begin{matrix} \mathrm{X} \\ \left\{ \begin{matrix} \begin{bmatrix} \mathrm{POSS} \\ \mathrm{+Noun} \\ \mathrm{+Whole} \end{bmatrix} \\ \begin{bmatrix} \left\{ \begin{matrix} \mathrm{OBJ} \\ \mathrm{SUBJ} \end{matrix} \right\} \\ \mathrm{POTENT} \\ \mathrm{+Verb} \\ \mathrm{+Trans} \end{bmatrix} \end{matrix} \right\} \end{matrix} - \_\_\_$$

18c $$\square \rightarrow \textit{-at} \;/\; \# \begin{matrix} \mathrm{X} \\ \begin{bmatrix} \mathrm{POSS} \\ \mathrm{POSS} \supset \textit{-at} \end{bmatrix} \end{matrix} - \_\_\_ - \left(\begin{matrix} \square \\ [\mathrm{T}] \end{matrix} - \right) \begin{matrix} \square \\ [\mathrm{Des}] \end{matrix} \#$$

18d $\square \rightarrow$ *-An* / ($\square$ -) X - ____

In these representations of the four rules just discussed, all conditions are assumed to be subjacent to Adj.

Rules like (18a-d) sense the presence of a designated semantic feature ensemble in the stem, match it with any suffix specified by the stem for that feature, then insert the affix copy designated by the rule into the dummy slot. The special features POSS $\supset$ *-av*, POSS $\supset$ *-at* are spelled out here for clarity's sake and have no relation to the actual morphemes *-av* and *-at*, except to trigger them. The classes they identify are arbitrary and, lexically, should be designated by some arbitrary notational system. These rules represent the speaker's knowledge that these suffixes are associated with the stem-context combinations designated by the conditions in the various rules.

(13-18) offer a compelling demonstration of the independence of derivation from affixation. Not a single condition holding for the derivation has any relationship to conditions on affixation. The only connection between the two is that sporadically the same stem will be subjected to any two derivation and suffix rules, but then either such a derivation or suffix rule could be paired with some T-rule by the same measure. This means that the semantics of derivation is in no way determined by the affix; the affix merely alerts the hearer to the fact that the stem is derived and that he must deduce or recall the semantics of the derivation. The meaning of the derivation is recoverable at the level of performance as the result of there being few derivations. At most there would seem to be only 5 to 7 cardinal adjective derivations: 3 or 4 from nouns, 2 or 3 from verbs. Given the knowledge that a derivation has occurred, the stem-class context in which the derivation occurs, plus the knowledge that so few derivations are available, the listener will have no difficulty in deducing the derivation intended by the speaker uttering a neologism.

By divorcing derivation from suffixation, three derivations, semantically identical except for one feature independently accounted for, may be conflated, e.g. *brad-at* 'bearded', *bez-brad* 'beard-less' and *bel-O-brad* 'white-beard-ed'. This is possible only by delaying the

problem of suffixation until the M-rules. Since M-rules are independent of derivation, no problem arises, for the conditions on the insertion of *-at* are clear of the HAdj derivation. Yet these conditions are related to the semantic class 'salient animal body parts', for precisely those stems which acquire *-at* in simple positive derivations, go unsuffixed in negative and compound derivations (cf. Appendix). To account for this, (18c) has been conditioned to operate only if the stem (X) is preceded by a word boundary (#). If the stem is preceded by any item other than a word boundary, suffixation is blocked. Thus the special lexical feature for this subclass is three times motivated: it specifies these stems for a rule in the M-component, which by applying or not applying predicts the suffixation of all the different HAdj variants of this subclass. One independently motivated derivation rule and one special M-rule explain what had previously been considered three separate derivations (cf. Roeper & Siegel 1978).

Perhaps more important than the conflation of the three L-rules and the explanation of their structural variants with one M-rule, is the elimination of the necessity for the awkward device of the 'zero morpheme' (cf. Townsend 1968 especially). Forms like *bezbrad* and *belobrad* are the results not of a mysterious process which inserts an undetectable yet meaningful sign, but from the operations of perfectly regular derivations which are not marked by affixation because of the nature of the lexical primes involved.

Assuming M-rules to be acyclic, there are two possible outcomes of the inability of (18c) to suffix negative and compound HAdjs. First, the HAdj may be ejected out of the derivational order altogether and receive no suffix. This is apparently what does in fact happen to HAdjs. But notice that (18a) and (18b) have been ordered with just the opposite in mind. Here those deverbal APAdjs not marked [-Good] and furthermore not receiving the suffix *-av*, will continue on to be suffixed with *-ljiv*. The reason for this discrepancy seems to be that in the former case the stems are strictly determined to receive *-at*, whereas, in the latter cases, the stems need not be marked for any specific suffix. If a stem is marked for a specific suffix under a given set of conditions, when those conditions are only partially met, the derivation is ejected

from the order. This convention itself is unstable at present, however, and may be already archaic. There is a growing tendency for the unsuffixed forms to remain in the order, receiving the ultimate, unmarked morpheme *-An: bez-griv-An* 'maneless', *bes-kost-An* 'boneless', *bes-kril-An* 'wingless', *bez-nož-An* 'legless', *bez-nos-An* 'noseless'; *bel-O-brč-An* 'white-moustached', *dug-O-kos-An* 'long-haired', *bel-O-kož-An* 'white-skinned' are but a few of such forms already appearing in the dictionaries.

There is also a morphological problem in the absence of the adjective suffix in the agentive despite clear semantic evidence of the operation of the HAdj rule. Elsewhere agentives preserve adjective suffixes. Isačenko (1972), in dealing with a similar situation in Russian, Babić (1966), in describing Scr adjective derivation, and others, have suggested 'morphological truncation' as a solution. The obvious weakness of truncation is that it requires two rules to accomplish nil: the truncation rule removes the very suffix some previous rule was created to insert. Of course, the semantic distinction remains after truncation, in violation of the sign theory of morphemes. If sound and meaning are like the two sides of a sheet of paper, removing the former of necessity removes the latter.

In fact, the separation of derivation from affixation explains morphological truncation, just as it explains 'zero' morphemes and 'empty' morphemes. Derivation without affixation is one of the possible results of this separation (cf. 1., above, p. 113). All that is required to predict the absence of *-at* in the *-onja/-ača* agentives is the condition that *-at* may not be inserted into an agentive derivation or, as stated in (18c), *-at* may not be inserted into a box-node followed by a nonterminal affix (T = 'terminal'). This allows the insertion of *-at* before the nominalization marker *-ost* '-ness' and the comparative *-ij*, but not before any of the agentive markers. Taken together with the constraint on *at*-insertion when preradical morphemes are present, it becomes clear that *-at* is a 'shy' morpheme, inserted only in the company of those morphemes which mark derivations which are parts of the definition of 'qualitative adjective'.

Before examining in detail the constraints on *at*-insertion, let us examine a class of Russian negative HAdjs and the verbs derived from them which are perhaps Isačenko's strongest case for truncation.

19

bez lóšadi 'without horse'	*bez-lošád-#n-yj* 'horseless'	*o-bez-lošád-et'* 'become horseless'
bez vodý 'without water'	*bez-vód-#n-yj* 'waterless'	*o-bez-vód-it'* 'deprive of water'
bez zemlí 'without land'	*bez-zeḿel'-#n-yj* 'landless'	*o-bez-zeḿel-it'* 'deprive of land'

The verbs in (19) contain not only all the semantic features of the corresponding adjectives, but all of their morphemic markings save the suffix -#n- itself. There are three logically possible explanations for the pattern of stress correspondences we see here. (1) The verb pattern may be derived from the adjective; (2) the adjective pattern may be derived from the verbal,or (3) both verb and adjective patterns may be the results of a third factor. (We have seen above that the derivation of these negative HAdjs from PPs obscures their IE communality. There is no reason to assume that the preposition *bez* is not of derivational origin.)

Isačenko accepted the first of the above three explanations since semantic factors clearly eliminate the second from consideration. But the third possibility has not been considered and, if we accept the strong case presented by Babby (1973) for Russian adjectives and verbs forming a single class, i.e. verbals, we would expect this possibility in Russian. Thus the prosodic parallels of (19) are just as naturally explained as normal verbal allomorphy adjustments occurring when [+Negative, POSS] are present in the stem. This explanation posits no new rules, certainly no truncation rule, and expands the conditions of the HAdj allomorphy rules in only one very natural way.

The three constraints bearing on *at*-insertion described so far seem unrelated. The suffix does not enter derivations which (will) contain *-onja/ača* (nor *-aš, -oša, -eša* as they pertain to these HAdjs), or which are negated or compounded. It does freely enter derivations marked to receive *-ij* or *-ost.* Judging from the fact that no agentive derivations, regardless of the actual suffix they receive, contain *-at,* this constraint would seem to be upon the agentive derivation rather than upon suffixation. The absence of the suffix in compounds and negatives, on the other hand, seems strictly morphologically motivated, i.e. the presence of morpheme slots preceding the stem prevents *at*-insertion. We cannot claim that this constraint is derivational as we have elsewhere claimed that simple, negative and compound HAdjs are all derived via the same rule. It is difficult to explain the admission of *-ost* and *-ij* into derivations with *-at.* Since the nominalization of adjectives and *-ost,* and the comparative and *-ij,* stand in one-to-one relation to each other, respectively, there is no reason why we cannot assume the occurrences of these suffixes with *-at* to be either derivationally or suffixationally determined.

The final answer to this question is involved in issues of the lines of derivation and causes of derivational blockage which cannot be resolved here. There are, however, beyond doubt, classes of terminal derivations and suffixes which prohibit further derivation or suffixation, and this distinction seems to influence the insertion of *-at.* Neither the agentive derivation nor the suffixes associated with it are terminal; they may at least receive the possessive adjective suffixes *-Ov/-in.* Nor are the complex HAdj derivations terminal, as examples like *bezrukac* 'person without an arm', *beskrilac* 'wingless animal', *bezrepac* 'tailless animal', *bezglavac* 'headless one'; *sedobradac* 'gray-bearded one', *crnogrivac* 'black-maned one', *golotrbac* 'bare-bellied one', *tvrdoglavac* 'hard-head', *crnovunac* 'black-wooled one' demonstrate. Comparatives and deadjectival nominalizations do not occur in larger derivations, however. These observations allow us to formulate a tentative constraint on the insertion of *-at* into lexical derivations.

-AT— is constrained from entering any lexical derivation marked for additional nonterminal affixation.

Apparently the *at*-rule will have to possess the power to read the morphological structure of the entire lexical structure into which it is inserted. But assuming a system of agreement which involves shifting features up and down P-marker branches as Crockett (1976) proposes for Russian, this power will not have to exceed phonological word boundaries. The alternative, morphological rules with power similar to the L-rules discussed here, that is, the power to read the cumulative syntactic structure at the point of morpheme insertion but not affect it, has not been explored, nor will it be explored here, since it would make no essential difference to the present theory.

7.3 The Lexeme-Morpheme Adjustment Rules

The adjustment rules for a theory separating derivation from affixation are simpler than those demanded of a theory lacking this distinction. The avoidance of morphological truncation and zero morphemes makes a material contribution to that simplicity. One need assume that there are only three types of rules: (1) morpheme insertion rules which select the proper suffix, (2) structural adjustment rules, which are much like Aronoff's allomorphy rules in that they involve phonological adjustments based on morphological considerations, and (3) strictly phonological rules. Only the former two are part of the M-component: the first of these have just been discussed, the latter will be described in this subsection. The terms 'allomorph' and 'allomorphy' will be eschewed because of the long history of difficulties in defining them in terms which clearly distinguish them from morphemes (cf. Nida 1946). For example, it is easy to claim that the variants */-t/, /-d/, /-id/* are allomorphs of a past participle morpheme */-d/*, for they may be phonologically derived from */-d/*. But the same past function of this morpheme is related to unmarked stems (*hit, cut, put*), mutated stems (*drunk, swung, sunk*) as well as mutated stems marked both

with */-d/* and */-en/* (*caught, bought, told; driven, sworn, broken*). The separation of regularity from irregularity in neither the derivation nor the affixation here is served by the concept 'allomorphy'. The crucial problem here, too, is morphological asymmetry and semantic regularity greater than formal; 'allomorphy' settles neither of these issues.

Since no direct relation between morpheme and meaning is assumed in this theory, allomorphs lose their relevance to morphological theory. The only concepts required for a complete description of the morphology of IE languages are lexical, phonological and semantic features, syntactic classes and affixes. A distinctive affix is one which is unrelated to any other morpheme via phonological rules. Such discrete affixes are inserted into derived lexemes in response to accumulated features in the stem. Some of these features appear in the original stem while others are added by various derivations. Thus *-ljiv* may be inserted after a noun referring to a whole animal which has undergone the HAdj derivation (*žab-ljiv* 'froggy, frog-infested'), after an intransitive verb which has undergone the APAdj derivation (*govor-ljiv*, 'talkative') or after a transitive verb which has undergone the PPAdj derivation (*mer-ljiv* 'measurable'). Only by considering the context including the stem, can the speaker recognize and generate previously unencountered or forgotten derivations on *-ljiv*. Yet he seems perfectly capable of doing so. The morphological regularities also no doubt help him maintain derivations in (nonideal) memory storage.

One may formulate a productive morphoneme, say *-D*, for English, which is added to the verb stem whenever it is marked [+Past]. We would fail to capture the past participle generalization, however, if we did not allow the same M-rules to insert *-N* after specially featured stems with the same past participle markings ([+V, -Adj, +Past] under an Adj-mode), and further add instructions to the phonological component to effect certain morphologically determined feature permutations for the past tense forms; *drive/drove/driven; ride/rode/ridden.* The phonological alternation */aj/ ~ /ow/ ~ /i/* observable in these examples is a lexically prescribed, morphologically determined, phonological alternation. That is, it is not a regular phonological alternation, but occurs only among an arbitrary subclass of lexemes and then

only in certain prescribed morphological contexts. For this reason, and since theory must characterize each feature of the phenomena it explains, all three components mentioned, the lexicon, morphology and phonology, must be involved properly in the alternation. We must assume, then, that each of these verb lexemes contains a feature which the morphology can interpret in the right contexts as a trigger for it to instruct the P-component as to the proper distinctive feature assignment. Ideally, the M-component's instructions to the P-component in these instances will conform to the nature of regular M-rules.

Just as lexical verb entries must bear a feature marking their conjugational class in Slavic languages, in the Germanic languages they must bear a marking for any 'strong verb' phonological alternations. But neither the lexicon nor the morphology are capable of carrying out phonological operations. One of the lexical features for */drajv/*, */rajd/*, etc., must be an arbitrary signal referring these verbs to a subset of the M-rules which will have the conditions for determining which phonological value to assign. P-rules cannot determine morphological environment and M-rules cannot make phonological changes. This type of rule will be called a structural adjustment rule and, as Aronoff points out, they apply both to the underlying affixed stem as well as to the affixes themselves. They do not have the power to insert or delete full morphemes, although they may be capable of shuffling full phonemes. If Halle (1974) and Micklesen (1978) are correct, they are capable of assigning accent.

Before contemplating the nature of structural adjustment rules and the phonological instructions they convey, let us look at a well-known affixational situation in Slavic. There are three suffixes inserted to mark singular possessive adjectives in Scr: *-in* is added to most subclasses of Declension I and II feminine nouns (cf. P. Ivić 1972 for a discussion of the declensions), e.g. *žen-in* (*žen-a*) 'a/the woman's', *krav-in* (*krav-a*) 'a/the cow's', *Zvezd-in* (*Crvena zvezda* 'Red Star', a soccer team) 'the Star's'; *-Ov* is generally added to masculine Declension I nouns, e.g. *brat-ov* (*brat*) 'a/the brother's', *slonov* (*slon*) 'an/the elephant's', *Fiat-ov* (*Fiat*) 'Fiat's'. The third is irrelevant here. The speaker seems to know that both of these morphemes may refer to the same

derivation in the proper context, that they are in complementary distribution *in this function* but not in others. *-Ov* is further used in many contexts where *-in* does not occur, including among HAdjs derived from nouns without reference to declensions: *breg* (Declension I, mas.) 'hill': *breg-ov-it* 'hilly', cf. *brazd-a* (Declension II, fem.) 'furrow': *brazd-ov-it* 'furrowed'. *-Ov* can be seen as an accidental alternate of the collective suffix *-j* among some monosyllabic noun stems, e.g. *bor* 'pine': *bor-ov-i* (plural), *bor-j-e* (collective). (An interesting side note is the fact that *-in* is used as a 'singulative' suffix among the members of a large subclass of derived nouns denoting geographical origin, e.g. *Beograd* 'Belgrade': *Beograd-jan-in* (sg.), *Beograd-jan-i* (pl.) 'Belgrader'.) Among the verbs, *-Ov* alternates with *-uj: rad-ov-a-ti* 'to make happy' ~ *rad-uj-e-m* 'I make happy'.

The conflict between the 1st and 3rd principles of Nida (1946) dissolves in a theory with separate conditions on derivation and affixation. Both *-Ov* and *-in*, like all other morphemes, are empty and can refer only to the operation of specific derivations in certain contexts. The 'alternation' of morpheme variants other than those phonologically determined, is controlled by the conditions of morpheme insertion. The ostensible paradigmaticity of such suffixes arising in treatments of *-Ov* and *-in* as 'possessive adjective' suffixes, is a reflection of only a part of the underlying features to which M-rules respond, a part morphologically accidental: lexical derivation. The imperfection of the derivational paradigms comes from the fact that only some of the morphologically relevant features for affixation are inserted by derivation rules. Affixation rules do not have to absolutely parallel L-rules due to the fact that several mental operations occur simultaneously in interpreting derivations. This permits M-rules to respond to semantic, lexical and syntactic information irrelevant to derivation, which explains the indirect relation of derivation and affixation.

More akin to traditional allomorphy rules are the alternations indicated here by capital letters, e.g. by *L*, *A* and the *O* of *-Ov*. One of the advantages of assuming phonologically interpretable lexical features in each lexical item rather than phonological distinctive feature matrices à la Halle, is that this allows M-rules intervening between the

lexicon and P-component to make morphologically and lexically determined instructions to the P-rules in cases where whole phonemes are involved, without disturbing the purely phonological rules. *O*, for instance, represents a so-called 'morphonemic' alternation. It has no phonological realization, but instead marks a decision which the M-rules must make: it must be replaced by */o/* or */e/*, either of which can be phonologically interpreted, but which are synchronically all but unrelated at the P-level. One of the advantages of having matrices of distinctive features in lexical entries is that in many of such cases, the alternating phonemes need only be partially described. A 'morphonemic' rule may then fill in the remaining phonological features on the basis of morphological context. Unfortunately, many such alternations, including */o/ ~ /e/* after palatal consonants, cannot be represented in a common feature matrix of any generality. At the extreme, there is a rule which alternates */e/* with nasal stops in a certain subclass of verb stems. In the position preceding a consonant-initial morpheme, */n/* and */m/* are replaced by */e/* in the verb stems in which they occur as the final phonemes: *po=čn–* 'begin': *po=če-ti* 'to begin', *po=če-t-An* 'initial', *po=če-t-Ak* 'beginning'; *pred=uzm–* 'undertake': *pred=uze-ti* 'to undertake', *pred=uze-t-An* 'enterprising', *pred=uze-t-j-e* (*preduzeće*) 'enterprise, undertaking'. Not only does Halle's approach, whereby full or partial matrices of phonological distinctive features are maintained directly in lexical items, mix components, it is of little use in predicting, and even less useful in explaining, such variations as these (cf. Hooper 1976 for an extreme reaction to this problem).

If the phonological component is indeed an interpretive device as Chomsky has consistently maintained, it makes little sense to have phonemic features anywhere in the deep structure of grammar. If the lexicon is an abstract lexical device, the addresses of its items should be marked by abstractions, interpretable by features of the P-component. These arguments must lead us to conclude that phonemic representations in the lexicon are at least as logically consistent with the demand for abstractness in the lexicon as are phonologically underived distinctive feature matrices. The major 'morphonemic' alternations in Scr include *L (l ~ o)*, *A (a ~ ∅)*, *T (t ~ ∅)*, *N (n ~ ∅)* and *O (o ~ e)*. The minor

alternations include */e/ ~ /o/ ~ /i/*, */m,n/ ~ /e/*, etc. The members of these alternations bear little or no resemblance to each other. For these reasons, and for reasons even more compelling to be raised in the following chapters, the lexical demands for abstractness lead us to a definition of the term slightly different from the definition of 'phonologically abstract' employed by Chomsky & Halle. Therefore, structural adjustment rules will be assumed to operate on traditional phonemes.

The final argument for phonemic lexical representation is the neurolinguistic case. It may be recalled from the discussion of Broca's and Wernicke's aphasia (pp. 55-57), that if Broca's aphasics can speak at all, they produce lexemes quite well amid a paucity of grammatical morphemes. From this it follows that Broca's area is a center for grammatical morphemes which contains few if any lexemes. Wernicke's aphasics exhibit the opposite set of symptoms, plenty of grammar but few lexemes, from which we conclude that it is the coordinating center for lexemes, i.e. it connects lexemes to Broca's area. Now Broca's area is the motor association area of the brain for the articulatory organs of the mouth, throat, and diaphragm. Distinctive features describe articulatory processes; nasality, aspiration, voicing, fronting—all refer to acoustically measurable results of articulatory gestures. Distinctive features, therefore, are most closely related to the functions of Broca's area, which explains why people suffering from the most severe damage to Broca's area cannot speak at all—they cannot produce linguistic sounds. The morphological theory most clearly representing these facts would have distinctive features a part of the articulatory grammar of Broca's area, units in the device which interprets the features of lexemes and grammatical morphemes and translates them into articulation via the motor strip of the left hemisphere. Lexemes, on the other hand, are anywhere but in this particular area. Inclusion of phonological distinctive features in the lexicon as well is not only theoretically redundant but also without empirical support.

Since not all occurrences of */l/* are in complementary distribution with */o/* (depending upon whether a vowel follows), there must be some lexical convention marking those which are. Capitalization is used here to mark the lexical and morpheme positions determining the range of the

rule which accounts for this morphonemic alternation. This allows the structural adjustment rules to be straightforward and quite simple, e.g.

20 L → l / _V
otherwise L → o

Certainly this rule is far simpler than any rendition in terms of distinctive features which would have to account for the phonologically unlikely shift from consonantality to vocality. However, once the M-component adjusts all stems and affixes to reflect the proper conventional phonemic representation, given the morphological context, it is an equally simple task for the P-component to assign each phoneme a phonetically interpretable distinctive feature matrix. (20) is a strictly morphological rule; it involves neither lexical, syntactic nor phonological features (although such features may be read as context). Phonological distinctive features are not part of grammar, however, and will not be available. For this reason, the symbol V in (20) must be interpreted as a shorthand morphological symbol for the six Scr vowel phonemes, not the distinctive feature [+Vocalic].

Boundary and accent markers are also assigned by M-rules in all probability. Halle's accent rules seem directly applicable to the Scr data under discussion here (cf. Appendix), assuming the accent system proposed by P. Ivić (1965). The structural adjustment rules would assign Halle's [+H] to the suffixes *-at, -onj, -ač* wherever they occur, as well as to the second lexical stem of compounds containing the feature POSS and/or not assigned a derivation suffix. Then all syllables preceding the one marked [+H] will also be assigned this marking. The P-component will assign accent to the rightmost occurrence of [+H]. The system works perfectly here because all of the possessional derivations receive suffixes with fixed accent.

There are, then, in conclusion, no truncation rules or phonemically dissimilar allomorphs involved in lexical derivation. There are no 'zero morphemes'; all morphemes are 'empty' in the sense that they have no dictionary meaning and their reference is restricted to certain relations determined by the grammar. The morphemes marking these relations

cannot be increased in a synchronic sense as can the store of lexical items. Even diachronically, the changes are very slow indeed and the majority of grammatical relations of lexical derivation remain the same for all IE languages. The essential issue of morpheme copy-insertion is the context. Given a stem and an affix morpheme together, the ideal speaker-listener can deduce the meaning of an extended lexeme without knowing that the morpheme bears any specific meaning. The implications of this interpretation for the speech act will be taken up in Book III. Either */-ov/* or */-ev/* following a Declension I noun in Scr can indicate possessivity if followed immediately by a concrete noun, the subject-of relation if followed by a nominalization, a conjugation marker if occurring after a verb stem and, elsewhere, a referenceless affix extender. The speaker must know that they represent a single morpheme at some level and the range of possible references it has. He must know that in the first context it is in complementary distribution with *-in* or, more precisely, that in those contexts *-in* refers to the same relation if the stem is feminine. All of this knowledge is accounted for and characterized by derivation rules separate from affixation, affixation by contextually determined copy-insertion rules, and a set of instruction rules which determines the proper phoneme to be interpreted in distinctive features by the P-rules. The occurring exceptions and gaps in the various derivation families must be explained by a more detailed theory of derivational performance. Such a theory will be presented after the question of the origin of derivational features has been settled. It is to this problem that our attention must now turn.

CHAPTER 8

The Types of Lexical Derivations

8.1 Two New Questions

The preceding chapters outlined the elements of a theory of lexical derivation which captures the fundamentals of possessional derivations. Before pursuing the implications of this theory and expanding it to include other IE lexical derivations, it might be useful to review the advantages of the theory and check for new problems it might have raised. There are 6 major advantages in the GL theory outlined in Chapters 5-7.

1. It provides for the derivation of all lexical extensions, compound and simple, embedded or not, which display the same basic lexeme with the same semantic characteristics, via the same rule. There seem to be different types of IE compounds (Meys 1975), but compound adjectives are the output of L-rules with optional modifier capacities. Even though the constraints on the output of these rules may vary with the presence of the optional modifier, even though the affixes may vary, the semantic and structural identity of these rules must be represented by nothing less than theoretical identity at some level.

2. It provides for the proper semantic interpretation of lexical derivation based on the syntactic configuration of the underlying structure and the semantic interpretation rules required for normal semantic interpretation of syntax. It achieves this without the importation of

syntax into the lexicon or the exportation of lexical operations to the syntax. It is capable of capturing the external syntactic relations which Chomsky's X-bar convention explains, e.g. the several derivations syntactically related to nominalizations: *John's proof of the theorem, the proof of the theorem by John*; but also the internal syntactic relations, such as the subject and object relations in agentives and patientives: a *runner* is anything that runs, a *reader* is anything that reads; *mixture* means anything that has been mixed, just as *the damned* is a collective patient derivation referring to all people who have been damned. Chapter 6 demonstrated how these internal subject and object relations can be maintained in possessional derivations without resorting to T-rules and without repeating any rule of semantic interpretation.

3. It provides an explanation of equivalent syntactic paraphrasing comparable to that of either the generative semanticist or the transformationalist approaches, yet without either set of assumptions. It did leave unclear the nature of the features determining derivation, e.g. POSS. This issue is one which must be settled before the GL theory may be evaluated against competing theories.

4. GL theory provides an explanation of (a) morphological asymmetry, (b) 'zero morphemes', (c) morphological truncation, (d) overdetermined and underdetermined lexical affixation, (e) 'empty morphemes' and (f) partial regularities of a wide variety. In fact, it provides for individuating various types of surface irregularities heretofore lumped together in one class of 'idiosyncrasies'. It provides a theoretical apparatus capable of accounting for derivations which have subregular or irregular affixes, but still fall within the semantic range of productive lexical rules, e.g. *knowledgeable, honorable; breadth, height.*

5. It provides an explanation of lexical idiosyncrasy in its distinction of lexical extension from lexical stock expansion. The separation of derivation from affixation allows the latter performance process to take advantage of affixational regularities without regard to regular derivation, e.g. *transmission, suspension.*

6. It provides a competence model much more amenable to the data of performance theory, especially that required to explain speech errors, TOT phenomena, word association, aphasia and recall phenomena

of experiments in cognitive psychology–all of which indicate that surface lexical units are composed as they are spoken according to the abstract representations we have of their parts. This knowledge would seem to include an awareness of their derivational composition and morphological composition separately maintained. Fromkin's examples *nationalness, groupment, intervenient,* Carroll's (1969) TOT example, recalling *inCONgruOUS, infectiOUS* and *CONtextual* in search of *contagious,* McKay's experiments mentioned in Chapter 1 and the fact of temporally linear sound production–all indicate that lexical extensions are reconstructed each time they are uttered according to separate stores of information we maintain about their semantic, syntactic and morphological structure. Moreover, this characterization holds for idiomatic as well as for regular derivations.

The preceding chapters also raised two new problems. If lexical derivations are not directly related to the affixes which mark them, as lexemes are so related to their meanings, how are they so readily maintained in our memory? There is so much morphological asymmetry that affixation obfuscates derivational classes. Yet there seems to be no more ambiguity in our use of lexical units than is found in syntax. Moreover, the basic stock of IE derivations, as will be shown in more detail in this chapter, has not changed significantly since the earliest evidence of Sanskrit. Since the lexical shift of stems in IE languages has closely paralleled the shift in phonological structure, it is surprising to note that the number and nature of lexical derivations has changed no more–perhaps less–than has deep syntactic structure. Obviously, these two questions are closely linked. There is a permanence to lexical derivations that does not characterize morphology or even lexical primes. It is apparent both synchronically and diachronically, and relates lexical derivation to IE syntax. Major support for the theory of Chapters 6-7 would derive from evidence that this permanence is related to the separation of derivation from affixation.

In the course of the foregoing chapters it became evident that some revision of contemporary postulations of lexical structure would be necessary in order to maintain the identity of the various grammatical components of contemporary language theory. The lexical insertion

rule must be revised as a 'copying-insertion' rule. Such revisions will inevitably lead to a need to revise the model of the lexical derivation rule proposed in Chapter 6. It is also possible that there may be several different types of lexical derivations. All of these surviving questions must be attended.

The most important question left open by the preceding chapters, however, is that of the origin of the features transferred by derivation rules, e.g. POSS. This question was circumvented on the basis of there being four equally plausible explanations of these features. Of course, there must be some way to demonstrate that one alternative is preferable; otherwise, all four lose their plausibility. Since the answer to this question will no doubt influence the modifications of the model presented in Chapter 6, it is to this question that we must first turn. The question, then, of this chapter will be, what determines the nature and origin of those lexical features manipulated by lexical derivation rules. Do they originate in the categorial component or the lexicon? Hopefully, the answer to this question will bear upon some of the other questions under discussion and lead us on to a more expeditious settlement of them all.

In order to examine the factors determining L-derivation, we will have to analyze an inventory of actual L-derivations. This requires that our assumptions as to the basic nature of L-derivation, i.e. 'transparency', be made clear. Derivational transparency refers to the capacity of an L-rule to predict perfectly the meaning of its output on the basis of input morphology. Since we are assuming that semantic drift is irrelevant to a competential lexical theory (cf. 10.32-10.33), we must maintain a strict definition of transparency so that the performative theory of later chapters will have a clear basis for distinguishing performative data from competential. Throughout the remainder of this chapter and in those to follow, this definition of transparency will be assumed:

> *Any L-rule* $X \rightarrow X + Y$ *is transparent if and only if* $X + Y$ *may be used to refer to all referents of* X *as determined by category* Y*, i.e. all instances of* Y*'s referent which are characterized by* X*'s.*

Swimmer, for example, is transparent to the extent that all agents (it is an agentive derivation) who generically swim may be referred to by *swimmer.* The V + Agentive relation also must be generic, for generi-city is the nature of all descriptive L-derivations (cf. 3.2).

The instrumental derivate, *reader,* on the other hand, is restricted in usage to refer only to a few specific types of instruments of reading: reading texts and electrical machines for reading microfilm and not, say, eyes or eye-glasses. In the case of restricted referential usage, the critical issue is the derivate's potential: *may* it be used in an unrestricted way? The feminine French correlate of *reader, liseuse,* for example, is used to refer to book marks, reading chairs (locative derivation?), reading lamps and stands. It strikes me that similar usages are possible in English and could be predicted to occur in informal conversation.

Restricted usage is notably different from idiomaticity. Not even the basic sense of *drawer,* for example, can be derived from *draw,* for *draw* in this sense has been replaced by *pull* in contemporary dialects. Moreover, one could not refer to a *drawer* as a *puller,* for *drawer* is now fully idiomatized. There are also idioms which have always been idioms, e.g. names of species adopted from descriptive derivates like *red snapper* (a fish). Although snappers are red, their name has nothing to do with the fact that they snap, for they snap no more than other fish and no doubt less than sharks and barracudas. *Snapper* is simply a name for a species taken from a derivate whose transparent meaning, 'any agent which snaps in any way whatsoever', has been supplanted by the species description.

The question of idiomaticity has already been dealt with in the theory of idioms of 3.2; restricted referential usage will be dealt with in Chapter 10. This chapter and the next are focused on transparent L-derivations as just defined.

8.21 The Cardinal IE Adjectivizations

The extent of lexical derivation in the IE languages has been thoroughly analyzed by such linguists as Marchand for English, Fleischer

and Henzen for German, Belić for Scr, Vinogradov et al. (1961) for Russian, and others. The problem remains to effect a synthesis, derive a theory which explains all the analytic data in a coherent, liberating and enlightening way. Toward the achievement of this end, we will examine the adjectivizations and strict nominalizations in Scr, still our favorite exemplar for the richness of its lexical operations, hoping that the nature of the derivational rules involved here will shed some light on the gaps and diminishing productivity of lexical derivations in English and elsewhere.

One can isolate at least 8 types of adjective derivation in addition to participles, following Belić's analysis. Even though Scr has preserved but one participle (past passive), it should be included in our consideration of lexical adjectivizations, for it points up certain contrasts in comparison with other derived adjectives. Importantly, all types of participles behave under at least some circumstances like normal QAdjs and, as is well known, 'conditional' past participles behave precisely like QAdjs. Genericity is the nature of the lexicon, of lexical items. Therefore, those past passive participles which may refer to a condition which is presently in the referent of the noun they modify, must be considered lexically derived. Those which refer to specific or temporal conditions must be by nature syntactic. Thus in *a wounded man, wounded* refers to a generic condition ond behaves like a QAdj but in *a man was wounded by a bullet,* it refers to a specific event and is more like a syntactic variant.

There are four cardinal types of nonparticipial qualitative adjectives (QAdj) in each IE language.[22] First, there are HAdjs, meaning 'HAVING X,' such as those discussed in Chapters 6 & 7, e.g. *brad-at* 'bearded', *trav-An* 'grassy', *čvor-Ov-it* 'nodose', *modul-ar-An* 'modular' *vaš-ljiv* 'lousy', *sten-ič-av* 'buggy'. Next, there are SAdjs, meaning 'LIKE X', e.g. *cinič-An* 'cynical', *čovečan* 'human', *devojač-ki* 'girlish', *budal-ast* 'foolish'. Third, there are two QAdjs derived from verbs, including the APAdj (the 'agentive' adjective), meaning 'WHICH X-es', e.g. *razor-An* 'destructive', *eksploziv-An* 'explosive', *izraz-it* 'expressive', *milozvuč-An* 'nice sounding', *govor-ljiv* 'talkative'; and the PPAdj, akin to the old Sanskrit gerund, but now meaning 'WHICH CAN BE X-ed', e.g. *razor-ljiv* 'destructible', *čit-ljiv* 'readable', *golic-av* 'ticklish', *vid-An, vid-ljiv*

'visible', *brod-An* 'fordable', *voz-Ak* 'drivable'.

The relation of the active and passive participles in other IE languages to these last derivations has caught the attention of several writers, but no revealing characterization of the distinction has come to light other than the obvious fact that the participles may refer to actual action, while the lexical derivations cannot. This characterization, for some reason, does not carry over as nicely to the agentive adjective, which is marked here nonetheless as the 'active potential adjective' (APAdj). This terminology is used to point out the parallel between participles and QAdjs in that both demonstrate both active and passive variants.

Similar to the nonqualitative participles in Scr are the possessive adjective (PAdj; not to be confused with the possessional adjective, HAdj) and the material adjective (MAdj). The latter is a straightforward RAdj in Russian. In Scr, however, both may occur in predicate position like QAdjs, though they are not usually compared, used adverbially, nominalized or intensified. Thus one may say *kuća je kamena* 'the house is (of) stone' and *kišobran je Mitin* 'the umbrella is Mita's', but constructions like *?naša kuća je više drvena nego kamena* 'our house is more wooden than stone' or *?kišobran je više Mitin nego Sašin* 'the umbrella is more Mita's than Sasha's' are not universally accepted.[21] Adverbs *(*)kameno, (*)drveno, *Mitino, *Sašino;* nominalizations **kamenost, (*)drvenost, *Mitinost, *Sašinost* are ungrammatical, and the adjectives cannot be intensified: **vrlo kamen,* 'very stone', **vrlo Mitin* 'very Mita's'.

Finally there are the mysterious true relational adjectives (RAdjs) which, like compounds, seem plagued by the missing verb nexus so that any relation that can exist between nouns is expressible as an RAdj + N construction. Yet, there are recognizable classes of RAdjs, e.g. purposives like *šivaći* 'sewing': *š. mašina* 'sewing machine'; *pisaći* 'writing': *p.papir* 'writing paper'; *igraći* 'playing': *i. karte* 'playing cards'. There are ablative and locative RAdjs from geographical proper nouns like *jugoslavski* 'Yugoslav', *dubrovački* 'Dubrovian', *argentinski* 'Argentinian'. But the RAdj class remains a mélange of derivations, all of which share the same distributional features; but it still is not clear that they

may be predicted even on the basis of a few highly general semantic features as Levi has suggested. The problem of the unpredictable verb nexus discussed by Marchand (1965ab) remains in such derivations as *životni standard* 'living standard', *Vukov rečnik* 'the Vuk dictionary', i.e. written by Vuk, *Zmajeva nagrada* 'Zmaj award', i.e. named in honor of Zmaj. While these may be examples of idiomatic lexical stock expansion, the case has not been made and cannot be made here. Further progress is hardly probable until a full explanation of the difference between RAdjs and QAdjs is available.

The advent of high-frequency borrowing from Latin has led to the importation into all IE languages of perhaps one new class of QAdjs. Constructions such as

21 His approach is (very) scientific.
His explanation is (too) technical.
His interest is (purely) biological.
The number is (absolutely) astronomical.

may reflect abstract nouns that have undergone some cardinal QAdj derivation, but they require quite different semantic interpretations in comparison to native derivations. These derivations appear in all IE languages, but they are relatively new, applying to newer professions and professional areas. Until further investigation clarifies their position in the derivation system of IE languages, they will not be included among the IE cardinal adjective derivations, which are:

QAdjs meaning

(1) 'HAVING X'	(HAdj)
(2) 'LIKE X'	(SAdj)
(3) 'CAN X, X-es'	(APAdj)
(4) 'CAN BE X-ed'	(PPAdj)
(5) 'HAS BEEN X-ed'	(PPP conditional)

Semi-RAdjs meaning

(6) 'HAS BEEN X-ed'	(PPP unconditional)
(7) 'BELONGING TO X'	(PAdj)
(8) '(MADE) OF X'	(MAdj)

RAdjs meaning everything else, especially

(9a) 'IN/FROM X'

(9b) 'BY MEANS OF X'

(9c) 'FOR THE PURPOSE OF X-ing'

.

.

.

(9n) 'etc.'

To arrive at such a small number of cardinal derivational meanings, one must make two basic assumptions. First, it must be assumed that context plays a major role in the interpretation of the MEANING of a derivation, as Jakobson insisted. In generating the English sentence

22 John made a knowledgeable statement

we must assume that *knowledgeable* is interpreted as an HAdj not merely on the basis of the appearance of *-able*, for it is more productively a marker for the PPAdj derivation; but on the basis of *-able* occurring after a noun, where it always marks the HAdj derivation: *honorable, peaceable, charitable.* But even with the interpretation of the object NP as 'a statement having knowledge', it is not clear what the phrase might REFER TO, for certainly statements cannot 'have' knowledge in the same way as people, e.g. *John is knowledgeable.* It seems that meaning may depend upon context and reference may depend further upon deducing the logical range of possible interpretations from pragmatic context. When there is a disjunction between meaning and the possible reference of an utterance, listeners ask, as it were, 'What could such a meaning possibly refer to?' In this case, the speaker might have in mind that it is John who 'has' the knowledge, but associates that knowledge with *statement* to indicate that it is reflected in the statement. It might be the case that there are different kinds of possession to which POSS may refer; some animate, some not. In any event, so long as the distinctions between meaning and reference, competence and performance are maintained, the rather small catalog of classical adjective derivational meanings stands with surprising firmness, and the proportion of irregularity in the lexicon begins to approach that of syntax.

8.22 The Cardinal IE Nominalizations

There seem to be three qualitatively different classes of IE nominalizations, making them a somewhat more complex group. First, there are gradational derivations. Both diminutives and augmentatives remain in productive usage in Scr, even though the latter occur with less frequency than the former. For virtually every underived noun of Slavic origin, there is a possible diminutive and augmentative.

23

	Diminutive	Augmentative	
pas	*pas-ić*	*pas-ina*	'dog'
jezik	*jezič-Ac*	*jezič-ina*	'tongue'
jabuka	*jabuč-ica*	*jabuč(et)ina*	'apple'
kuća	*kuć-ica*	*kuć-et-ina*	'house'

As usual, the affixation is less predictable than the derivations. The augmentative is particularly susceptible to overdetermining morphemes; *-eT,* is frequently inserted without function. It also occurs in animate young nouns and substance nominalizations from animate nouns. The gradational derivations fall somewhere between lexical and purely inflectional forms (cf. Stankiewicz 1968), in ways similar to the comparatives, i.e. they are highly paradigmatic but the suffixes marking them do not fall in final position.

Next there is a series of derivations involving subcategorization features such as *Feminine, Masculine, Plural* and *Singular.* These features are obligatorily implied by the feature *Animate;* however, *Singular* and *Plural* characterize inanimate nouns as well. Following Chomsky fairly closely, Crockett (1975) has recently described these as syntactic features for Russian and developed a system of feature copying to explain agreement in Russian which could easily be adapted for Scr. These features are far more active in the lexicon than in the syntax, however, and the arguments for postulating them as lexical features are more convincing.

First, gender and number features are fixed for many if not most lexical items, e.g. *makaze* 'scissors' [-Sg, +Pl], *ćebad* 'blankets'

(collective) [+Sg, +Pl], *vazduh* 'air' [-Sg, -Pl]. The M-component assigns plural paradigm endings only to strongly marked lexical items, i.e. [-Sg, +Pl]. Those items which may appear either in the singular or the plural must be optionally or conditionally marked to capture the fact that singular and plural assignment is at the speaker's option, i.e. theoretically random.

Subcategorization features are also involved in lexical derivation, or, at least, what seems to be derivation. It is possible that collectives, feminines and the like might just as well be derived by conditions on the cooccurrence of these features. For instance, collectives, [+Sg, +Pl], are not freely derived, but are limited to certain lexical subclasses such as animate nouns marked [-Mas, -Fem] (animate young) and masculine nouns naming trees.

24		Collective	Plural	
	slon-č-e	*slon-č-ad*	*(slon-č-ić-i)*	'elephant calf'
	jagnj-e	*jagnj-ad*	*(jagnj-ić-i)*	'lamb'
25	*jasen*	*jasen-j-e*	*jasen(ov)i*	'ash'
	bor	*bor-j-e*	*bor(ov)i*	'pine'
	šljiva	. . .	*šljiv-e*	'plum(tree)'
	brez-a	. . .	*brez-e*	'birch'

Various conditions on the cooccurrence of subcategorization features can predict the forms in (24-25). The feature *Young* could be inserted by a redundancy rule automatically when [+Animate, -Mas, -Fem] occur. A similar rule might optionally adjust [-Sg, +Pl] to [+Sg, +Pl] making a plural noun into a collective. The important factor here is that these changes be made in the lexicon, before sentences reach the syntactic agreement T-rules. Any unmarked subcategorization features remaining after L-rules must be assigned a value before departing the lexicon, therefore, by an automatic redundancy rule which randomly assigns values to any such features unaffected by previous rules.

The stem *slon* 'elephant' is marked as an animate noun; therefore, redundancy rules automatically assign it the features Mas, Fem, Sg and

Pl with random or conditioned values affixed. The assignment of these values may be accomplished by separate lexical rules, but this is irrelevant to the present work. *Slon* will be assigned Declension I masculine endings if marked either [+Mas, -Fem] or [+Mas, +Fem], for it refers either to the bull elephant or to elephants generically. If the values [-Mas, +Fem] are assigned, however, a suffix *-ic*, which demands Declension II feminine endings, will be added to the stem, i.e. *slonica* 'cow elephant'. In any of these cases, the Sg and Pl markings will be limited to [+Sg, -Pl] or [-Sg, +Pl], for there is neither a mass nor collective form associated with *slon* or *slonica*. Should the features be marked [-Mas, -Fem], however, the possibility of [+Sg, +Pl] does arise: *slončad* 'elephant calves' (collective). One may either assume that [-Mas, -Fem] triggers a redundancy rule which inserts a lexical feature *Young* into the lexical feature inventory of *slon* in this instance or, one may assume more simply that 'young' will be the semantic interpretation given to animate nouns marked [-Mas, -Fem].

The point here is that there seems to be an area of lexical 'derivation' operating on the same features which determine inflectional endings. That is, derivational and inflectional operations seem to be intertwined in an interesting way. The interest derives from the potential light such intermixing might shed upon the perennial question of the relation between derivational and inflectional systems: whether they are distinct or two sides of the same coin. How does one go about proving this? The data of (24-25) would seem to indicate that (1) there are two ways of realizing the semantically interpretable features under discussion: via 'extrinsic', syntactic means, i.e. with inflectional endings, e.g. the plurality of *slončići* 'elephant calves' or *borovi* 'pines' ([-Sg, +Pl]); or, via 'intrinsic', lexical means with suffixes generally linked to lexical and syntactic derivation, e.g. *slončad, borje*—forms extrinsically singular ([+Sg, +Pl]). (2) The features which are involved are those characterizing the declensional system, yet simultaneously corresponding to certain lexical subclasses.

Deverbal and deadjectival nominalizations which do not affect the meaning of the underlying structure will be assumed, after Marchand, to be syntactic derivations. Thus *čitanje knjige* 'the/a reading (of) a

book' or *Ankina blesavost* 'Annie's craziness' will be assumed to be underived surface forms of *Ø čita knjigu* 'Ø reads a book' and *Anka je blesava* 'Annie is crazy', respectively, when they occur under NP-nodes. This is not to exclude from lexical derivation all deverbal nominalizations on *-(e)nje* or deadjectival ones on *-(n)ost* on the basis of similarity of suffix as Chomsky (1970) has proposed for English nominalizations. Before a decision can be made as to whether a derivation is the result of lexical or syntactic processes (or both), a fuller examination of IE derivations must be conducted. Specifically, we would not want to exclude from further consideration those nominals on *-(e)nje* and other affixials corresponding to 'inner' subjects and objects whose relation to their underlying verb is the same as that of agents and patients, i.e. which name the class of all things that can be the subject or object of the verb underlying the derivation.

26	*X iznenađuje* 'X surprises'	X = *iznenađenje* X = 'a surprise'
	X zaražava 'X infects'	X = *zaraza* X = 'an infection'
27	*X odgovara Y* 'X answers Y'	Y = *odgovor* Y = 'an answer'
	X pita Y 'X asks Y'	Y = *pitanje* Y = 'a question'

Closer examination of (26), however, reveals that the possibility of inanimate subject nominalizations may be eliminated from consideration. Most such verbs also accept animate subjects, in which case the inanimate 'subjects' still may occur but in some other case.

28	*On iznenađuje nekoga X-om* 'he surprises someone with X'	X = *iznenađenje* X = 'the surprise'
	On zaražava nekoga X-om 'he infects someone with X'	X = *zaraza* X = 'the infection'

29 *X traje 5 dana* — *trajanje = 5 dana*
'X lasts 5 days' — 'the period = 5 days'

X teži 5 kg. — *težina = 5 kg.*
'X weighs 5 kgs. — 'weight = 5 kgs.'

Examples (29), of course, are verbs with patient subjects and in these cases no subject-class derivations are generally possible. Ostensible subject nominalizations such as *vodopad* 'waterfall' from *pasti* 'fall' and *voda* 'water', or *plovac, plovak* 'float' from *ploviti* 'float', are defective in some way, suggesting that they are lexical stock expansions rather than lexemic extensions. Thus while a waterfall is 'water that falls', the term refers specifically to natural water phenomena. *Plovac, plovak* refer specifically to corks and buoys; dialectally *plovac* refers to sailors and the feminine *plovka,* to ducks. None refers to ships under sail or other floating objects. This lends support to the position that either all deep subjects must be agents or that there is no deep subject. Let us tentatively assume the latter, encouraged by Jakobson's conclusion that the subject case, the nominative, is the absolutely unmarked case.

There is no question, however, but that the agentive nominalization is one of the most productive derivations in IE languages.

30 *voditi* 'lead': *vodilac, voditelj* 'leader'
čitati 'read': *čitač, čitalac, čitatelj* 'reader'
blebetati 'blabber': *blebetalo* 'blabberer'
emancipirati 'emancipate': *emancipator* 'emancipator'

As in all other IE languages, a wide range of affixes is available to mark this derivation, including *-L-O,* a regular instrumental marker. This affix is normally attached to agentives derived from verbs referring to unfavorable actions and the derivative tends to be pejorative, e.g. *cunjalo* 'snooper', *mazalo* 'dabber, smearer' (reference to a painter), *prisluškivalo* 'eavesdropper'. The insult is formalized in the insinuation that the person referred to is a thing, dispossessed even of animacy.

In the Slavic languages the patientive nominalization also enjoys notable productivity. Even where no affixed derivation such as (31)

is in use, the past passive participle may be quite freely used directly under an NP-node for the same effect: *zaraženog nisu propustili* 'they didn't allow the infected one in'; *povređeni* 'the injured'. In English this derivation is restricted to collective usage only, e.g. *the injured, the killed-in-action,* but in the Slavic languages the participle may be marked for mas. or fem. sg., gendered or ungendered pl. There seems to be no reason to assume in these cases that some deep structure noun such as *čovek* 'man', *žena* 'woman' has been deleted (cf. Mel'čuk 1979); rather, it is simpler to assume that the derivation is productive, but since participles may reflect gender and number, the nominal suffixes have become redundant. They are now added only to lexically marked stems.

31	*izbaviti* 'rescue'	*izbavljen* 'rescued'	*izbavljen-ik/ica* 'one rescued'
	zatvoriti 'imprison'	*zatvoren* 'imprisoned'	*zatvoren-ik/ica* 'prisoner'
	okriviti 'accuse'	*okrivljen* 'accused'	*okrivljen-ik/ica* 'the accused'

Presumably the same derivation operates on predicate adjectives (32). Both adjective and participial agentives draw on the same set of suffixes, and both adjectives and participles may occur directly under an N-node with the definite adjective endings and serve as functional (syntactic?) agentives, e.g. *mrtvi* 'the dead one', *bradati* 'the bearded one'.

32a	. . .	*lep* 'beautiful'	*lep-ot-an/ica* 'beautiful one'
32b	. . .	*mrtAv* 'dead'	*mrtv-Ac* 'corpse'
32c	*greh* 'sin'	*grešAn* 'sinful'	*grešn-ik/ica* 'sinner'
32d	*brbljati* 'gab'	*brbljiv* 'gabby'	*brbljiv-Ac/ica* 'gabby person'

The affixation in (31) and (32) indicates that the patientive derivation may be simply a deadjectival rule, assuming that passive participles are lexically derived by rules similar to those generating (32cd). While such an approach is feasible via any of the various lexicalist hypotheses presently in circulation, the ultimate solution must be one which not only preserves the differences inherent in the subject-agent relation of (30), the object-patient relation of (31) and the subject-patient relation of (32cd) (*grešnik* is 'one who has sins'; *brbljivac* is 'one characterized by being gabby'), it must explain all these possible relations. Moreover, patientive derivations need not be animate.

33

Verb	Object-Patient Derivate
jesti 'eat'	*jelo* 'food'
piti 'drink'	*piće* 'a drink'
igrati 'play'	*igra* 'game'
pevati 'sing'	*pesma* 'song'
reći 'say, speak'	*reč* 'word', *rečenica* 'sentence'

In each of the cases in (33) and many more like them, the object-patient is the name of the class of all things which may be the direct object of the verb. In the case of (31-33), there is a logical division of affix *classes* which is very predictable on the basis of the meaning of the underlying stem.

One may conclude from the sample of nominalizations thus far introduced that while agentives all seem to reflect an animate subject deep structure relation, patientives present a more complex case. They may correspond to the subjects of adjectives including passive participles, as well as adjectives derived from verbs in relation to which the derived patient would stand in subject position. Patientives may be animate, inanimate, concrete or abstract nouns. The facts tend to suggest an agentive derivation restricted to animate outputs and a patientive with no such restriction. It is possible that surface sentences with structures like X_{Sub} *plovi* 'X floats' have deep structures like *Ø plovi* X_{Pat} with an obligatory 'object-raising' rule accounting for the difference.

The productive English intransitive agentives with patientive suffixes like *escapee, returnee, standee, waitee* more strongly suggest this.

An interesting fact of nominalizational morphology is the coincidence of affixation marking agents and instruments, especially in languages with normal or weakened derivational systems. English *conductor, regulator, receiver, cleaner, beater, washer, governor, cutter, reader;* French *conducteur, guide, vanneur, coupeur, regulateur;* German *Leiter, Führer, Träger*—all reflect both a subject-agentive and an instrumental derivation. To these might be added the Scr agentives with the instrumental affixes just mentioned: *cunjalo* 'snooper', *mazalo* 'dabber', etc. The coincidence of derivational affixes in these cases interestingly enough corresponds to the syntactic association of the agent and the instrumental cases vis-à-vis the passive transformation. Alternatives to this association have arisen: English marks instruments via the sociative *with,* agents with the manner preposition *by;* ablative markers are used elsewhere, e.g. German *von* + Dat, French *d'un* + NP (optional), Scr *od* + Gen (animate nouns). But Russian and some other languages maintain the instrumental marking in these instances. The rise of pre- and postpositions and the deterioration of the 'pure' IE case system have provided for finer grammatical distinctions among contemporary IE languages. Further on it will become clear why the historical relation of agent and instrumental is of more interest than the recent refinements.

The grammatical coincidences between agents and instruments would be improbable without some perceivable semantic identity involved. Indeed instruments and agents may be seen as the inanimate and animate means by which an action is carried out. The agent is the original means or source, thus the secondary association with ablative case. If we assume with Jakobson and others that case paradigms are mediating nexus between surface structure and deeper, more semantic relations, but retain the classic deep relations (means, manner, sociation, etc.) in lieu of Jakobson's newer and untested ones, an interesting explanation of these coincidences might be that syntactic agents and instrumentals are animate and inanimate variants of the same deep case node, e.g. instrument (of the action). Since the animate instrument for carrying out an action is also the origin of the action, it will under

most circumstances 'rise' to the preeminent subject node; otherwise, the patient or some other noun will. Such a hypothesis is difficult to prove, however, and will not be tested here. The lexical and syntactic affinities of agents and instrumentals remain mysterious, but inasmuch as they suggest some deep origin for agents other than a subject node far removed from the instrumental, they feed rather than impede our suspicions that the subject is a special, higher and absolutely unmarked node.

In Scr there are affixes for distinguishing instrumental derivations referring to ordinary tools from those referring to machines. They are marked by some overlapping of affixation between feminine agentives (on *-ica*) and the instrumentals as well as between instrumentals and the pejorative agents already mentioned.

34	Agentive	Tool	Machine
bušiti to drill, punch	*buš-ač(ica)* driller, puncher	*buši-L-O* punch, drill	*buši-L-ica* power drill
bacati to throw	*bac-ač(ica)* thrower (sports)	*baca-L-O* (mine) thrower	. . .
vezati to tie, bind	*vez-ač(ica)* tier, binder	*vez-a, vez-iv-O* binding, rope, etc.	*vez-ač-ica* tier, binder
sušiti to dry, blot	*suši-L-Ac/ica* dryer	*suši-L-O* blotter	*suši-L-O* dryer
pisati to write	*pis-Ac* writer	*pisa-L-O* pen(cil)	*(pisaća mašina)* typewriter
pomagati to aid, help	*pomag-ač(ica)* helper, aid	*pomaga-L-O* an aid, help	. . .
pamtiti to remember	*pamti-L-Ac/ica* rememberer	. . .	*pamti-L-O* computer memory

All of these derivations are quite productive in contemporary Scr, as such slang derivates as *mislilo* 'head, brain' from *misliti* 'think' bear witness to. There is a third suffix, *-iv*, associated however inconsistently with instrumental mass nouns, e.g. *gorivo* 'fuel' (*goreti* 'burn'), *gradivo* 'material' (*graditi* 'build'), but also *bojilo* 'colorant' (*bojiti* 'color,

dye'), *lepilo* 'paste, glue', (*lepiti* 'paste, glue'), *plavilo* 'bluing' (*plaviti* 'to blue'). Again, to the extent that matching such suffixes to the proper stems represents independent knowledge required of speakers of Scr, this knowledge must be marked in the individual lexical stems. The fact that instrumentals are lexically possible for all verbs with instrumental valences, however, requires no independent knowledge and can be assumed to be part of general lexical knowledge requiring no special treatment other than the instrumental lexical rule.

This class contains performative gaps caused by interference from compounds and analytic structures, e.g. *pisaća mašina* 'writing machine = typewriter' instead of *pisalica*. There is some 'semantic drift' such as the use of *gradivo* 'material' in the sense of material for a book, even though one does not usually 'build' (*graditi*) a book. Linguistically, however, the derivations remain surprisingly regular and the semantic drift seldom moves meaning far from that predicted by rules of substantial generality. Our approach will be to attempt to capture these generalities in competence rules, then explain variations in terms of performance (speech) strategies and regularities of reference. This approach will allow even *gradivo* to be generated by a regular rule, so long as there is a stipulation for metaphoric usage in the accompanying performance theory.

The instrumental nominalizations are, like other types of deverbal nominalizations, capable of occurring in external syntactic structure. Generally, the additional cases involved are restricted to those marking object and manner adverb complements.

35 *bušilo kartica* 'a puncher of cards = card punch'
pamtilo podataka 'a memory of data = data bank'
bacalo mina 'a thrower of mines = mine thrower'
merilo poriva propelera 'a measurer of the propulsion of the propeller = propeller propulsion meter'

The same constraints seem to operate in English with the addition of obligatory prenominalization.[22] Again, if independent motivation can be found for the X-bar convention, it can handle these relations with

ease, though it cannot capture the internalized instrumental relation without further elaborations.

Another historical instrumental function, the sociative or comitative, is also detectable in the internal structure of a moderately productive IE derivation. In Scr it is marked either by a prefix identical to the preposition used to mark the function syntactically, *s(a)-*, or by a similar one, *su-*: *(sa)igrač* '(co)player, teammate', *(sa)besednik* '(co)-conversationalist', *(sa)/(su)radnik* '(co)worker'; *(su)optuženik* '(co)defendant; *(su)naslednik* '(co)heir'. The occurrence of this derivation is interesting, because it represents the second of the three original functions of the IE (prepositionless) instrumental case exhibited in the internal structure of lexical derivations. Should evidence of the third function, the instrumental of manner, be found, we would have to suspect some motivation for the emerging parallel between the basic meanings of lexical derivations and the fundamental functions of the old IE case system.

The instrumental of manner is now a very marginal case in a few Slavic languages. In Scr such constructions as *živeti robom* 'to live (like) a slave' are archaic, having been replaced by constructions with *kao* 'like'. In Russian, however, these constructions e.g. *vyt' volkom* 'howl like a wolf', *mjaukat' kotënkom* 'meow like a kitten', are still current. There should be evidence of manner adverbs and adjectives resulting from lexical derivations, however, if the parallel between case functions and lexical derivations is not coincidental. In fact, this is exactly what was observed in the SAdj and what is observable in denominal manner adverbs.

36	*hajduk* outlaw	*hajdučki* outlawish(ly)
	profesor professor	*profesorski* professorial(ly)
	anđeo angel	*anđeoski* angelic(ally)
	vuk wolf	*vučji, vučki* wolfish(ly)

37	*jaje* egg	*jaj-ast* oval
	kruška pear	*krušk-ast* pear-like
	kesten chestnut	*kesten-ast* chestnut (color)
	ljubica violet	*ljubič-ast* violet (color)

There are no manner nominalizations from the adjectives of (36), although there are deverbal manner nominalizations in all IE languages, e.g. English *his arrival surprised us* in the interpretation 'the manner in which he arrived surprised us'. There are differences between this derivation and (36-37), and the IE manner instrumental, which must be explained. For instance, the adjectives of (37) occur readily in predicate position and reflect more character than manner. But these issues may be resolved later; here it suffices to note that there are, apparently, lexical derivations corresponding to the instrumental of manner.

Another lexical derivation associated with an original case relation but which has become peripheral in most languages is the locative. In German, for example, there is a locative derivation, marginally productive and usually marked with *-ei* following *-er: Brau-er-ei* 'brewery', *Bäck-er-ei* 'bakery', *Druck-er-ei* 'printery'. As in English, they generally refer to places of business. In Scr, however, there are two locative derivations based on verbs.

38	*igraj—* play; dance	*igra-L-nica* dance hall; casino	*igra-L-ište* playground, playing field
	radi— work	*radi-L-nica* workshop	*radi-L-ište* work site
	kupaj— bathe	*kupa-ti-L-O* bathroom	*kupa-L-ište* bathing beach
	vežbaj— exercise	*vežba-L-nica* gymnasium	*vežba-L-ište* practice field

kopiraj– copy	*kop-ira-L-nica* copying shop, room	. . .
parkiraj– park	. . .	*park-ira-L-ište* parking lot

These derivations are just as productive operating on nouns (39). In this case there is a semantic problem in that the verb nexus is not present; however, the relation of the underlying noun to the place noun resulting from the derivation is very nearly predictable on the basis of the lexical subcategory of the base noun. Hopefully, a more specific rule will resolve the remaining disparity.

39a	*opančar* cobbler	*opančar-nica* cobbler's
	pekar baker	*pekar-nica* bakery
	stolar carpenter	*stolar-nica* carpentry shop
	voćar fruitier	*voćar-nica* fruitier's
39b	*ovca* sheep	*ovč-ar-nik* sheep pen
	guska goose	*gus-inj-ak* goose pen
39c	*raž* rye	*raž-ište* rye field
	kukuruza corn	*kukuruz-ište* corn field
	grad city	*grad-ište* site of a (former) city
	manastir monastery	*manastir-ište* site of a (former) monastery

Kiršanova (1974) noted the distinction here between locative derivations denoting 'open spaces', suffixed with *-ište*, and those denoting 'closed spaces', suffixed with *-n(ic)a*. There are some problems with this characterization. First, there is an unusually suffixed series denoting the place where fruit trees grow which does not fit either class gracefully, e.g. *voće* 'fruit': *voć-njak* 'orchard'; *breskva* 'pear': *breskv-ik* 'pear grove'; *šljiva* 'plum': *šljiv-ik* 'plum orchard'. Also, if the place in question is particularly large, the 'open/closed space' dichotomy breaks down: *pil-ana* (*pila* 'saw') 'sawmill'; *cigl-ana* (*cigla* 'brick') 'brick kiln'; *elektr-ana* (*elektr-ika* 'electricity') 'power generating plant'. A third problem resides in the frequent past-tense interpretation of the derivations on *-ište*. Thus *ražište* may be a field where rye is or was growing, but *gradište, manastirište* and *vodeničište* refer only to places where some city, monastery or water mill once stood. Unless this is explained extra-linguistically, this locative derivation must incorporate some feature [+Past] into its output, as do the Russian participle rules (cf. 10.34 for such an explanation).

The two semantic variants of the locative derivation in Scr are explained by local enrichment—a characteristic for which the language is noted. The original meaning of the IE locative was 'place *in* which' or, metaphorically, 'a place *at* which'. While English has a single preposition now reflecting the metaphorical sense, Scr has two, between which speakers must choose in order to express the abstract 'at' as opposed to the specific 'in', 'on': *u* + Dat/Loc also meaning literally 'in' and *na* + Dat/Loc, also meaning literally 'on'. It is interesting that precisely these two meanings are reflected in the Scr locative derivations, for a *radionica* 'workshop' is a place *in* which one works, while a *radilište* 'work site' is a place *on* which one works. This explanation very neatly includes the arboreal locatives, *voćnjak*, etc. A fruit tree grove is a place in which one finds fruit trees, even though it is not enclosed.

A slightly more complex problem presents itself in the ostensibly myriad derivations referring to usable substances from animal and vegetable nouns. They specifically refer to a wide variety of products and materials derived from the objects denoted by the base nouns, so that most grammarians have assumed many derivations are at work.

40a	*svinja* hog	*svinj-et-ina* pork
	ovca sheep	*ovč-et-ina* mutton
	guska goose	*gušč-et-ina* goose (meat)
40b	*jare* kid	*jar-et-ina* kid (meat/hide)
	medved bear	*medved-ina* bear (meat/hide)
	jelen deer	*jelen-ov-ina* venison/buckskin
40c	*kuna* marten	*kun-ov-ina* marten (fur)
	hrčak hamster	*hrčk-ov-ina* hamster (fur)
40d	*dabar* beaver	*dabr-ov-ina* beaver (fur/fat)
	kornjača tortoise	*kornjač-ev-ina* tortoise shell
	slon elephant	*slon-ov-ina* ivory
	miš mouse	*miš-ev-ina* mouse droppings

These derivations are traditionally divided into those meaning 'the meat of X' and those meaning 'the fur, skin or hide of X', with the admittedly marginal forms of (40d) slipping through the cracks of the description. Following on the wake of previous successes, we would like to find an underlying relationship which holds for all cases, explaining differences of reference in terms of context and pragmatics. In fact, the common portion of the definitions of all these derivations may be paraphrased

'*X je od Y* (X is from Y)', the contemporary Scr surface form of the old IE ablative case.

It is possible to establish an integral semantic class uniting these derivations, then explaining variations in significance in terms of pragmatic reference. The meanings are generic as are the meanings of all L-rules; these are mass nouns because animals are most often sources of mass products, e.g. meat, hide, fat. These derivations refer to that product derived from the animal denoted by the underlying stem which enjoys the greatest currency in Yugoslav society. Since martens are not eaten, but their fur is worn, *kunovina* 'marten' refers to fur. On the other hand, *svinjetina* refers to hog meat. There is a problem in the fact that at least three products are derived from hogs, yet only one is an actual referent of the derivative. Hogs provide hide and lard in addition to meat. But there is a strong tendency for these derivations to refer exclusively to meat if the stem refers to domestic animals. *Jaretina*'s (40b) reference to both hide and meat is something of an exception. The distinction between domestic and wild animals needed to maintain this performative distinction is relevant elsewhere, too, e.g. in distinguishing those stems which undergo locative nominalization in speech (cf. 39b). Thus there would be no more than the normal number of exceptional features were these derivations defined as meaning 'X from Y' where Y = [+Animate, -Human] with their actual range of refence determined by context, pragmatics and one or two semantic conventions.

41a	*bor* pine	*bor-ov-ina* pine(wood)
	jasen ash	*jasen-ov-ina* ash(wood)
	brast oak	*brast-ov-ina* oak (wood)
41b	*luk* onion	*luk-ov-ina* onion tops
	bob beans	*bob-ov-ina* bean bushes

kukuruza corn	*kukuruz-ov-ina* corn stalks

The first observation that can be made about the highly productive 'wood from X' derivation is that it exhibits the same ablative meaning 'X is from Y' as (40). The fundamental semantic distinction between this class and the preceding one is predictable on the basis of differences between the semantic classes of the underlying stems. In addition, there would seem to be a semantic convention applying here which holds that when the underlying stem refers to a plant, the output of this L-rule refers only to a derivative of the plant's stalk. However, this is simply a matter of pragmatics. If a plant is a fruit tree, the fruit and the plant share the same name, e.g. *jabuka* 'apple' refers both to fruit and tree. The only generic product which may be referred to by a mass noun produced by fruit trees, therefore, is wood: *jabukovina*. The same applies to beans, corn and onions, the stalks of which are put to various uses. In any event, both the deanimate and devegetative ablative derivations fall easily into one deep structure class of lexical derivation.[23]

Since the ablative of origin (generic ablative) is frequently used with locative nouns, delocative ablative agents enjoy high productivity in all IE languages.

42

Beograd Belgrade	*Beograd-jan-in* Belgradian
Bosna Bosnia	*Bosan-Ac/ica* Bosnian
Crna Gora Montenegro	*Crnogor-Ac/ka* Montenegran
Dalmacija Dalmatia	*Dalmat-in-Ac/ka* Dalmatian
Hercegovina Hercegovina	*Hercegov-Ac/ka* Hercegovinian

There seem to be major semantic differences between these derivations and the previous two, even though the basic ablative relationship, *X je od*

Y, fits. Not only are the derivates count nouns rather than mass nouns, they are furthermore animate.[24] But here, again, all of this is predictable by rule, given the class of the underlying stem, i.e. locative proper noun.

At this point we cannot fail but notice (1) a clear pattern forming among the elementary meanings of lexical extensions and (2) the degeneration of any line of demarcation between noun and adjective derivations in this pattern. There are manner adjectives but tool nominals corresponding to two of the instrumental case's elementary functions. No special functions or components of grammar have been required to discover these parallels nor will any be required to capture them in rules. We must merely take advantage of the theoretical mechanisms already provided by our predecessors, but all too infrequently used in linguistic theorizing: competence vs. performance rules, context, meaning vs. reference and the exclusion of all pragmatics from linguistic theory. This latter condition means that any linguistic aspect which *can* be explained without reference to linguistic theory, *must* be so explained. Thus no linguistic theory is required to capture the fact that meat is derived from animals and not trees, or that wood is derived from trees and not animals. In fact, only a faulty theory will. There remain two IE cases not yet examined, the dative and genitive, and several derivations. Let us now see if the parallel holds to the end of the data.

8.23 The Dative, Genitive and Other Things

The IE dative had three major functions. It indicated the recipient, the purpose and the goal (a function it shared with the accusative). Recipient lexical derivations would of necessity be animate. There are a few, e.g. *plaćenik* 'payee', but for *dati* 'give', *prodati* 'sell', *pomoći* 'help', there is no recipientive. This is because the dativa l verbs are few and generally come in pairs with mutually reverse meanings, e.g. there is no recipientive for *prodati* because there is a verb *kupiti* 'buy' with an agentive *kupac* 'buyer'; since *iznajmiti,* like English *rent* is 'reversible', *iznajmljivač* refers both to agent and recipient. Thus there seem to be recipients where they are needed, but little need for them.

The dative of goal, like the accusative of goal, which now requires one of the prepositions *u* or *na* in Scr, is generally incompatible with the genericity of lexical rules. If someone is on his way to some place but has not yet arrived, it can hardly be the case that the place is generically related to him. Only if an object is a repeated goal can it characterize another noun, e.g. *Beogradski vlak / voz* 'the Belgrade train', but these situations are rare enough that the goal nominalization is rarely required by the speakers of the language.

The dative of purpose is another question. The industrial age finds the denotation of purpose an important lexical function, particularly in connection with machinery. In 8.21 purposive RAdjs were discussed as a highly productive adjective subclass. The names of machines almost always have a purposive RAdj paraphrase (cf. also 34), e.g. *bušaća mašina* 'boring machine', *mašina za bušenje* 'machine for boring' = *bušalica; stroj za vezivanje* 'apparatus for binding' = *vezačica.* The purposive deep case is reflected in contemporary Scr via *za* + Acc, but was originally a dative function in the classic IE languages. Here, again, the lexical derivation operates on a restricted domain in comparison to the case: it is restricted to nominalizations of verbs with instrumental 'valences'. Nonetheless, the purposive function is reflected in this class of derivations as easily as the instrumental.

The genitive case is extraordinary, for it is the only case capable of reflecting a verbal function, the classical definition of the genitive, possession. This verbal function, as the paraphrastic verb *imati* 'have' demonstrates, is a transitive one, requiring both a subject and an object. Thus, if the genitive is the case of possession, it also, in addition, must be capable of representing subject and object relations. Of course, the subject and object genitives are well known secondary functions of the genitive in all IE languages. But what is even more interesting is the fact that the genitive expresses Possession + Subject and Possession + Object simultaneously. *Čovek ima plave oči* 'the man has blue eyes' may be paraphrased with the genitive either as *plavi oči čoveka* 'the blue eyes of the man' (possessive), or *čovek plavih očiju* 'the man with blue eyes' (qualitative genitive). Although the genitive phrase may be used predicatively like QAdjs, it may not be modified in any way. Moreover, it must

consist of a single determiner plus a single noun; the determiner is 'non-omissible', in Milka Ivić's terminology. Although the constraints on the qualitative genitive vary from one language to another, it has survived in all IE languages.[25] For the case-derivation parallel to survive, both of these functions should be found among the lexical derivations.

The lexical derivation corresponding to the objective genitive, of course, was the object of investigation in Chapter 6. Although there is a possessional derivation without a determiner, HAdj compounds paralleling the qualitative genitive are possible, even though they are not possible for the possessive or manner derivations. The underlying function is always the same: *čovek je okat* 'the man is (big)eyed'; *čovek je plavook* 'the man is blue-eyed'. Both the case function and the derivation share the major constraint on this class, i.e. that the part involved must be a generic or inherent characteristic of the whole (cf. 6.1). Certainly, too much correlates here to fail to bring the two constructions under the same description at some point in our theory.

Little needs to be said concerning the possessive adjective: it represents the Subject-Possessive relationship. The HAdj originates in the predicate, has a verb-object function; it is, therefore, a QAdj. The possessive represents a nominal, nominative function, thus, although it may occur alone in the predicate, its function there is anaphoric, e.g. *kišobran je Mitin* 'the umbrella is Mita's' reflects an anaphoric deletion of the second occurrence of *kišobran: kišobran je Mitin (kišobran).* This is, in fact,characteristic behavior for all RAdjs.

The denotation of time was a function of all the oblique cases plus the accusative in early IE languages. Generally, time derivations are similar to locatives, although no special affixes are usually associated with them, e.g. English *(during) work* vs. *(at) work.* There are relatively few time derivations in Scr, perhaps because most time expressions are standardized. There are relatively few names for units of time necessary in a generic sense and, of course, specific references to particular time spans are handled by inflection. The names of days are crystallized in Scr and the names of the months are derivations only in certain regions, e.g. *list-o-pad,* literally, 'leaffall' = 'October' (cf. *vodopad* 'waterfall').

Throughout Serbia adaptations of the names of the Julian months are used. Still, for some reason Scr seems to prefer constructions of *u vreme* + Gen 'at the time of' (perfective) or *za vreme* + Gen 'for the time of = during' (imperfective), plus a general nominalization over temporal nominalizations such as English *at/during feeding, landing, take-off, set-down, count-down, work, play, maturation, prohibition.*

There are several derivations which do not obviously relate to case functions. There is a widespread derivation, generally suffixed *-ar-ina* and referring to a fee paid for something (mercedive nominalization), e.g. *krčma* 'inn': *krčmarina* 'inn-keeping tax'; *mlin* 'mill': *mlinarina* 'millers's fee'; *brod* 'boat': *brodarina* 'shipping costs, shipping tax'; *Pošta* 'post office, mail': *poštarina* 'postage'. But there was an old IE instrumental of price, represented now by the surface preposition *za* + Acc 'for', to which this derivation no doubt corresponds. There are even traces of it in English, e.g. *millage, postage, cartage, haulage, truck-age, dockage.*

There are also derivations in Scr on *-Ov-Ac* and *-Ov-ača* referring to walking sticks or switches coming from some specific tree, to liquor made from some fruit or some item of food made from fruit, vegetables or grain, named by the underlying noun. Little needs to be said about these derivations for they seem to fit well among the ablative and tool instrumental derivations already discussed. They may require a few semantic conditions on the range of their potential meaning, but in most cases their range of meaning is dictated by pragmatics.

8.3 Conclusions

We began this chapter with an examination of the types of lexical derivations in Scr, having rid ourselves of the confusing trappings of affixation. Derivation (lexemic extension) had been established in preceding chapters as an absolutely abstract deep structure process operating most probably in the lexicon. Affixation is a process located nearer the surface, directly related to phonology and, therefore, more prone to change. As we progressed, a persistent parallel began to emerge

between the meanings of lexical derivations and the primary IE case functions, that is, those original functions marked by prepositionless cases in Latin, Greek and Sanskrit. Apparently these cases continue to be more fundamental than others. This is not to say that secondary case functions cannot be internalized by lexical derivations; they are, in fact. However, these derivates must be prefixed with the surface preposition associated with the case function *do rata* 'before the war': *doratni* 'prewar'; *pod vodom* 'beneath the water': *podvodan* 'underwater'; *nad zemljom* 'aboveground': *nadzemni* 'overground'; *za morem* 'beyond the sea': *zamorje* 'place beyond the sea'; *po reci* 'along the river': *porečje* 'river basin'. The necessity of including some prepositional representation in the surface form of a case derivation may turn out to be a test of whether the derivation is 'primary'; there does seem to be a correlation between the inclusion of the preposition and productivity.

Our examination of the data led to the conclusion that there are three classes of derivations based on underlying noun stems. (1) There are gradational derivations such as diminutives and augmentatives, perhaps including comparatives, which are on the borderline between lexical and syntactic derivations. (2) There are derivations which seem to insert or shift the marking of the lexical subcategory features *Feminine, Masculine, Singular* and *Plural.* These derivations are intriguing for these very same features are reflected in the declensional paradigms of those languages retaining declensions. The question of whether the derivational and case systems are the same is not equivalent to asking whether derivational and inflectional morphology are the same (cf. Stankiewicz 1962; Worth 1966). Regardless of whether the morphologies of the two systems are distinct, the occurrence of declensional features among lexical derivations is exciting in its promise of some insight into the question of the relation of the two overall systems.

More promising yet is the third class of lexical derivations which must be defined in terms of the case relations of the proto-IE language (PIE): agent, object, recipient, purpose, means, manner, sociation, place, possessivity, 'possessedness', place—even the old ablative of source. This evidence leads us to believe that, aside from the gradational derivations which may be syntactic, and other purely syntactic derivations, all

lexical derivations may be restricted to exhibiting internally those relations which basic syntactic cases mark externally. If this proves to be the case, lexical derivations may be defined once local constraints have been delineated.

These discoveries lead to two major questions. 1. How are case function derivations generated? That is, what is the difference between such lexical derivations and the syntactic relations which seem to define them? 2. How are the case relation derivations related to the lexical categories and subcategories (cf. Table I)? It is to these questions that we now turn.

CHAPTER 9

The Origins and Operations of Lexical Derivations

9.1 Lexical Subcategory Derivation

In the preceding chapter we witnessed a consistent parallel between the semantic values of lexical derivation and the primary (prepositionless) IE case functions. This observation raises two previously underestimated facts to new prominence: (1) the failure of morphologists up to now to define any real difference between inflectional and derivational morphology and (2) the fact that morphological asymmetry, which Karcevskij first noted in the the inflectional system, also characterizes the derivation system. These two facts, taken together, point toward the existence of a deep and fundamental relation between lexical derivation and the case system of IE languages. Having now cleared the way of morphological asymmetry by distinguishing derivation from affixation, we should have no difficulty in expressing this relation in generative lexical rules.

Note that the fact that lexical derivation remains in English, however diminished, despite the disappearance of the case-ending system, is of no relevance. The correlation discovered in the preceding chapter holds between lexical derivation and the case functions, or 'deep cases'. That English has divested itself of inflection, or 'surface case' in the traditional sense, is no indication of the stature of the case functions in the language. All IE languages have at least begun to replace the

ancient inflectional system with a prepositional or postpositional system, first by enlarging the original or primary case relations with these particles, then by adding redundant particles to nouns bearing the primary case endings and, finally, as in English, shifting the perceived redundancy to the inflection and dropping this.

At this point it is not crystal clear what the terms 'primary case functions' or 'primary deep cases' refer to. It is clear that there is a set of case relations which used to be syntactically expressible without prepositions and which remain lexically expressible without prepositions or prefixes. The remainder of the case relations, expressible via a single preposition, may undergo lexical derivation, but they must be assigned, as a prefix, the preposition which would mark them in a specific syntactic construction, or a Latin-Greek suppletive like *anti-* for *against, sub-* for *under.* Such derivations are far less frequent in inflectional languages like Scr than the primary derivations, while in the less inflectional Germanic languages they flourish. In order to account for the distinction of primary and secondary case functions in Scr, we will need a rule of some generality which ordinarily will not apply to 'secondary deep cases', but can be so applied to a few select lexical items. In Scr these lexemes are almost exclusively restricted to salient body part nouns and primary geographical nouns; *ruka* 'hand, arm': *doručje* 'wrist'; *zemlja* 'ground, earth': *nadzemni* 'overground', *nadzemaljski* 'superterrestrial'; *voda* 'water': *podvodni* 'submarine'; *more* 'sea': *prekomorje* 'overseas country'; *Sava* 'Sava river': *posavlje* 'Sava river basin'. Whether primary cases may be defined as those participating in verbal valences cannot be established until more information concerning valences is available. They do occur in constructions not determined by verbs (cf. 51 below). It is, therefore, clear only that there are structurally distinct sets of 'primary' and 'secondary' case relations. Our attention will be focused on the former, since they are most closely related to lexical derivation.

Since the overwhelming majority of lexical derivations in Scr and elsewhere are the results of changes in the case and lexical subcategory features, the gradational derivations will no longer be considered. Presumably gradation is a syntactic intensification relation applicable to all nominals in the classical sense, i.e. all those marked [+Noun] or, in

our terms, having the lexical characteristics of items generally taken to be so marked. There are semantic constraints on gradation; only nominal lexical items marked further for verbal characteristics (adjectives) are capable of continual gradation and those without verbal markings (nouns) are capable only of two fixed degrees.

Let us begin now with a review of the cardinal lexical derivations of IE languages as they emerge in perhaps the richest of the lexicons, the Scr one, and compare them with the original prepositionless case functions. The reasons for the presence or absence of N- or Adj-outputs are generally obvious. There are a few instances where there are mysterious inconsistencies in this aspect of the system. No comment will be made on this problem here, though some light will be shed upon it in the course of the discussion which follows.

43	*Lexical Derivation*	*Primary Case*	*Scr Case (if different)*
	Agent (N, RAdj)	Nominative/Instrumental	
	Object (N, RAdj, QAdj)	Accusative	
	Recipient (N, RAdj)	Dative	
	Goal (RAdj)	Dative	*u/na* + Acc
	Purpose (N, RAdj)	Dative	*za* + Acc
	Possessive (PAdj)	Genitive	
	Possessional (HAdj)	Genitive	
	Source (N, RAdj)	Ablative	*od* + Gen
	Place (N, RAdj)	Locative	*u/na* + Loc
	Means (N, RAdj)	Instrumental	
	Manner (SAdj, Adv)	Instrumental	*kao*, etc.
	Sociation (N, RAdj)	Instrumental	*sa* + Instr
	Price (N)	Instrumental	(*za* + Acc)
	Time	(various)	

To these must be added the lexical subcategory features which are obligatorily added to all nouns in Slavic languages (44-45).[26] These features, we have already decided, must be lexical; that is, all lexical nouns contain them: some are lexically marked for a specific value (±),

e.g. *pluralis tantum* nouns and collectives; others must be randomly marked by automatic lexical rules before leaving the lexicon.[27]

44 ±Singular
±Plural

45 ±Masculine
±Feminine

This latter process represents the speaker's option for marking many nouns singular or plural, and most animate nouns, feminine or masculine, even though most inanimate nouns have fixed gender and many others, fixed number values. Mass nouns, for instance, are presumed here to be marked [-Sg, -Pl] and collectives [+Sg, +Pl]. The M-component is then conditioned to assign plural paradigm endings only where the feature combination [-Sg, +Pl] is present in the stem; elsewhere various singular paradigmatic endings are applied.

It remains unclear whether there is a feature [±Neuter] which, when inserted or assigned positive value in animate stems, automatically implies [+Filial]. Animate nouns frequently comprise semantic 'families' consisting in a general name (e.g. *konj* 'horse'), a masculine member (e.g. *pastuv* 'stallion'), a feminine (e.g. *kobila* 'mare') and a filial (e.g. *žrebe* 'colt'). The productive pattern of counterpart derivations (cf. *slon, slonica, slonče* in the preceding chapter) generally combines the generic name with the masculine or feminine, and derives the filial from that form with no further derivations possible. But among suppletive filials like *žrebe,* a further masculine-feminine differentiation is possible: *žrebica* 'filly'; *jarica* 'nanny kid', also *jarić* 'billy kid'. If we assume that *žrebe* is a suppletive in a marginal though productive derivational system, [Filial] would have to be a lexical feature in that system. But if it is assumed that *žrebe* is an independent lexical item, associated with other equine members in a semantic system which, perhaps, served originally as the pattern for the now productive derivational subsystem, we may merely assume that it has masculine-feminine features unmarked for value, allowing *žrebe* to be marked to refer

to a colt either regardless of gender or including both genders. The same form may be used to refer to male colts vis-à-vis *ždrebica* 'filly'. Although this question begs further investigation, the simpler approach will be adopted here in order to keep explanations of the derivational system as lucid as possible.

With these assumptions in mind, it is easy to see that certain lexical nouns will have variants which may be realized without undergoing any derivation at all. For example *studenat* 'student' is neutral as to femininity. If the automatic lexical feature valuation rule assigns it a positive value against a negative masculine feature, [-Mas, +Fem], the M-component will insert the suffix *-kinj-* (actually: *-Ak-in-j-*) which, in turn, will demand the feminine Declension II endings: *student-kinja* 'coed'. All other markings [+Mas, +Fem], [-Mas, -Fem], [+Mas, -Fem] surface as the unmarked masculine form, although their referents may vary in accordance with their specific lexical marking.

There are similar cases involving singular and plural. There is no more reason to assume that the collective *momčad* 'boys; bachelors' is a derivate of *momAk* 'boy; bachelor' than there is to assume that the simple plural, *momci*, is. The collective suffix is needed to distinguish the collective from the singular, on the one hand, and the plural, on the other. The basic question is: Why is a collective necessary in the first place? If we assume that lexical items must carry two number features, but in some cases they may be unmarked as to value, all of these variations can be accounted for quite simply. The entry for *mom-Ak* would contain [αSg, αPl]. The redundancy rules would add one box-node if the markings are [+Sg, -Pl] (*momak*) or [-Sg, +Pl] (*momci*) for case endings. But if the markings are not contradictory, an additional box-node must be inserted by the automatic position-marking rules at the end of the lexicon, so that the collective, [+Sg, +Pl] may be marked *mom-č-ad(Ø)* and, perhaps, the mass noun values, [-Sg, -Pl] marked, *mom-A-štv-O* 'youth(fulness); bachelorhood'.[28]

This approach explains the difficulty linguists have traditionally met in deciding whether feminine forms such as *Bosanka* (*Bosanac*), *učitelj-nica, slon-ica* are derivations: they are lexical alternates for their underlying masculine counterparts, but they do not require a rule to

account for the additional suffix. In fact, there are cases where no suffix is used, cf. Italian *zi-o* 'uncle'/*zi-a* 'aunt'; *cugin-o* 'male cousin'/*cugin-a* 'female cousin'. The 'ruleless' approach explains why there are large lexical gaps among nouns vis-à-vis number, but not case; if a noun is capable of reflecting either singularity or plurality, then it can reflect all cases. This must be captured in the separation of number from case at some level, and the differences seem to lie in their origins. These differences in origin cannot be handled by theories based on the assumption of affixes consisting in part of meaning. If derivation is seen as several abstract processes independent of the means of morphologically marking them, however, the differences between gender, number and case markings fit into classificatory systems elsewhere.

Positing the same derivation (or nonderivation) for all IE languages even where it appears that only a difference in the usage of a lexical prime is at issue, presents no problem. For instance, Scr marks the ablative shift of vegetable and animal stems of the type *pile* 'chicken': *piletina* 'chicken (meat)'; *kuna* 'marten, mink': *kunovina* 'marten, mink (fur)'; *brast* 'oak (tree)'; *brastovina* 'oak (wood)' with a nominal suffix (cf. 40). English does not: *I eat chicken: she wears a lot of mink; an oak table.* Czech marks the nominals referring to language with a suffix, e.g. *čeština* 'Czech'. English does not: *He speaks Czech.* Whether these forms are the result of derivations or optional lexical feature markings is irrelevant, so long as affixation is separate from all lexical and syntactic operations.

Gender, number and filiality are thus marked in ways distinctly different from the marking of case relations. The simplest approach to these 'quasi-derivations' would be to allow unmarked subcategory features to be assigned an arbitrary value in the lexicon by an automatic rule which sees to it that all subcategory features have a value before departing the lexicon. This rule will also have the power in certain instances to insert a box-node in addition to the one(s) required for surface case. It will not be able to operate, of course, if the subcategory features are lexically preestablished, i.e. in cases of *pluralis tantum,* collectives and the like. Case relation assignment differs from these 'quasi-derivations' in several ways. First, there are no lexical gaps. That

is, if a lexical item receives any case ending at all, it receives them all. Second, the case relations are more closely related to syntax than the lexicon. Even though nominal stems are assigned case endings, that assignment is determined by the syntactic structure, particularly verbal valence. For these and other reasons, it will not be possible to derive case-related derivations in the same manner as subcategory extensions. To get a better idea of how these derivations must be approached, it will be necessary to examine the nature of the case and case-function systems of Scr.

9.2 Case Relations and Derivation

It has been accepted rather generally that deep cases are semantic rather than syntactic functions. Fillmore's deep case system assumed that deep case features are semantic while interpretative TG-grammarians have stuck to subcategorization rules which provide N-nodes with surface case features immediately before lexical insertion (cf. Babby 1976). A theory of lexical derivations based on deep case functions, therefore, must argue for a GS-grammar or demonstrate that deep case functions are not essentially semantic. To undertake such a major task as this in a work attempting to develop a lexical theory without altering basic theoretical assumptions would be misplaced effort (cf. Siegel 1978 for an attempt in this direction). What follows, then, is not intended as a definitive treatment of the problem, but an attempt to demonstrate that some prelexical deep structure mechanism is at work in both case function assignment and lexical derivation, and that this source is syntactically or lexico-syntactically determined. Since the argumentation will be somewhat condensed, each step of it will be numbered.

1. **Case relations are grammatically determined.** Any semantically conceivable relation between NP_i and NP_j, or NP_i and VP can be expressed syntactically, but only a limited number of such relations can be expressed in IE languages immediately, i.e. with what is conceded to be syntactic case endings or a single clitic preposition or postposition with or without a case ending.

46a *seče nož[em]* '(he) cuts [with] a knife'

46b *seče [na] stol[u]* '(he) cuts [on] the table'

46c *radi [bez obzira na] zdravlj[e]* '(he) works [without consideration for] (his) health'

46d *On je [u dobrim radnim odnosima sa] Ivan[om].* 'He is [on a good professional footing with] Ivan,' i.e. '. . .on a professional footing, which is good. . .'

(46c,d) show that the range of linguistically expressible relations is no doubt open-ended if we include descriptive, syntactic means. But the range of relations expressible by strictly grammatical means is limited to the 'case system' of IE languages. Exactly where the case system leaves off and other means of expressing relations–lexical and syntactic–begin, is not entirely clear. However, in view of the theory of sharp differentiation of lexical and morphological items and functions, we would have to distinguish between (1) morphological means of marking, i.e. affixation, characterized by 'bound' items in asymmetrical relations with meaning–clitic prepositions and inflection; and (2) lexical means, involving items with fixed meanings, capable of intrinsic accent, etc. This position would have to recognize an expansion of the case system from the 'primary' one, which apparently characterized the IE protolanguage, since such a system would contain more than the original or primary cases.

2. **Deep case is determined by grammar other than the lexicon.** We have already seen that nouns determine their own gender and number if the lexicon does not set it for them. Case, however, must be assigned to a noun; the question is, by what and at what point in the syntactic derivation of sentences. There are no nouns with restricted case as there are with fixed gender and/or number. If a noun is susceptible to any case ending, it is susceptible to the whole paradigm. No noun is thus restricted to any 'central' as opposed to 'peripheral' or 'adverbial' cases (cf. Chvany 1975: 121). It is true that verbs determine the surface inflection assignment for certain 'central' case functions like object, goal and place. But means is marked only by the instrumental case, and the recipient is always marked by the dative.

The verbal valences, therefore, account for the very few surface case markings and perhaps no deep case functions. In any event, there are many different functions associated with NP-VP, NP-V and, perhaps, even NP-S relations, reflected in the IE case system. Most such relations seem to be selected at the option of the speaker on the basis of some catalog of markable relations made available by the grammar.

Chomsky (1971: 190-191) notes that the same results as are achieved by case grammar, may be achieved by standard theory if the semantic component interprets NPs in terms of the lexical structure of the head Ns occurring in them. Thus the 'agent' interpretation may be derived as well by a semantic rule which interprets an animate noun in subject position as an agent, as by positing an agent node in deep structure. This works where the case function corresponds to the lexical category of the noun occurring in that case, i.e. an animate noun in the subject node. But what if, say, a body part noun occurs in various sentence positions:

47 *pisati rukom* 'to write by hand'
ići iz ruke u ruku 'go from hand to hand'
udariti po ruci 'to hit on the hand'

In (47) *ruka* 'hand, arm' occurs in four different environments which cannot be determined simply on the basis of the number of NP positions from the V-node without a considerable degree of ad hocness. There is no obvious way by which priority can be established: does sentence position, reading from left to right, determine syntactic function, or does syntactic function determine position in the underlying sentence structure? In (47) the lexical item itself gives no intimation as to its function in the sentence. There must be some underlying feature(s) of the syntactic system which determine both the function and the proper inflectional ending which marks that function in the surface structure.

3. **The same primary case relations also determine the permanent lexical derivation system.** This is perhaps the most persuasive evidence for elements of a single system entering sentences via two different components (as opposed to, say, a single component, e.g. the lexicon,

assigning two different but parallel sets of features or the same set at two different points). The relations are themselves basically the same in either system, but they simultaneously differ in just the way comparable lexical and syntactic structures differ.

4. **The difference in the two grammatical functions of case relations is accounted for by differences in the component responsible for them.** In lexical derivations, grammatical functions are internal and convey only a generic sense; that is, the relation in question can only be a defining trait of the extended lexeme and its referent. In syntactic derivations, they are external and convey only a specific sense. Syntactically, genericity can be reflected only analytically, by a specific adverbial lexeme, e.g. Aronoff's (1976: 50) syntactic characterization of the lexical agent as 'one who Vs habitually, professionally, ...' Note there is no definable end to the various adverbial lexemes that may refer to genericity (cf. Ullmann 1962: 118-123).

The agentive derivations are interesting, for there appears to be a lexical and syntactic version. The latter is stylistically staid if not archaic in American English, but in Scr it is still widely used.

48a John is a baker.
48b John is a/the baker of the bread.

(48a) implies that being the agent of the activity 'baking' is a part of John's generic definition, while (48b) simply implies that he was involved in one instance of baking. The former is the lexical derivative, while the latter is apparently the output of a T-rule. There are many other differences. Notice that the variant *John is a baker of the bread* presupposes that there were more than one such baker. *John is a baker* presupposes no such. *John is the baker of the bread* requires no prior reference; *John is the baker,* does. The former may lead off a slice of discourse; the latter may not. Lexical derivations, in general, permit compounds based on a single lexical determiner, e.g. *John is a cookie baker,* but no further modification. The restrictions on determination among transformations are far more slack, tending to be mostly performance constraints protecting comprehensibility: *John is the baker of*

that delicious bread which we all enjoyed so much last evening. By the way, if an agentive T-rule is required to explain these disparities, it, too, will require the C-Component to mark a deep-structure agent NP-node. This claim, however, must remain conditional until the appropriateness of the 'X-bar' convention as an explanation of nominalizations like (48b) is settled.

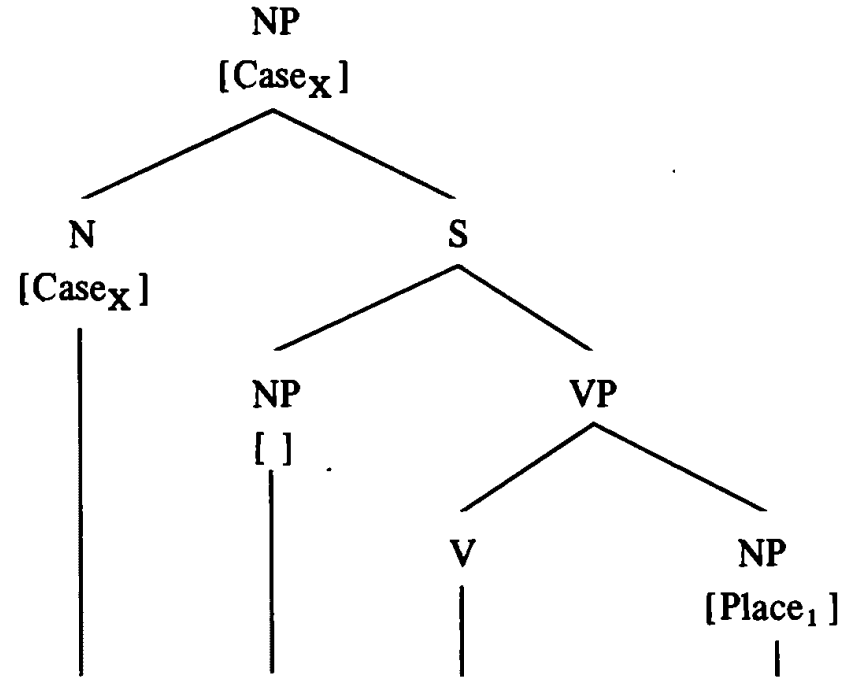
There seems to be no way to avoid positing deep structure categorial markings for case functions. If such exist, the parallel between these functions and pronouns, corresponding relative clauses and conjunctions comes into sharper focus. Moreover, the parallel with lexical derivation classes and case functions can be explained in a very natural way. The two-way overlapping of form and meaning characteristic of inflectional asymmetry is explained by the same theory which explains asymmetry among lexical derivations. Rather than the four hyperabstract semantic features Jakobson proposed, however, we would prefer to postulate the 'primary' case functions, for they are the ones which define lexical derivation. Furthermore, they tie the synchronic theory in a way both logical and natural to the diachronic one. Because these functions are arbitrarily limited in number, they must be linguistically determined. And since they are directly related to certain basic syntactic functions, we will tentatively call them syntactic. The next step is to show how syntactic functions may, under certain circumstances, come to be in lexical derivations.

There would seem to be no reason to abandon the assumption that nominal lexical derivations, excepting QAdjs in predicate position, originate in deep relative clause constructions. There are four strong arguments for this procedure. (1) The relative clause seems to be approximately as ubiquitous as nominal derivations, but more or less in complementary distribution with them in speech performance. That is, where lexical derivations are possible, relative clauses are less likely to be used, e.g. *mesto, gde se kola parkiraju* 'the place where cars are parked' is less likely to be used than *parkiralište* or *parking* 'parking lot'. (2) Simple modifications requiring minimal rule movement result in the proper description of extended stems and the proper assignment of meanings if relative clauses serve as the source. (3) This assumption

allows us to derive nouns under NP-nodes, adjectives under VP-nodes and so forth, so that the proper affixes may be assigned without introducing syntactic class markers, N, V, Adj, Adv, into the lexical inventories of primes or derivatives. (4) It provides an explanation for a set of choices a speaker has when he speaks about classes of objects, in terms of variables of a single system: pro-item, lexical class name, lexical derivation and relative clause. For instance, if a speaker is unsure of a locative referent, or if specificity is irrelevant, he may simply use the locative pro-item or lexical class name, e.g. *ono mesto* 'that place', *tamo* 'there, yonder' or *ovo mesto* 'this place', *ovde* 'here'. If the place can be named or described in one word, he may choose a place lexeme, e.g. *grad* 'city', *Skoplje* 'Skoplje', *planina* 'mountain' or create one: *igralište* 'playing field, playground'. If a great deal of specificity is required, an entire descriptive sentence may be incorporated into a relative clause, e.g. *polje, na kojem/gde su borili Rusi sa Nemcima* 'the field on which/ where the Russians and the Germans fought'.

The pro-items will be assumed to be end nodes provided with a deep-case feature alone (cf. PLACE_1 in 49); the M-component automatically interprets preserved delta-nodes with no more than case function assigned, as proforms. The lexical item emerges in surface structure wherever a lexical prime is assigned to a node with a case function. The derivations and relative clauses result from NPs assigned a case function, which further expand into N + S. If the embedded S-node contains but a single lexeme, in some cases permissibly determined by one further lexical prime, the relative clause may be reduced to a lexical derivation, i.e. extension. The reason for lexical derivations, then, is that the relative clause expressing the same idea consists of too little meaning to justify the complexity of the structure. The lexicon, therefore, reduces the structure, preserving the meaning. This is, no doubt, why Chvany's informants feel that relative clauses are more awkward than synonymous prenominal adjectives (p. 124). The parallel between lexical derivations and the case system is a result of the fact that case relations control those meaning relations available for such reduction. This explanation of the types of lexical derivations in IE languages thus becomes a direct implication of the conclusion that relative clauses underlie lexical derivations.

49



49a	*učionica*	Δ	Δ	*/uk-i–/*		Δ_1
	'classroom'			'teach'		

POTENTIAL SYNTACTIC REALIZATIONS [1. *on–* / 2. *tamo* / 3. *tuda*] *(se)* *uči (generično)* [*u koj–* / *gde*$_1$]

i.e. 1. *ona, u kojoj se uči* 'that, in which one is taught'
2. *tamo, gde*$_1$ *se uči* 'there, where(in) one is taught'
3. *tuda, gde*$_1$ *se uči* 'thither, where(in) one is taught'

49b	*berbernica*	Δ	*/berber–/*		Δ	Δ_1
	'barber shop'		'barber'			
49c	*gusarnik*	Δ	*/gus–/*		Δ	Δ_1
	'goose pen'		'goose'			
49d	*šljivik*	Δ	*/šljiv–/*		Δ	Δ_1
	'plum grove'		'plum'			

(49) exemplifies the structural description of the locative L-rule input for *učionica* 'classroom'. For simplification, some nodes have been slightly misplaced, e.g. the patient node, which accounts for the passive-reflexive particle *se*, has been omitted and *se* has been rather arbitrarily located under the subject (nominative) position.

Since Scr has two deep locatives distinguished both lexically and syntactically, a subscript has been added to the place node in (49) to indicate the function 'in' as opposed to 'on'. The fundamental locative meaning in IE languages seems to be 'in' (cf. Whitney 1889: 101 for Sanskrit), which explains why only this meaning is associated with the locative derivation in most IE languages.

Chvany (1975) has made the case for the possibility of sentences in Russian both with and without subject-object nodes and with empty ones. This characteristic is presupposed for Scr in (49). But it is further assumed that unfilled nodes under specific case markings, not replaced by lexical category nouns (e.g. *mesto* 'place', *način* 'manner', *sredstvo* 'means', etc.) in the lexicon, will be replaced by pro-items in the M-component. The fact that proforms do not occur as the optional element in compounds is strong evidence that they are inserted morphologically after lexical derivation.

The structural description of (49) is easily adapted for all noun and RAdj L-rules; QAdj rules must operate on VP-nodes, so that QAdjs begin in predicate position before entering the T-rules. The rules deriving nouns and RAdjs will be quite different, of course, but the same RAdj, QAdj and nominalization rules will be capable of deriving both simple and compound variants, as in the case of the possessional derivations of Chapter 6. Compound nominalizations in Slavic languages, for sure, are severely restricted, while simple derivations in some other IE languages tend to be marginally productive. This will be discussed in connection with the definition of productivity in the next chapter.

The assumption that L-rules cannot prune away useless branching leading to deleted nodes still holds. In the case of *učionica*, we may assume that the object node is absent and that the place node was not filled. The nominalization rule in this case apparently collects all relevant syntactic and lexical information and combines it under the one

node (or two when a compound is in question) with a lexical filler. Empty V-nodes cannot be pruned away; they are always preserved until the M-rules insert the proverb *biti* 'be'. The place feature in (49), however, will be incorporated under the verb */uk-i–/*, leaving the NP-branch dangling. This will automatically wither away later in the derivation.

The simple incorporation of the syntactic feature which externally would trigger locative case endings and the preposition *u* 'in', accounts for the lexical meaning of *učionica*, exclusive of the speaker's encyclopedic knowledge of where classrooms normally are, what they look like, etc., except for the genericity. *Učionica*, which we claimed elsewhere must be a lexical description in that it refers to the class of all places in which people are taught, in fact refers only to those places defined in these terms, where teaching is the determining factor of their definition. Aronoff noted genericity in the English PPAdj (*-able*) derivations and Roeper & Siegel (1978) note its presence in passive participle adjectives. In fact, genericity characterizes the lexicon as a whole, excepting perhaps proper nouns. All nonproper lexical items, derived and underived, refer to classes of items generically related, i.e. their reference is 'type reference' (cf. p. 54). Isolated lexemes may refer to specific objects only as members of some generic class. A descriptive derivative, then, is one which refers to the entire class of items which can stand in the relation specified to the underlying form (cf. also p. 174). It is possible to characterize the lexicon with genericity as a whole only with the further exclusion of stock expansion processes and idioms from the lexicon. In Chapter 10 we will see that these two contribute specific names to our vocabulary as well as delimit the class of referents for descriptive derivatives in irregular ways.

Učionica, then, in summary, describes classrooms to the extent that it refers to the entire class of objects in which people may be taught. By this definition, *učionica* both names and describes the class of its referents. But *učionica* is not specifically (syntactically) descriptive, for it refers as a type only to those places where teaching is generically carried on, where teaching is part of the definition of the place. Its descriptiveness is given to it by the internal structure it received from the locative L-rule.

Ražište, parkiralište, učionica, berbernica are, therefore, better called 'descriptive names', for they do not refer to all places where rye is, where one may park, where one may teach or to any place where any barber may be at any given moment. Somehow, only those relative clauses referring to places generically related to the concept reflected in the underlying form of the potential derivation can be permitted to undergo the rule. This problem might be solved by positing some feature, [Generic], which must be present in the deep structure for the L-rules to operate. Such a tack would imply that this feature is a syntactic subcategory, however, and there is no independent support for such an assumption. There is no morphological realization for this feature in the surface structure; in fact, there is no lexical marking for genericity; genericity characterizes all lexical entries and derivates, again with the possible exception of proper nouns.

If our theory were based on the assumption of 'once-only' rules, the feature might be written into the L-rules. By this approach, only where genericity could be logically ascribed to a referent would the rules be able to operate. But even if there were strong support for 'once-only' rules, this would result in a common feature for all lexical derivation rules and one which they would share with primes. This approach thus would involve large-scale redundancy while simultaneously losing a major generalization about the nature of the lexicon.

Since genericity does characterize the lexicon as a whole, it must be the case that any transparent L-derivate must be characterized by this same semantic quality. The lexicon only recognizes generic relationships; others automatically escape lexical operations. Rather than needing a rule to implant genericity in L-derivations, we need an explanation of how specificity can only be handled by the syntax. If one simply states *John works,* it is presupposed that his working is generic, i.e. characterizes him in a permanent way. Only by using complex syntactic and morphological structures, e.g. *John is working; John will work; John works sometimes,* can specificity be achieved. The use of morphologically determined proforms and surface case endings—all the result of linguistic features added well after L-rules have operated—determines specificity. To capture the genericity of L-rules, then, all that

is required is a semantic condition in the performance theory of IE languages. The L-rules themselves are optional within the range of the normal, linguistic constraints which condition them. The semantic condition, however, specifies that inasmuch as the lexicon contains items which by nature refer generically only, L-rules are applied only when the speaker is aware of a generic relation holding between the underlying form and the potential referent of the derivation. In other words, the only reason for a person to refer to a field using a name meaning 'a teaching place', would be that there is some sort of generic connection between the place and teaching. Otherwise, he would want to specify the relation.

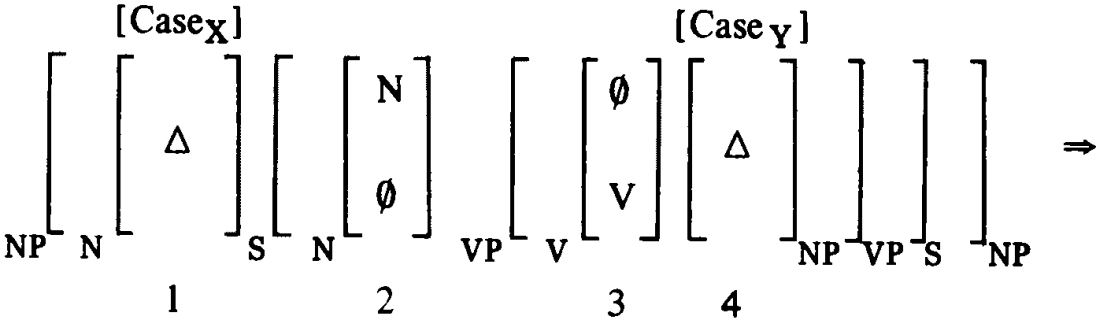
This explanation is in keeping with differences in the basic functions of the lexicon and the syntax. The former provides names of pragmatic referents, while the latter provides means for describing, specifying pragmatic situations in detail. There is some overlapping in the possibility of syntactically derived compounds which reduce descriptions to momentary, specific names, e.g. Zimmer's *hamburger plate*; just as there are L-rules which generate descriptive names. But the basic natures of the two components differ in, among other things, this particular dichotomy.

The structural description in (49) may serve as the basis of all nominalizations discussed in Chapter 8. If the dominating N-node, marked [Case_X] in (49), is filled by a lexical noun, the resulting configuration may serve as the source of RAdjs. The same configuration may serve as the structural description for the input of QAdj derivations with the further stipulation that the dominating NP-node marked [Case_X], again, need not be present, i.e. the output QAdj may stand in the predicate of an independent sentence.

The basic lexical extension rule for IE nominalizations is outlined in (50). This rule is a lexical one; it operates on strings only, although it may read syntactic configurations. It does not delete any branching, but rather leaves dangling nodes which later wither away. It deletes delta nodes which have not been filled, i.e. some positions for lexical insertion, thus prohibiting any insertion during further derivation. It can delete these nodes only by incorporating the case marker originally

marking them into the lexical composition of derivational stems. Then it adjusts each stem's class distinguishers so that the stem will conform to the distributional characteristics of the rule's output class, in this instance, a noun. This requires replacing conjugational features with declensional ones or, where the lexical prime is already nominal, re-valuing those features present. Notice that we avoid using the syntactic class features, noun and verb. This will allow the elimination of the function of renaming the immediately dominating syntactic node, as discussed in 6.1. The new derivation will be provided with the lexical featuring which defines its class and will automatically occur under the proper superclass node: NP or VP.

50



$$\Rightarrow$$

$$[Case_X]$$

(2) (3) - □ (- □ (- □))

$$\begin{bmatrix} Case_Y \\ \alpha Animate \\ \alpha Singular \\ \alpha Plural \\ \alpha Feminine \\ \alpha Masculine \end{bmatrix}$$

Not only is the use of features [±Noun], [±Verb] an invasion of syntax into the lexicon, it explains nothing about the lexicon. Insofar as the lexicon is concerned, the syntactic classes must be defined in terms of lexically determined features. The correspondence between

the lexical and syntactic definitions will be imperfect, but then this must be enlightening. For example, *petAk* 'Friday' is by all measures a lexical noun, but with the instrumental case ending *-Om*, *petkom* 'Fridays, every Friday', it is a syntactic adverb. The omission of [+Noun] in this lexeme's entry may well lead to the capture of the sorts of generalizations which distinguish Montague grammar, i.e. that *petAk* is a temporal item which may be inserted under NP- and Adv-nodes.

The model of (50) may well also represent the structure of the Adj-rule, though verbal rules must, of course, provide verbal features. Adjectives will contain the same features as nouns, though they will not be provided with specific values (±). Rather, their fem., mas., sg. and pl. features will not be assigned values before the agreement rules which are presumably transformational (cf. Crockett 1975). Adjectives will be distinguished from nouns by the presence of a comparative feature if it turns out that comparability cannot be predicted on the basis of semantics.

The box nodes are not solely determined by the rule itself, but as well by the lexical stem. If the feminine suffix *-kinja* (e.g. *student-kinja* 'coed') is fully analyzed, it will require three nodes: *-Ak-in-j*. The final *-a* is the nom. fem. II desinence. This is indicated in (50) by the provision for up to three optional boxes if demanded by a given lexeme. Otherwise, the rule itself provides one suffix position.

(49) does not abandon the basic Chomskyan tree structure. It merely presumes that various NP-nodes must be marked for function, with one exception: the subject node. This is the node in which nouns occur in the unmarked nominative case. Agents, patients, instruments, possessionals—all appear under this node without assuming any special function other than their lexical functions. The subject is a catch-all position among the various other case distinctions discussed previously. For lexical purposes, there needs to be a neutral function corresponding to the verb position to serve as a point of departure for lexical items picking up other case functions during derivation. The subject appears to be that function, not only for the reasons just mentioned, but also because there seems to be no subject derivation. The one derivation reflecting the subject function is the agentive. But this derivation is

restricted to animate referents, as mentioned in the preceding chapter. The object or patient derivation, on the other hand, seems to generate both animate and inanimate, even abstract nouns. There must be some explanation for this, and the necessity for a neutral derivational point of departure does provide the explanation needed.

It goes without saying that the basic rule represented in (50) must be accompanied by a welter of structural, semantic and performance conditions which vary from language to language. For example, compound variants of nominalizations are comparatively scarce in Slavic languages, cf. Scr *drvosečа* 'wood-cutter', *kamenolom* 'quarry', literally 'stone-break', *vodomer* 'water gauge', i.e. 'water-measure'. Although the number of nominal compounds in use is increasing with the rise of industrialization, their use is greatly restricted in comparison to Germanic usage of equivalent constructions. In English, on the other hand, compounds are commonplace: *can opener, nail polish remover, nutcracker, hair conditioner.* Moreover, in Germanic languages there is no restriction against compounds themselves participating in compounds (*cold water stain remover*) as there is in other IE languages.

The structural conditions on (50) are legion, so only a handful will be discussed here, just to provide a flavor of what they are like. Basically, the conditions on this rule will be of the form IF X THEN Y. For example, if $Case_Y$ = $Place_1$, the gender features must be marked [+Fem, -Mas] to insure that the M-rules insert the suffix *-n(ic)*, which governs the feminine Declension II inflection. If $Case_Y$ = $Place_2$, however, the gender features must be marked [-Fem, -Mas], to insure that the neuter Declension I inflection be properly assigned to the suffix, usually *-ište* or *-L*. The structural conditions on the ablative derivation are even more complex. *Bosna: Bosanac* 'Bosnia: Bosnian' (42) indicates that if $Case_Y$ = Ablative, and if further the stem is [+Proper, +Place], then the derivation must be marked [+Animate]. This obligatorily implies [±Mas, ±Fem], a choice which will be made automatically by the feature control rules at the end of the lexicon. If the underlying stem is already [+Animate], however, then the ouput must be assigned the values [+Fem, -Mas; -Sg, -Pl] to guarantee the feminine mass noun, e.g. *svinjetina* 'pork' from *svinja* 'hog'. The same output is characteristic of

vegetable ablatives. Conditions like these are easily defined on the basis of examinations of the derivational classes presented in Chapter 8. No more will be said of them here, therefore.

The major semantic condition on (50) has already been discussed, namely, that the output of this rule must typically refer to a class of all objects generically bound by the given case relation to the referent of the underlying stem. That is, the case function is incorporated into the lexical feature inventory of the stem, 'internalizing' the case function. This 'internal' case function accounts for the genericity of the case relations in L-derivation as opposed to the specificity that the same relations convey apropos the (conceivably same) lexeme in a syntagma (P-marker). A derived lexeme controls internalized case functions; they become intrinsic features. But lexemes are controlled by external, syntactic case functions.

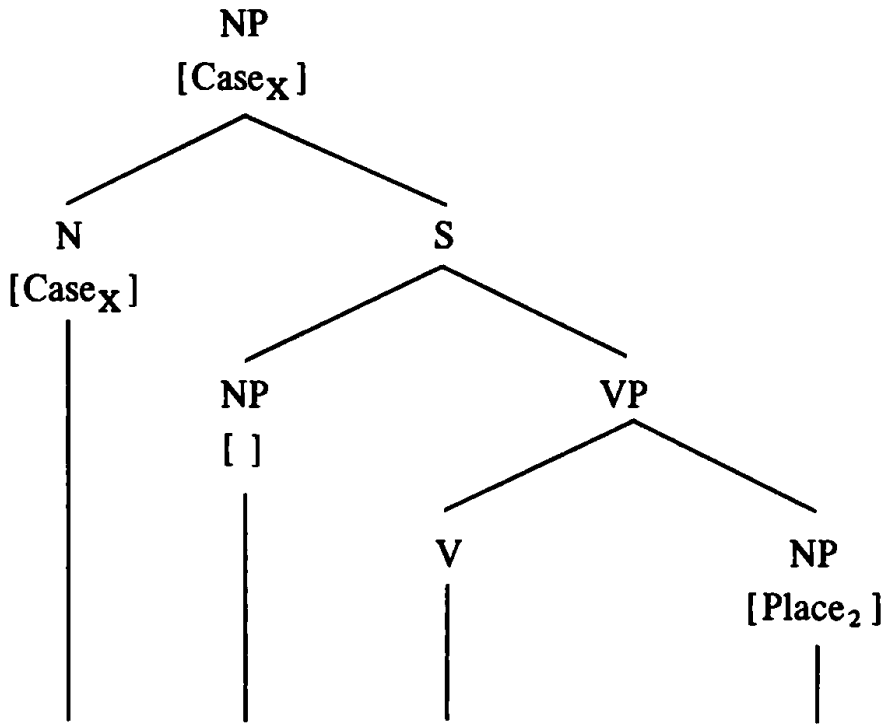
9.3. Special Problems

There are derivations which fall beyond the domain of the paradigm described thus far. Consider, for example, the handful of locative nominalizations referring to handles of tools: *sekir* 'axe': *sekir-ište* 'axe handle', *grablje* 'rake': *grablj-ište* 'rake handle', *vile* 'pitchfork': *vil-ište* 'pitchfork handle'. There is no a priori reason why this semantic variant could not be handled via an L-rule which provides the basic meaning, e.g. 'place on the axe',in conjunction with a semantic condition such as: *If the locative derivation operates on an instrumental lexeme, the ouput will specifically refer to the noninstrumental part of the object, i.e. the handle.* But for some reason, this derivation has not taken root and it simply is not available to most instrumental nouns referring to objects with handles. A lexical theory of Scr should be able either to explain why this derivational variant has languished while others thrive, or to demonstrate that the cause of the stagnation is not lexical.

Most nouns not susceptible to this variant are themselves instrumental derivations on *-L* derived from occupational verbs which are

also susceptible to *na*-locative derivations. The output of the regular *na*-locative, of course, refers to the place whereon the activity takes place. If *-ište* were added to an instrumental derivation on *-L*, therefore, the structural result would be, in most cases, a form identical to the regular *na*-locative operating on the verb, e.g. *mlatiti* 'thresh': *mlatilo* 'flail' but *mlatilište* 'threshing floor'. But one cannot argue 'blocking' at a grammatical level, first because polysemy does in fact characterize lexical items (*transmission*$_{1,2}$), but also because the M-component has a plentiful supply of distinct morphemes with which to distinguish variants as it does, for instance, in the case of *u*-locative and *na*-locative. If the answer to this question is lexical, the *sekirište*-type locatives must violate (50) in some way.

51



51a	*ražište* 'rye field'	Δ	*/raž–/* 'rye'	Δ	Δ_2
51b	*parkiralište* 'parking lot'	Δ	Δ	*/park-ir-aj–/* 'park'	Δ_2
51c	*sekirište* 'axe handle'	Δ	Δ	Δ	*/sekir–/* 'axe'

(51) demonstrates just such a violation. If *sekirište* were a lexical regularity, it would have to derive from an underlying structure which would be a paraphrase of 'something which is on an axe'. Thus the special semantic condition which would be required of these derivatives is no fortuity: they simply are not generable under the terms of the *na*-locative L-rule, to which *ražište* and *parkiralište* conform perfectly without any special semantic condition.

This leaves us with the question, 'where, then, does this small subclass and others like it come from and how do we go about accounting for it'. The only alternative provided thus far in this theory is the performance component. That is, if these forms cannot represent something that the lexicon does, they may represent something that is done to the lexicon. They cannot be lexical extensions, but must represent a sort of pseudoregular expansion of the lexical stock along the lines of blending, acronymization and the like. This issue will occupy Chapter 10, so we will leave it until then.

There are a couple of apparently recent arrivals in the L-derivation repertory of IE languages. There is a class of denominal derivations referring to philosophies in the broad sense: *positivism, Marxism, hedonism, transformism* (cf. Beard 1981); as well as a productive one providing names of sciences: *hematology, primatology, volcanology, cosmology*. The latter class is a special type of compound generally using Latin stems which correspond in many cases to local designated compound stems, e.g. Russian *-vedenie* (*muzykovedenie* 'musicology'), German *-wissenschaft* (*Musikwissenschaft* 'musicology'). These may well be compounds with a designated suppletive component. The former class is much more freely generated and ostensibly a simple derivation, although it is not in any sense a descriptive one. *Transformism* is related to a different sense of *transform* than is, for example, *transformationalism*, and this situation characterizes the entire class.

It is interesting to note that there is evidence of these derivations' being compounds, for *ism* is now used freely in English as a noun meaning 'belief, theory'. Such a development is in keeping not only with the claim here that suffixes not attached to case functions tend to be transitory, but also with the trend in English toward more compounding

at the expense of L-derivation. Although both these morphemes would bear further investigation, initial inspection suggests that they are bound, suppletive compounding components for restricted classes of designated compounds, which will be discussed in 10.5.

In Chapter 6 the 'possessional' derivations were treated as generates of an underlying verbal feature POSS. Now we know that all of the characteristics of POSS, as well as the conditions on its operation in lexical derivations, are also found in the genitive case. The underlying rule outlined in Chapter 6, therefore, is materially different from the more general rule discussed above. It is, of course, the case that the output of the QAdj rule will be substantially different from that of the RAdj and nominalization rule: QAdjs are introduced only in predicate position in the deep structure and are moved under certain circumstances to attributive position by T-rules. But there is another issue: should the possessional derivations be handled by the case relation rules or left to be derived from an underlying verbal feature? The crux of this issue hinges on whether the genitive case is a deep case or a surface realization of the same underlying configurations from which PAdjs and HAdjs are derived.

There would seem to be no pretheoretical arguments for either position; the appropriate results may be obtained with either assumption. However, there are significant theoretical gains accruing from the assumption that the genitive is a deep case and not transformationally derived. First, the possessional derivation may be incorporated into the case relation derivation rule(s), thus removing the necessity for a fourth or fifth *type* of rule. But more importantly, it will allow the simplification of the deep structure of IE languages in a way that explains a hitherto enigmatic imbalance in the output of the C-component.

The ability of lexical verbals to occur in syntactic N-nodes is a widely noted fact of IE grammar, e.g. *raditi je bitno* 'to work is essential'. But the reverse is not evident in any IE language, i.e. the operation of lexical nominals in syntactic verbal position, at least, not without prior lexical derivation.

Evidence has been mounting, that there are two BE-forms in various IE languages: one a lexical form with the meaning 'to exist', the

other, a proverbal morpheme which merely provides the essential verbal features to nonverbs, especially adjectives, inserted under a V-node. In the case of verbs inserted into N-nodes, because of the bare verb's incapacity to reflect case, we find the neutral form of the verb (infinitive) occurring in the unmarked NP-node only (nominative). Verbs may occur elsewhere in sentences under NP-nodes if their form is changed so that they may receive case endings, i.e. nominalized or transformed into participles. But given the existence of a proverb BE as argued by Babby, Chvany and others, there is no reason why nouns might not be inserted directly under the VP-node, even when they are marked for case. Indeed, this is a possible interpretation of the facts in (52).

52 He is a baker
He is like a wolf
He is with a friend
The novel is by Hemingway
The machine is for sewing
He is from Ljubljana
This is to/for Cathy
His house is (of) stone
He is of impeccable character
He is at the beach
This book is five dollars

Most such constructions are available in all IE languages. The sorts of restrictions on them are characteristically the same as those on lexical derivations; thus, in no language can any noun or noun phrase be freely inserted and allowed to remain unchanged until it reaches the surface. This is a problem for any syntactic theory. But if these constructions are directly related to lexical derivations, the extent of the problem may be reduced by allowing more nouns into the V-node, i.e. those which will be transformed by L-rules, thus reducing the number and kinds of constraints which otherwise would be required to predict surface output. Moreover, the constraints would be limited to lexical ones.

Nowhere is this option more promising than in the case of the possession cases and derivations. We have already noted that the inherent characteristic condition holds both for the qualitatitive genitive and the HAdj derivation. There is, however, a problem in treating the qualitative genitive in that it is a possibility only when the N_{Gen} is modified by a single determiner (M. Ivić 1964). Assuming that such determiners originate in the predicate position of a relative clause, how can the deep structure constrain the predicate use of the genitive case to only those instances where a single determiner will emerge on the surface? Moreover, if the N is modified by a complex determiner, only the 'qualitative' instrumental may be used. The single, simple modifier is a common constraint on lexical derivation rules; it constrains them to syntactic complexity not exceeding that of compounds. But it is problematic in syntax, to say the least.

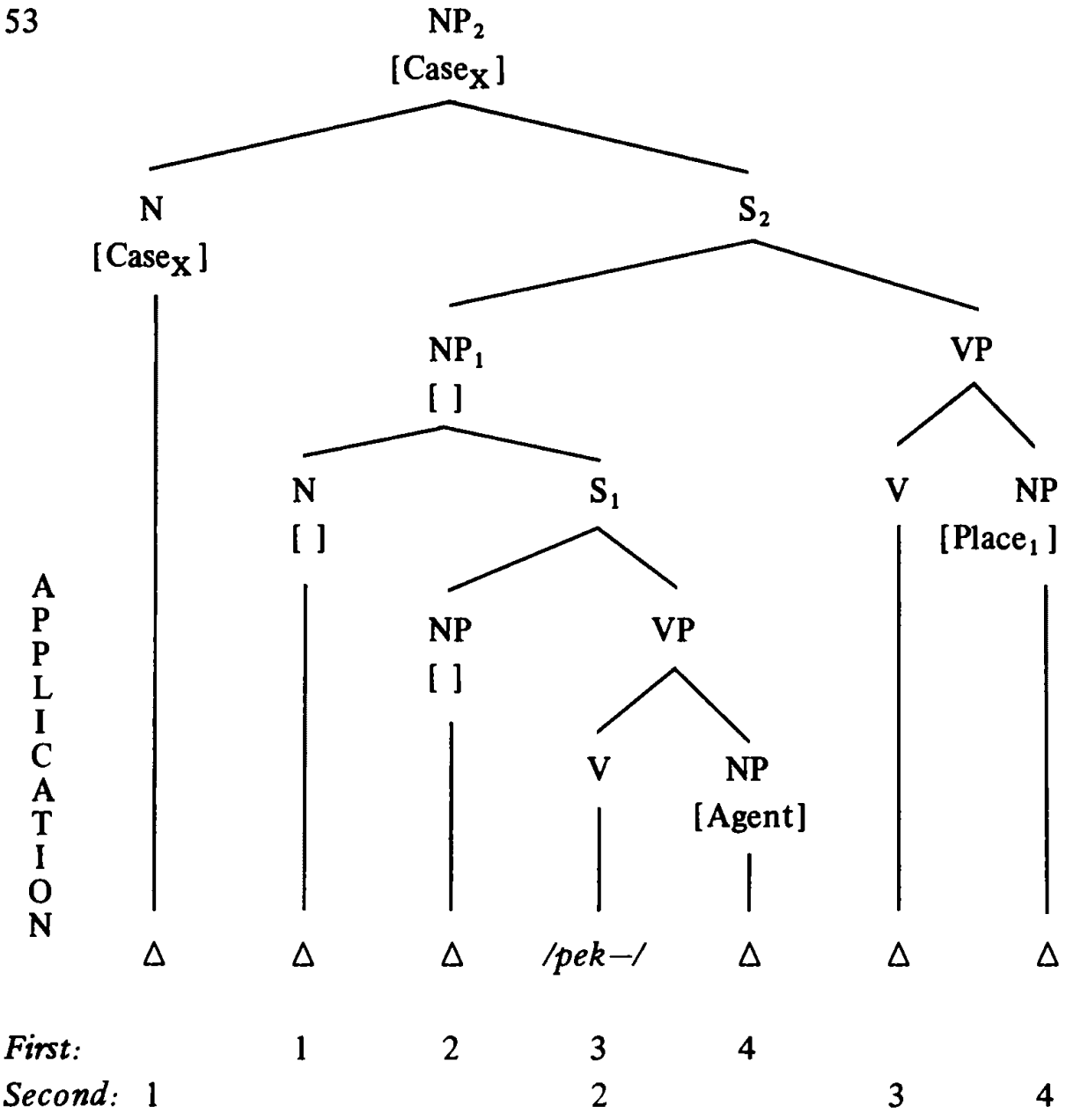
If we assume that the qualitative genitive is the syntactic realization of the possessional case function ($Genitive_2$), then we may condition the case relation L-rule (50) in such a way that unless the single determiner is present, the rule is obligatory. Moreover, if more than a single, simple determiner is present, the construction will not fit the structural description of that L-rule and may be adjusted for *sa* + Instr 'with' either by T- or M-rules. This approach not only simplifies the C-Component, ridding it of what otherwise would seem to be inevitable contextual constraints, it also explains the relations between the qualitative genitive and the HAdj derivations. It furthermore provides a natural origin for the HAdj; one which does not involve the deletion of the V-node containing POSS, then replacing it with the proverb BE.

The correlations between the genitive case and the verbs corresponding to English *have* are thus synchronically accidental. There may be interesting historical and sociological issues at stake, however, in discovering the reasons why this particular complex relation became so important in IE societies as to justify its being accorded a specific deep case function among the primary case relations.

Derivations within derivations present no essential problems to the model represented in (50). Among the various constraints on case

relation derivations is one preventing the *na*-locative ($Place_2$) derivation from operating when even a simple lexical extension has been derived inside it. Thus there are no $Place_2$ derivations containing a derived stem. This constraint does not apply to $Place_1$ derivations having embedded agentives. Consider, for example,(53).

53



Continuing the assumption that L-rules may read but not disturb the syntactic structure (except to steal category function features), two readings of that structure by the case relation L-rule are presented in (53).[29,30] The multiple operation of that rule is presented as 'appli-

plications' rather than 'cycles', since there is but one rule. The outputs of this L-rule are thus ordered by embedded syntactic configurations, not cyclicity.[31] The output of the case L-rule's first application, then, would be (54).

54

First:

1	2	3	4	
[$Case_X$]	([∅]) ([∅])	[ ]	([Agent])	[$Place_1$]

$_{NP}[_{N}[\ \Delta\ ]_{S}[_{NP}[_{N}[\emptyset]_{S}[_{NP}[\emptyset]_{VP}[_{V}[/pek-/]_{NP}[\ \square\ ]]]]_{VP}[_{V}[\ \Delta\ ]_{NP}[\ \Delta\ ]]]]$

$$\begin{bmatrix} \text{Agent} \\ \begin{bmatrix} \text{Dec I} \\ \text{+Anim} \\ \text{+Sg} \\ \text{-Pl} \end{bmatrix} \\ \text{Conj I} \\ \text{etc.} \end{bmatrix}$$

Second:

1	2	3	4

This diagram shows deleted or transposed case markings in parentheses. The information newly introduced in the lexical item apparently 'pushes down' old information, for while the semantic content of the verb *pek—* must be accessible for comprehension, the structural information becomes irrelevant; the newly introduced structural information seems to come to the fore. This becomes more obvious when the second application occurs and *pekarnica* 'bakery' is derived from *pekar* 'baker'. Assuming that empty nodes (∅) will be ignored, where 'empty node' means a node with its dummy marker (Δ) erased, the nominalization rule now considers the next highest node and finds that same structure excepting only a different case marker. Since none of its conditions prohibit its operation on the $Place_1$-node, it optionally applies again, following the second application reading.

The diagram in (55) has been improved to include only the semantics and morphological conditions on *pek—*, but still retains subcategory

information for the agent, *pekar.* But this information is irrelevant to the semantic interpretation of *pekarnica,* so the model must be adjusted one more time, so that all subcategory information in an underlying lexeme is replaced by the new information implanted by the L-rule.

55

$$[\text{Case}_X]$$

$$_{NP}[_N[\ \emptyset\ ]_S[_{NP}[_N[\ \emptyset\ ]_S[_{NP}[\ \emptyset\ ]_{VP}[_V[/pek-/]_{NP}[\ \square\ ]]]]_{VP}[_V[\ \square\ ]_{NP}[\ \emptyset\ ]]]]$$

$$\begin{bmatrix} \text{Place}_1 \begin{bmatrix} \text{Dec I} \\ \text{+Sg} \\ \text{+Fem} \\ \text{-Mas} \\ \text{-Pl} \end{bmatrix} \\ \text{Agent} \begin{bmatrix} \text{Dec I} \\ \text{+Anim} \\ \text{+Sg} \\ \text{-Pl} \end{bmatrix} \\ \text{Semantics of } pek\text{-} \\ \text{etc.} \end{bmatrix}$$

The case relation L-rule obviously applies following lexical insertion. It is less obvious where semantic interpretation applies vis-à-vis L-rule operations. There are two possibilities. If semantic interpretation occurs after case markers are incorporated into the principal lexeme, projection rules will have to come in two slightly varying versions; first, to apply to ordinary arborizations and, second, to project the same interpretations on case markers listed in lexical inventories. If interpretation is positioned to apply prior to the case function L-rule, the interpretations of Agent, Place_1, Manner, etc., may be incorporated along with, or even instead of, the syntactic marker.

Such an order of application makes sense on other grounds, as well. It would seem that the function of L-rules is to reduce arborization in cases where the complexity of the syntactic structure is not justified by the amount of lexical substance. 'There/the place where

bakers are' represents a lot of syntactic structure manifested by grammatical morphemes, with but one full lexeme: 'baker'. Of course, if the speaker wishes specifically to describe, there is no alternative but to turn to the descriptive T-component and generate, e.g. 'there, where the baker is'. But given the prior knowledge of the definition of 'baker', which may even include reference to a generically associated place, generic reference to his place may be made through the lexicon via a lexical transformation. In deciding whether to use a lexical or syntactic form, speakers no doubt use a test consisting of considerations such as these. If the speaker's intention is not to express specificity, in the absence of constraints against lexical derivation, the underlying configuration will not be accepted by the T-component unless lexically derived. If this interpretation of the facts is valid, then the proper location for L-rules is immediately before the T-rules.

It deserves repeating that this does not imply that speakers actually operate L-rules every single time they use a lexical derivation. Speakers may remember that a derivation is possible and store that derivation in encyclopedic memory even if it is transparent. But such a memorized transparent derivation must conform to all the conditions of the appropriate L-rule(s), which is to say, it *could* be derived each time it is spoken. The theory thus far represents the purely linguistic relations manifested in the lexicon; it does not pretend to speak to the question of how individual speakers take advantage of the rules discernible there. The human mind is certainly capable of instantaneously predicting the outcome of clusters of L-rules and T-rules without going through each operation after it has become accustomed to the rules through years of use.

9.4 The 'Whys' and 'Wherefores' of Lexical Derivation

In Chapter 6 two major differences between L-rules and T-rules were postulated pretheoretically: (1) the purview of L-rule operation is restricted to a lexical item and (2) L-rules are capable of altering the semantic content of lexemes in fundamental ways. Now we see that this

latter characteristic is an accidental function of the location of L-rules and, essentially, they differ from T-rules only in their operation which is, quite naturally, limited to lexical inventories. Otherwise, they are generative, they operate on case markers, they read and manipulate conditions so as to capture syntactic relations by 'setting up' T-rules for compounds. While they may be included in the lexicon, they cannot be separated from syntactic configurations. It is impossible that the cardinal adjectivizations and nominalizations of all IE languages only accidentally correspond, in some languages on a one-to-one basis, to the primary deep case functions of the language family. Thus L-rules must capture syntactic relations both internally and externally and this capacity must be a major characteristic of any theory claiming to explain lexemic extension processes.

A strong lexical theory must be sufficiently abstract to apply to all natural languages. A theory based on morpheme concatenation, where a meaningful structural element like a lexeme is added to other such elements, must by definition be a local theory, for the individual morphemes which it explains must be local. A metatheory of morpheme concatenation, dealing with sign morphemes abstractly, may work for isolating languages where grammatical morphemes are much more like lexemes, but certainly not for inflectional languages where the sound-meaning relation is mediated by a paradigm and is much more complex. The present theory, therefore, provides a basis for choosing among theories, for it provides a determining factor for L-derivation. Any theory of L-derivation which is not predicted by the categorial system of the language, cannot be workable unless determining factors of greater predictive power are given.

The three classes of determinants for L-derivation, gradational features, lexical subclass features (gender, number, animacy) and category systems, form the paradigm which associates L-rules and creates the possibility for asymmetry and null marking. The paradigmatic relations of L-rules predicted by these phenomena have been argued for on other grounds by Guilbert and Zemskaia. Aside from the gradational features, there should be no surprise in this discovery, for the same features are involved in the morphological paradigms of syntax: case and conjugation

systems, too, vary on the basis of gender, number, animacy and category. The nature of the 'indirect relation' between derivation and inflection now becomes clearer: the mediating paradigm which associates derivation with affix consists of these same factors comprising the inflectional paradigms. This, no doubt, is the factor which diachronically stabilizes L-derivations (5.2). The difference lies in the nature of the components operating with them. The L-rules incorporate these semantically interpretable features deeply in the derivative, while the inflectional rules add them externally at a more superficial level. The semantic interpretation of these features **in** the lexeme, therefore, is generic; the interpretation of them **on** the lexeme is specific.

Another interesting aspect of the lexical processes explained by this theory is that it predicts what sorts of changes in conditions will cause an erosion of the lexical derivation system. There should be some sort of correspondence between the health of the case system and that of the lexical derivation system. Isolating languages, after all, have no L-derivation. The relation will not be a direct one, however, for the critical issue for L-derivation is the status of the deep case functions, a system which is representable by prepositions without inflectional endings. The issue here, then, is not necessarily the health of the inflectional system. But since there are quite a few subtleties involved, it will require more detailed scrutiny further on.

The theory presented in Book II also further unravels the intricacies of the meaning of meaning. 'Meaning' as defined by this theory, is the fundamental sense and relations associated with a lexeme, which cannot be inferred from any other component of grammar or any extralinguistic source. There is no way to explain how the single morpheme *-in* in *svinjetina* and *hrastovina* can 'mean' 'meat of' in one case and 'wood of' in another, that is compatible with the prior existence of lexical items *meso* 'meat' and *drvo* 'wood'. Moreover, any such presupposition would itself be incompatible with the fact that the same morpheme, for sure, refers to fur, shell, tusk, hide, stalk and droppings. Since the only positive statement we can make as to the *in(a)*-derivation is that it refers to all these various objects, and since there would seem to be by all other evidence only one derivation, we must conclude that the

meaning is merely 'some mass from X' and all other significance comes from context and encyclopedic knowledge related by deductive logic or sheer memorization. In any event, only this approach, combined with the assumption of the separation of derivation from affixation, explains both the regularities and irregularities of this and similar derivations.

A complete theory of significance will have to consist of several components, for the sense attached to the words we use derives from several sources: language, extralingual knowledge, pragmatics. It would be misguided to assume that all of the significance associated with a lexical item is the product of language alone. The distinction of the contributions of these various components is testable. One needs simply to present subjects with a list of neologisms having no pragmatic reference and ask for the definitions of the neologisms. The subjects will, of course, in an attempt at deriving both a meaning and a referent, add to the lexical meaning by tying in the plausible semantic associates of the underlying lexeme. But these associates should vary from subject to subject, while the linguistically defined, true meaning should remain constant across all subjects.

Despite all that is clarified by this theory, there remains a large body of variations in meaning and outright irregularities associated with all these lexical processes. It was argued in Book I that idiomatization is a product of performance or speech act processes. Speech act theory is, however, more than a list of exceptions. It possesses its own rules for taking advantage of those regularities described in our theory. Sometimes speech act regularities add to linguistic regularities; sometimes they contradict linguistic regularities. They inevitably confuse the issues of lexical theory. For this reason, the present theory can stand only if the remaining irregularities can be cogently and convincingly explained by a lexical performance theory. It is to this issue that the final Book is addressed.

NOTES TO BOOK II

1. Stockwell (1977: 116), for example, notes, that 'since we don't know much of anything substantial about how speakers store their extensive knowledge of their languages, or how they retrieve it and put it to use in forming sentences, we are free to build formal models which have NO NOTION OF MENTAL PROCESS WHATEVER built into them. They provide analogues to the CONTENT of what speakers know, but not analogues to the MENTAL STORAGE OR PROCESSING of that content.' The lexical rules discussed here, however, possibly do reflect on mental storage in that they demonstrate the types of relations that facilitate storage as well as generation. These rules, under such a hypothesis, may well be used in cognitive rehearsal processes for verification of grammaticality in addition to retrieval. They are not by any means wholly removed from strategies of speaking; they simply represent the knowledge upon which such strategies are based, rather than the processes by which they are performed. Speaking, in summary, must operate on rules different from those governing remembering. The rules developed hereafter underlie strategies for remembering, verifying and theoretically generating neologisms, i.e. they will be conditions on well-formedness.

2. Capitalized phonemes throughout this book refer to certain well-known morphonemic alternations in Scr, e.g. $A = a \sim \emptyset$ (no vowel if there is a following syllable); $L = l \sim o$ (*l* before vowels); $O = o \sim e$ (*e* following palatal consonants).

3. Numericals might seem to be an exception to the disallowance of recursivity in the lexicon, especially in light of Russell's theory of numbers. However, if numericals are lexemes, they must have referents, thus it seems possible to assume that they are names of a possible set of mathematical recursions. That is, IE peoples have a decimal counting system and have so named their numbers, rather than the decimal system resulting from a recursive lexical or syntactic rule.

4. The only absolute exception to the monosyllabic condition is *obrva* 'eyebrow': *obrv-at*. Although lexemes with declensional extensions like *-eT* and *-eN* seem to be excluded from this class in general, *jaje* 'egg', which optionally contains *-eT*, and *vime* 'udder', which obligatorily receives *-eN* (*vime*, *vimena*), both have HAdj derivations on *-at*. Finally, *trb-uh* (*trb-uv* in some provinces) 'belly', presents a special case with adjectives *trbuš-at* and *trb-at* possible. The former noun is an absolute exception with its disyllabic stem; the latter is an exception in that the declensional extension of the stem is unique.

5. Obviously, capturing such a convention in the lexicon presents substantial problems since it depends upon powers and operations of deduction as well as such semantic detail as would be uncomfortable in a competence theory. In Chapter 10, therefore, an alternative approach, postulating this convention as a performance constraint, will be presented.

6. There are limits as to how far the whole-part relation can be taken vis-à-vis the HAdj derivation. For example, even though all animal tissue consists of

cells, one would hardly expect to hear such derivations as *a celly man* or even *a small-celled man.* This is because *cell* and *man* are several times removed from each other by part-whole relations. Constructions such as *veiny meat* or even *sinewy man* are acceptable because there are no more than two intervening part-whole relations. *Weak-celled tissue* strikes me as acceptable. On the other hand, many physically alienable parts (thus the avoidance here of Fillmore's and Chomsky's term '(in)-alienable possession') may be perceived as inherent characteristics: *uniformed cop* (*?uniformed woman*), *aproned butcher, beltless trousers.*

7. The inherent characteristic convention and semantic intensification are breaking down or, perhaps, already have broken down, in English and Russian in connection with the HAdj derivation. In English, there are only a few intensified HAdjs based on salient body parts, marked by the suffix *-y: hairy, leggy, chesty, busty, toothy.* All salient body parts are susceptible to the HAdj derivation without the possibility of intensification; the usual suffix is *-ed: eyed, eared, headed, nosed, legged, toothed. Hairy* is an exception which may be intensified or not. In Russian, too, the patterning is hard to follow; three suffixes are involved: *-at, -ast* and *-ist. Volos-at-yj* means 'having hair', while *volos-ast-yj* means 'very hairy'; *borod-at-yj* means 'bearded', while *borod-ast-yj* means 'heavily bearded'. But this pattern is marginal at best; *zub-ast-yj* means 'toothed, toothy', *uš-at-yj* means '(big-)eared'.

8. I am grateful to Fred Householder for bringing this problem to my attention. He also informed me of the existence of David Reibel's very interesting dissertation (Reibel 1963).

9. More precisely, reduplication is the copying of a copy of a lexical stem, as will be discussed in more detail in Chapter 7.

10. Roeper & Siegel (1978) insist that compound and negative L-derivatives are generated by rules separate from the rules which produce simple derivatives. However, they do not provide a single example of a stem which can undergo a simple version of a rule and not the corresponding compound. Rather, they stipulate a new category marked by the symbol '&', defined as 'grammatical but not used', and employ it to justify this distinction. Thus they stipulate that *church-goer* is generated by a compound agentive rule unrelated to the simple agentive rule, because *&goer* is not used. This argument is faulted at several points. First, if *goer* is grammatically possible, it must be explained. If it is not used (it does appear in the OED), this fact must be explained in terms of performance, since the agentive rule is by far the most productive L-rule in English. Roeper & Siegel also do not consider *church-goer* a member of the other category their definition creates by implication, i.e. 'used but not grammatical', a definition not far removed from our expansion rules. Yet outside *church-goer* and *theatre-goer*, one finds dative-verb agentives grammatically questionable: *?school-goer, ?game-goer, ?vacation-goer, ?market-goer.* The reason for this seems to be a constraint on the role of dative nouns in compounding rather than a 'first-sister' principle. If we choose verbs similar to *go*, e.g. *come*, whose 'first-sister' case is ablative (*come from N*), first-sister compounds sound even more bizarre: **city-comer, *country-comer, *home-comer.* The same is true of manner-verb

compounds: **friend-talker*, **duck-walker*. The fact is that even when there is no conceivable referent, object-verb agentive compounds are palpably more grammatical than compounds with any other case relation: *juice-folder*, *air-straightener*, *question-molester*, *libido-conditioner*. The fact that there are slightly more dative-verb compounds than compounds reflecting other cases (*indian-giver*, *star-gazer*, *church-goer*) regardless of the 'first-sister' principle is probably a result of the 'noun phrase accessibility hierarchy' (Comrie & Keenan 1979), which is no doubt applicable at many levels of grammar.

11. Cf. Belić (1958: 112, 140-141, 148-150) for evidence that among nominal compounds 'we have syntagmas for all cases without any case marking.'

12. There are in Scr 'semi-compounds', foreign expressions which have not been fully assimilated into the grammar, e.g. *šlag pena* 'whipped cream', *nafta peč* 'oil heater', *paradajz salata* 'tomato salad', *šlep služba* 'tow service', *parking mesto* 'parking place', *hula-hop čarape* 'panty hose'. This is a question of using foreign languages simultaneously with Scr on a collective level. With time the foreign expression is usually assimilated into the grammar or the phrase is dropped, replaced by an indigenous one, e.g. the present competition between *non-stop* and *stalno radi* 'constantly works' to designate shops which do not close for a midday break.

13. In fact, desinental rules in IE languages may well set off lexemes with morpheme dummies, i.e. one before and one after, since most cases of inflectional endings are associated with a prefix-preposition. This would explain not only how prepositions enter sentence structures marking the same relationship as do simple derivational affixes, but also why so many enclitic prepositions function also as prefixes. Prepositionals, of course, cannot be inserted lexically, since many of the relationships they represent are introduced transformationally, e.g. *by*-passive, subjective and objective genitive.

14. Babby (1976) has described very accurately the situation in Russian, distinguishing lexical from syntactic features and demonstrating why a separate M-component capable of interpreting clusters of such features, is necessary. Although as of this writing I have not been able to read the work, Siegel (1978) seems to contribute substantially to this issue, judging from her abstract.

15. There are 13 exceptional cases of nouns containing *-ost*, further extended by the adjective suffix *-An* in Matešić (1965), but all have undergone lexicalization, e.g. *mil-ost-an* 'gracious' (*miL* 'nice'), *pak-ost-an* 'malicious', *rad-ost-an* 'joy-ous' (*rad* 'glad'), *sigurn-ost-ni* 'safety-' (*siguran* 'sure'), *žal-ost-an* 'sad, depressed' (*žaL* 'regrettable').

16. Two facts concerning this set of derivations seem related: (1) they are all *names* of biological species (not *descriptive* of genuses) and (2) they violate the rules for descriptive L-derivations. Since the production of specific names is a performative process, even when the name is based on a descriptive derivation, it is easy to see how these derivatives come to violate what seems to be the regular

morphological rule (cf. pp. 67-69).

17. The agentive rule will not, of course, operate on every construction which may trigger the HAdj rule. A major constraint is that agentives operate only where the head noun contains no lexical specification beyond [+Animate, ±Mas, ±Fem, ±Sg, ±Pl]. Thus *profesor, koji ima bradu* 'a professor who has a beard' = *bradat profesor* 'a bearded professor' ≠ *bradonja* 'a bearded one', since *bradonja* in the last case would lose the specification of the profession present in the common underlying phrase.

18. The morphonemic alternation *O* (→ *e* after palatal consonants) fails to operate on two occasions. First, if the stem refers to a tree, it operates optionally or regionally, i.e. *trešnja* 'cherry (tree)': *trešnjev/trešnjov* 'cherry-'. In the case of the Declension II instrumental ending, the alternation obligatorily fails to operate if the stem is marked [+Feminine], e.g. the instr. sg. *trešnja: trešnj-om* (cf. the mas. sg. *češanj* 'garlic clove': *češnj-em*). These two examples vividly exemplify the range of contextual features to which the M-rules must be sensitive in their operation (cf. fn. 32 for further comment).

19. Stem features also determine the preponderance of the semantic interpretation of an extended lexeme. Beard (1977) discusses a particular instance in Scr. See also Belić (1959: 31-32) for a discussion of the dominance of the stem in the extended lexeme.

20. In two of the three cases where the negative physical state results in a salient body part referred to by an underived monosyllabic N, i.e. *grba* 'hump', *ćela* 'bald pate', *guša* 'goiter', we find the stems belonging to both the 'salient animal body parts' and 'negative physical states' subclasses: *grb-at/grb-av* 'hunchbacked', *guš-at/guš-av* 'goitered'. The second form in each case is the normal one, and for *ćela* only *ćel-av* is attested. Apparently, these lexemes are more firmly rooted in the 'negative states' subclass.

21. The second example, *?kišobran je više Mitin nego Sašin* 'the umbrella is more Mita's than Sasha's', was accepted by 9 of 9 native Serbs now living in the Boston area, who completed a questionnaire in connection with Beard (1977). They unanimously rejected the same sentences with comparative endings on the material and possessive adjectives, e.g. **kišobran je Mitiniji nego Sašiniji* 'the umbrella is Mita's-er than Sasha's'. Although the analytic forms are used in informal speech, this may result from a sense that *više* 'more' functions here as an adverb modifying the VP *je Mitin* 'is Mita's' rather than an analytical particle. In careful speech and writing, material and possessive comparatives are generally avoided.

22. The two variants reflect, no doubt, the same phenomenon observable among agentives (cf. 9.2), namely, the prenominalized English form is a compound lexical derivation, while the variant displaying external syntactic structure is a syntactic transform. All of the arguments for a syntactic-lexical distinction among agentives apply here. The syntactic variant of these nominalizations seems to apply

exclusively to those 'primary' cases most closely associated with verbs, i.e. agent, object, instrument, recipient, rather than locative, purpose, goal and so forth.

23. It is also conceivable that the filial deanimate derivations fit here, too, for offspring were denoted in the classical IE languages via the ablative. Thus *slonče* may be perceived as an animate object generically coming from *slon*. Note also *O'Reilly*, *O'Brian* and Russian *Boris-ov-ič*, where *-ič* is a diminutive marker and *-ov* marks the possessive/ablative relation.

24. It is the case that many of these forms may refer to inanimate substances and objects, e.g. *dalmatinac* = Dalmatian wine, *bosanac* = a species of tobacco, *Beograđanka* refers to a large department store in Belgrade. But in every case, as was observed among the examples on *at-Ac/-at-ica* (cf. fn. 16), the derivation is the name of a species or brand. These usages will be treated here as all other specific names, as derived names potentially referring to situations only tangentially if at all related to the meaning they reflect. Thus *dalmatinac* means 'a person from Dalmatia', but it has the additional capacity to refer to the wine from Dalmatia (cf. 3.2 and 10.33). Recent suggestions that agentives are lexically unmarked for animacy will be dealt with in the Epilogue.

25. For example, the operation of the qualitative genitive is restricted to abstract NPs in English: *a man of considerable intelligence/international repute/ integrity* but **a man of blue eyes*. The qualitative genitive is also obligatorily attributivized in English, i.e. it does not occur in predicate position as in Scr: **the man is of great courage*; only *a man of great courage*. The construction in English is only marginally active though far from inactive; rather, it may be applied with but a restricted degree of generativity. It is a good example of a syntactic derivation with all the characteristics of the 'lexicalization' and 'idiomatization' that many feel haunt only the lexicon. The real problem, of course, is that of partial regularity and close examination of the grammars of IE languages shows that it plagues all components without exception.

26. There are also indeclinable nouns in some Slavic languages, though not in Scr; Scr does have a series of indeclinable adjectives, however. Russian, for example, bears a large catalog of borrowed words which are not declined. Since they are not marked for gender, agreement is automatically effected by the assignment of the neuter case endings to verbals, e.g. *taksi* 'taxi': *gruz-ov-oe taksi* 'hauling taxi', with the neuter long-form *-oe* ending. Russian might be characterized as an 'obligatorily agreeing language'. Scr, on the other hand, has indeclinable adjectives and compound attributes, but all nouns must be inflected. Thus, Scr might be called an 'obligatorily inflecting language'—a fact, no doubt, not unrelated to the great enrichment of its inventory of lexical derivations. Even morphotactically awkward borrowings are adapted to declension, e.g. *taksi: taksij-a, taksij-u* (assigned masculine gender); *radi(j)-o: radij-a, radij-u* (assigned neuter gender). Note that *radio* in Scr is a neuter noun; it receives all of the Declension I neuter endings. In Russian, *radio* has no gender, thus the same neuter endings are assigned to items in agreement with it as are added for agreement say, with an infinitive subject.

27. Since most lexical items cannot realize all four possible combinations of [±Sg, ±Pl], we must assume that a lexical convention is built into the system of value assignments to the effect that, if a lexical prime has the fixed marking [+Sg, -Pl], the value assignment rules may optionally reverse the markings, i.e. [+Sg, -Pl] → [-Sg, +Pl]. This allows many stems to be pluralized without permitting them to be marked as collectives or mass nouns.

28. The difference between the general sense of *momaštvo* and that of *momak* may involve more than the adjustment of number features. Since derivation is considered here apart from suffixation, it is possible that *momaštvo* is the form of several derivations and adjustment rules. In this context I intend only to demonstrate that with the separation of derivation and affixation, the various meanings of what have been perceived up to now as single, 'existing', crystallized forms, may in fact be those plus flexibly derived forms in more than one derivational system. In any event, the complexities continue to unravel themselves the more we examine derivations independent of affixation.

29. No attempt has been made here to adapt (53) to the comments concerning the advantages of allowing case-marked NPs to be directly inserted into V-nodes. It is easy to discern in (53) that this would simplify denominal derivation, though not deverbal.

30. The L-rule's ability to read syntactic structure but not alter it theoretically represents the lexicon's access to syntactic structure, on the one hand, but its demonstrable independence, on the other. The lexicon is independent because its functions can be isolated from those of other components. However, it is clear that it has access to syntactic information; moreover, derivations for which there will be no available affix, are not generated. All components must have access to the information of all others, for language is used by linguistically omniscient speakers, speakers who know all components simultaneously. Thus there is no possibility of a speaker deriving a comparative based on a derived adjective which he knows receives the adjective suffix *-ski*, for he also knows that this suffix does not accept comparative endings. Since the speakers of all languages are linguistically omniscient, it stands to reason that languages have evolved with componential omniaccess. Halle's (1973) worry that derivational rules must have special access to P-rules consequently is unwarranted. Omniaccess must characterize languages in general. This does not in any way impair the self-sufficiency of the distinct components: their operations are distinct; the information upon which their operations are based, cannot be.

31. It goes without saying that since subcategory lexical rules are final adjustment rules, like the automatic inflectional box-insertion rules, they must be located at the very end of all lexical processes. Case relation derivation rules, because they change the classes of lexical primes, must be located further in, nearer the copy-insertion rule(s). The gradational rules simply are not dealt with here. Their productivity, their syntactic isolation and other suggestive details lead me to believe that they are, in fact, subcategory rules. But this is not completely clear at present.

III

INTENT AND THE GRAMMAR

"The question is," said Alice, "whether you *can* make words mean so many different things."

"The question is," said Humpty-Dumpty, "which is to be master—that's all."

—Lewis Carroll

CHAPTER 10

Lexical Performance

10.1 Grammar and Competence

The terms 'grammar', 'competence', 'language', 'performance' and 'speech act' have all been used quite loosely up to this point in referring to language and its use. In Chapter 3, this work was committed to a position strictly discriminating between language and usage with special attention devoted to the proposition that 'meaning' is a concept directly related to abstract lexical structures while 'reference' is one determined additionally by usage. Prior to developing a theory of lexical performance, a procedure for distinguishing usage phenomena from strictly linguistic phenomena must be established. Chomsky's term 'performance' is a felicitous means of referring to language usage, for it has clear behavioral overtones and, on a practical level, it is provided with a complement of generally accepted derivations, e.g. the adjective 'performative'. Thus 'performance' and 'speech act' will be considered henceforth synonyms and no further implications may be assumed from the choice of either or of 'usage', in the following discussions.

'Competence', on the other hand, implies a prior capacity for the assimilation of 'grammar' as Chomsky uses the terms. For this reason, 'competence' will be eschewed. The lexical theory presented in the preceding chapters involves no notion of mental process whatever, either for the acquisition or execution of grammar; rather, it is strictly

a subcomponent of the general theory of IE grammar. It does not broach the issue of any 'initial state' of the human mind prior to the acquisition of the model. It merely presents a theory of the knowledge acquired and whether any part of that knowledge is genetically determined is immaterial to the substance of this theory. So long as grammar is a collective abstraction, yet whole within each master of it, grammar aside from actual occurrences of it must be conceivable. It is grammar in this sense that the theory of Book II claims to be: an explanation of all lexical structures however they might be exploited by acquisition and usage.

Obviously, the definition of grammar usage will be dependent upon the definition of grammar. The argumentation presented in the preceding two books is intended as a contribution toward such a definition, but it remains too early to conclude a final definition. There are certain general characteristics which can be more closely associated with the abstract conditions of grammar than the more concrete, sociological ones of performance. Grammatical rules, for sure, must be arbitrary. Any aspect of speech behavior which may be explained without recourse to arbitrary linguistic rules must be so explained. Grammar, then, is first and foremost those regularities of speech behavior or verbal expression which cannot be explained in psychological, sociological or other nonverbal terms. Grammar is assumed to be internally consistent; irregularities are stored elsewhere. This does not exclude the regular storage of lexical primes in the lexicon. Lexical primes are unique individually, but as classes they are quite regular. Constraints may be grammatical so long as they are consistent. Restrictions and constraints grammatically irregular must belong to systems other than grammar. Of course, this is not to exclude the possibility of their being regular in performance theory. Indeed, lexical performance, too, is characterized by its own regularities, as this chapter will hopefully show.

Grammar is an invariant, abstract, arbitrary system whose function is human self-expression. The primary function of self-expression, in turn, is communication. Since self-expression and communication are possible by means other than grammar or language behavior in general, it follows that the performance of grammar extends grammar's inherent

capacities. Grammar in this extended sense becomes an instrument of self-expression and communication which can be put to uses other than communication, just as a screwdriver may be used to open cans and can openers may be used to drive screws. Lexical items may be used to attract someone's attention, e.g. *John! Here! Hey, you!*, i.e. the vocative function, comparable to a whistle. Lexemes can also merely identify, e.g. *Lewisburg, restaurant, restroom* on signs. These latter tokens frequently can be replaced with pictures.

It is also possible to put syntactie structures to various uses. For example, the primary function of the question is to elicit a verbal response. However, due to the sociological fact that making a demand is impolite, it is also possible in IE languages to suggest a polite demand via a conditional question, e.g. *Would you open the door, John?* Just as in the case of idioms, discussed in Chapter 3, the chief characteristic of such usage is an ambiguity of humorous potential, i.e. the possibility of responding to the underlying question with a 'yes' or 'no' in feigned ignorance of the implicit command.

In a sense, resorting to an extended concept of grammar as a definition of our theory avoids G. Miller's imperative quoted in Chapter 1, that the linguist is obliged to explain just what his theory describes in psychological terms. The present GL theory describes only the abstract relations holding between the various subcomponents of language when removed from its psychological setting; it avoids the question of the relation of grammar to the human mind. Consequently, this chapter and the next become quite crucial, for they must relate the abstract theory of Book II to theories of usage and acquisition. Moreover, except together with a fairly clear theory of performance, the lexical theory of Book II would be untestable. It must be demonstrated not only that such a relation can be described, but, moreover, more of language behavior is explained by such a dual, combined theory than by other available theories. The theory of idioms presented in the third chapter is good presage that this can be shown. The remainder of this chapter will build on that demonstration.

The primary aim of Chapter 10 is to isolate those aspects of lexical irregularity which can be explained in terms of performative

regularities. However, this is not a simple task, since the focus of the analysis will be that vaguest of all areas in linguistics, meaning. In order to distinguish performative from grammatical contributions to lexical meaning and reference, both aspects of entry meanings will have to be examined in some detail. The result will be a closer definition of the term 'lexical meaning', a definition based first and foremost on the primacy of the distinction between grammar and its performance.

Much of grammatical lexical meaning will be predictable on the basis of logical deduction, semantic convention, syntactic classes and lexical categories as Clark & Clark (1979) have recently argued. The remainder, the purely arbitrary regularities, must be captured in L-rules. This chapter will comment in some detail on all these factors which contribute to lexical meaning, plus referential usage, in an attempt to demonstrate that in the framework of the entire system, the lexicon and its processes are as regular as any other component of language. In fact, it will become evident exactly how this component is related to the other grammatical components.

10.2 Dual Memories and Performance

Forgetting a lexeme is quite different from never having known it. We are capable of remembering that we once knew a lexeme which we have since forgotten—and this is no mean ability. TOT phenomena are a vivid class of data exemplifying this capacity, especially what Brown & McNeil call 'generic recall', the ability to recall affixes, syllable count and accent placement without being able to recall the item on the tip of one's tongue. Further, people seem to have little difficulty in distinguishing derivations which are grammatical though never encountered from those which have been encountered or are ungrammatical.[1] We have examined the evidence of idioms which seems to indicate that memory is somehow bileveled: in addition to our ability to reconstruct syntactic phrases via subconsciously memorized grammatical rules, we can also remember specific occurrences of certain phrases which might have variant references. In fact, when we stop in the middle

of a conversation and say, for instance, 'now what is the word I'm looking for', we apparently demonstrate our access to the memory of the fact of memorizing some word. No characteristic of memory is more prominent than its 'multileveledness'. Since the lexicon is doubly related to memory processes in that both its items and rules are memorized, we should expect no lexical theory to succeed which does not reflect levels.

Recall now Tulving's (1972) arguments for 'semantic' and 'episodic' memory; the former consists of a system of more or less stable mental categories similar to our lexical system, the latter, recollections of specific incidents which may include linguistic experiences. This seems to explain why organized material is more easily memorized, and why subjects in cued and free recall laboratory experiments presented with unorganized material for memorization, attempt to organize it before commitment to memory. The memorization of linguistic items in a laboratory experiment involves the commitment of that 'episode' of the material to memory. If it is organized, say, as in a list of words or familiar letters that have already been committed to memory as stable categories of the linguistic components, there is less to memorize: only the selections themselves and the associations comprising their perceived organizations. This previous commitment to a system of more or less permanent classes guarantees the subject double access to the episodically stored material: either directly from the episodic memory or via the permanent system at points which have been 'tagged' for the specific episode. Recall in this latter fashion is facilitated by the much greater network of associations of 'semantic' memory.

It is clear that the lexicon does not take up all mnemonic space: we do remember material other than grammar. Language also functions as its own metalanguage; thus, we are capable of remembering things about language, and this material cannot be stored in our knowledge of language itself. Since we cannot assume that lexemes are stored exclusively outside grammar, we are forced to consider the possibility that information determining lexemes in usage is stored both within and outside our 'knowledge of language'. In addition to the evidence of memories of forgotten words, and that educed by Tulving, we cannot

afford to ignore the evidence of meaning-reference distinction. In and of itself, the basic senses of *star* and *herring* remain quite stable. Only if the former is preceded by *morning* or *evening* can it refer to a planet and only if the latter is preceded by *red* may it refer to an issue. Aside from these peculiar environments, the meaning and reference of *star* coincide, as do those of *herring*. Moreover, this coincident meaning is the one associated with these lexemes when they occur in isolation and in all other contexts.

Idioms such as *evening star* and *red herring* tend to be learned secondarily, i.e. ancillary to their fundamental meanings. In order to properly use them, we must know not only the lexemes involved, but have additional knowledge of the specific syntactic structures which effect the alternate reference from an acquisition episode subsequent to the episodes in which the function of the component lexemes are learned. Since such references are not part of the system of lexical regularities nor can they be captured in T-rules, and since the fixed meanings of the component lexemes do not change in any appreciable way even when used idiomatically (cf. the double entendres of 17, p. 64), our knowledge of the referential override must be maintained independent of our basic knowledge of the individual lexemes. All this indicates a large area of mnemonics outside the lexicon which has access to its entries and processes; an area where no distinction is made between poetics, syntax, the lexicon, morphology, semantics, etc.

TOT phenomena also provide evidence for a rule-regulated performance component with access to the lexicon but at a separate level. Generic recall reflects partial forgetting, that is, occasions on which people can remember things *about* an item, without being able to completely recover it: that a certain affix is involved, that a specific number of syllables is involved, which one is accented, that a semantic category is involved. Unless we wish to pursue the possibility of the same material organized in different ways comprising several discrete lexicons—i.e. first sound lexicon, syllable count lexicon, affix lexicon, first and last letter lexicons—we must assume that a single lexicon may be accessed by various strategies and that the episodic acts of accessing may be remembered. Thus, when we remember that the word we are seeking consists of a

certain number of syllables, we may remember previous encounters and retrievals, and in the process of subsequent recall, remember only the number of syllables or initial sound.

TOT is apparently unique in that it is the only linguistic process that is conscious. People do not consciously search for T-rules, syntactic structure, P-rules and the like; only certain types of lexical items. Moreover, there seems to be a tendency for TOT to involve reference more than meaning. That is, it is more likely that a speaker simply forgets which retrievable lexical structure is used to refer to some object with a specialized name, e.g. *crescent wrench, trace theory, gondola.* In cases such as the first two of these examples, the speaker might be perfectly capable of retrieving *crescent, wrench, trace, theory* in situations where meaning and reference correspond; what is forgotten, then, is the use of these terms for specialized reference. Specific terms like *gondola,* inasmuch as they do not participate in derivational processes and tend to be learned after primary acquisition of class terms, frequently have only a referent, no derivational or metaphorizable meaning. We are less likely to have difficulty recalling *radio transmission* than *car transmission,* even when the generic terms are marked by irregularity or suppletion, e.g. *went, stricken, worse, perverse/pervert.* To the extent this easily testable observation is true, it supports the argument that idiomatic, specific naming usages are memorized external and ancillary to lexical regularities. There must be a linguistic difference between primary, generic names, e.g. *transmit,* and secondary, specific ones, e.g. *transmission*$_2$.

It is not difficult for human beings to memorize secondarily long and complex poems, roles in plays and the like, i.e. syntactic and lexical structure aside from the unconscious knowledge of syntax and lexemes. Of course, idioms have been shown to be precisely this: bits of lexically pregnant syntactic structure memorized independently of the internal knowledge of language, for all idioms are ambivalent. *The early bird gets the worm,* like all idioms, reflects simultaneously two meanings: the direct grammatical meaning which anyone without access to the idiom store can decipher, and the idiomatic one, which is secondary and requires special ancillary knowledge. There is no reason to believe

that this additional knowledge is any more a part of grammar than is the knowledge that a red octagon signals the driver of a vehicle to bring that vehicle to a standstill. Lexical performance will be distinguished from other types of episodic knowledge here only by virtue of its accidental dependence on the lexicon (cf. the storage model on p. 70).

10.31 Derivational Gaps in Serbocroatian

Performance theory must differ from grammar theory in at least one striking aspect: it must deal with human will. Grammatical rules must be absolutely obligatory or absolutely optional, but in exercising these rules, like any other social rules, speakers may either individually or collectively perform variations on them. Speakers may show a preference for one option over others or attach different connotative nuances to linguistically neutral options, e.g. *two languages are known by everyone in this room* vs. *everyone in this room knows two languages.* They may violate obligatory rules or constraints if sense can be made of the results, e.g. *more infinite, stick-to-it-iveness, comeuppance, talkative, uproarious, cheeseburger.* They may impose external rules of (pseudo)-logic upon the units of grammar, e.g. if the referent object is part smoke and part fog, then the symbol referring to it should consist in part of the symbol for 'smoke', and in part, the symbol for 'fog', thus–*smog.* A fully developed theory of language behavior must contain a catalog of these various psychological and sociological motivations involved in actually performing grammar, including the lexicon, which will explain all the linguistic mutations unmotivated by the regularities of grammar. This catalog will contain not only individual idiosyncrasies, such as the use in Scr of *šap-onja* 'big-handed man', from *šapa* 'paw', in place of the expected *šakonja*, from *šaka* 'hand, fist', but lists of usage regularities like back-derivation, loan translation, blending, as well. Usage regularities frequently explain derivational gaps and what otherwise seem to be linguistic irregularities.

There is, for example, the previously mentioned IE usage regularity whereby the generally impolite imperative verb may be circumvented

in favor of a question, particularly a conditional question. Thus, the question *would you close the door, Jack* does not reflect any anomalous meaning of the question, for the interrogative interpretation is unavoidable, omnipresent, like the literal meanings of idioms; the polite imperative interpretation is dependent upon circumstance. This is demonstrated by the fact that when the latter is intended, the listener always has the option to facetiously reply *no.* This sentence must be a regular conditional question *used* in situations demanding politeness in place of an imperative. Only this interpretation explains the relation of such questions to imperatives, predicts the situations in which they must occur and their ambivalence, which may result in jokes of a specific type. Therefore, the combined grammatical-performative definition represents the preferred theoretical approach.

It will be the claim of this chapter that all derivational gaps among L-derivations in IE languages which are not explicable on lexical, morphological or phonological grounds, can be explained in terms of performative or logical constraints. These constraints determine what has frequently been referred to as reduced 'productivity' among L-derivations as compared to T-rules. Babić (1966: 95) described one class of logical constraints in what he called 'semantically empty fields'. In reference to the HAdj derivations of Book II and the Appendix, what would *beščel* 'foreheadless' or *bezgnjat* 'shinless' refer to? A person with a head must have a forehead and anyone with legs must have shins. To be foreheadless or shinless would be to be headless (*bezglav*) or legless (*beznog*). But Babić's reference to semantics is misleading, for the meanings of these adjectives are clear; they simply have no referents, thus there is no occasion for their use. We do not expect, further, masculine possessional agentives derived from stems referring to female sex organs, nor vice versa, except in jokes, possibly. All such constraints, then, are logical ones and ultimately do not prevent the predicted forms from occurring.[2]

There are also conventional constraints on the use of L-rules which are dependent upon various sociological and semantic conventions, and which also result in 'gaps' in the L-paradigms as well as 'semantic drift'. For example, the possessional agentives defined in 6.32 on *-onja/*

-ača, like all agentives (cf. also 8.22), in largest part refer only to people, but some also refer to animals, while still others refer exclusively to animals. The extent to which animal referents are allowable for agentives varies from locale to locale, particularly with respect to the urban-rural dichotomy. The *onja*-forms generally refer peculiarly to men and oxen, but *reponja* 'tailed one', refers to animals, principally to dogs and wolves, while *rogonja* 'horned one' refers only to animals with horns. There are two ways to approach this problem. Since most agentives refer exclusively to humans, one may assume that all of them must be marked [+Human] and that references to animals are exceptional. However, in rural areas references to animals via possessional agentives are much more frequent than in urban areas, thus the exception rate would be higher there. The alternative is to assume the more broadly based rule suggested in Chapter 6, which marks agentives only as being [+Animate]. This approach will then require a performance (stylistic) convention on the order of the following.

> *If the derivative stem referring to a 'salient animal body part' in a possessional (qualitative genitive) agentive derivation is marked [+Masculine, -Feminine], unless the head noun of the NP in which the derivation occurs refers to a human or, in rural areas, an ox, the agentive derivation is eschewed by speakers of Scr, unless the derivative stem refers to a [-Human] body part, e.g. tail, wing, horn.*

Since this is a performative convention, we would expect a higher rate of exception to it in comparison to, say, the L-rule which determines the meaning of the agentives or the suffix rules which supply the *-onja* tokens. That is, we would expect even urbanites to feel free to use these derivatives in referring to animals should the occasion arise, in a way they would not feel free to use them to refer to someone without the designated body part, or to attach an alternate suffix such as *-Ac* or *-nik*.

Under normal circumstances, however, this constraint makes it improbable that a speaker would use the option of the agentive derivation

in preference to a definite HAdj or an analytic construction unless the derivation contains the feature [+Human], except when the definition of the stem itself precludes such a reference. The variation of meaning here from derivation to derivation, from locale to locale, strikes me as evidence that we are not dealing with a rule of grammar, nor with 'semantic drifting' from a word referring strictly to oxen to one predominantly referring to men, but a choice on the part of the speaker as to how derivational options are exploited. Recall the caveat that 'derived from' does not imply 'identical to' (p. 124). The options of *onaj, koji ima bradu* 'the one who has a beard', *onaj sa bradom* 'the one with a beard', *bradati* 'bearded one' and *bradonja*—all mean the same. But each may be exploited differently for referential, stylistic and connotative distinctions. The constraint presented here handles a stylistic distinction; there is also an interesting connotative distinction made via the choice of available options among these possessional expressions which seems to imply 'semantic drift' but is, in fact, simply the result of a sociological convention. We turn to it now.

10.32 The Question of 'Semantic Drift'

The agentives of 6.3 are characterized by a mild but pervasive pejorativeness which is absent in the adjectives. Stevanović (1964: 530-531) explains this in terms of 'semantic drift', i.e. as a consequence of the fact that *-onja* originally referred exclusively to oxen but now is used 'metaphorically' to refer to people. This explanation applies neither in the case of contemporary urbanites, most of whom feel that *bradonja* 'bearded one', *glavonja* 'big-headed one', *krakonja* 'long-legged one' are derogatory in a way that *bradati, glavati, krakati* (definite adjectives) are not, nor in the case of the forms which by definition can apply only to humans, e.g. *brkonja* 'mustachioed one', *bradonja.*[3]

A better explanation seems to be the following. First, the agentives represent a narrowed sphere of reference in comparison to the HAdjs. While the HAdjs apply to inanimate objects as well as to animate, the agentives are restricted in their use to animals and, by the performative

convention just introduced, focused on humans. This, naturally, results in a sense that *onja*-forms are human nouns, specifically based on lexemes referring to body parts.[4] Moreover, the close parallel between derivation and suffixation in this small subclass gives the speaker a particularly strong sense of paradigmaticity here. This sense is heightened because of the narrowed sphere of reference. The fact that all the stems of this subclass refer to salient body parts, pronouncedly developed in most cases, including all the tabu sexual organs, influences the entire paradigm of possessional agentives in a way the HAdjs are more attenuatedly influenced. *Glavat,* after all, may refer to the heads of pins, rivets, salad vegetables as well as of animals and people, but *glavonja* in actual usage refers almost exclusively to people with large heads.

The derogatory tinge of the *onja*-agentives, therefore, derives from the fact that the agentive derivation narrows the field of reference of the HAdj and the fact that usage narrows it further to human beings alone, combined with the sociological fact that referring to someone in terms of a notably large part of their body is insulting. This may also explain why in actual performance, the historical development of the masculine forms preceded that of the feminine: what is considered rude among men is felt to be even ruder for women. Thus the feminine forms are almost never heard among urban speakers. It is easy to see from this explanation that both semantic differences and much of the gapping in the paradigm are better explained in terms of extralinguistic pressures on usage, regular within their own framework, than in terms of such dubious linguistic concepts as 'lexical gaps', 'productivity' and 'semantic drift'.

The question of 'semantic drift', in fact, seems to have slipped in by the back door of lexicology. Originating with Sapir (1921, Chapter 7) as 'linguistic drift' in a description of all diachronic linguistic processes, it has been used recently in reference to L-derivates whose meanings are ostensibly unpredictable. 'Semantic drift' affects only L-derivations in ways which account for their reputedly high rate of irregularity. In Book II considerable evidence was summoned in support of the need to resolve the issue of morphological asymmetry prior to proceeding with the construction of a lexical theory. That is, Karcevskij and Bazell

were right in focusing on asymmetry as the crucial issue of morphology. The resolution of this issue is the sine qua non of any lexical theory which describes lexical regularity. Until the semantic regularities of the lexicon are established, it follows that the description of any 'drift' from those regularities will be impossible. Chomsky's arguments for drift are thus at best premature. The proper procedure for developing a lexical theory must begin with a resolution of the question of asymmetry, followed by the development of a theory of lexical regularity in grammar paralleled by one of lexical performance. The latter must explain all the usage gaps and referential connotations not predicted by the grammatical theory which are logically, sociologically or otherwise consistent. Residual problems, whatever they might be, can be measured only after a full grammatical-performative theory of lexical behavior has been constructed.

10.33 Alternatives to 'Semantic Drift'

There does seem to be a principle by which to judge whether problems like those discussed in 10.31 should be treated via a broadly encompassing rule constrained by performance or a narrowly defined rule accompanied by performative exceptions. In order to consider it, let us reexamine the ablative agent derivations (42) on page 196. These derivations are ablative nominal derivations based primarily on geographical lexical primes, whose output is predictably agentive: [±Mas, ±Fem; +Sg, -Pl]. In fn. 26 of Book II, however, it was noted that these forms may additionally refer to inanimate objects.

1a *dalmat-in-Ac* any Dalmatian wine
1b *Bosan-Ac* name of a hybrid tobacco
1c *Beograd-jan-ka* the Beogradjanka department store

This catalog could be materially extended, but without discovering any semantic consistencies among its entries. These forms may refer to classes of edibles, species of insects, animals, vegetables; they can be the proper names of stores, industries, products. Never do they name

and describe the class of all objects which may stand in ablative relation to the underlying lexeme, or even to the countable such objects.

To claim that the meaning of the underlying agentive in each case here has 'drifted' with time, at best avoids the issues; at worst, it misrepresents the facts. (1c), for sure, is a name which was rather abruptly assigned to a Belgrade department store at some point in time. But the length of time required for these nouns to come to their usage as specified in (1) is beside the point, especially for synchronic theory. The data seem to indicate the following. This class of usages contains names, proper names and names of species; none seems to be the lexical description which characterizes L-rule outputs. Its members do seem to be ambiguous in their consistent reference both to animate ablatives and specific classes; that is, jokes based on this ambiguity are possible. While all these specific names are ambiguous vis-à-vis ablative agents, not all ablative agents also have a specific referent. Finally, it is important that no semantic regularity capturable in an arbitrary rule holds among the class of specific names. In fact, the correspondence of form to referent is frequently unfelicitous, e.g. *vino* 'wine' is a mass noun referring to an uncountable substance, while *dalmatinac,* which refers to a type of wine, is potentially a count noun.

All these facts indicate that the ablative agentive derivation underlies this usage; it is in some sense primary. However, the marking for animacy can be waived in collective usage by convention. That is, no one can predict that *dalmatinac* will refer to a wine (English *dalmatian* specifies a breed of dog), or that *bosanac* will refer to tobacco, or even that such a specific, inanimate or nonhuman reference is possible: *Crnogorac* 'Montenegran', *Vojvođanin* 'Voivodinian' *Hercegovac* 'Hercegovinian' have no such reference in common usage. One can always predict the possibility of an animate, usually human, count noun derived from all nouns naming geographical areas. Thus the agentive derivate must be primary for it is general; there are ablative agents without specific referents which cannot simultaneously refer to agents.[5]

The generality of the agentives is also demonstrated by the ability of very young speakers and nonnative speakers to predict that *Bosanac,* for example, may refer to any male from Bosnia on the basis of their

knowledge of *Bosna,* but only natives familiar with tobacco are likely to know the special reference (1b). Speakers, as noted before, must learn the possible inanimate referents of ablative agents independently of their knowledge of how these agents are derived. This process hinges on the ability of the speaker to waive the general lexical condition of animacy on the output of the nominal L-rule when the lexical prime involved refers to a geographical area and the case is the ablative.

All this agrees very nicely with the comments on the unpredictability of naming processes and the positioning of them in a parallel theory of lexical performance (Chapter 3). In cases like (1), the performance theory must be given the power to assign derivatives special referents, usually on the basis of partial relationship to the descriptive meaning. This raises the question of the nature of the storage of such assignments. Are such semantically enriched derivatives subsequently returned to a special level of the lexicon, or does the speaker merely retain in general memory the information necessary for connecting a specific derivative with a certain secondary referent?

There would seem to be little difference between positing a second, perhaps performative, level of the lexicon for storing whole derivatives which would be remembered more readily for their association with their underlying lexemes but with different referents and, on the other hand, allowing a segment of general memory called 'performance' to recall that the ablative agentive derivation, for instance, may be allowed to operate despite the lack of an animate referent in cases where the speaker has in mind the appropriate species-definite objects. However, the apparatus required for reentering normal derivatives, outfitted with additional, marginally related or unrelated referents, into the lexicon would seem to be theoretically unnecessary.

As noted in Chapter 3, these idiomatic and semi-idiomatic naming items are not only lexically irregular by definition, they are generally based upon the assumption of the prior existence of cardinal lexical rules (regularities) and their component lexemes. Since the names are theoretically secondary phenomena, they cannot be arbitrary thus linguistic, i.e. there is usually some logical reason based on physical, psychological, sociological or other factors determining the choice of a name. For

example, *dalmatinac* is chosen for the reason that the referent is an agricultural product of Dalmatia; *zub-at-ac* 'dentex', from *zub-at* 'toothy', is chosen for the zoological reason that this species of fish is characterized by prominent teeth. Thus while there is no extralinguistic reason for Scr to possess ablative or possessional derivations, the reason for the language's containing *dalmatinac* and *zubatac* in its vocabulary is determined by extralinguistic factors. Our conclusion, therefore, must be that in addition to the speaker's knowledge *of* lexical derivations, he must also possess knowledge *about* their outputs, i.e. of their usage in various contexts. This latter knowledge would seem to be stored somewhere other than the regular lexicon.[6]

The examples of (1), therefore, might be more appropriately referred to as 'pseudoagentives', if we wish to designate the predictable, descriptive derivative as 'agentives'. They are structurally regular, only semantically irregular. There are examples of pseudoagentives which are both structurally and semantically unpredictable. The examples of (2) refer to unpredictable species of animals, fish and vegetables, which in addition are structurally anomalous in that they reflect the direct attachment of the agentive suffix *-Ac* to the HAdj suffix *-at* (cf. 6.32 for the rule which they violate).

2 *glav-at-Ac* (plant): *glava* 'head'
glav-at-ica (fish): *glava* 'head'
ok-at-Ac (grape): *oko* 'eye'
ruk-at-Ac (grape): *ruka* 'arm, hand'
zub-at-Ac (fish): *zub* 'tooth'

The previous examples can be explained theoretically by allowing the regular lexical rules to operate even when the reference is some specific nonagent which the speaker must know independently of his regular knowledge of the lexicon. Thus in the overall theory of Scr language behavior, we would argue that a speaker will intentionally develop a phrase with the meaning 'male animal from Dalmatia', intentionally (and obligatorily) subject it to the ablative variant of the nominal L-rules, when he has in mind a class of wines. The L-rules, T-rules and

M-rules all operate normally; the output is assigned or allowed an aberrant referent by virtue of a general memory waiver. In the case of (2), however, the structural rules are violated. Specifically, a morphological constraint is neglected, resulting in anomalous outputs of the HAdj derivation within the agentive derivation.

Again, whether this class of examples is explained synchronically, in terms of the conscious performance release of a grammatical constraint, or in the diachronic terms of a 'once-only' rule which results in a single prederived element which must be committed to memory, is insubstantial. The diachronic approach may well be closer to psychological reality and any complete description of linguistic behavior must contain a diachronic element. But the synchronic approach captures more of the purely linguistic regularities. Until the case for linguistic theory as an inseparable segment of human knowledge is airtight, language as a separable abstraction will remain an intriguing possibility supporting the synchronic approach. For this reason, it will be assumed here that (2) is explained by a behavior pattern which includes a regular but abstract system of L-rules and M-rules which are capable of producing this subclass in form and reference, but which are constrained from doing so; plus a second system comprising rules capable of overriding the constraints, and controlling the structural and referential rules of the first.

10.34 Logically Determined Semantic Conventions

There are several outputs of the ablative rule. First, it generates countable animate objects from proper geographical nouns: *Zagreb* ⇒ *zagrep-č-an-in* 'Zagrebian'. If the input is the name of a major class of animals or vegetables, however, the output is an inanimate mass noun. Moreover, in the latter case, the final type-reference class varies between 'meat of X, skin of X', on the one hand, and 'wood from X', on the other: *bor* 'pine' ⇒ *bor-ov-ina* 'pinewood' vs. *jelen* 'deer' ⇒ *jelen-ov-ina* 'venison'. As mentioned before, however, it is impossible to set up rules which simply assign the meanings 'meat of, skin of, wood of', etc., for a

complete examination of the data reveals that the ultimate referential class of this derivation is very broad; thus, *miš-ev-ina* denotes mouse droppings, *kornjač-ev-ina* refers to turtle shell, *luk-ov-ina* refers to onion tops and *kukuruz-ov-ina,* to corn stalks. We concluded on the basis of this data that the original L-rule must be quite broad, to include the entire range of generic ablative meanings derivable from these nouns, but that in usage, certain semantic conventions restrain their referential scope.

Broadly based L-rules with 'sparse semantics' combined with 'general pragmatic principles in context' have recently been advocated by Clark & Clark (1979) and Aronoff (1981). These articles suggest that 'zero-verbs' in English like *oil: to oil, shell: to shell, wallpaper: to wallpaper* may be derived via an extremely simple L-rule, e.g. $X_N \rightarrow X_V$, plus an elaborate catalog of pragmatic reference principles similar to those developed here. The semantics of this derivation consists solely of the [+Verb] feature transferred to the underlying noun and the original semantic featurization of that noun. This feature is very informative in this case, but many L-derivations do not transfer the underlying stem to another syntactic class. Many derivations, including the one under discussion here, are N → N or V → V. In these cases more has to be added by the L-rule.

Aronoff even suggests that this barebones approach will work for the agentive in English, so that abstract and concrete instrumentals like *eraser, fertilizer, reminder, thriller, eye-opener* may all be included, regardless of their likelihood, e.g. *slider* (the pitch in baseball). But if the agentive rule is simply V → N-*er,* can it be distinguished semantically from other nominalizations?: V → N *-ery,* V → N *-(at)ion,* V → N *-age*? How does one distinguish it from the locative, temporal, patientive, resultative nominalizations? If instrumentals and agentives are the same, how does one explain the differences in suffixation in other IE languages (cf. p. 188)? Pragmatics may work in these cases, given variations in the affix, but if so, the generalization of category function iteration will be lost. The issue is not whether a general lexical rule is preferable to many specific rules which attempt to capture all the details of reference; this is the position of GL-theory. The question is where to draw the line

between lexical semantics and pragmatics. Clark & Clark and Aronoff seem to expect too much of pragmatics and propose L-rules which are too vague. The issue of broadly based vs. narrowly based L-rules will be taken up in the Epilogue in connection with the question of distinguishing the exceptions from the rules. Here we may simply agree with the broad-based rule approach in principle, noting only that problems arise if L-rules are too broadly based.

The lexicon apparently marks all primes for gender and number as they leave the lexicon if they are not lexically marked for a specific gender and number. We may assume that such rules can add to gender and number markings correlated to the class of the underlying stem, which will predict their being mass, count or animate nouns. But this still leaves us with the question of how Scr speakers know that a mass ablative derivation based on a nonhuman animate noun will refer to that animal's meat, fur or hide; or, if the underlying stem refers to a vegetable object, the derivation will refer to the wood or stalks collectively of the object referred to by the stem.

Clearly, no linguistic rule or convention is involved in the fact that *borovina* refers to pinewood and *jelenovina* refers to deer meat. While there is no linguistic reason that *borovina* might not mean 'pine meat', there are very obvious logical ones. That is, many linguistic rules may, as Clark & Clark argue, be quite general, for the range of possible referents is logically restricted. It is easy to see how a compound *pine-meat* might, in fact, refer to pine wood, since the original meaning of *meat* logically has no application in this case. The substance which is vegetable but edible in nuts, for example, is referred to as 'nutmeat' in many IE languages. No one would expect blood to be a constituent part of nutmeat, for, since the nut is a vegetable, the usage of meat in referring to it is clearly metaphorical. Thus the range of possible referents for *borovina* and *jelenovina* is first and foremost restricted by the range of referents of their underlying stems. However, the range of their possible referents is even more prescribed, for if this derivation is based on an animate noun, its referents include only meat and skin and never milk, bones collectively, hair, and lard only marginally. Yet any of these latter products might well be the referent of an ablative mass

derivation based on nonhuman animate nouns referring to domestic animals in IE societies.

In addition to the logical constraints on the ablative derivation, therefore, there must be semantic conventions which respond to the lexical class of the underlying stem. If the underlying stem refers to a vegetable whole object, the ablative derivation will be used only to refer to the main part or trunk of that object. If the object is a tree, the derivative will refer to the useful product of the tree trunk; if the object is other than a tree, it will refer to the useless product of the plant or, at least, to the inedible part. Again, we notice that the rule itself is easy to perceive, but difficult to define. This however, only reinforces the conviction that we are dealing with a performance convention on reference rather than a function of intensional meaning.

The same approach applies to the deanimate derivations. In this case, the mass ablative derivation without exception refers to the most useful product of the animal. In cases where two products are of approximately the same usefulness, there are generally two designated mass ablatives, e.g. *ovč-et-ina* 'mutton', *ovč-ina* 'sheepskin'; *zeč-ev-ina* 'rabbit meat', *zeč-et-ina* 'rabbit fur'. But this rule, too, is very general and falls short of an absolute definition of the ablative L-rule's behavior.

If the definition of these derivations begins from the form at the surface of the grammar and aims at excluding all nonoccurring forms and including all semantic variations by means of one rule, the result will mask, rather than reveal, all the various components of meaning and reference which these forms reflect. The present approach allows the regular ablative derivation to explain that part of the meaning common to all of these derivations, while the speech act theory explains not only the referential variations, but why, given the basic, linguistically derived meaning, these forms tend to vary as to their referents. The result is not a mere listing of all the 'meanings' possible in the case of these extensions, but an explanation of their various layers in such a way as to distinguish direct from implied significance, this from the possible referents, while separating the lexical from the semantic from the strictly logical.

In English, the distinction between meaning and reference may be clearer due to the fact that in the case of these derivations, no suffixation occurs.

3 I saw a rabbit.
I don't like to eat rabbit.
She has a rabbit coat (alligator shoes).

Where there is no suffixation, it is clearer that we are dealing primarily with a basic lexeme which has three series of referents. Only the common sense, which is linguistically determined and thus must be accounted for, need be incorporated in a regular L-rule, i.e. mass noun + '(derived) from'. The ability to use the lexeme more specifically seems to result from a common IE system of semantic conventions and logical constraints.

Another semantic peculiarity in Scr better explained in terms of performative reference than linguistic meaning is the ability of *na*-locative derivations to refer to the place where the referent of its base used to be, to the exclusion of its present location.

4 *grad-ište* 'field where a town once stood'
manastir-ište 'field where a monastery once stood'
ovs-ište 'field where oats were or are'

Again, the problem is not merely to classify those derivations, which incorporate the past tense in their meaning in opposition to those which do not, but to explain how the distinction can arise and why this one rather than some other. Since the derivatives are otherwise formally and semantically identical, only one L-rule is suggested by the data.

This particular derivation generates a place noun from a variety of underlying noun and verb types. In (4), however, the underlying stem is also a place noun or, at least can function as one. Under normal circumstances, a speaker wishing to designate a place in terms of its relation to a city or a monastery would have no need to refer to the place at which the place is located, but would merely locate the subject

under description: 'at the monastery' or 'in the city'. Only if the place object were absent would the necessity arise to refer to the generic place of the place. That no past tense feature is incorporated in these derivates is also confirmed by the fact that when the underlying noun is not a place noun, but refers to a grain, such as *ovAs* 'oats', the surface definition wavers between 'where the oats were' and 'where the oats are'. Native speakers hesitate in defining these forms. The L-derivation apparently means simply 'generic place of X'. If the underlying noun can itself function as a place noun, it would tend to be used only where the place it is generically associated with is contrasted with the object itself. This would occur in instances where the referent of the underlying noun is yet to come into being or has ceased to be. Since the necessary generic tie is unlikely to be perceived in advance of the appearance of the object in its place (cf. the discussion of datives, pp. 197-198), the former situation is less likely to stimulate reference via one of these derivatives.

10.35 Purely Logical Constraints

The last example of 10.34 borders on a purely logical constraint, i.e. one with no element of arbitrariness at all. The 'semantic intensification' convention discussed in 6.1 is another example of referential adjustment bordering on the wholly logical. *Bradata/brkata žena* 'bearded/mustachioed woman' refers to a woman who, because of hormonal imbalances, has a few visible hairs under or over her lips. If there were independent arguments for including this type of information in the competence theory, one could posit some semantic feature, e.g. [±GRAD] as Lightner (ms.) has suggested. Such a feature could be incorporated into *bradat*, e.g. *bradat človek* 'heavily bearded man', or not: *bradata žena*, depending upon context. Such an approach begs the question, however, since *bradat človek*, in fact, makes no commitment as to the degree of beardedness and *bradata žena* means 'lightly bearded' only because women under normal circumstances cannot have heavy beards. In fact, the bearded ladies of sideshow fame are *bradate žene*, too. Clearly, *bradat* is used in every case where hair on the chin is involved

without regard to thickness; our presumptions as to the degree of hairiness intended derives from our knowledge of the range of beardedness among the derivative's referents. The meaning is consistently 'having a beard'.

This observation raises the question of whether semantic intensification is a matter of speech behavior at all. Once the speaker has encoded his intentions in the structure language makes available, the semantics of lexical derivation revolve around the question, 'what could the given expression possibly mean?' That is, given the grammatical derivations which could be marked by the given affix, the semantics they imply, the context in which the derivative occurs and what the listener knows and presumes the speaker knows about the world, what could, for example, *okat človek* 'eyed man', possibly mean? Casting the problem in this frame separates the various levels of significance involved in the semantic interpretation of a lexical derivation: grammar, semantics, performance and pragmatics.

If we know that the man referred to by this phrase has two good eyes, the expression might seem redundant, meaningless. But since the speaker uttered it presumably to be understood, we must conclude that he intends to indicate that the person in question has eyes which are in some way pronounced since he repeats by implication the semantics of 'eye'. The definition of *oko* would seem to indicate that it consistently refers to roundedness, perhaps containing a colorful concentric spot, openings, and the function of seeing.

From his contact with the world, the listener knows that humans by definition possess two such round objects used for seeing. He knows that they are not openings as in the mesh of a net. From his contact with the customs of language usage, he knows that if an object is characterized by its shape, the semantic repetition of the lexeme referring to it may be interpreted as indicating an exaggeration of that shape, i.e. the speaker may be indicating that the eyes of the referent are bigger than normal. On the other hand, since function plays a principal role in defining this particular object, the eye, the listener recognizes the possibility that *okat človek* might denote that the person's vision is better than others'. The only other possible logical interpretation of the semantic

implications of 'pronounced eyes' would be that it indicates that the person has more than the usual number of eyes, since the number of eyes animates have is relevant to their definition. Although no attestation of this meaning is found in the dictionaries, there are indications that this is a legitimate use of the derivate, i.e. attestations of *nogat* 'leggy' in the sense 'having many or more than the usual number of legs'; also *okac* is a slang word for a person who wears glasses (cf. American children's slang: 'four-eyes').

If *okat čovek* arises in the course of a discussion of blindness, however, the only possible interpretation of the phrase is a straightforward 'sighted person'. Moreover, the negative HAdj, *bezok*, is, among other things, a synonym for *slep* 'blind'. If *okat čovek* is mentioned in connection with people who have lost one or both eyes, i.e. who are *ćoravi, jednooki* or *bezoki*, it can only mean 'having two good eyes'. Furthermore, an identically parallel set of facts is present among the usages of *uv-at* from *uvo* 'ear'.

It seems that all of the logically possible definitions of *okat* and *uvat*, based on the definitions of *oko* and *uvo* are exhausted by the actual uses of these HAdjs in Scr. All the possibilities, as we have seen, are accounted for by (1) the HAdj derivation, (2) pragmatic and contextual knowledge and (3) the process of elimination, i.e. deduction. We are left with the question of whether semantic intensification is a semantic convention, or whether it is simply one of the logically possible interpretations of fully active derivational L-rules, producing derivations even where their basic meaning is redundant. Again, Lightner's suggestion to posit some deep semantic feature to account for the difference in meaning begs the question. There can be no examples of nouns referring to objects which cannot by laws of nature have big eyes, heads, etc., modified by HAdjs meaning 'having pronounced eyes, ears, or heads', because the concept 'pronounced' is relative to the class to which the noun belongs. Thus *glavata igla* 'headed needle = pin' cannot refer to a big-headed needle, since needles do not usually have heads, but *glavata čioda* 'big-headed pin' must refer to a big-headed pin, since all pins do, even though the head in question is considerably smaller than the HAdj referent of *glavat čovek*.

Linguistic rules, then, are absolute, either obligatory or optional, but in either case, absolutely so. Speech act or stylistic factors determine criteria of preference for optional linguistic rules or conditions, or violations of obligatory ones. Before approaching the question of whether a set of facts belongs to grammar or performance, it must be established that there are logical options to them which are not linguistically realized. For if no such options exist, the facts must be attributed to pragmatics. The agentive possessionals might logically refer to humans, animals, pins, cabbages, potatoes and pots. But the actual range of referents of the descriptive derivations is restricted to animate beings. The interpretations of HAdjs modifying a stem that repeats the semantic content of the HAdj stem, in Scr at least, seem to reduce to questions of logic, and need be mentioned by the linguist only to remove them as factors from linguistic considerations. Once such encyclopedic factors are removed from linguistic consideration, most of the irregularities pointed out in recent literature turn out to be performance regularities interdicting grammatical regularities at points expectably unpredictable from the point of view of either theory taken separately.

10.4 The Mental Levels of Performance

Generally, the native speaker recognizes lexical derivations the first time they are encountered regardless of the morphological means for marking them, so long as that means is consistent with the context. That is, given (1) an acquaintance with the base lexeme, (2) a knowledge of the basic L-derivations, (3) a syntactically consistent affix, and (4) the contexts, any native speaker can deduce the meaning of a newly encountered L-derivate more or less instantaneously. The implications of these circumstances, especially the use of 'context' in the interpretation of neologisms, are not without consequence to our assessment of the complexity involved in the human speech processes and competences.

Any animal capable of processing signs must be able to associate two mental levels simultaneously: that of the sign and that of the sign's referent. Lexemes are enhanced signs of a special sort. They differ from

spoor and stop signs in that they have metaphorical potentialities which make them symbols. They can have one meaning and additional references; they can have references without meaning, meaning without reference. Morphemes, as defined in Chapter 7, are more abstract yet. Morphemes refer obliquely. They not only lack meaning and are characterized solely by referents but, additionally, their referents are abstract and wholly determined by grammar. Morphemes, therefore, have only abstract, grammatically determined referents which form systems that, in turn, have additional semantically interpretable, grammatically determined referents, e.g. plurality, past tense, iteration, potentiality, possession. Morpheme usage, then, implies three levels of linguistic reference: a linguistic marker referring to a grammatically determined system referring to syntactic categories.

Since there is no one-to-one relation between the morpheme and its referent, the listener must frequently make logical choices when interpreting speech. That is, as was argued in 3.1, since the suffix *-able* does not mean either 'capable of being X-ed' or 'having X', but may mark both derivations, the listener receiving *knowledgeable* for the first time and properly decoding it, must resort not simply to 'context', but to a different type of mental process in decoding the new derivation. He must decide that

> There is a single morpheme */-able/*, such that
> it marks 'HAVING X' after noun lexemes;
> it marks 'CAPABLE OF BEING X-ed' after transitive verbs;
> it marks 'WHICH X-es' after intransitive verbs.
> *Knowledge* is a noun.
>
> ---
>
> ∴ *Knowledgeable* must mean 'HAVING KNOWLEDGE'

The process may be simple, but it is important to remember that this is a logical, not a linguistic, process. It represents a mental level and activity quite different from those governing grammar.

There is even another possibility which the listener must exclude upon first hearing this derivative. There is a productive causative

possessional verbal derivation, meaning approximately 'provide X with Y', which could conceivably be involved here. That is, *knowledge* might undergo the derivation which produces *to roof* (a house), *to saddle* (a horse), *to seed* (a field), generating a verb meaning 'to provide with knowledge'. Were such a derivation to operate, *knowledgeable* might be interpretable as 'capable of being provided with knowledge'. Since derivations can be interpreted upon first encounter and need not have been previously heard, and since we are assuming that *knowledgeable* is being first encountered in this instance, both possibilities must present themselves to the listener. He might have already noticed that **to knowledge* is not used and thereby deduces the improbability of *knowledgeable* having the deverbal sense. If not, he must test the two possibilities against pragmatics, i.e. is the person being referred to more likely to be someone possessed of considerable knowledge or someone merely capable of being taught.

In any event, there is seldom enough information in the linguistic form alone to convey the full intent of the speaker clearly.[7] The listener must, therefore, constantly rely on logical processes to interpret the various 'contexts' for the additional information needed, especially during language acquisition. The speaker must, likewise, be able to depend on the listener's using logical processes along with linguistic ones to process incoming signals. This is not a minor matter related to the explanation of linguistic processing, for it implies yet another level of mental activity involved in speaking, making the overall picture of linguistic behavior much more complicated. We have now determined that there are separate grammatical and performative systems which must be put into operation in order to convey meaning. Certain classes of meaning are linguistically determined, but the overall content of linguistic performance is not; that is, grammatical and performative systems represent a bileveled system for conveying knowledge of a third, namely, general human consciousness of the world. Language frequently serves as the organization of that consciousness, but not always. There are inexpressible experiences and expressions for unexperienceable referents.

Over and above these three operative mental levels, we have now pinpointed a fourth: that of logical deduction, which mediates between the other three. Where performative usage overrides lexical or syntactic regularities, e.g. in the case of idiomatic or metaphoric usage or questions used as polite imperatives, the listener must have some means beyond these two systems to negotiate a correct semantic interpretation. In some situations, *will you close the door, John,* may be intended as a question, just as *John kicked the bucket* or *John is a prince* may be taken quite literally. No subsystem of either the grammar or performance theories can be used to determine which of the various interpretations is intended, yet whatever system is employed must have access to linguistic processes. The process seems to be deductive, i.e. a logical one. If so, we may assume the same process is used in those instances when comparison of the grammatical and performative data with the grammatical-performative context fails to provide the proper interpretation, and all of this information must be compared with pragmatic context. In any event, there is no obvious alternative to assuming that during any given speech act, human beings are operating at four mental levels: (1) drawing on a fixed stable, basic knowledge of the rules of grammar, (2) which is employed via a knowledge of how these rules are used in conversation with other human beings in specific social contexts, (3) in order to process their present and remembered sensory experiences, ordered according to their own systems, they (4) logically mediate between several possible interpretations of virtually everything they say on the basis of (a) remembered past usages, (b) logical possibilities and (c) clues from the immediate speech environment.[8] Thus, in addition to the three levels of knowledge depicted in the model on p. 70, a fourth level, deduction, must now be added.

10.5 The Missing Pieces in English

In 4.3 several peculiar attributes which rather starkly set English off from other IE languages were introduced as arguments for devising an initial theory of the IE lexicon centered around a Slavic language. No

attempt was made thereafter to explain these particularities in the English lexicon in such a way as would accommodate the English language to the general IE theory outlined in Book II. One of the differences between English, indeed, all Germanic languages, and the Slavic languages, is found in the Germanic preference for compounds over L-derivatives. This is a preference, of course, which does not imply the absence in English of those same IE L-rules which are found active in Scr, although we would not expect the rich expansion of them in English that characterizes Scr. The same rules are found active or inactive in English. Both the existence of the (semi-)regularity found in *hairy, toothy, leggy, bearded* and *mustachioed* and its identity to a rule most active in Slavic languages must be captured at some level in English; the question is, at what level? The preference for compounds in English will surface in the speech acts, where we would expect to find an impoverished usage of L-rules in Germanic languages, especially in English, as compared to an impoverished usage of compounds in the Slavic languages.[9] Since rule 'activity' and 'productivity' are strictly usage issues, the chapter on performance is the appropriate context for a discussion of these preferences.

Since the 'salient body part' possessional derivations have been examined in some detail elsewhere, let us consider here the implications of providing English with the same L-rules which generate them in Scr, but constraining the rate of frequency of their usage in English so that only a few stems are subjected to them in actual speech. Of course, a new version of this rule is now highly productive with all 'salient body part' stems in a few technical dialects of English.

5a	5b	5c	5d	5e
hairy	haired	hirsute	long-haired	hairless
toothy	toothed	dentate	one-toothed	toothless
(*)heady	headed	capitate	two-headed	headless
(*)nosey	nosed	nasute	long-nosed	noseless
*eyey	eyed	oculate	three-eyed	eyeless

The data of (5) are fairly typical of a wide range of problems inherent in the application of IE L-rules in English. The Germanic HAdjs of (5a) have tended to develop idiomatic usages based on the metaphoric applications of the underlying stem, since the Latinate forms of (5c) provide a more technically specific alternative to them and the Germanic compounds of (5d) represent more precise meanings in colloquial usage. While one may deduce whether *hairy* refers to 'having hair', 'having long hair' or 'having much hair'; or whether *leggy* refers to 'having many legs' or 'having long legs', given the possible range of referents, *thick-haired, long-haired, long-legged, many-legged* provide meanings much more specific regardless of reference.

The loss of referentially relative meanings among L-derivations in English is also reflected in (5e). The negative HAdjs correspond in productivity not to the original HAdjs of (5a), but to the new, semantically invariant version of (5b); moreover, perhaps due to their semicompounding character, they are in general even more productive than their positive counterparts.

6	?treed landscape	treeless landscape
	?defenseful child	defenseless child
	?aimful wandering	aimless wandering
	?guilesome smile	guileless smile

In fact, the role of 'semicompounds' in English is much greater on the whole than in Slavic languages: note the recent suffixes *-ful* and *-some* in (6).

The maintenance of the IE L-rules in the theory of the English lexicon even when they are inactive in the extreme leads to a clearer understanding of semicompounds. The interesting aspect of semicompounds is that they preserve the semantic relations of the old IE case derivations, i.e., among adjectives, HAVING X, SIMILAR TO X and so forth. The semicompound class including *finger-like, man-like, woman-like* reflect the incipient stage of the repetition of a transition from a compound to a derivation of the type *friend-ly, man-ly, woman-ly.* PPAdjs like *destructible/destroyable* no doubt reflect the reverse of this

process, that is, the shift of a suffix to a semicompounder via folk etymology (cf. Chapin 1967). Since there is no lexicological means for treating the shift of a morpheme to a lexeme or vice versa, however, no grammatical means exists for capturing these processes. In fact, even in English, these processes are possible only if the fundamental IE L-derivations are theoretically available alongside the semicompounds. That is, the full theory must explain why there is no possibility of the compounds, say, of (5d) ever reducing to derivatives or of the series *big-headed, bald-headed, two-headed, red-headed* ever developing derivative characteristics with the second lexical member taking on the features of a morpheme, while it is highly likely that the series *man-like, woman-like, chair-like* will.

It would seem to be the case that some compounds are felt to be more fundamental because of their semantic relation to the primarily semantic, abstract classes of L-derivations. In these cases, English periodically hits upon a lexeme close in lexical meaning to the case derivation and designates that lexeme for those compounds which are preferred by speakers of English over the L-derivations. Sometimes these 'designated compounds' eventually replace the L-derivation in toto; sometimes they coexist with them. But while the L-derivation will be preferred in derivational languages like the Slavic ones, the compound will almost inevitably take precedence in the Germanic languages, especially that one most influenced by the analytically inclined French–English.

7a	ping-pong player	7b	*pingpong-aš*
	football player		*nogomet-aš*
	chess player		*šah-ist*
	tennis player		*tenis-er*
	hockey player		*hokej-aš*
8a	gold-bearing	8b	*zlat-ovit*
	quartz-bearing		*kvarc-evit*
	ore-bearing		*rud-ovit*
	silver-bearing		*železˌ-ovit*

9a	flea-infested	9b	*buv-ljiv*
	rat-infested		*?štakor-ljiv*
	caterpillar-infested		*gusenič-av*
	ant-infested (anty)		*mrav-n-at*
	bug-infested (buggy)		*stenič-av*

Of course, the compounds of (7-9) will hardly evolve into derivations; first, because the second member of the compound is multisyllabic, but also because it is a derivation itself in all the English examples. In the case of (9), there are HAdjs which one hears: *ratty, caterpillary, anty, buggy.* Apparently, the compounds of this class are in the process of replacing L-derivations. Other examples related to the semantic classes discussed above which are in a similar state of transition are not difficult to find.

10	fox	fox fur	11	bear	bear meat
	squirrel	squirrel skin		turkey	turkey meat
	?rabbit	rabbit fur		?snake	snake meat
	?lamb	lamb skin		*dog	dog meat
	*cow	cow hide		*monkey	monkey meat

As usual, the various productivity markers have little meaning except to the author, perhaps. Speakers of English are fairly free to generate unencountered deanimate ablative forms, especially where style demands consistency.

12 I like chicken a lot, but not snake.
In Vietnam, pork, chicken and dog are popular meats.
Mink and lamb are her favorite furs.

For whatever reason, when it comes to choosing between the reductional alternatives to syntactic constructions, the English-speaking peoples seem to prefer the semantic specificity of compounds to the economy of L-derivations.

The designated compounds are 'designated' in two senses. First, they are semantically designated by the case derivations which they replace and which, thereby, determine the correlation of the semantic range of the compounds with their high productivity. They are also designated in the sense that the second member is arbitrarily chosen and then maintained in a semiparadigmatic manner. (8a-b) are good examples of this type of designation. Assuming that English speakers would at some point in their linguistic history evolve a compound to replace the HAdj derivation based on mineral nouns, why do all speakers constantly repeat the form X-*bearing?* In fact, the sentence *this ore bears gold* is a far less common construction than *this is gold-bearing ore. Gold-bearing ore* is ore which *has* gold, *contains* gold or *holds* gold. Yet, even though compounds such as *gold-containing, gold-holding, gold-possessing, gold-filled* are certainly lexical possibilities, the single verb designated in speech usage to refer to ore which contains gold, is *bear.*

The existence of designated compounds and compounders in English explains, on the one hand, how certain basic L-derivations can be absent in English despite a need for them and, on the other, the absence in usage of a wide range of compounds which are lexically possible. It supports the argument that the rise of compounds accounts in large measure for the decline in the use of L-derivations, for they represent a demonstrable connection between compounding patterns and those of the case derivations. The cause of the decline in the use of L-derivations would seem to be the depletion of the morphological stock accompanying the loss of inflection. However, as German and other Germanic languages partially preserving the old IE inflection demonstrate, the relationship is not necessarily direct. For this reason, we will return to this question in Chapter 12.

Explaining the relation between compounding, L-derivation and analytical syntactic constructions as performance preferences rather than grammatical rules avoids dealing with the varying extent to which these three construction types are used, as a continuum in the grammar, Grammatical theory and all its rules remain absolute and concepts like 'degrees of preferability' and 'productivity', which may vary from region to region, speaker to speaker, remain in performance theory where

deviation and variation are accounted for. Performance rules are rules of ritual, style, connotation, regional and class dialects and, therefore, are expectably vague. Grammar must be firmer, however, if it is to be dealt with empirically.

The approach outlined here is also quite amenable to an explanation of English's bizarre unrestricted access to the Latin and Greek lexicons (5c). The adjectives of (5c) reflect a widespread phenomenon of the English lexicon, apparent in many other such classes if not all of them. The preference for Latinate stems and derivations is much more characteristic of specialized scientific and technological dialects than colloquial English. Other than in the cases of the large catalog of abstract Latinate and Hellenic stems which have been fully absorbed into the English lexicon at all stylistic levels, in order to generate and interpret derivations such as those of (5c), one must know (1) that they are possible, (2) how to access the stems in the proper foreign lexicon and (3) how to assemble and analyze the derivations. All these processes are conscious and require some conscious knowledge of Latin and/or Greek; they are not the subconscious processes which might lead to someone's blurting out, *"What a caterpillary road!"* or even, *"He has quite a nosey profile"*. The mixture of conscious and subconscious levels in speaking, as we have noted elsewhere, is a characteristic of lexical stock expansion. In dealing with this major class of lexical stems, we must consequently keep in mind the possibility that what in Latin and Greek may have been a lexical extension, in English may be a type of stock expansion.

Since the derivatives of (5c) are unknown to most native speakers of English, dealing with them in the performance theory would be the a priori preferable approach. However, the stems of the rare HAdj derivatives (5c), are the only stems available for the highly frequent RAdj derivative corresponding to the same underlying Germanic stems.

13	tooth	dental
	eye	ocular
	nose	nasal
	ear	aural

mouth	oral
tongue	lingual
lungs	pulmonary
heart	cardiac

Of course, since RAdjs are derivationally and syntactically equal to compounds, they are, no doubt, also in the process of being replaced by compounds.

14	tooth decay	dental decay
	nose spray	nasal spray
	mouth diseases	oral diseases

The selection of the RAdj or compound depends upon stylistic factors including habits of reference, e.g. *oral hygiene* is consistently preferred to *mouth hygiene* even though the latter is grammatical.

Since it is not uncommon for a lexical item to have two or more meanings, there is no theoretical barrier to positing dual phonological representations as an explanation of the data of (13). In fact, dual phonological representations would seem to be the only explanation of lexical suppletives. However, there are two problems associated with applying this solution to (13). First, the RAdjs in these cases are paralleled by a fuller range of compounding possibilities involving the Germanic stem, and English is, after all, a compounding language. Latinate RAdjs + N constructions like *oral hygiene* seem to be preeminently if not wholly idiomatic. Second, the Latinate stems which seem lexically determined in the case of RAdjs are unquestionably performative options in the case of the HAdjs, i.e. they are consciously chosen from secondarily learned material. Whether the stem-RAdj relation here is lexical or performative must be decided by psychological testing. We must know whether speakers of English make more mistakes in recalling and uttering Latinate RAdjs than the corresponding Germanic compounds of this class; whether the recall time varies in correlation to the distinction. Variations here might indicate that speakers move from one mnemonic level to another in associating these stems. In particular, we

might expect that the Germanic stems contain specially coded instructions for searching elsewhere for a Latinate correlate (Chapter 11 reviews such a process).

Just as there seem to be derivations, such as the agentive, which have both syntactic and lexical variants, there seem to be both lexical and syntactic compounding rules. The exact relation of L-derivations to compounding rules of either sort has not been established here. Rather, the intent has been to show that since English is a compounding language, the L-derivation rules, which nonetheless seem available to it, are neglected in speech. In the following chapter, we must examine in detail what has been called 'semantic drift', with a view on incorporating the partial regularities which characterize a primary cause of it, loan translations, into a full synchronic lexical theory. If idiomatization is to be accommodated in a performative level of memory separate from lexical storage, a problem arises in those metaphors which undergo further lexical derivation, i.e. after idiomatization. Since previous writers have treated the problem as a diachronic one, we shall consider it from the perspective of the intersection of the diachronic and synchronic axes.

CHAPTER 11

The Intersection of the Diachronic and Synchronic Axes

11.1 On the Way to the Issue

The preceding chapters have presented a methodology for capturing partial regularities among lexical derivations, while explaining many 'irregularities' in terms of performance generalizations. A substantial portion of the irregularities assigned to performance theory, however, were written off in Book I as inexplicable within a theory of linguistic competence. I have in mind here what has been referred to as 'lexical stock expansion', processes by which the fundamental store of lexical primes is expanded. The methods of lexical stock expansion are various: polysemantic expansions of structurally predictable derivations, back-derivations, borrowing, loan translations and so forth. This chapter examines the question of whether there are regularities in lexical stock expansion which ought to be accommodated in a synchronic theory, and, if so, by what sort of rules. This is the question of how far the bounds of a synchronic lexical theory should extend themselves; where should the competence-performance theory described here leave off.

Let us begin with the assumption that a natural language consists only of regularities and irregularities. In general, a theory of language attempts to explain all regularities through rules and to store all irregularities in storage components. Two such storage components have been proposed here: (1) the lexicon itself, a special subsection of linguistic

knowledge, and (2) non-linguistic general memory, particularly that part holding rules of linguistic performance. This distinction, however, raises the need for a device to distinguish between lexical and nonlexical regularities. What is the smallest regularity which the lexicon must capture? In a series of recent publications, Lightner (1975, 1976, ms) has boldly demanded that every morphological regularity corresponding to even a single lexical or semantic regularity, must be derived from an abstract lexical prime via rules. Lightner's standpoint can be opposed to that of Meys and Aronoff, who exclude from consideration derivations which contain so much as a single departure from the known rules. Lightner, for example, has proposed that the five lexemes of (15) must be derived from a single lexical prime via rules.

15 *foot*
feet
*fet*lock
*ped*al
tri*pod*

Lightner further suggests, that, although the protolexeme underlying (15) is **pd-*, the lexicon must also encompass the derivation rules which generate all five variants from the protolexeme.

Although Lightner was the first to discover the importance of the distinction between the morphology of Latinate and native stems to phonology and describe them in his doctoral dissertation (Lightner 1965), in his later works he seems to demand an explanation for the relations holding between stem variants going back to different times and even different languages. His demand seems hopelessly to confuse synchronic and diachronic issues, but the striking phonological similarity of the examples in question spur us to take his remarks seriously. We must remember that it is not even clear that IE languages can be defined in such a way as to clearly distinguish them; they do hold much in common. Furthermore, the evidence of Lightner's dissertation and SPE (Chomsky & Halle 1968) has shown that the abstract phonological forms required to capture all the regularities of that component for IE languages

inevitably reflect protoforms, even as the derivation rules required tend to be the same as recognized diachronic rules.

Lightner has approached this problem in strictly phonological terms. He did not assume derivation to be a process independent of affixation. In light of the observations of Book II, however, the need arises to slightly rephrase Lightner's question. The major hindrance to his approach is partial regularity. The stem *foot* alone, for example, can refer to 'the lower part of a leg, bed, etc.', 'a unit of verse', 'a measure of length' and so on. Moreover, this semantic inventory is only irregular relative to the semantic inventories of the same protolexeme, e.g. the stem *-pod* in *tripod* or *ped-* in *pedal.* Therefore, there is no reason to pursue Lightner's approach unless some solution to the problem of semantic unpredictability can be found.

In the current literature no question has been raised against the lexicon's legitimate place in the deep structure of grammar. The preceding chapters have provided evidence that it is located between the categorial and transformational components, but in any case, in the deep structure. The deep structure generates the abstract underlying form of the physically realized surface sentence. It follows from the basic abstract nature of deep structure that the lexicon must be a storage component of abstract items. In other words, no surface structure elements such as distinctive features, phoneme or morpheme variants can be introduced into the lexicon. There is a solid theoretical basis, thus, for seeking explanations of this component not in morpheme formatives, but in deeper abstractions. This conclusion is strongly supported by the data of morphological asymmetry, especially the arguments for deep structure lexical derivation independent of phonologically interpretable affixation. The fact that the features of L-derivation are the same as those of deep structure case relations lends further support of an even more substantial nature. But perhaps the most convincing evidence for the abstractness of the lexicon comes not from the morphologically related items such as (15), but from wholly abstract partial irregularities which form a system uniting all IE languages.

11.2 The Nature of the Issue

The discussion to this point has centered mostly on the descriptive function of lexical derivations in language and speech theory. Naming, it was mentioned, seems quite unsystematic and lexically unpredictable. Let us now return to the example mentioned earlier, *transmit,* to reconsider the exclusion of this class of partial regularities from our theory. From this verb, the substantive, *transmission*$_1$ 'the process or act of transmitting', is very simply derived. All processes of transmitting can be described as transmission, regardless of the specific character of the process referred to. This derivation allies itself with no particular instance of the process and, thus, apropos the verb, is sooner a description than a name of the process in question. *Transmission*$_2$, on the other hand, is related to the verb *transmit* structurally, but semantically in no recoverable way if in any way at all. Although an automotive transmission may be thought of as transmitting torque to the differential, so do the clutch, drive shaft and universal joint. Therefore, *transmission*$_2$ does not refer to the entire class of items which transmit torque. Here we are not dealing with the descriptive name of a class of all possible objects of some verb *transmit*$_2$, but at best with the use of such a derivation of *transmit* as the strict name of a specific subclass of its type reference.

Departing from the assumption that the smallest lexical unit is any lexeme not fully analyzable, one inevitably comes to the conclusion that such derivations as *transmission*$_2$ must be excluded from the class of derivational possibilities. Rather than analyze such derivations, one must assume them to be independently entered lexical primes. Derivations are by definition regularities, and the combined information found in *transmission*$_2$ fits no known derivation rules of any generality. On the one hand, we must agree with Meys via-ā-vis a monolingual theoretical structure, that a theory of lexical derivation cannot accommodate any irregularities. But we must also agree with Lightner in that, if all partial regularities in the lexicon cannot be described, the better theory will describe at least some, and the best theory will describe the most. Now since *transmission*$_2$ is structurally regular, so long as our

interest is in a full and complete theory of the lexicon, we cannot ignore this example entirely in our deliberations, especially since the separation of derivation from affixation makes the capture of such partial irregularities eminently more feasible.

When affixation is separated from derivation, the prediction of affixation without regard to derivational provenience encounters no problem. *Transmission*$_2$ is morphologically wholly regular; our attention here will, therefore, center on the question of the unpredictable semantic peculiarities of such derivations. In light of the preceding discussion of the nature of derivations, our interest will focus on strictly abstract, deep-structure processes. The specific question we wish to pursue has to do with the limits of generalization capturable in a lexical theory: is there a level of derivational regularity beyond the extension rule and can it be integrated into a synchronic or related diachronic theory?

In examining Lightner's example (15), one is struck by the apparent fact that his standpoint is that of the 'multilingual grammar' (MUG) as recently outlined by Putsch & Schwarze (1975). The stems which Lightner discusses originate in several languages, i.e. English, Latin, Greek. It is also obvious that the larger part of Lightner's lexical rules, with only phonological adjustments according with local phonology, is valid for virtually all IE languages–certainly, for all those borrowing from Latin and Greek. The same lexical relationship *foot: pedicure* in English, corresponds to the German *Fuss: Pediküre*, even modern Greek *pódi: pentikioúr*, etc. Although English *tripod* corresponds to German *Dreifuss* and French *trépied*, and all are irregular in their respective lexicons, there remains an issue in the explanation of how in all these IE languages the same class of supportive apparatuses consisting of three *legs*, is named with the borrowed or native derivation consisting of the lexical structure **TRI** 'three' + **PED** 'foot'. In the Slavic languages, which make no lexical distinction between leg and foot, it is possible to derive a descriptive term via normal compounding rules: Russian *trenožnik*, Scr *tronožac*. But in these languages, compounds are comparatively rare; thus there must be some explanation why this class of objects is named with this compound rather than a derivation meaning, e.g. 'stand'.

One can with surprising confidence predict in virtually all IE languages the presence of (1) a compound structure corresponding to the abstraction **TRI + PED**, (2) referring to the same classes of stands. The situation, of course, does not surprise the scholar of comparative IE studies; however, in synchronic monolingual lexical studies, aside from that of Putsch & Schwarze, it has not been seriously considered.

In fact, the advantage in pursuing the matter in a synchronic grammatical theory is far from obvious. Synchronic theory deals with individual first languages which are only accidentally related to others. Thus, the relations between languages cannot be introduced into the grammar of any individual language: these relationships have been the subject matter of strictly diachronic studies. In order to justify the introduction of MUG materials into a monolingual grammar (MOG), we have to prove that such an introduction would increase the explanatory power of the model or simplify it. Since there is nothing but irregularity at stake here, the opportunity to do both is substantial, indeed. But beyond achieving these two ends, we may further hope that deeper investigation of the multilingual implications of lexical irregularity may shed some light on the relationship between synchronic and diachronic grammar in general.

11.3 From the Data

Before exploring the possible place of MUG material in a lexical theory, more detailed information as to the nature of the material itself will be needed. It is, in fact, very easy to find suitable examples; the *in-fluence*-family of loan translations has been selected here, for it exhibits a wide range of interlingual lexical idiosyncrasies.

16	French	German	Russian
	in-flu-ence	*Ein-fluss*	*v-lij-a-nie*
	in-flu-ent	*ein-fluss-reich*	*v-lij-a-tel'-nyj*
	in-flu-enc-er	*be-ein-fluss-en*	*v-lij-a-t'*

There are several conditions holding for (16): 1. The concept 'influence' emerges in all western IE languages. 2. In all of these languages, it emerges as a native derivation or borrowing from Latin, in the form IN + FLU + Suffix_N, where FLU represents a verbal lexeme meaning 'flow'. 3. The basic form is a secondarily derived noun. Further examples are Danish *ind-flyd-else*, Swedish *in-flyt-ande/else*, Dutch *in-vloe-d*, English *in-flu-ence*, Italian *in-flu-ènza*, Spanish *in-flu-encia*, Romanian *in-flu-ența/în-rîu-rire*, Polish *w-pływ*, Scr *u-tic-aj*, Latvian *ie-tek-me*, Albanian *in-flu-enc-ë*, Modern Greek *epi(r)-roé*. 4. Aside from the Romance languages, the underlying verb is not used in this sense; rather, the most widespread manner of expressing the verbal concept is via the operative corresponding to English 'have', plus the substantive, plus the preposition corresponding to English 'on' or 'over', e.g. French *avoir influence ă*, German *haben Einfluss auf*, Spanish *tener influencia en*, Russian *imet' vlijanie na* 'have influence on/over'. 5. In those languages which have a verb with the meaning 'to have influence on. . .', it is secondary, i.e. derived from the substantive. 6. Although no derived verb in the Scandinavian and modern Greek languages, and no adjective in the Albanian and modern Greek are common, these two derivational possibilities exist in all other western IE languages. Further derivations are a matter of local discretion, e.g. English *influencing, influenceable.*

(16) represents an interlingual lexical system and not merely individual lexical borrowings. Lightner's example, *foot-feet-ped-pod* represents only phonological variants of an isolated interlingual lexeme. But (16) reflects the operational domain of a derivation system, in which an abstract prefix combines with an abstract stem and a suffix determined by local morphology in such a way as to determine the extent of, and conditions on, the lexical derivation of the designated stem in each individual IE language. It is an interlingual regularity explaining a system of intralingual irregularities in each of the languages. The incorporation of such a system into each IE lexicon would certainly increase the predictivity and explanatory power of each lexicon. It would explain, in the case of (16), the absence of a verb $einfliessen_2$, despite the availability of the metaphorical $Einfluss_2$ paralleling $Einfluss_1$. It explains the presence of such secondary verbs in the Romance languages despite

the fact that the underlying verb in these languages can in fact be used intransitively with an 'on' or 'over' preposition in the metaphorical sense, e.g. Italian *influire: influènza* vs. *influènza: influenzare*. It explains the presence of substantives even in those languages where the system is most sharply constrained, e.g. modern Greek *epi(r)-roé*, from which no adjective or verb is widely generated.

All of these facts are understood only by positing a system of derivations based on the nominalization of a derived verb, which is itself not usually drawn into the metaphorical system. That this nominalization is always of the structure **IN** + **FLU** + Suffix_N can be explained best by assuming that some such abstract structure exists external to each language, and controls some aspects of this derivation in most languages. Since it is a common IE phenomenon, we must assume it has a common IE existence.

11.31 Multilingual Theory: A First Approximation

The abstract derivational system discovered in (16) seems to have its own inner cohesion. Yet contemporary synchronic theory provides us with no approach to it. It reflects neither the paradigmatic patterning of a morphological system nor the synonymy, antonymy or polysemy of a monolingual semantic system. Any attempt to subsume such parallels as *flu, fluss, flyd, vloe* and *in-, ein-, ind-, ie-* under a phonological rubric as Lightner suggests for (15) would be misguided, as the East European stems *roé, pływ, tic, lij* and prefixes *u-, v-* clearly demonstrate. In point of fact, interlingual lexical systems such as (16) provide a further argument against the assumption that phonological formatives are the foundations of lexemes. Lexemes here seem to be wholly abstract, semiparadigmatic equivalences which are fully convertible interlingually. The phonological realizations are local, thus superficial. In fact, these examples demonstrate three levels of lexico-morphological depth: (1) the abstract lexical level of loan translation where foreign lexemes and morphemes are translatable into native ones, (2) the abstract phonological level of loan words where foreign phonemes are translatable into native

ones (Fr *influence* > Eng *influence*) and (3) the level of native phonology characterized by local distinctive feature matrices.

Although the multilingual systems of naming derivations are unpredictable within the local languages, they offer a rich source of explanation of an enormous number of idiosyncrasies in the lexicons of IE languages. Should we mount some other type of lexical rule system, i.e. nongenerative, and could such a system in some disciplined way be associated with the monolingual rule systems, two notable advantages would accrue: (1) the simplification of the descriptions of individual IE lexicons through a method for sharply distinguishing between predictable but ungenerable information from that which is directly generable; (2) the incorporation of a series of partial regularities heretofore undescribed in the theories of IE languages. The successful association of a workable multilingual lexicon with monolingual lexicons would provide a means for meeting the strongest demands of a lexical theory: the explanation of all, even partial lexical regularities, as well as the differentiation of productive from truly unproductive rules. Moreover, these demands would be fulfilled with the greatest degree of explicitness yet.

A multilingual theory of lexical stock expansion must be characterized by (1) multilingual relevance, (2) nongenerativity (redundancy rules) and (3) accessibility via monolingual L-rules. The critical point on which a MUG lexical theory hinges is the nature of accessibility, for providing any accessibility to MUG lexical entries will affect the structure of monolingual lexical entries. This question must be approached with an eye on explaining the exact relevance of MUG lexical functions to those of MOGs.

The lexical information in (16) can be organized in a lexical entry pattern such as (17), which expresses the availability of a verbal concept 'fluid movement' with a radiating lexical family of naming derivations or 'lexical stock expansions'. (17) reflects the fact that languages sharing this idiom follow this entire paradigm in preference to their own descriptive derivational systems or in addition to them. **FLU** is a rubric symbol serving as an identity key for the pattern, and to which a corresponding designated lexeme in each participating language may be compared. Thus in the lexicon of each there must be a speci-

fied lexeme which is identified by this symbol with the MUG lexical pattern (17). For instance, the entry *fliessen* in German will be designated for identification with **FLU**, so that *fliessen* and not *giessen* (cf. Russian *vlijanie*) or *laufen* (cf. Latvian *ietekme*) will be selected for the **FLU**-conditions. This demand results from the assumption that several entries will bear an identical meaning. Since the system here is abstract, we can dispense with either the definition appearing here in quotation marks, or the symbol, without affecting the reliability of the systems. The important thing is that the identity key remains essentially semantic and in no way reflects MOG or MUG phonological formatives.

17

FLU

Verb 'fluid movement'

1.0 **IN + FLU (SUPER)**
'influentia'
1.1 [+Verb] (only in Romance)
1.2 [+Substantive]
$Oper_1$: **POSS + — + SUPER**
$Oper_2$: **BE + SUB + —**
1.31 [+Verb]
1.32 [+HAdj]

2.0 **AD + FLU**
'copiosus'
2.1 [+Verb] (only in Romance)
2.2 [+Adjective]
2.3 [+Substantive]

3.0 **SUPER + FLU**
'superfluitas inutilis'
3.1 [+Adjective]
3.2 [+Substantive]

It is also important to notice that the central definition serves only for identification. The function of the system is a representation of the generation of the predictable meanings of the prefix combinations 17.1, 17.2, 17.3 from the special meanings appearing beneath. Because the lexeme *fliessen* contains the identity key **FLU**, it facultatively refers to the MUG entry **FLU**, whenever it is inserted into deep structure under the right conditions. Should such an entry occur beneath an N-node also bearing the conditions for the prefix *ein-*, the entire, normally derived meaning 'fluid movement into' may be optionally replaced by the corresponding common meaning, *'influentia'*. The use of Latin semantic symbols here is not meant to imply that (17) represents only loan translations from Latin. These symbols simply reflect the common IE semantic concepts which have come from common source, borrowing and loan translation from all directions. The fact that affixation in these cases is regular within the local grammatical system is captured in the fact that all affixation and structural adjustments will be carried out by regular local rules—again, a possibility created by the separation of derivation from affixation.

The system of subnumerals in (17) represents the derivational constraints characterizing each MUG lexical entry. In (17.1) they specify that, with the exception of the Romance languages, the metaphoric meaning is accessible only in cases where the underlying verb is inserted under an N-node scheduled for nominalization. This node, in turn, may be located in a node scheduled either for further verbalization or adjectivization under the Genitive_2 or possessional derivation rule, but not under the manner adjectivization rule (SAdj). This model also specifies that the noun may be inserted under a VP-node provided with the **POSS** proverb operative, e.g. *haben* plus the preposition *auf*, or the copular operative, *sein*, and the preposition *unter* for the subject to be in the Genitive_2 position in German. Verbal operatives, as described by Apresyan (1974: 44ff), are lexical verbs which are used in essentially meaningless functions with nouns to indicate whatever generic relation holds between the noun in question and other nouns which might stand in subject position to it. However, one needs to distinguish between essential proverbs like *have* in *have an influence*

on someone and legitimate lexical verbs like *exercise*, whose meanings merely accidentally coincide with that of a proverb + N combination, e.g. *exercise influence over* paralleling *exercise power over*. Thus the features in (17) are of three different types: (1) identity features (in bold type), (2) semantic surrogates (in italics) and (3) derivational constraints. They represent three different types of knowledge about this type of derivation.

For comparison, (17) has been expanded by two idiomatic derivational families which share the same identity key, FLU: the bases for *affluent* and *superfluous*. Comparisons of these two naming families among IE languages reveal substantial gaps in the paradigmatic possibilities. In German, for example, there is no reflex of any AD + FLU lexical stock expander, and the Slavic languages exhibit no reflex for either AD + FLU or SUPER + FLU.[10] One should not be surprised as Aronoff (1976: 11-14) seems to be, that all the languages in question do not realize all the prefixational possibilities in lexical stock expansion. While one finds more or less complete lexical extension paradigms for such Latin borrowings as *refer, prefer: reference, referential; preference, preferential*, there is no observable regularity in the expansion of base verbs by prefixation. Thus while *refer, prefer, defer* are in widespread use, one finds only *resume* and *presume* (no **desume*); one finds *remit*, but no **premit* and only an archaic *?demit*. But these gaps frequently form a pattern of exceptions which is relatively consistent within the linguistic collective, e.g. *refer: (sich) beziehen; prefer: vorziehen* (Table IV).

The cumulative effect of intralingual gaps is interlingual exceptions such as those existing between German and Russian vis-à-vis the AD + FLU derivation, i.e. exceptions within the systematic exceptions. The Romance languages need be supplied only with a base verb entry marked for FLU; German *fliessen*, on the other hand, must bear the more specific references, IN + FLU and SUPER + FLU for *Einfluss* and *überflüssig*, and to exclude the German lexicon from the AD + FLU pattern. And there is a more subtle problem: the conditions on the subentries vary irregularly from language to language. French, for example, contains a base verb *affluer*, related to AD + FLU, which

is supposed to be an adjective-based entry. In English, no such verb is available, but one finds instead the proper adjective *affluent* (though not **affluential*, cf. *influential*) and the substantive *affluence*, as in French. English and the majority of other languages, therefore, must contain a further constraint, probably that the multilingual meaning associated with **FLU** cannot be entered directly under a V-node.[11] This still presents no theoretical problem, because (17), in fact, represents nothing but a constraint system.

11.32 A Tentative Hypothesis of the Evidence: The Monolingual Theory

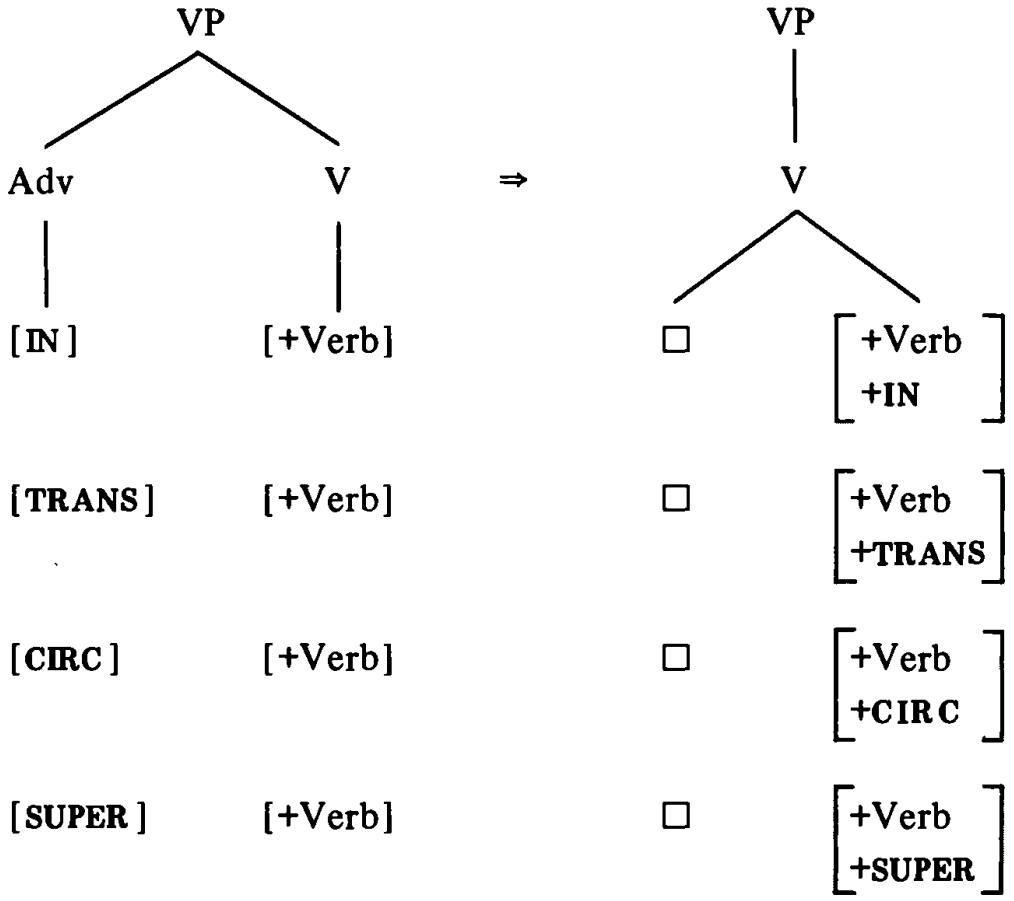
Up to this point, only the structure and content of the multilingual entry has been discussed. The question of changes in the make-up of monolingual lexical entries demanded by the potential adoption of a multilingual lexical theory, naturally assumes a position of equal importance. The major question in this respect has to do with the nature of monolingual prefixation, for the prefixation rules must relate the monolingual to the multilingual entry. Only if a given prefix accrues to a designated stem, does the possibility of identification with the multilingual entry arise.

Since prefixes, directional adverbs and certain prepositions are virtually identical in structure and content in German, we may tentatively postulate that they share the same deep structure provenience. Rather than posit a theory here of the nature and origin of the class of relational features to which *ein-* belongs, i.e. **IN**, **TRANS**, **CIRC**, **SUPER**, etc., let us no more than assume, on the basis of the fact that these particles appear in prefixal, prepositional, adverbial and adjectival positions, that they do, indeed, correspond to a class of abstract underlying forms of some sort. Should such an abstract underlying form turn up in an adverb node directly paired with an underived verb node, we may assume the operation of a prefixation rule with the characteristics of (18).[12]

(18) assumes, for clarity's sake, that any applicable T-rules have operated. Those lexical items altered by this rule must carry a special

complex sign which may be compared to the identification feature of any appropriate multilingual lexeme. Such signs theoretically represent the accessible loan translations or common lexical items which a given lexeme shares with other lexemes of other IE languages. In the case of *influence*, both an abstract prefix **IN**, as well as the abstract representation of the verbal stem **FLU**, must be available. Since a rule to unite

18



them must in any case exist in each IE language which does not borrow the term directly from Latin, we may capture the unpredictable partial relationship of the regular term to the performative one by allowing the abstract derivation rule to provide an abstract structure, which can be interpreted individually by the M-rules of each particular language. The special semantic interpretation of the normal derivation, as was argued in Chapters 3 and 10, *must*, in fact, come from outside the monolingual grammar. The rules importing performative meanings into the productive generative rules of grammar themselves can be neither productive nor generative. However, since they do represent an interlingual regularity,

there is hope that they may be stated in such a way as to allow monolingual lexical items access to interlingual regularities without disrupting generative grammatical processes.

Although interlingual lexical entries represent regularities among IE languages, within the monolingual lexicon they represent sets of strict lexical constraints on the lexical item with which they are associated. They represent special kinds of knowledge speakers have as to the idiomatic usage of the otherwise normal lexical prime. For this reason, they may be considered performative phenomena. The major characteristics available in the German lexicon for the derivation of *Einfluss*$_2$ and *Überfluss*$_2$ are abstracted from (17) and presented in (19). In German, the constraints on the derivational realm of *Einfluss*$_2$ are basically restricted to three major derivations and the marking of the proverbal operative Oper$_1$ as *haben . . . auf*$_{Acc}$.

19

+Strong
+Patient
-Agent
-Causative
.
.
.
FLU

1. **IN + FLU**
   Oper$_1$: *haben...auf*$_A$
   V ⊃ *be-*
   Adj ⊃ *-reich*

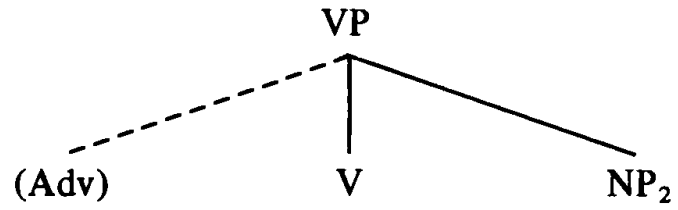
2. **SUPER + FLU**
   Adj ⊃ *-ig*

Nominalization ⊃ ∅
.
.
.
'fluid movement'
|flI:s⊣

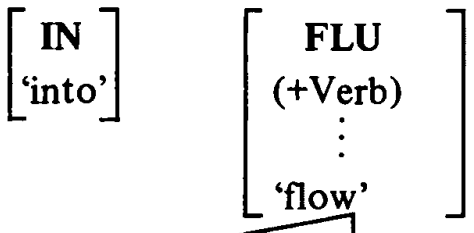
In addition to the identity keys, this German lexical entry may also have to be marked for the *be-* verbal prefix rule, the *-reich* designated lexeme rule when the stem is prefixed with *ein-*, or the *-ig* suffix rule if the prefix is *über-*. The marking of the nominalization of all derivations from this stem is ∅, a fact which may be omissible in the feature inventory. This sort of lexical feature display seems to capture well the kinds of knowledge speakers have about derived lexemes, such as emerge in speech errors, TOT phenomena and word association. Note that the verbality of this stem is marked without resorting to syntactic class markers, but relies on strictly lexical features.

Should a lexeme containing a complex of identity features be selected for introduction into a syntactic configuration, the lexical rules must choose between two options. As the copy-insertion rules operate, they can ignore the feature and generate a normal lexical extension, e.g. *der Bach fliesst in den Teich ein* 'the stream runs into the pond'. Assuming that the lexicon inserts only stems, the VP-node of this example approximates the following. (The lexeme entry under the V-node is a simplification of (19), i.e. 'flow' = 'fluid movement', etc.)

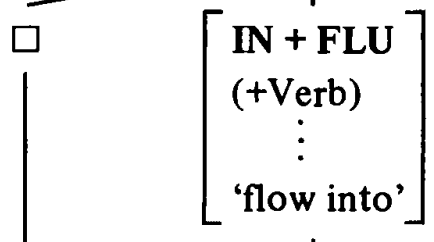
20



20a Insertion



20b Rule (18a)



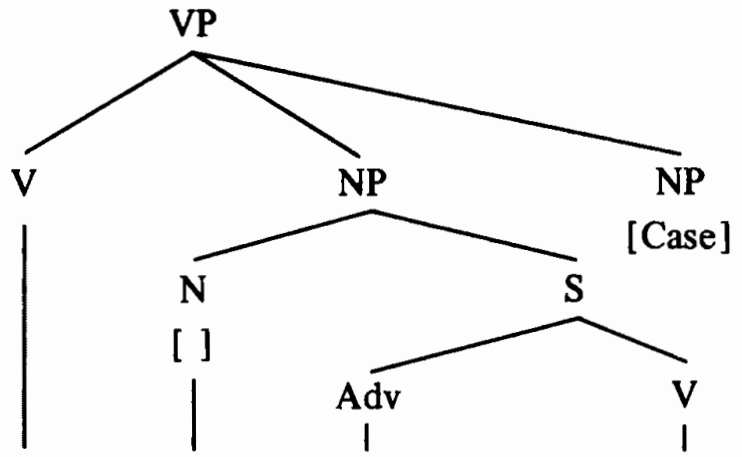
20c M-rules |*ain* + *flI:s*—|

Again, rule (20a) combines the L-rule and a T-rule. There is a further assumption in (20), namely, that prefixation is essentially the same process as suffixation. The reason for this assumption will be presented further along.

On the other hand, however, should the derivation rules, either on the basis of selection constraints or freely, decide to recognize the key feature, it is switched to the interlingual lexical entry. In this case, the majority of the normal morphological rules are nonetheless ultimately engaged, but only within the constraints which provide the derivation with the otherwise unpredictable meaning, e.g. *der Mond beeinflusst die Meere* 'the moon influences the seas'. The VP-structure of *beeinflussen* is, of course, considerably more involved. In (21) the explanation of the nominalization first presented by Motsch (1967: 34-35) has been adjusted to fit the generative lexicalist position argued here. It has further been imbedded in an expanded configuration in order to demonstrate its syntactic relation to verbalization. Again, the use of 'features' such as +Verb, +Pro, +N are to be considered simplifications to facilitate comprehensibility rather than any surrender of the constraints previously established for the range of possible lexical features. These features may be considered extemporaneous conventions for the cluster of purely lexical features determining lexical insertion in N-, V-, Adj-nodes.

We may assume that, inter alia, the verbal form corresponding to Apresyan's $Oper_1$ may be inserted under the proverb node. Upon entry into the MUG lexicon, the MOG lexicon must choose between inserting $Oper_1$ in accordance with the MUG instructions, i.e. *X hat* $Einfluss_2$ auf_{Acc} *Y*, and the complete verbalization, *X beeinflusst Y*. This alternative will become available only after nominalization, which is logical, since only after nominalization is access to the MUG lexicon possible, for FLU marks an entry based on the substantive derivation. $Einfluss_1$ is excluded from verbalization by the general performance constraint discussed previously, 'blocking', which limits the repetition of the meaning of the underlying stem. Were $Einfluss_1$ verbalized, its derived meaning would coincide with that of the base verb, i.e. 'become an influx'.

21



1. Insertion	[+Vb, +Pro]	[+N, +Pro]	[**IN**, 'ein']	[+Verb, **FLU, etc.**, 'fliessen', */flI:s–/*]
2. L-Rule (18a)	[+Vb, +Pro]	[+N, +Pro]	□	[+Verb, **IN + FLU**, 'einfliessen', */flI:s–/*]
3. Nominalization	[+Vb, +Pro]	□	□	[[+N, +Pro], +Verb, **IN + FLU**, 'influentia', */flI:s–/*]
MUG Retrieval: *'einfliessen'* → *'influentia'* (Facultative:)	[+Vb, +Pro] → *haben* *[auf$_{Acc}$]*			
4. Verbalization	□	□	□	[[+Vb, +Pro], [+N, +Pro], +Verb, **IN + FLU**, 'influentia', */flI:s–/*]
5. M-Rules	*/be =*	*(I → u)*	*ain =*	*flI:s–/*
	/be +		*ajn +*	*flus–/*

(19-21) represent a theory of the stored structure of the *Einfluss* derivation family within the context of the lexical rule system discussed here and elsewhere in this work. They specify the distinction between rule- and entry-stored information describing that family in a precise way. This theory shows, for instance, that the prefix *ein-*, the nominalization, the operation of the HAdj (Genitive$_2$) rule are thoroughly regular lexically and morphologically. The HAdj rule, applying after idiomatic information has been added to the nominalization, operates normally and is marked with a designated morpheme. We do not expect a normal HAdj derivation from *Einfluss*$_1$ meaning 'having influx(es)' for semantic reasons. The affixation is normal in the sense that we are not dealing with an affix associated only with this derivational family. All of the rules required here exist elsewhere in other contexts. Only the access convention to the common IE information adds to the theory thus far developed. But this convention, together with the separate storage of the common IE information, represents the separation of synchronic conditions on derivation from those diachronic conditions which affect synchronic ones. It also represents the common generalizations, of course. Such a representation simplifies the description of German and other IE languages by better discriminating and specifying the information to be memorized. It distinguishes (1) that information which binds together several lexical variants related at one level (derivations) from (2) the monolingual information peculiar to lexical entries, from (3) the information peculiar to specific entries which is shared by several languages. This latter information is critical in second-language learning and in explanations of lexical stock expansion.

11.4 A Reconsideration of Lexical Insertion

The concept of access to a multilingual from a monolingual lexicon significantly alters the current definition of a lexical entry. Two questions arise as a result. Can MUG access be accommodated by lexical insertion rules without crucially affecting local operations, and is the additional apparatus justified by the explanations and simplifications it

achieves? Recall now that in 2.12 it was noted that the concept of lexical insertion as currently defined would imply that speakers forget each lexical item as they speak it. Thus some modification of the insertion process must be made toward developing it into a copying process whereby token copies of stable lexical entries are inserted into sentences.

Perhaps the most important implication of this observation is the possibility of surrendering the assumption that L-rules may insert only fully specified entries. Only fully specified copies may be inserted, of course, but these copies may be taken from several different entries. It may even be possible to enter only partially specified copies, so long as the remainder of the necessary information may be inferred. The output of rule (21.3) under such a system may be seen as a collective copy taken from two independent entries or parts of entries. (17) lacks the phonological specification present in MOG lexical items, while it contains a surrogate meaning and a set of derivational constraints. Since it is not fully specified, it cannot be considered for copying-insertion except in cooperation with a regular MOG entry. (17) represents a special type of idiomatic information which can be traced across IE languages. It is undeniably systematic in the diachronic plane, but just as undeniably irrelevant to MOG theory. Thus to locate an access rule in MOG theory would be a questionable move. While the revision of the lexical insertion rule brings us closer to an answer of what our attitude toward MUG lexical constraint systems should be, the issue of access inhibits prospects for a satisfying final resolution.

The process of retrieving MUG lexical information might be avoided by including it in individual MOG lexical entries. The distinction could be maintained only if the multilingual information occupied a separate subsection or was located in a separate dimension of the regular entries. The problem of this approach is that such a separation has no synchronic relevance; therefore, the distinction has no business in a synchronic lexical entry. (It is pertinent to the individual lexicons of those speaking more than one IE language.) These facts are at the intersection of the synchronic and diachronic axes; they do form a system, but one to which the monolingual speaker has no access either via competence or performance. Yet the competence lexicons somehow have

access to this system, for they largely consist of it. Not to separate multilingual from monolingual systems would be to ignore the structural foundations of IE lexicons; to separate them would violate the 'unorderedness' condition on lexical items and suggest the availability of information for acquisition which is actually assimilated only upon learning a second IE language.

Another possible approach to this problem is via the copying mechanism, which now needs closer defining. Multilingual lexical retrieval could be a regular part of lexemic copying, for the ability to transform types into evanescent tokens adds a new dimension of complexity to lexical procedures. It becomes possible for a copy to acquire features from more than one lexical entry, just as it certainly acquires features from deep-structure nodes. Lexical features represent lexical associations and cross-classifications in the sense of the associative theories of cognition mentioned briefly in 1.1. The retrieval of the meaning 'influence' for *fliessen* when prefixed with *ein-*, then, is simply a theoretical representation of the fact that 'influence' is mentally associated with *Einfluss* in the same way as the idiomatic meanings listed in (17) are related to their underlying lexeme, that is, in a generalizable way. The incorporation of IN into the feature inventory of *fliessen* and subsequent assignment of the prefix *ein-* by M-rules, represents the fact that the grammatically determined relation IN 'into' occurs as adverb, preposition and verbal prefix, marked by different morphemes, *in, ein-*, depending on context. This captures the relation between these morpheme variants and between them and the system of grammatical relations one of whose functions they represent.

Regardless of whether speakers memorize the two meanings of *Einfluss* or reconstruct it using all the relations captured by (21), the relations are certainly present and would have to assist in remembering and recalling the lexicalized derivation. That is, the meaning 'influence' is associated with the memory address of *Einfluss,* which in turn, certainly goes back to *fliessen* via derivation rules. If this is the case, lexical theory must explain why this is, and (21) seems to do that. Lexical theory must also explain why there is no Manner QAdj derivation, i.e. providing the meaning 'like influence': **influencish, *influency.* At

some level, the theory must explain not only why all of the cardinal lexical derivations are the same across IE languages, but why constraints on lexicalized forms also tend to be consistent. All of this is accomplished by (21).

The lexical copy which is assembled from copies of features of various proveniences, is a new organization of lexical associations (with meanings and affixes) and cross classifications (lexical characteristics of nouns, verbs and adjectives). These associations and cross classifications are represented in our model by features. If frequently used, these copies, or special information on how they are made, may themselves be stored at some level of memory, though not at the same level as the base lexeme to which they are associated by rule. Native speakers seem to have the ability to tell not only whether a lexical extension is well-formed, but also whether they have heard it before. But theoretically, derivational copies are derived by rules each time the copy is made and individual speakers *can* carry out all the rules, just as they do when infrequently used forms are performed: new items, items forgotten from disuse, etc. If the theoretical derivation occurs during the copying process, multilingual lexical retrieval may be incorporated into this process along with all retrieval of performance-related idiomatic referential material previously discussed. If this is the case, the copy process will have to contain at least three steps:

1. the selection of an entry
2. the production of the copy
3. the insertion of the copy

If selectional restrictions are included in the model of grammar, the process will have to be expanded by further steps: 'reading the delta-node context' and 'comparison of selection restrictions'. We have seen, however, examples of verbs inserted into N-nodes and nouns inserted into the V-node. If this is possible, subcategorization restrictions would hardly be at home in the grammar; more likely, they would be performance constraints. This will be our assumption.

Let us further assume that, rather than following lexical insertion, L-derivation occurs where applicable *during* the copying-insertion procedures. That is, the copying mechanism selects a base lexeme, copies the features necessary one by one down to, say, a referral feature which demands or offers retrieval of irregular information concerning the reference of the derivation from idiomatic storage. It then simply moves to that point and begins copying the applicable information there. If the second lexical or extralexical position does not furnish all the information required for a fully specified entry, the copying mechanism returns to the original address and copies the remainder of the features there, e.g. the phonological markings for the nominalization of *einfliessen*. This mechanism captures the apparent fact that people combine regular with idiomatic knowledge of certain lexical derivations and can refer to both the regular and idiomatic simultaneously, i.e. in theoretical terms, produce two copies simultaneously or a single ambivalent copy with connections both to the regular meaning and idiomatic reference (cf. the *red herring*$_3$ example or imagine the possible double entendres from *Einfluss*).

Such a procedure is facilitated by the fact that the stem accumulates all information, including that which will eventually be represented by affixes. But the new information introduced by the derivation rules discussed in Book II requires the same sort of reading of the syntactic nodes as would be required by selectional restrictions. The model of copying-insertion will, therefore, still have to be expanded.

1. the selection of an entry (*type*)
2. the production of the copy (*token*)
    a. reading of the syntactic configuration
    b. operation of applicable L-rules
    c. retrieval of idiomatic (including MUG) features
    d. operation of further L-rules
    e. completion of the fully specified copy
3. the insertion of the copy (*token*)

Notice that should it turn out that most metaphorical derivations with idiomatic references are memorized, this is easily explained in terms

of this model. One simply assumes that there is a performance strategy such that (a-e) of (2) may be circumvented or collapsed, resulting in the same process which occurs when a base lexical prime is inserted. But the theory still provides answers to the kinds of questions Lightner raises: why does meaning X remain related to the lexical extension Y, even though by all regular rules Y should mean Z? Exactly what are the regularities and irregularities involved? How are they interrelated? The conflation of the copy-entry and derivational processes offers an explanation of how people *can* memorize a sufficient vocabulary for carrying on normal discourse.

This conception of lexical entry assumes that the lexicon does not come in direct contact with the syntactic structure except in cases of normal derivation. Rather, the lexicon contains entries which issue full or partial copies of themselves onto some intermediary blank tablet which may well be the delta-node. In the case of partial copy-entries, referral elsewhere in the overall competence-performance lexical storage area is required, so that all the features may be accumulated which are required for a fully specified copy. By 'fully specified' is meant that all information for proper affixation and phonological representation must be copied. The lexicon is a catalog of lexical addresses and rules for 'associating' those addresses in linguistic ways, which move from one address to another copying features. This is represented in the collection of features from addresses in both the basic competence lexicon (lexical primes only) as well as the performance store of idiomatic references, as well as in the rules which adjust subcategory features already in the stem or incorporate case relation features from syntactic nodes.

The 'performance store of idiomatic references' very much resembles Reibel's 'feed-back control'. It must be located outside the grammar, though, for the information it provides is nongrammatical in the sense that it cannot be predicted by lexical regularities. Yet it is introduced into regularly derived constructions (as opposed to such irregular constructions as blends, acronyms and the like), frequently between derivational applications. The improvements on Reibel's model here are two. First, this model captures all of the synchronically relevant regularities, e.g. the asuffixal nominalization of *einfliessen* (*Einfluss*), the stem

mutation, the normal prefix and the partial semantic correspondence. The synchronically unpredictable features are stored in a lexically related component in a performance theory, which is designed to determine reference in ways which may be independent of lexically determined meaning. Second, this model fully specifies the reentry procedures of the unpredictable information as part and parcel of the lexical copying-derivation mechanism. This explanation of idiomatic reentry is in consonance with the lexical-performance distinction of meaning and reference elaborated in 3.2. This model has the advantage over Halle's filtering device in that there need be no phonological feedback into the lexicon. Because of the separation of derivation from affixation and structural adjustments, these latter may operate independently of the former on regular, partially regular and wholly irregular derivations alike.

11.5 Conclusions

The intention of this chapter was not to present a formalization of multilingual IE derivations. Rather, the hope was to demonstrate that one can see the way clear to such a formalization of these diachronic regularities. Given a refined theory of lexical insertion, only a simple, facultative retrieval condition on lexical copying, combined with the independent marking of multilingual information in the performance store would be required. The separation of multilingual from monolingual lexical storage theoretically represents the special, diachronically accumulated nature of these regularities. The retrieval process represents the fact that they are nonetheless related to synchronic rules via partial regularities. The hypothesis presented here of their relatedness is designed to capture both sets of regularities without the repetition of any part of either set.

Of course, the separation of multilingual from monolingual regularities is an expansion of the range of possible grammars. Chomsky (1972: 123-129) has argued that a competence theory should not be so enriched that the number of possible grammars from which a child must

choose during acquisition becomes too large for the operation of the selection process under the empirical conditions under which speech acquisition is known to occur. This assumption concentrates, perhaps arbitrarily, on the question of the acquisition of the first language at the expense of other important questions which also depend on the nature of the linguistic theory. Chomsky's primary interest in language focuses on the eventual light linguistic theory may throw on our understanding of the human mind (Chomsky 1975: 4ff). This interest is incompatible with the above-mentioned separation of multilingual information, for that separation is not involved in first language acquisition. On the other hand, it does explain why it is easier for a speaker of English to learn German or Danish vocabulary than Russian, or Russian than Turkish. Moreover, it simplifies the creation of a historical theory of the IE lexicon by providing a means for distinguishing between historical and synchronic features. Naturally, we wish our theory of language ceteris paribus to be amenable to the various ancillary theories. In mounting a theory of language one should certainly keep the historical as well as acquisitional theory in mind, but without incorporating into the theory facts which can be explained without reference to linguistic theory, e.g. selectional restrictions or 'global rules' (cf. especially Katz 1976). Nonetheless, one has good ground to doubt the propriety of permitting any access by a monolingual theory to historical information.

The decision as to whether to incorporate this piece of theoretical apparatus depends ultimately on the nature of the separation of the multilingual from the monolingual lexicon. The problem here has to do with regularities which lie simultaneously inside and outside language: an axis of the synchronic and diachronic lexical rules, where regularities beyond the domain of any one language dominate intralingual regularities. Thus a multilingual lexicon, in fact, cannot be totally separated from the monolingual ones; it must in some sense be a common part of each IE language. The question is only whether it should be marked in such a way as to distinguish it from the remaining types of intrinsically unpredictable lexical behavior.

One should not underestimate either the importance or the dimensions of this problem. It involves exceedingly large and rich *classes* of

TABLE IV

Selected Multilingual Lexical Parallels in Western IE Languages

German	French	Russian	Modern Greek
Eindruck	impression	vpečatlenie	entýpose
anziehend	attirant	privlekatel'nyj	(helkystikós)
unterschreiben	souscrire	podpisat'	hypográpho
beschreiben	décrire	opisat'	perigrápho
zuschreiben	(Eng ascribe)	pripisat'	. . .
Einleitung	introduction	vvedenie	eisagoge
Leitung	conduite	provodnik	agogos
Leiter	conducteur	putevoditel'	hodegos
Mitgefühl	compassion	sočuvstvie	sympátheia
mitleiden	compatir	sostradat'	symponô
(grossherzig)	(magnanime)	velikodušnyj	megalópsykhos
hartköpfig	. . .	(Scr tvrdoglav)	skleroképhalos
Vorwort	. . .	predislovie	prólogos
widersprechen	contredire	protivorečit'	antilégo
unsterblich	immortel	bessmertnyj	athánatos
Lösung	dénouement	razvjazka	lýse
. . .	contemporain	sovremennyj	sýgkhronos
Einheit	unité	edinica	monáda
teilnehmen	prendre part	prinjat' učastie	paírno méros
	participer	učastvovat'	symmerízomai
zauberhaft	enchanteur	očarovatel'nyj	mageutikós
bewegend	émouvant	(trogatel'nyj)	sygkinetikós
schrecklich	terriblement	strašno	tromerá
(auffallend)	frappant	porazitel'nyj	. . .

partial regularities, as Table IV demonstrates. Should all of these regularities be treated only in the diachronic theory or through unrelated, discrete classes of rules, not only will lexical entries be repeated, e.g. *Einfluss*$_1$, *Einfluss*$_2$, but many if not most of the unproductive rules will be identical except for their class to the productive ones. Redundancy rule(s) accounting for the differences between *Einfluss*$_1$ and *Einfluss*$_2$, must apply solely to those differences; the regularities must be

accounted for by the same rules which account for those regularities in general.

It is, of course, too early to decide the question of the construction of a storage component for multilingual items in a generative theory of performance. But when one adds to the purely linguistic prospects of the theory just outlined, the further promise that the system of abstract structures and associations constituting it may well lead to insight into the collective subconscious of IE peoples, Lightner's theoretical demands, which previously seemed so excessive, take on a more reasonable cast.

CHAPTER 12

Conclusions and Prospects

12.0 The Five Basic Issues

The preceding 11 chapters are intended as a framework in which lexical questions may be discussed and which is compatible with contemporary, especially generative, linguistic models. The attempt has been to introduce no new theoretical apparatus or components, but rather to focus and define more precisely those already developed in generative theory so as to explain lexical relations and processes without disturbing the bearings of the standard components vis-à-vis each other. There may be ramifications of this theory which will lead to future adjustments and expansions of other components, but for the present, it suffices to represent the basic nature of the lexicon.

In fact, this theory in many respects is compatible with the conservative attitude toward Chomsky's 'standard theory' recently proposed by several authors in Bever, Katz and Langendoen (1976). It is an alternative to the lexicon of both the standard and 'extended standard' theories, representing a middle ground between R. B. Lees' syntactic explanation of L-derivations, and the more recent strict lexicalist theories; it arrives via overlooked insights from Bazell, Belić, Karcevskij, Kuryłowicz and Marchand. Once the processes of affixation are separated from those of derivation, it becomes clear that 'derivation' itself must refer to several different processes: syntactic and lexical lexeme

extension, lexical stock expansion—each of which is itself a class of different operations. Their similarities, however, all point to properties of standard theory, some of which have lost their appeal to many recent linguists; these properties include a deep base component determining categories and category relations and upon which both the lexicon and T-component draw; the separation of semantics from syntax, except for those categories which are syntactically determined, a separate M-component following the T-component and a complex performance theory tying grammar into the remainder of general knowledge. This view of the lexicon explains lexical relations independent of phonological, morphological and syntactic relations and is dependent only upon those intensional semantic relations which are lexically determined. Problems do remain, however, and the present chapter will be devoted to reviewing the basic advances made possible by this theory and pointing out a few directions which might be explored in settling the outstanding issues.

At the beginning of Chapter 4, after a substantial introduction which examined the basic assumptions of lexicology in detail, five issues were established as crucial to any lexicological theory. They were (1) the relation of meaning to sound, (2) the nature of lexical storage, (3) the operations of neologistic processes, (4) the nature of lexical insertion and (5) the relation of the lexicon to general knowledge. In the intervening chapters these issues have been dealt with in the contexts of specific bodies of data. In this concluding chapter the arguments for the answers to these questions provided by the GL-theory will be reviewed in terms of the questions themselves and the ramifications of our answers to them for general linguistic theory.

12.1 The Relation of Meaning to Sound

In a real sense the entire book deals with this issue, so that all five sections of this chapter bear directly upon it. For this reason, this first section will be restricted to the nature of the sound-meaning relation among base lexemes; the remaining sections will deal with the

question of semantic transparency among L-derivations. The discussion here, moreover, will be directed to the issue of to what extent the lexicon determines semantic features. The preceding chapters have brought evidence to bear on this issue; to wit, the degree of lexical determination of various classes of features seems to fluctuate from one such feature class to the next.

Writers have long noted major differences between 'lexical morphemes' (lexemes) and 'grammatical morphemes' (morphemes) though little has been made of the distinction, except by recent psychologists who have associated it with different areas of the left hemisphere of the brain. Book II attempts a linguistic definition of this distinction along with further specification of the relation of meaning to morphemes. In the sense this relation may be said to be indirect, the relation of lexemic meaning to lexemic phonological form is direct. The directness of the sound-meaning relation of lexemes has been customarily indicated by representing both phonological and semantic features in lexical entries. The evidence of loan translation, the abstract nature of lexemic extension relations and general theoretical considerations have led us to conclude that the basic nature of lexical entries is lexical and wholly abstract. Interpretivists widely subsume syntactic and semantic features under a phonological heading, implying that meaning is a dependent factor. The evidence here indicates that lexical entries are independent and that no consistent dependency relation exists between phonological and semantic representations. There are lexemes with multiple semantic readings (polysemy); there are lexemes with multiple phonological representations (suppletives).[13] Some lexemes share identical lexical phonological representations in various languages, interpreted differently at the surface level of each language (e.g. Latin borrowings); there are lexemes sharing identical semantic readings across languages (loan translations). There is no lexical reason to believe that lexemes have any nature other than their own, or that semantic and phonological components are anything other than independent. The lexicon for certain relates these components but by means other than containment.

The major reason for maintaining the independence of the phonological and semantic components of a theory of language is the ostensible

fact that they each consist of universal features. To the extent that this is true, the grammars of individual languages are the arbiters of these two systems, descriptions of the characteristic way in which each language expresses the one via the other. It is quite possible that traditional phonemes are the sound-image units which combine to identify lexemes when interpreted by the P-component via articulatory distinctive features. This position has been adopted here on five grounds: (1) it explains the relation of the universal distinctive features to the language-specific phoneme; (2) it provides a characterization of the psychological basis of alphabets; (3) it explains the difference between the lexicon and the P-component; (4) it specifies the distinction of lexically and morphologically determined phonological alternations from purely phonological ones and (5) it explains the possibility of lexical borrowing where the borrowing language interprets the phonemes of the lending language in terms of its own distinctive features. No better example of this phenomenon can be found than the concept 'r' in the various IE languages, which receives wildly varying phonetic interpretations in borrowed words. The abstract phonemic formative represents the memorized sound image—to use Saussure's term again—of lexical addresses which can be identified by the M- and P-components.

If the semantic component can recognize this same phonemic representation of lexemes, it cannot be universal. A phoneme is a language-specific matrix of universal phonological distinctive features. It possesses no recognizable semantic qualities. If the lexeme is to be the arbiter of universal vs. specific semantics, we must assume that it contains a 'sense image' alongside the sound image. Assuming that the nature of such semantically interpretable lexical features could be determined, would we have arrived at a definition of the sound-meaning relation in the lexeme? This depends upon whether the answer to this question amounts to more than the specification of an identical location for the identifying abstractions interpreted by the P-component and semantics. If this definition is acceptable, the last remaining problem is to locate and define the language-specific semantic abstractions corresponding to phonemes.

The problem in resolving this issue stems from the variation of the extent to which semantic features may be said to be lexically determined. There are semantic values which are clearly determined by the lexicon and are justifiably postulated as semantically interpretable lexical features: the pronominal animacy, gender and number features; the gradational diminutive-affectionate and augmentative-pejorative features.[14] These meanings form a lexically determined abstract paradigm which can combine with syntactic case features and be matched in bundles with specific inflectional morphemes in most IE languages.[15] It is even a lexical decision whether these features have variable or invariable values. For example, in Scr the noun *slon* 'elephant' is variable in relation to the features of gender, number and gradation: *slon-ov-i* 'elephants', *slon-ic-a* 'elephant cow', *slon-ić* 'little elephant'. On the other hand, *makaze* 'scissors', *štipci* 'pinchers', *naočare* '(eye)glasses' have a lexically fixed plural valuation, while *šećer* 'sugar', *meso* 'meat', *sreća* 'luck-happiness' are always singular. The fact that one finds the relation *slon/slon-ica* referring to male and female elephants, but not *konj/(*)konj-ica* referring to male and female horses (*konj-ica* = 'cavalry') is a lexical fortuity, too.

In this case, then, there is no difficulty in premising strictly lexical features in entries to account for the semantics of gender, number and gradation. But these are paradigmatic features more aptly related to lexical rules; what of the semantic features associated with individual lexical entries? Katz (1972) posits a semantic dictionary which 'assigns' meanings consisting of semantic markers to lexical morphemes, presumably in the syntactic lexicon. The exact nature of this assignment is left unclear and no representation of it is offered. However, he elsewhere (Katz 1976) establishes that the semantic component must have its competence-performance dichotomy as does the syntactic component; semantic performance is representable in a theory of pragmatics (cf. Katz & Langendoen 1976; Katz 1977). The latter is a theory of tokens from types, how individual utterances vary in given pragmatic situations from grammatical sentences. The grammatical meaning of sentences is derived from the *semantic markers* of dictionary entries. These markers are 'the semantic representation[s] of one or another of the concepts

that appear as parts of senses' (polysemantic functions of meanings) (Katz 1972: 37). Semantic markers, according to Katz, must be distinguished from *cognitions,* i.e. images, mental ideas or particular thoughts. Semantic markers are *concepts,* i.e. abstract entities without temporal properties and not individuated by persons. Katz's theory seems to provide a reasonable semantic explanation of intension amenable to the GL linguistic theory argued here.

In light of the foregoing arguments, however, there is no justification for postulating semantic markers, defined in the strictly semantic terms of Katz, as features of lexical entries. But is there any justification for positing special lexical features, interpretable in terms of semantic markers, as phonemes apparently function for phonological interpretations? In fact, a good portion of semantic meaning derives from arbitrary and idiomatic secondary associations, e.g. the associations of wisdom with *owl*, slyness with *fox*, badness with *smell* in English. Such unpredictable associations might well be lexically determined, for they remain constant through transparent L-extentions: *smell* – *smell* (n.), *smelly, smelliness, smelling, smeller.*

But while the associations in these cases seem idiosyncratic, the semantic markers of the items themselves remain universal and proper only to the semantic component. Semantic markers apparently have their own dependency relations distinct from lexical and syntactic relations. For instance, the semantic markers for *fly* would be something on the order of [MOVEMENT [FAST][AIRBORNE]], with FAST and AIRBORNE subordinate to MOVEMENT. Since these relations must be strictly semantic, their inclusion in a lexical entry would be theoretically inconsistent regardless of whether they represent relations between autonomous semantic features or semantically interpretable lexical ones.

Of course, the status of semantic markers is itself far from clear. Are such features as MOVEMENT, FAST, AIRBORNE semantic entities or implications of a holistic concept of flight which is connected to some lexeme *fly*? This latter approach is especially appealing in light of its clarification of the 'assignment' of dictionary readings to lexical entries. Each underived lexeme base on this hypothesis would contain a lexically determined concept along with an abstract phonemic representation.

The semantic component could then be seen as interpreting this integral concept via its universal features in much the same way the P-component interprets phonemes. The concepts would theoretically correspond to lexical meanings; the readings, to the implications we know they have, knowledge derived from alternative sources.

Holistic concepts would differ from Katz's cognitions in that they would be the common denominators of cognitions in a language community or subcommunity. They would be the generalizations of cognitions upon which our responses to previously unexperienced situations are based. Semantic markers would then become the logical implications of such lexical concepts—difficult to arrive at due to the confusion arising from individuals having different cognitions of the same class of referents. Notice that a similar situation presents itself in defining the distinctive features of a language, since they, too, vary from dialect to dialect due to variation in the perception of the underlying phonemes and phonemic rules. The English-speaking peoples of the world recognize the phonemic structure of their common vocabulary quite easily even when the phonetic realization of it varies significantly. Other advantages of this semantic treatment would parallel those of the phonemic treatment proposed here: it would explain how ideographs and pictographs can arise and would clarify the relation of individual lexemes to universal semantic markers.

The exact nature of the relation between lexical bases and their primitive meanings remains a beclouded issue and cannot be represented in the present theory. For the purposes of this theory, an integral, lexically determined concept functioning as a semantic liaison in each lexical item would prove ideal. The definition of the primary sound-meaning relation would then be very simply the lexeme itself. However, there is no evidence supporting either approach which can be offered here, so this aspect of GL-theory must be left open. This does not undermine the theory, but simply constitutes a major unresolved question on which attention needs to be focused. In fact, the theory sharpens the issues here a bit more by distinguishing the meaningful associations characterizing underived, lexical primes from those marked by paradigmatic, semi-paradigmatic (gradational) and derivational means,

and by specifying these latter relations in an overall lexical framework. With a more detailed model of the lexical entry also, it is now easier to see exactly what is involved in developing theories of lexically embedded semantic features plus the relative advantages of a strict interpretive semantic theory as compared with a theory of semantically interpretable integral lexical concepts.

12.2 The Nature of Lexical Storage

This section will be concerned with the questions, what can and what cannot be stored in the lexicon. The preceding section established our goal in this: to rid the lexicon of nonlexical information, yet keep it accessible to the various other universal interpretive components. The necessity for this clarification of what is strictly lexical and what is only lexically related evolves from the basic question of what the lexicon is and how one goes about justifying it as an independent subcomponent of grammar. The strongest argument for separating the lexicon from syntax is that it possesses independent properties and functions which cannot be explained in terms of any other component. Thus the independent properties (lexemes) and functions (insertion, extension, feature-marking rules) of the lexicon have been the focus of this book. However, the second immediate step is an explanation of the relation between the lexicon and syntax; for, as we have seen, this relation is close indeed.

The lexicon is a nexus of many different types of information: syntactic, semantic, phonological and pragmatic. It serves not only the linguistic function of supplying the basic elements of sentential substance, but also the psychological function of organizing episodic, pragmatic memory in its individuated, nonideal form. Yet the question raised by a lexicological theory is what is the lexicon, what are the qualities defining it as a component in and of itself in a grammar. The nonlexical information associated with it must be explained as relations to that which is purely lexical. For this reason, the initial task of the lexicologist is to develop a model bereft of nonlexical properties, yet

accompanied by the ancillary descriptions explaining the relations of these properties to the model.

Certain properties traditionally attributed to the lexicon have been proven unsuitable for lexical theory. Grammatical morphemes cannot be stored in the lexicon, for the same morpheme frequently marks either a combination of lexical and syntactic features, e.g. inflectional endings (cf. Babby 1976) or, now a lexical derivation, now a syntactic one, e.g. the English *-ing,* agentive markers, etc. For these two compelling reasons, morphemes cannot be said to have meaning, but only intrinsic, grammatical reference which forms a paradigm which itself may be semantically interpretable. Thus morphemes cannot be stored in the lexicon with lexemes.[16]

The major question remaining to this issue is where to draw the line between lexemes and morphemes. But the definitions for establishing this line are now available. Lexemes have direct referents; they underlie lexical and some syntactic derivations, i.e. they are capable of undergoing L- and T-rules; they are independent and do not form paradigms of any sort. Morphemes are all empty; they refer to paradigms or rules; they are organized according to their own class of phonological rules which their component applies to them and to lexemes. The M-component, because it is theoretically posterior to the lexicon, can operate on lexemes (e.g. carry out stem mutations), but the lexicon has no access to the M-rules except for designating their position by abstract box-nodes which denote the operation of a derivation. There are phonemic forms and systems which seem to function both lexemically and morphologically (*be* and *have,* for instance); that is, there are stem morphemes which receive affixation like lexemes, though not as a result of undergoing derivations. There are also designated lexemes which function very much like morphemes and not infrequently delexemicize to become affixes.

If we are to keep track of all the diverse types of full and partial regularities which characterize the lexicon's contribution to grammar, lexemic derivatives must be excluded from the deepest lexical domain. This might be interpreted to mean that the output of L-derivations enters a superior chamber of the lexicon susceptible to 'semantic drift'.

Such a two-chambered lexicon would not discharge the lexicologist of the responsibility for explaining with predictive rules all aspects of such 'drift', for the lexicon would remain a grammatical subcomponent and as such must be regular. It may not be haunted by any undefined concepts.

In point of fact, it would be advantageous to define the lexicon in terms of a storage component for only the irreducible lexical primes, with rules representing carefully defined lexical concepts, explaining all divergences from full regularity. Any aspect of L-derivation which cannot be predicted by lexical rule must be determined by nonlexical conditions. Indeed, any aspect of linguistic behavior which can be explained by laws other than the strictly arbitrary laws of language must be so explained. There is also some question as to whether 'semantic drift' can be a lexical concept in the framework of an interpretivist TG-theory. If meaning is assigned to lexical items by the semantic component, 'semantic drift' must be a semantic, not a lexical problem. Lexemes remain a part of the grammatical system of language. If the structural outputs of the L-rules and their interpretive M-rules are predictable, the rules must work. It is difficult to conceive of a grammatical rule whose outputs are not 'strictly invariably predictable' (Dowty 1979: 397).

Most of our explanations of 'semantic drift' centered on performance variations. This is due to the fact that 'semantic drift' is by definition a catch-all for semantic anomalies among lexemic derivatives. There may be a class of semantically divergent lexemic extensions caused by the distinction between lexical and syntactic derivations (*the bread baker* vs. *the baker of the bread*). Some of the paradigmatic causes of semantic anomaly discussed in Chapter 10 as performance-related, e.g. the semantic intensification convention on inherent characteristics, may turn out to be semantic. But most instances of the various types of stock expansion and idiomatization are organized processes of linguistic performance and must be wholly removed from the lexical domain. Their relation to the lexicon has been defined: stock expansion includes the processes by which lexical primes are recovered and randomly added to the end of the lexical list. Idiomatization is a process of regularizing

metaphors within a speech community, i.e. assigning referents on the basis of perceived similarities of associations, rather than on the strict basis of the sum of a derivative's lexical semantic readings.

Lexemes, then, must be minimal lexical items. Since they are deep structure concepts, they must be wholly abstract. Since they are components of the lexicon, they must be wholly lexical. The fact that they may be shared with several related languages and realized by completely unrelated phonological forms, substantiates this definition beyond reasonable doubt. Meaning and phonological form must be assigned by separate components. As we noted in the preceding section, this is easier to establish in the case of phonology than in that of semantics, but this situation presumably is but a function of the primitive state of semantic theory. In any event, there is no way to know until more is known of semantics. It is true that the structure of shared lexical systems such as the *influence*-system discussed in Chapter 11 has a decidedly semantic cast. On the other hand, the relations which determine such systems seem to be the same as those reflected in extension rules. The nature of the lexeme seems essentially proven; it is (1) independent, which is to say purely lexical; (2) wholly abstract and (3) irreducible via any grammatical process. Lexemes are mental nodes whose function is to relate sound directly to intensional meaning.

In addition to lexical entries defined in purely lexical terms, the lexicon must contain about four types of rules. Copy-insertion, extension, gradation and category-marking rules represent the basic lexical functions; ultimately, they may be combined in several ways, effecting further economy. For example, gradation and category-marking rules may involve the same process, which could be a subroutine of the copy-insertion rule. The lexemic extension rule, inasmuch as it operates on underlying syntactic case relations, is distinct from the other rules. Still, it might be seen as a complex variation of the copy-insertion rule. This rule does insert lexemic bases as does the copy-insertion rule, but it has the additional power to snip 'stranded' features marking the primary case relations from deep P-marker trees and to incorporate them in the inserted lexemic copy.

The final lexical function is so ubiquitous that it may well be an automatic trace of any lexical operation left on an inserted copy just as the mark of genericity is left upon its semantic reading. I have in mind now the specification of the number of morphemes required to mark the number of operations relevant to the lexeme's interpretation. The 'box-node-per-operation' assumption may not be sufficient for explaining morphemic overdetermination. For sure, the process of marking derived and underived lexemes for affixation will have to be further specified. For example, it is frequently the case that when a family of lexical borrowings forms from the influx of a lexeme at sundry derivational levels, functionless morphemes often arise in the derivations. In the Scr derivational nest *akumul-ir-ati* 'collect', *akumul-at-or* 'collectory, battery', *akumul-at-sij-a* 'collection, storage', neither the verbal *-ir-* nor the nominal *-at-* mark any lexical process. The solution to this particular variant of the problem is straightforward within the generative lexical framework of the present theory: the additional position is determined by the very fact that the stem is Latinate, i.e. the number of morphemes is automatically determined by the selection of the morphemes themselves, a frequent lexical function of stems. In short, the overdetermining morphemes here are determined lexically, as are the box-nodes.

There are also instances, however, where the motivational factor seems to be the morphology itself, as in the case of the HAdjs marked by the morpheme complex *-Ov-it: breg-ov-it* 'hilly', *polj-ev-it* 'many-fielded', *sneg-ov-it* 'snowy'. Since *-Ov* and *-it* are used as independent morphemes in the language, they must have independent status. The insertion of *-Ov* seems conditioned by the use of *-it* with the HAdj derivation. Thus their combination here seems to be more morphologically than lexically motivated. Of course, since the selection of these suffixes over others is lexically motivated by the stem's belonging to a class of monosyllabic common geographical nouns, special provisions for the lexicon's insertion of two box-nodes could be made. However, we would like to avoid special provisions and, if the dual nature of this morphemic marking is in fact morphologically determined, only a morphological solution will be acceptable. This may be possible, though the motivation for the morphemic doubling is presently obscure.

If there are proverbs such as *be, have, will* which have, among other possible functions, a strictly grammatical one, the M-component will have to be so contrived as to be capable of inserting 'stem morphemes' as well as affixes. If morpheme stems do exist in isolation from lexemic ones, the M-component may then have to have the capacity to determine affix nodes. Thus before we can have a clear perspective of this question, many issues surrounding the extent of the morphemic units stored in the M-component must be clarified. For the time being it is sufficient to see that, although the issue of the causality of morphological overdetermination remains open, it is not for a dearth of possible solutions.

It bears reiterating that the issue of the reality of box-nodes is not a theoretical one. There is more than sufficient empirical evidence in speech error analysis and in the generic recall of TOT phenomena supporting the premise that knowledge *that* an affix is required is independent of knowing *which* affix is required. This may reflect the well-established distinction between mnemonic storage and retrieval as applied to the lexicon. Speakers do seem to have the capacity to remember knowing a derivation, i.e. how it is constructed, even to the extent of knowing the number and basic lexical-morphological nature of its constituent parts; yet, in the middle of a normal utterance they may not be able to retrieve all the proper pieces and assemble them. Fromkin's already quoted examples *intervenient, nationalness, groupment,* or the example I recently heard on a local telecast: *false nomer* for *misnomer;* TOT evidence such as Carroll's construction of *inCONgruOUS, CONtextual, infectiOUS* while in search of *CONtagiOUS*—all reflect knowledge of a specific number of marked spaces designated for lexemes and morphemes in specified relation to each other, in face of an inability to recall the specific items required to fill them. This situation must not be confused with speech errors related to syllable count. Fromkin's data shows that errors like *intervenient* for *intervening* and Carroll's example are typical examples of morphological speech errors involving both 3- and 4-syllable derivatives. If syllabic and morphological errors are psychologically related, they are still linguistically discrete.

12.3 The Operations of Neologistic Processes

The central issue of this book is the necessity to see derivation and affixation as separate linguistic processes. There are two sets of justifications for doing so. First, the separation of derivation from affixation settles the outstanding problems of morphology, including the question of null morphemes, morphological truncation, over- and underdetermined lexemes, empty morphemes, the sharing of the same morphological systems by lexical and syntactic derivations and lexical derivations with 'syntactic' structure. The second set of justifications for the separation of derivation from affixation is the new avenues opened up by its implications. The abrogation of the direct connection between sound and meaning in lexical derivation leads to a theoretical explanation of the indirect relation between the two, which establishes the essential identity of the processes of inflectional and derivational marking systems and locates the both of them in a posttransformational, prephonological, morphological component. The processes of lexical derivation emerge as processes which are abstract in precisely the same sense that syntactic processes are abstract. This opens the way to a definitive explication of the perennially noted ties between lexical and syntactic derivation. The explanation of these ties, on the basis of the evidence examined in Chapters 8-9, would seem to lie in a lexical-syntactic prelexical deep structure such as that aptly named 'the categorial component' in recent theories, and characterized by grammatically determined case functions (relations) shared by all IE languages.

The first major distinction emerging from the derivational data once the question of affixation is separated, is between lexical stock expansion and lexemic extension. The former is a class of strict naming processes for increasing the number of lexical bases in the lexicon and can no more be lexical itself than can a process for increasing the number of grammatical categories in a language itself be grammatical. The latter is a method of extending the bases already in the lexicon via descriptive derivations, so that they have variants corresponding to all available lexical classes or subclasses. Extension rules are wholly synchronic and generative; expansion processes are diachronic performance processes

which assume the prior existence of lexical extension rules as noted in the discussions of loan translation and back-derivation. Lexemic extensions provide automatic potential variants of the base lexeme. In other words, as soon as a base is established in the lexicon, all of its extensional variants are automatically available whether performed or not. The most grammatically interesting question of lexemic existence is one of what can be, rather than of what actually is. Even in the case of stock expansions, where actual existence is crucial to a full description, this is true.

The lexicon is the repository of the generic names of things which are used in syntactic descriptions; even lexemic extensions must be names. But lexemic extensions are also descriptive, just as certain syntactic configurations are used as names. A lexemic extension is descriptive in the sense that it refers to all the members of that class of objects described by the accumulation of its intensional features. For example, the agentive *reader* in its broadest and most productive sense, may refer to all agents who read, limited only by the extent to which the process of reading can become a conceivable generic characteristic. The instrumental derivate *reader*, on the other hand, does not refer to all generic instruments by which one may read, but only to a couple of closed subsets of that class: (1) books which are used in the process of learning to read and (2) machines used to magnify microfilm and microfiche. The instrumental derivate, therefore, in actual usage, takes on the cast of a lexical idiom, i.e. its strictly grammatical meaning must be enhanced by special knowledge of its performance, requiring its performer to use this derivate solely in reference to these special subclasses of its potential descriptive referents.[17]

The distinction between lexemic extension and lexical stock expansion leads to a performative explanation of what many writers have referred to as 'semantic drift' (see Dowty 1979 for a hypothetical definition). Inasmuch as the processes of lexical stock expansion presume the prior existence of extension rules, there can be no doubt but that extragrammatical performative operations are involved in what is perceived to be lexical derivation rules. Moreover, included among performative operations there are many of wide generality in addition to those idiosyncratic. With our definition of L-rules determined by primary categorial

deep structure relations plus lexical category markings, it now becomes possible to develop a criterion for distinguishing between the kinds of information making up the grammatical and performative sides of the lexicon: only that information predictable by L-rules based on deep structure relations can be considered proper to the lexicon; all other information must be explained in terms of performance. This distinction of two kinds of lexical knowledge in no way contradicts what is generally held to be true about the difference between 'sense' and 'reference'; in fact, the former may now be defined in terms of fundamental, intensional meaning which remains transparent thoughout L-processes. Any opacity accruing must be explained in terms of constraints on the class of referents potentially transparent descriptively, as predicted by the original lexemic sense plus features added by the rules of the lexicon. Constraints on referents which are independent of meaning and the grammatical lexicon, must belong to lexical performance theory.

Since the processes of restricting reference must be performative, the same processes may apply to syntactic as well as lexical output (a not unfamiliar situation). When this fact is combined with the fact that idiomatization reduces the descriptive, extensional potential of any construction to a specific name which can be applied generically, we arrive at an explanation of how long phrases can have the same referents as lexical derivatives. We have seen previously how *parking lot, clothing store, plum producer* and so forth can have generally the same class of referents as single derivatives in Scr. Of course, all IE languages have access to the same simple and compound lexemic extensions and syntactic derivations, idiomatized or not. However, different languages display drastically varying preferences for lexical and syntactic means of expressing generic significance. Each has its own advantage: idiomatized syntactic constructions are descriptively more precise and flexible, e.g. *five-speed step-variable automatic synchromesh transmission.* L-derivatives, on the other hand, sacrifice descriptive specificity and flexibility for compactness and economy. Given the overdetermined output of language vis-à-vis the possible references it must describe, wide latitudes of selectivity among the potential outputs of both sources are

available in every language. There is no question as to whether there is an expression for every referent; there are many. Performative theory is required, therefore, to explain the trends of selection of standard (normative) derivatives.

There are three determining sources of L-extensions: (1) the general character of the lexicon itself (genericity), (2) the lexical categories (gender, number, gradation) and (3) the primary grammatical relations of the deepest grammatical component. The exact nature of this component has come under serious question in recent years. First, the generative semanticists attempted to prove that it is a semantic component. More recent theories, such as the 'relational grammar theory', describe it to varying degrees as a mixed semantic-syntactic component. The ramifications of the lexical theory outlined here cast considerable additional light on this question. There is no question but that the deep case functions which determine the range of basic syntactic relations in IE sentences also determine the range of possible lexical extensions. This situation seems to warrant our consideration of the deepest level of grammar to be 'lexical-syntactic' or simply 'grammatical', for there is no reason to assume that grammar is fundamentally either lexical or syntactic. Deep case functions are therefore not syntactic functions or relations, but grammatical ones which determine the internal relations of L-derivates just as much as their external relations in syntactic derivates. This grammatical dichotomy is paralleled by the semantic distinction of generic reference (the naming function) vs. specific reference (the descriptive function). But the categories used in both naming and description are the same: grammatical case functions.

Another question relevant to this discussion but not broached here is that of the source of verbal and deverbal L-derivations. These involve categories such as PASSIVE, CAUSATIVE, INCHOATIVE, POTENTIAL which, presumably, characterize the deep verbal system as case functions characterize the deep nominal system; i.e., they are categories of the IE conjugational systems. Although no detailed analysis of verbal derivation is presented here, there is good reason to believe that its range will be just as predictable on the basis of verbal categories as nominal derivation is predictable on the basis of nominal categories.

The basis of this belief is the same aphasic studies mentioned previously which consistently show that the 'closed class' of grammatical morphemes Broca's aphasics have difficulty retrieving includes auxiliaries. It is the auxiliaries which most frequently carry these verbal categories in English, although many of them are affixally marked in other IE languages. Thus there is reason to believe that the verbal category functions underlie the verbal and some deverbal (APAdj, PPAdj, for instance) derivations in pretty much the same way as case functions underlie the nominalizations covered in Book II. In English the syntactic causative is marked by the auxiliary *make*: *John made Ed do it* (note the absence of *to*: **John made Ed to do it*). Other IE languages mark verbal causatives with suffixes, e.g. Urdu *gir-nā* 'to fall': *gir-ān-ā* 'to fell': *gir-wā-nā* 'to get (someone) to fell something'. The derivational morphemes for English are *-ize* (*normalize, formalize*), *-en* (*widen, sweeten, deepen*), when any affix at all is used (cf. *to narrow, thin, dry, wet*).

The astute student of what Newmeyer has recently called 'The Linguistic Wars' will have noticed the similarity between the verbal category features just mentioned and the deep semantic features of generative semantic (GS) theory. A deep-structure configuration like the structural description of the category function rule (50) containing such features (figure 49, p. 215), would even resemble the P-markers for *kill* posited by GS-theoreticians. The claims made by GL-theory here, however, are quite different from those made by GS-theory. The features of (49-50) are only those reflected both in intrinsic and extrinsic grammar, in lexemes and syntagmas. Their range and nature are determined by grammar, not universal semantic theory. Moreover, while they are inherent in lexical primes like *kill*—and this no doubt determines the lexical categories available in the lexicon for L-rules to operate on—they are incorporated by rules only in derivatives. If they are inserted in the deep structure by categorial rules, they must be realized either as an L-derivative or a proform of some class along lines discussed by Kastovsky (1977) and above (pp. 213-216). The GL-theory presented here distinguishes between the syntactic and lexical uses of these category functions while maintaining their essential, i.e. deep-structure, identity. GS-theory confused the parallel between the lexical categories of inchoative, causative

and so forth, which are implicit in *kill*, with the active grammatical functions of inchoative (inceptive), causative (causal), which are syntactic as well as derivational categories in IE languages.

In comparing English and French, which have lost their case systems, with German, which retains three or four cases, and with Slavic languages, which in most areas retain five or six, it might seem that there is a direct relation between the prevalence of L-derivations and the maintenance of the case paradigm. Although L-derivation is on the whole more pronounced in German, this language still tends to prefer compounding, while French exhibits a proclivity toward analytic structures. English is inclined to both of these, while the Slavic languages have higher L-derivation activity. The number of cases in all the IE languages is diminishing, even in Scr. But the correlation is not a clear and direct one. Russian has the same number of cases as Scr but its catalog of L-rules has not been enriched in the ways the Scr one has (but cf. note 28, Book II). English, on the other hand, has become an almost wholly isolating language, yet retains very active agentive, instrumental, perfective and imperfective nominalizations, active and passive actual and potential adjectivizations.

We must remember that it is the cardinal deep case *functions* which determine L-derivations, not the syntactic cases themselves; not dative, genitive, instrumental, etc., but means, manner, purpose, cause, possessor, possessed. All these relations survive in all IE languages, though ever more frequently expressed syntactically by pre- or postpositions ('appositions') or simply by position. If the premises of the present theory are valid, the loss of the case paradigm system in IE languages could be the result of a general atrophying of the morphological component described in Chapter 7. If Halle (1973) and Travis (1979) are right in concluding that all morphological processes, lexical and categorial alike, are carried out by a single component, we would expect the loss of distinctive declensional and conjugational morphemes to be accompanied by a loss of derivational affixes without any necessary concomitant withering of the derivational system. This would mean that more and more L-derivations would be marked by a dwindling stock of affixes; multifunctional marking would increase until comprehension

begins to be impaired. At the point of comprehensional impairment we would expect the language to turn to naming devices, which are clearer, i.e. compounding and analytical constructions.

Since the L-derivational paradigm will remain a part of linguistic consciousness so long as case functions and the like are marked by distinctive means (e.g. atonic prepositions or those with reduced accent), we would expect that compounds would come to be more noticeably based on designated lexemes such as those described in 10.5. So long as the categorial function paradigm persists, the possibility exists that the appositions marking it may ultimately resolve into another case system. The other alternative would be for the appositions themselves to be absorbed into the lexicon, becoming true lexemes with fixed, direct meaning and single functions like the English peripheral prepositions *into, during, vis-à-vis*, which have only a prepositional function. Prepositions of this type may function adverbally if their object position is not filled, but they are not used in such purely morphological functions as prefixation like *in* (*incoming, input*), *out* (*outgoing, output*), *under* (*understate, underground*) and *over* (*overstate, overground*).

This issue is the critical issue of the present lexical theory. If L-derivation is determined by categorial paradigms, then languages with no categorial paradigms, e.g. oriental languages like Chinese, Thai and Vietnamese, would not be expected to be capable of L-derivation. As Sapir pointed out more than a half-century ago, this is, indeed, the case. Furthermore, among those languages with both case systems and L-derivation, the semantic range of the L-derivations should by and large correspond to that of the case functions. Agglutinative languages are midway between inflectional and isolating tongues in that, like inflectional languages, they exhibit paradigmatic morphemes which phonologically attach to lexical bases, but these morphemes reflect pure functions like the particles of isolating languages, i.e., single morphemes which do not contain a mix of categories like [+Fem, +Sg, +Case]. The agglutinative languages should behave lexically like inflectional languages. This issue must await further research of the world's languages. Here we must settle for an examination of one language family, interesting in the dissolution of its inflectional parent into isolating great-grandchildren.

12.4 The Nature of Lexical Copy-Insertion

It has become common to assume that lexemic extension rules represent recursive loops which restock the lexicon on a 'once-only' basis before copy-insertion, so that this latter process is the same for derivates as for the base lexemes. This assumption, no doubt, derives in part from a confusion of everyday dictionaries with linguistic theories of the lexicon. There are several reasons for rejecting even the more recent redrafts of this traditional structuralist view of L-derivation. First, we have independent reasons for distinguishing between lexical stock expansion and lexemic extension. The former cannot be a lexical function since it assumes the prior existence of lexical functions; it is based upon them. Rules for lexical stock expansion must be excluded from the lexicon, yet there is no doubt but that there are generative rules upon which they are based which must reside there.

In the second place, we must admit that the relation between *run* and, say, *sigh* is of a nature decidedly different from the relation between *run* and *runner*: the latter relation is far from random. If the lexicon consists of random entries, therefore, *run* or *runner* must be explained elsewhere. Assuming the obvious, that *runner* is the derivate of *run,* not vice versa, to assign *runner* a lexical position would force new problems upon the theory. Since part of the lexicon would then be ordered and another part not, the lexicon would have to be divided into two domains aside from any 'filter' assigning idiomatized meanings.

Such a decision would have to be justified and explained in terms of the relation of these two domains to the other components of grammar and to each other. Moreover, the ordered addresses would have to be ordered according to three classifications, one of which would be determined by a component other than the lexicon. The ordering of lexical addresses would have to be according to (1) input (to establish the relation to the base, e.g. *run: runner*), (2) output (to establish the relation of the derivate to other derivates of the same class, e.g. *runner: walker: talker: reader*) and (3) according to a dozen or so M-rules which determine the scope of appropriate agentive suffixes, e.g. *runner: escapee: recipient: cook: immigrant: chairman.* This latter demand of recursive

loop rules would make the separation of derivation from affixation an impossibility, leaving us with our original array of morphological problems. Even if such rules were otherwise possible, notice that the output relations they would specify would be the same as those characterizing primary case relations: agent, patient, possessor, possessed, means. This would introduce either syntactic or semantic information into the lexicon, but more importantly, it would lead to the loss of the following major generalization.

The third reason for not assigning L-extensions a lexical entry address before insertion into sentences is that they are in largest part determined by the same conditions which determine syntactic relations and certain syntactic transformations, i.e. category functions. If we posit 'once-only' recursive loops for extending base lexemes, and if their output classes are the same as syntactic relation classes, the identity of these two systems would have to be captured in an ad hoc, secondary theory overarching the two components in question. Remember that the lexical and syntactic versions of the rules for agentives, patientives, instrumentals (to which may be added the active and passive lexical adjectives and syntactic participles) are identical in their power to incorporate empty case nodes into the stems upon which they operate. They differ only in the genericity which characterizes L-rules and the larger syntactic configurations which the T-rules manage. The identity of the case relations must exist at some deep level to capture and appropriately characterize these facts in a complete lexical theory. For this deep identity of the case relations is the theoretical representation of the focus they bring to the various derivational systems at sundry levels, a focus which reinforces these systems, making them easier to remember synchronically and easier to maintain diachronically. The essential unity of the case relation and nominalization systems is a fundamental characteristic of IE and perhaps all inflectional languages.

The copy-insertion process discussed in Chapter 11 is intermediate between a direct syntactic insertion process and a lexical insertion process. That is, the output of these rules is allowed a status intermediate between that of a lexemic base and a syntactic item when it is composed on a copying 'tablet'. This tablet may in fact be the same as the dummy

'delta' symbol of ultimate deep structure nodes; it psychologically represents the spoken token of the lexemic type. It skirts all of the pitfalls of both the recursive loop and the direct derivation rules. It should be fairly simple for the acquisition and performance theories of IE languages to account for the ability of a nonideal speaker to memorize frequently encountered derivational tokens and enter them as types either as lexical bases in his nonideal lexicon or into general memory when their relation to their base breaks down or is not perceived.

Although research in this area is conspicuously lacking, it is generally assumed that the range of derivations memorized in isolation from their bases varies from individual to individual. If this type of random, secondary memorization characterizes the lexical theory, there will be no way to capture this variation. Extensional L-rules must be seen as 'constraints on well-formedness' rather than as actual psychological processes, for these latter processes most certainly will exhibit individuation. Thus an adequate theory of acquisition will have to explain how a token may be psychologically turned into a type. But even if a derivate is, in fact, memorized before use, it remains *linguistically* a derivate so long as its relation to its base can be established. For this reason, transparent derivates which are memorized may not be seen as counterevidence against a strictly grammatical lexicon.

Another advantage of the 'token-tablet' concept of spoken lexemes is that it accommodates the evidence of lexemic tokens being reconstructed from information stored in different areas of the lexicon and general memory. Brown & MacNeil, Fromkin and others have suggested that the recall of lexical items may involve the assembly of pieces of information from different parts of the brain, somewhat like the assembly of strictly linguistic information proposed in Chapter 11. Even if lexemes receive independent entries, these entries will be presumably passive and, as is generally known, passive knowledge far surpasses active knowledge. The active use of stored lexical information, especially infrequently used information, involves many sorts of performative strategies such as the recollection of previous uses of the item, generic knowledge of the item recoverable from such recollections (the number of

syllables, initial letter or sound, the placement of stress) and, no doubt, the operation of L-rules and affixation rules.

Speakers can apparently give themselves hints about lexical items from information emanating from episodic usage. Judging from 'tip-of-the-tongue' and speech error evidence, this information seems to be added to the description of the token on the 'tablet' bit by bit until enough parts are assembled to instigate recall, presumably from permanent 'semantic' storage, to again use Tulving's term. If the speaker is trying to recall an L-derivate and can recall the lexical prime, L-rules and affixation rules may be performatively applied to generate the target token. As constraints on well-formedness, they may also be used to verify the probable well-formedness of derivates being recalled, i.e. reconstructed.

Lexical extensions, in conclusion, are quite different from lexical stock expansions. They are automatic and absolutely predictable. Their output cannot be at variance with itself by virtue of any 'semantic drift'; the constant presence and activations of the rules which generate them, determined by the categorial paradigm in deep structure, maintain all outputs constant. If 'semantic drift' is in fact an actual function of language, it must be specified just as explicitly as any other such function. To describe 'semantic drift' in terms of rules whose outputs may be unpredictable is not to explain it at all, but merely to accommodate it to a particular theory at the expense of the theory.

12.5 The Relation of the Lexicon to General Knowledge

The fact that conducting a speech act involves several levels of mentation is consequential for a full theory of linguistic behavior in that it implies that not all our explanation of this behavior can be linguistic. In explaining lexical functions, the grammatical lexicon itself will occupy only one level of our full theory. Some linguistic behavior may be explained by our general knowledge of the objects and concepts to which lexemes directly and indirectly refer. Much of the organization of the individual lexicons of non-ideal speakers derives from this general

knowledge.[18] General knowledge can include knowledge about lexemes, i.e. their use as referential symbols. This leads to a level of mental activity between language and general knowledge: performance. Performance theory, as pertains to the lexicon, must contain rules and idiosyncratic knowledge of how base and derived lexemes are used in actual speech acts to refer to pragmatic objects and concepts. Some of these performative rules are in the form of semantic conditions, such as the Scr condition on the ablative nominalization of animate nouns which designates the referent as the most widely used product from the animal in those instances where several products are taken from the animal, e.g. *svinj-et-ina* 'pork', even though both lard and hide are taken from the hog. Other performative rules are logical, e.g. the rules determining semantic intensification or the knowledge which speakers of Scr have as to the exact referents of derivations like *bor-ov-ina* 'pine(wood)', *jelen-ov-ina* 'venison'; *grad-ište* 'former city site', *raž-ište* 'rye-field'. There are also idiomatic rules which associate base lexemes and lexemic extensions with referents other than those predicted by their intensional meanings, e.g. *dalmatinac* 'Dalmatian wine', *morski pas* 'sea dog = shark'.

There is yet another level of simultaneous operation required for a complete description of lexical functioning. It is commonplace for linguists to speak of 'contextual variation' in explaining how speakers are capable of assigning the same significance to structurally differing morphological items, e.g. the past participles *driv-en, paint-ed, hit-Ø.* We are not dealing here with three allomorphs of a single morpheme, but with two different morphemes contextually selected or not, for they are also used in other contexts implying other derivations: *beard-ed, paint-ed* (past tense); *en-liv-en, ox-en, wood-en.* The use of the same morpheme to indicate several different derivations is made possible by the fact that there is a distinct, extralinguistic process, logical deduction, available to speech, which operates simultaneous to other performative processes. It compares each affix with its context and deduces from the combined information which lexical or syntactic derivation the speaker intends.

The availability of simultaneous deductive processes is the key to the explanation of why and how morphemes can maintain but an indirect relation to their referent and how a single morpheme can refer to

several derivations; it is the ultimate explanation of morphological asymmetry. IE languages have developed in such a way as to exploit and rely upon the accessibility of logical processes. In a sense, IE grammars have gaps in them, for there is no linguistic explanation of how *-ing*, for example, can mark adverbial, adjectival, verbal and nominal lexical and syntactic derivations as well as verbal inflection classes concurrently. Ultimately, it is the availability of these logical operations, applied simultaneously to semantic substance and grammatical form, which provides for the complete understanding of utterances.

In addition to logical conditions and operations, and semantic conditions on the output of derivation rules, there must also be a body of idiomatic referent-assignment rules, capable of imposing referents on derivations which are not implied by their source, e.g. *strawberry, dalmatian, transmission.* Not only is there no indication of the existence of any grammatical explanation of such idiomatic names, there is always a pragmatically determined metaphorical or other association which does explain them. There is much evidence pointing to a capacity to remember things about derivatives aside from the capacity to derive them. To the extent that speakers remember only that the ouput of a lexical extension rule may be applied to an unpredictable referent, this secondary information forms a body of performance theory similar to Halle's 'lexical filter'. However, there are regular processes such as back derivation and blending which provide expansions of the actual lexical stock. These more closely resemble Reibel's 'feed-back control'.

Loan translations are a special type of optional, lexical performance subsystem which, given special operations of acquisition, can be directly related to lexical entries. It is not clear that Germans can assimilate *Einfluss* in the sense of 'influence' without connecting it to the abstract entries for *fliessen* and *ein.* If this is possible, it is even less clear where they would store such a semi-regularity so that it would not impinge upon the lexicon in such a way as to induce an association. The structural relation of the lexicalized nominalization to the lexemic primes cannot be denied; one may only raise the issue whether it may go unnoticed during acquisition and, if so, how this fact is best captured in an overall theory, specifically, whether it is relevant to the grammar of

language. The approach outlined in Chapter 11 accommodates all the facts, but explains far more of the diachronic data than the synchronic. Rules such as (21.3) must be optional devices of synchronic theory, which may be incorporated into the performative body of knowledge of bilinguals or, perhaps, into the lexicons of non-ideal speakers via performance. Still, it does represent actual, if optional, regularities in the grammar and, so long as our theory is purely linguistic and not psychological, such information as Lightner and others have pointed out does have a place in it.

In the description of lexical performance above, no attempt has been made to separate, catalog and strictly define its various functions in individual subcomponents. In fact, no attempt has been made to distinguish 'semantic' from 'performance' conditions on lexical output. To have done so would have taken us too far astray from the main purpose of the book. Issues such as the distinction of 'semantic' from 'logical' from 'performative' constraints on output depend in large measure on the future development of these components and processes in linguistics. The nature of these classes of constraints and conditions is important to arguments as to exactly what may reasonably be expected of a strictly linguistic theory of the lexicon; their location, other than the fact that it is outside grammar, is not essential. This question does impinge upon the final ostensibly important issue of lexicology considered here: 'productivity'.

The attributive 'ostensibly' is appropriate because, with the redefinition of the nature of derivation presented here, the question of 'productivity' does not arise, or better, it arises in a different context. The problem is traditionally defined in structural, specifically syntactic, terms. While there seem to be few syntactic constraints on transformation rules, there seem to be many lexical constraints on lexical rules. Given that *-(at)ion* is the lexical nominalization marker in English, as *-ing* is the syntactic nominalization marker, there is none but a lexical explanation for the absence of such derivations as *state: (*)station, run: *runation, stop: *stopation.* Moreover, as Chomsky (1970) points out, there are many unpredictable nominalizations such as *statement, run* and *stoppage.* The fact that the syntactic nominalizations (or 'gerundives') are

marked consistently by *-ing*, as we have seen, is exceptional, probably a function of the ubiquity of this particular suffix in English. One needs only look at the syntactically derived agentives to see that this purely structural definition of the distinction between lexical and syntactic derivations suggested by Chomsky holds only accidentally for this one derivation, assuming with Marchand that constructions like (22) are transformationally derived.

22 a previous recipient of the Brockhaus Award
a frequent escapee from the federal pen
the regular chairman of the faculty

The lexical and syntactic active and passive adjectives, as well as the nominalizations themselves, frequently share the same suffix.

23 She is more captivating than I
the lady captivating the audience now, . . .

24 I have never seen so broken a man.
The chair was broken by John.

25 Ed's billing his brother shocked us.
After six billings, he quit.

Whatever the nature of 'productivity' might be, therefore, it applies discretely to derivation and affixation.

Once separated from affixation, lexical derivation becomes much more predictable (= productive?). Lexical extensions such as *knowledgeable, grassy, bearded, two-headed, nodose, modular, youthful, temperamental, harmonious, elegiac, dilemmatic, methodical, burdensome* all share one common, highly active and wholly regular derivational source: the possessional adjective (HAdj) variant of the case relation rule. The morphological form can now be seen as a representation of several derivations sharing a suffix marker: RAdj, SAdj, etc. The specific pragmatic relations which these derivations denote of their referents, may be

more specifically paraphrased as 'containing X', 'having X', 'characterized by X', 'covered with X', 'full of X' depending upon the normative use of these paraphrases as well as the physical nature of the referents of the underlying stems and the specific noun modified by these derivations. Thus, the better paraphrase of *grassy hill* would be 'hill covered with grass', but for *grassy woods,* 'woods full of grass'. Both, however, perfectly reflect the POSSESSION-OBJECT relation with *grass,* now productively signified syntactically via the instrumental *with: hill with grass, woods with grass.* The difference between these two expressions lies not in their meaning, but in their referents. This forces the necessarily more specific syntactic paraphrases of each to vary in common dictionaries. L-rule productivity, however, immediately approaches that of T-rule productivity in both predictivity and activeness of use once affixation is set aside.

The term 'productivity' might now be applied in a novel sense to the question of what determines the range of primary case relations which, in turn, determine the number and nature of L-derivations. Since the PIE case system with its clear distinction between primary and secondary case marking systems (prepositionless vs. prepositional) has long since broken down, there must be other linguistic or psychological reasons for the persistence of cardinal L-derivations in the system. In this sense, the primary case relations are more productive, in that they determine more aspects of the grammar than do the secondary ones. They are determining factors in the pronominal system (*who, whom, what, which, whose, where, why, when, how-much, what-kind-of*) and thereby the dependent clause system in the syntax. Therefore, pursuing this question will prove interesting, for it must lead to a hierarchy of case relations which could be as psychologically significant as linguistically so.

Let us return to the original question, which is comparative as well as absolute: why do speakers seem to derive fewer neologisms than new sentences, despite the fact that no demonstrable differences in the 'productivity' of their respective rules can be established.[19] The answer to this question lies in the nature of the two different types of rules and their relative applicability to pragmatics. First, the nature of the lexicon is generic; lexemes are descriptive and nondescriptive names. Syntactic

structures, however, are not restricted to specificity; rather, they are ageneric. A sentence may express the same generic relations that a lexeme can, but it may additionally describe specific relations. Now, the number of specific relations emerging in the day-to-day world far exceeds that of the generic ones–and they are constantly changing. Relative to specificity, it is rare that speakers wish to imply genericity to a previously unnamed object or quality. Most generic referential objects have already been named; this is, no doubt, the diachronic explanation of true semantic drift. Furthermore, the sociology of performance forces us to memorize and recall the 'right' name via our knowledge *about* language. Dictionaries abound for this prescriptive function, yet there are no dictionaries for sentences. This intensifies our sense of lexical 'acceptability' over that of our sense of syntactic acceptability.

The need for new, generic names arises less frequently than that for specific descriptions and the pressure for memorization is greater in the case of L-derivations. There is yet a third reason for greater syntactic creativity: sentences may also refer generically. Syntax, therefore, is an alternative for L-derivation, while there is no alternative for syntax. Moreover, syntactic constructions may refer generically and specifically simultaneously, e.g. *he bakes professionally; he bakes as a hobby; he is constantly baking in June's kitchen.* The referential capacity of sentences is astronomically greater than that of the L-derivations. Perhaps this explains why lexical normativity has become far more focused and detailed in languages with writing systems. Lexical norms, however, are performance subsystems and they do not interfere with the lexicon's capacity to generate neologisms. Normative prohibitions on the use of derivations in English in no way hinder the generation and grammatical use of them in conversation.

The present theory of lexical derivations treats the question of 'productivity' as an ostensible problem which vanishes the moment that the basic issues of derivation are explained. But can productivity be an issue for affixation as it is outlined in Chapter 7? The constraints on affixation enumerated in that chapter included semantic and morphological factors, e.g. in the case of derivations under Adj-nodes with the Genitive$_2$ (possession-object) feature in them, the suffix *-av* is generally

added to stems containing the phonemic cluster *-ic* or which refer to undesirable conditions. Otherwise, the suffixes *-ljiv, -at, -ast, -An, (-Ov)-it* and others mark this derivation on the basis of unpredictable or semipredictable semantic classes. Where affixation is predictable at all, the basis for the prediction is sometimes structural, sometimes semantic. Moreover, it is not uncommon for more than one affix to mark the same derivation's operation on one particular stem.

26 *srebr-(e)n, srebr-ast, srebr-(e)n-ast* 'silvery'
rib-An, rib-ljiv 'full of fish'
sneg-Ovit, snež-An, snež-av 'snowy'
brz-Ac, brz-ić, brz-onja 'fast one'

This situation is so widespread throughout IE languages, that it raises substantial doubt as to whether affixation is wholly determined by the morphology.

But then it need not be. If derivation does not prescribe affixation nor affixation derivation, inasmuch as superfluous affixes exist, formal superfluity is to be expected. In instances where idiomatization or variant semantic implications emerge in connection with a derivation, the norm frequently assigns each variant its own interpretation, cf. English *sensual* and *sensuous, various* and *variant, elemental* and *elementary*. The proof that such variations are the result of prescribed performance norms lies in those examples where the least likely alternant becomes the norm, e.g. *normalcy*. The American norm here is less likely than the British *normality* or even the highly productive *normalness*, since the suffix *-cy* most frequently marks the nominalization of adjectives on *-ent*. If affixation is determined by morphological conditions, they are not very strict and are easily overridden in performance. Another possibility, however, is that affixation is only loosely conditioned by the morphology, i.e. morphology controls only classes of morphemes: QAdj, RAdj, PAdj, Agentive, Instrumentals and so forth. Within these classes, it may very well be the case that no *morphological* constraint applies, allowing for such flexibility that phonotactically awkward situations may be avoided, divergent semantic implications may be

accommodated and other distinctions maintained by the performative norm.

The generative lexicalist theory proposed in this book represents an attempt at sorting out the issues of lexicology in such a way as to explain the 'what', 'where', 'when', 'how' and 'why' of lexical derivation and affixation. Less attention has been devoted to the question of the basic lexeme, yet several aspects of its structure and function have emerged from our investigations. Much, needless to say, remains to be done. The question of the verbal and deverbal derivations was not dealt with here, nor were all the nominalizations examined in great detail. The question of the cause of the variation in the proliferation of L-derivations in the several IE languages has not been settled. There may be a better theoretical technique for expressing the relations discussed in Book II. But the present approach seems still to cast such light on the fundamental questions of the lexicon as to justify any theoretical old-fashionedness. When the nature of linguistic semantics and performance are better understood, we will be in a better position to judge the adequacy of the theoretical framework.

EPILOGUE

In Chapter One George Miller's imperative that linguists must explain the psychological status of their theoretical concepts was accepted. In the discussion of the lexemes and L-rules this challenge was met by distinguishing the purely theoretical status of the lexeme and L-rule in grammar from their usage in performance. It was argued that in performance the lexemes were 'mental nodes' uniting sound via abstract phonemes to type reference via abstract intensional meanings. L-rules in performance represented knowledge of such unions which is used in storing and retrieving lexical items as well as creating neologisms.

These same relations are involved in syntactic processing. But even though more emphasis is on spontaneous 'creativity' there and less on using syntactic knowledge for storage and recalling sentences as in phrasal idioms, L-rules must be generative in just the same sense syntactic rules are generative. The difference in 'productivity' between L-rules and T-rules is great but still quantitative, thus a function of performance and requiring explanation there, not in grammar. While this definition moves a step forward toward specifying the levels required of a definition of L-rules—a step beyond the discovery that derivation must be defined separate from affixation—it does not firmly associate the grammatical and performative theories to empirically observable linguistic behavior patterns.

The discussion of L-rule performance pointed out regularities which are related to L-rules and errors which are dependent upon them, even neurological evidence of them. But none of this provides a definition of L-rules in psychological terms. A recent theory of L-rules advanced by Clark & Clark (1979) and supported by Aronoff (1980) can be seen as a positive contribution to such a definition. The Clark & Clark theory is essentially a psychological theory of performance; their definition of 'contextual reference' is in essentially psychological terms. (They are psycholinguists.)

Clark & Clark examined 1300 English denominal verbs displaying no derivational suffix (zero/null verb derivations). Certain classes of semantic relations tended to dominate the meanings of their sampling, namely LOCATUM (*blanket the bed*), NEGATIVE LOCATUM (*skin the rabbit*), LOCATION (*ground the plane*), DURATION (*summer in France*), AGENT (*referee a game*), INSTRUMENT (*to bicycle, to mop, to hammer*). These names reflect several relations familiar to us. But Clark & Clark also found a significant minority of such verbalizations with deviate meanings, e.g. *they Bonnie-and-Clyded their way across the country; they were stoned and bottled by the spectators.* Furthermore, they were able to posit the example *to teapot* in an imaginary setting where all speech participants were already familiar with the reference, and where it would mean 'to rub someone behind the knee with X'. Clark & Clark accepted all their data on equal footing, not questioning the grammaticality of *to Bonnie-and-Clyde, to bottle* referring to the throwing of bottles. Rather, they assumed that any locution which is comprehensible is grammatical. They did not distinguish between the meanings which are available without an unusual context from those dependent on such. These are all points upon which their arguments may be faulted. Rather than critique their approach, however, it will be more interesting to look at their basic theory as one opposing the GL theory of this book on a fundamental point.

Clark & Clark came to the conclusion that the range of possible referents a new zero verbal derivation could have is limited only by the range of logical possibilities. To arrive at this conclusion, they posit an 'innovative denominal verb convention', which provides that "in using

an innovative denominal verb sincerely, the speaker means to denote (a) the kind of situation (b) that he has good reason to believe (c) that on this occasion the listener can readily compute (d) uniquely (e) on the basis of their mutual knowledge (f) in such a way that the parent noun denotes one role in the situation, and the remaining surface arguments of the denominal verb denote other roles in the situation" (Clark & Clark 1979: 787). The difference between their theory and the GL position resides in (e), namely, what is the basis of the speaker's and listener's mutual knowledge which allows the latter to readily compute the neologism's meaning.

It was argued in Chapters 8 and 9 that the basis of this knowledge is a knowledge of the IE category function system. Moreover, the arguments here lead to the conclusion that the range of possible referents any derivate will have is determined by this factor regardless of the situation in which a neologism is used. Performance determines selection in the case of several possible neologisms applying in a given situation or where restricted reference is necessary. Performance can additionally override the regularities predicted by L-rules and assign exceptional referents to a derivate, especially in special contexts. Assuming these more narrowly defined grammatical rules, we had to adjust performance theory to explain unpredictable referents like *to bottle*$_2$, *to teapot*$_2$ and so on, in terms of exceptions to the paradigmatic rules.

The approach proposed by Clark & Clark uses a far simpler grammatical rule (Aronoff suggests $X_N \rightarrow X_V$) to predict a greater range of meanings, but then has to explain why, with an infinite range of possible referents, the actual output of this rule centers around a dozen or so actual classes of referents. They do this by beginning with two types of human knowledge, generic and specific, similar to but defined rather different from Tulving's semantic-episodic dichotomy. They argue that people classify objects in the world in terms of their being *placeables, places, time intervals, agents, receivers, results, antecedents* and *instruments*. This classificatory system represents the 'core of generic knowledge'. When a listener receives an innovative denominal verb from a speaker, he interprets the relation of the underlying noun to the derivative in terms of this core of relations.

The similarity of this 'core of generic relations' to the IE case function system is evident. Thus, with a little theoretical adjusting the differences between the two approaches could be resolved save for one: Clark & Clark claim that these relations are determined by a classification system of general knowledge and are thus performative. Here it is claimed that this system is linguistic, determined by lexical-syntactic paradigms. The advantage of their theory is that all denominal verbs are predicted by their simplified rule without special explanations for exceptions. The disadvantage is that they then must provide a special condition to explain the high predictability of the case function relations. If their core classifications are nonlinguistic and are required for explanations of other types of mental activity, their theory will be the simpler and preferable. If linguistic constraints are required on their core classification system, this theory must be adjusted toward the GL position.

The generic classifications found in all L-derivations form a set much smaller than logic alone predicts. The denominal verbs in English, for example, are restricted to bases on nouns referring to concrete objects, thus the core class instrument is narrowly defined apropos the capacity of human perceptions. If *pencil* is an instrument in *he wrote a letter with a pencil* and *he penciled a letter, candor* must be an instrument in *he shocked them with his candor* but **he shockingly candored them.* Since both concepts are treated similarly by extrinsic grammar, syntax, we may assume that they are perceived similarly. So why are they not treated similarly by intrinsic grammar?

Not even all nouns referring to physical instruments can be verbalized. A cup is an instrument for holding liquid to be drunk, a plate is an instrument for holding food during meals. But one may not say **he plated his food; *he cupped his coffee; *he bowled the vegetables,* although *he knifed/forked/spooned/ladled his food* are all in common use. The instrumental referent is arbitrarily restricted to something a human agent controls in achieving an end and this constraint must be lexical, dependent upon lexical subclasses.

The second argument for the lexicality of these classes has to do with lexemes whose referents fall between the classes. There has to be a body of 'metaknowledge' for deciding to which class such a referent

belongs. Ingredients for the preparation of food, for example, might be perceived as either the source, the means or the convergence of the prepared dish but in IE languages they are indicated by either the sociative (comitative) or the ablative functions: *Gary made soup with/ from/out of the chicken he found.*

Why is the choice reduced to one between the ablative and sociative? Considering how fundamental to life food preparation is, it seems illogical that no core class or case function *Ingredient* or *Convergence* has developed. Of course, the ablative function generally covers the concept 'materials from which an object is made'. But even this decision seems quite arbitrary considering the basic meaning of ablative, i.e. 'source': 'coming from' (one's parents, a geographical location or, in the case of the mass nouns discussed above, animals and vegetables). The arbitrary decision to refer to ingredients via either the sociative or ablative sense defies logical explication and forces us to accept these classes as, perhaps, logically based, but still linguistically determined.

If we make this one adjustment to Clark & Clark's proposal, however, we come to an interesting possibility. Human beings can derive any kind of L-derivate they wish and assign it any meaning that crosses their collective mind. But in actual linguistic performance, they do not do this. Rather, the overwhelming majority of the derivations they generate gravitate toward a limited class of core functions. This is necessitated by the finitude of the human mind: it simply cannot logically deduce all the possible referents of a given neologism even given the context. Remember, the primary function of language is expression to communicate. Usually communication is required only when new information needs conveying. Thus the context upon which speakers must rely in performance is always incomplete. The number of concepts people can manipulate in short-term memory is 7 (±2), but they can manipulate these concepts at about 4 different levels simultaneously—maybe even 7. Thus there has to be a way for the possible number of referential classes to be reduced. While there may be necessary logical reasons for the selection of the basic category functions which do this in languages, constraints on abstractness and gaps inevitably arise when

arbitrary decisions are made as to which of the original classes will have to accept new concepts.

Performatively, we are talking about speech conventions, logically based but arbitrarily constrained. These conventions are what are called here linguistic 'lexical extensions'. By implication, those derivations which do not conform to these speech conventions are exceptions, speech errors (*to Bonnie-and-Clyde*) if they pass, stock expansions if they stick (*motel, smog, laser*). Thus the article by Clark & Clark can be seen as an approach to the same issues covered here, but from the perspective of performance. The only real difference between the two theories is the issue of whether the categories discussed here in Chapters 8 and 9 are lexically or logically based.

NOTES TO BOOK III

1. There is some difficulty, however. During investigations into the validity of the various derivation rules discussed in Book II, questionnaires were distributed to 39 undergraduates at the Universities of Belgrade and Zagreb. The questionnaires contained a list of 20 sentences based on L-derivates of which one or two frequently occur, one or two were ungrammatical and the remainder were hypothetically grammatical derivates which most likely had not been previously encountered. All the derivates were placed in logically consistent contexts and presented to native speakers from different dialectal backgrounds. They were asked to rate the derivates on a scale consisting of (1) possible and frequently used, (2) possible but seldom used, (3) possible but not used and (4) impossible. With one exception, a derivation which should be ungrammatical but proved acceptable to one group on the average, the extremities of the range were kept clear. The murky area seemed to be between (3) and (4), where previously unencountered derivates, regardless of their rule's productivity, tended to be deemed impossible. Still, with the one exception just mentioned, majorities of each group substantiated the hypotheses and provided few surprises. These tests are worth noting primarily for their depiction of the relative difficulty speakers have in distinguishing 'acceptability' from 'grammaticality' as pertains to lexical rules.

2. This was confirmed by the testing mentioned in note 1. above, however tentatively. Using the ablative and locative derivation rules described in Chapters 8 and 9, extensional neologisms were generated in sentences which provided a logical context for them, even though the derivations themselves should have been alien to the speakers, e.g. *eukaliptus-ov-ina* 'eucaliptus (wood)?', *banan-ište* 'banana field?' *banan-ik* 'banana grove?', *majmun-ov-ina* 'monkey (meat)?', *zmij-ev-ina* 'snake meat?', *kikirik-ište* 'peanut field?' However, derived in an appropriate syntactic context, they were consistently accepted by the majority of the subjects, even when they bordered on the phonologically ridiculous: *hipopotam-ov-ina* 'hippopotamus (meat)?', e.g. *U svom životu sam sve vrste mesa oprobao, i sve volim, osim hipopotamovine, koju su mi dali na lovačkom pohodu u Africi:* 'In my life I have tried all kinds of meat and I like them all, except hippopotamus, which I was given on safari in Africa.' The results of this testing are not presented here, since little more can be drawn from them than the accepted fact that these derivations are indeed productive in Scr. Major factors impinging on the outcome of the testing were not controlled. For example, no control of the distinction between lexical extension and stock expansion processes was maintained. One example, *knižište* 'place on which books are (generically) found?' should have been rejected, but was not in Belgrade. This may well have been the result of an awareness of the fact that performative expansion rules may override lexical constraints, as in the derivation of the class of species names exemplified by *zub-at-Ac* 'dentex', despite what otherwise seems to be a lexical constraint on the insertion of *-at* before nonterminal agentive affixes: *zub-onja* 'big-toothed one'.

3. Theoretically, *brkonja* and *bradonja* might refer to animals other than humans, e.g. cats and goats. However, in Scr the generic names for these two animals are feminine and there is no mention in the dictionaries of the derivations being used to refer to the male of the species. Of course, this latter fact is no indication that they are not so used in some areas.

4. The suffix *-onja* is not restricted in its use to possessional agentives; it is used also with a few other types of agentives derived from adjectives, especially those referring to animal colors; e.g. *mrk-onja* 'brown one', *siv-onja* 'gray one', *mršˇ-onja* 'skinny one', *mlak-onja* 'milquetoast'.

5. There are some ostensible exceptions to this in the possessional agentives used exclusively for species naming and marked by alternate suffixes, e.g. *zub-at-Ac* 'dentex (fish)', *ok-at-Ac* (species of grape), these will be discussed directly.

6. This type of knowledge very closely approximates Reibel's concept of the 'feed-back control' and Halle's 'lexical filter'. Like Reibel's control, this knowledge is extralexical, but it does not return semantics to the lexicon nor filter it into derivations as they are generated. Here, it is more closely specified as a performative device for storing extensional, referential knowledge about derivatives, along with the proper associations.

7. Recall also Belić's example *sedmak* mentioned earlier in the introduction.

8. In addition to the radically nonhuman way in which chimpanzees and gorillas acquire the sign systems which they have mastered in recent research on their cognitive abilities (Premack 1975; Patterson 1978), there is no evidence that they are capable of manipulating 3-4 levels of brain activity—in addition to the phonological filtering—required of speech behavior. Terrace (1979) and Sebeok & Uniker-Sebeok (1980) have recently detailed the central differences between language and the artificial sign systems which have been taught to pongids.

9. Moreover, English has suffered heavily under the influence of French, which displays a strong proclivity for analytic structures rather than L-derivations or compounds. We should not be surprised if closer examination reveals that compounding dominates generic naming in German even more than it does in English as a result. For more details of the comparative situation, see Ullmann (1972: 105-115).

10. The Slavic languages have their own stems for these meanings: *obil'*— 'abundance' and *lišˇ*— 'superfluous'.

11. The Romance $influer_2$ is in fact a transitional form bridging $influer_1$ and *influencer* in the sense that $influer_2$ is intransitive and thus must syntactically display the SUPER-relation of *influence*, e.g. *influer sur l'opinion de quelqu'un.* This exception can be handled by a condition in the Romance languages on the IN + FLU entry which allows the verb to be inserted directly under a V-node. Since the verb FLU is marked in all languages as intransitive, the incorporated preposition

SUPER (French *sur*) must be inserted before N_2 according to the instructions in (17).

12. It might seem somewhat strange that the adverb lexeme IN with the meaning 'into' is not directly related in the lexicon to the phonological figure */ain/*. I follow here, however, the greater part of the data, which supports the complete independence of derivational processes from affixation. Prefixation is affected by this independence in the same ways as suffixation. In the context of the present theory, only the question of whether the phonological formative is separable from meaning emerges. If the answer to this question is positive, the unit must be an affix inserted by the M-component; if it is negative, the item must be a lexeme. Although Fleischer (1975) emphasizes the importance of the differences between prefixation and suffixation, his overviews 9.-10. (pp. 340-341) demonstrate the same double overlap of structural with semantic classes among prefixes as his overviews 4.-5. (pp. 198-199) show for substantive suffix classes: the same asymmetry depicted in Table II of Chapter 5 of this book.

13. Aronoff (1978) claims that in any given set of suppletives, one will always display 'priority'. He cites as evidence the absence of past-tense and plural suppletives in L-derivations, i.e. *be-in/*was-in*, *movie-goer/*movie-wenter*, *womanizer/*womenizer*. It is difficult to see how strictly lexical features like number and tense, by definition incorporated in lexemes, could participate in lexical incorporation (extension) rules. However, if we ignore the difference between extension and stock expansion rules, as Aronoff does, the evidence weighs heavily against this claim, e.g. Russian *byt* 'way of life' *by-t-ie* 'being', *by-t-'ë* 'life'; *sut'* 'essence', *sušč-ij* 'real', *sušč-nost'* 'essence', *sušč-estvo* 'being, creature' and *est-estvo* 'nature, substance', derived from the various suppletive stems of *byt'* 'to be': *est'* 3rd per. sg., *sut'* 3rd per. pl. In English one finds lexicalized compounds like *menfolk*, *womenkind*, *menswear*. In fact, English would seem to present the greatest obstacles to establishing such a position, given the volume of such pairs as *tooth/dent-*, *eye/ocul-*, *cat/fel-*, *cow/ox/bull/bov-* (cf. 10.5 for discussion). Proof of any 'priority' among suppletives in the lexicon consists solely of an explanation of all the factors determining such 'priority'. Short of that, the unscrutinized data militate against any more grammatically motivated priority among phonological variants than can be found among semantic ones.

14. This position is ostensibly contradicted by the nature of the syntactic versions of the agentive (and instrumental in Scr) case-relation derivations which allow the lexical marking for number (and gender in Scr). Diagrams 49 and 53, Chapter 9, show that for the syntactic configuration to be such that these T-rules can generate *the six bakers of the homemade bread* (with a plural syntactic agentive), the same information is required as determines a relative clause construction, i.e. *those/the six* [Case] *who* [Agent] *baked/are baking/will bake the homemade bread*. Gender and number are essentially pronominal features in that pronouns consist in little more than these features, especially relative pronouns. Since these features also lexically characterize all nominal lexemes, however, and since they are variable in many cases, they must be assigned and assigned values by the lexicon. All of these

facts can be accommodated by a rule which requires all N-nodes exiting the lexicon to have gender and number features with assigned values, regardless of whether the node is occupied by a lexeme. The M-component can do the rest.

15. See Babby (1976) for more details of this for Russian. The fact that both the lexicon and the syntax make a contribution to the feature list which inflectional morphology interprets, comprises a second, independent argument for positing an M-component following both the lexicon and transformations.

16. There is one possible way to combine lexical and morphological insertion which might justify further consideration despite obvious obstacles. It may be possible to delay lexical insertion until after the syntactic rules have all applied, i.e. rearrange the grammatical component so that the lexicon stands between the T-component and M-component essentially at the surface level, unless 'deep' and 'surface' were to be redefined. Lexemic extensions would then operate on deep syntactic configurations which had escaped T-rules and would be, in effect, simply enhanced copy-insertion rules. The decision to use a generic lexical name would come after all T-rules have operated—perhaps a structural way to account for the higher productivity of T-rules. The obvious difficulty would be the provision of surface agreement rules of any generality; however, Wierzbicka (1980) has some suggestions along these lines. No attempt to explore this avenue has been made here due to the complexity of such an endeavor and our commitment to avoid major changes in the standard model.

17. This situation may be predictable on the basis of logical restrictions on the range of the derivate's possible referents. In other words, what is the possible range of objects or concepts which may be considered generic instruments or means of reading? The instrumental *reader* might possibly refer to eyes or the mind. But these objects are perceived independently, specified by functions other than reading (seeing and thinking). It is possible that the microfilm reader is the only possible referent for this derivate in the present world. If so, there is no constraint on this lexeme's undergoing the instrumental L-rule nor on its use, i.e. the derivate would be 'transparent'.

18. No doubt a good deal of what has been described in Beard (1976a, 1976b, 1976c) must be reconsidered as this type of nonideal, individual organization rather than a universal, grammatical type. The principles discussed in these articles hold—some have been refined in Chapter 10; only their position in the overall theory of linguistic behavior needs reconsideration.

19. Aronoff & Schvaneveldt (1978) have begun psychological study of 'productivity' but it is too soon to judge whether they have, in fact, isolated psychological or mental capacities corresponding to this linguistic concept. Since they assume that L-derivation is a process of concatenating morphemes without distinguishing between derivation and affixation, it is difficult to determine whether they are measuring derivational or morphological tendencies.

APPENDIX

The Appendix contains the structurally or semantically attested derivations of 46 of the closed class of 48 lexical primes described in Chapters 6 and 7 as referring primarily to 'salient animate body parts'. Two have been omitted for considerations of delicacy. The derivatives are all found in standard Scr dictionaries with the exception of *nogonja* and *leđonja,* which are well-attested in the spoken language. Many of the derivatives were found among the lexical materials of the Institute of the Serbocroatian Language of the Serbian Academy of Sciences and the Arts and will appear in print only as that institution's comprehensive dictionary is completed. Bear in mind that listing only those derivatives which have occurred so frequently as to have been recorded in a normative dictionary places the most conservative restraints possible on the list. There can be no doubt but that many of the gaps in the paradigm are the result of failure to record rather than lexical or other types of constraints. Still, despite this and the many obvious logical constraints on these derivations mentioned in Chapter 10, the paradigm is remarkably complete, leaving little doubt but that the entire paradigm is potential, i.e. the rules involved are wholly 'productive' at the grammatical level.

Since the accent pattern of the affixation was only briefly discussed in Chapter 5, rather complete accentological information is provided here. Length and accent placement is fixed and regular in all the derivatives and independent of that of the stem: accent is always on the final

morpheme, not counting desinences. Length is not carried over, but in the case of the agentives, is added to the syllable preceding the accent. The double macron (=) marks the moveable quantity categories discussed by Ivić (1965). Otherwise, parentheses indicate forms which are provincial, archaic, attested only once or similarly marginal. Brackets mark forms which are attested structurally but not semantically, or vice versa.

Stem	HAdj	Neg HAdj	HAdj & Ag	Compound
bō̄k— side	*bok-'at* big-hipped bellied	. . .	*(bōk-'onja)* = *trbonja*	*bel-O-'bok* white sided
brād—a beard	*brad-'at* bearded	*bez-'brad* beardless	*brād-'onja* b-ed man	*bel-O-'brad* white b-ed
br̄k— moustache	*brk-'at* m-ed	*bez-'brk* m-less	*br̄k-'o(nja)* m-ed man	*dug-O-'brk* long m-ed
čel—'O forehead	*(čel-'at)* big f-ed	. . .	*(čēl-'onja)* big- f-ed man	. . .
glāv—a head	*glav-'at* (big) h-ed	*bez-'glav* headless	*glāv-'onja* big h-ed man	*usk-O-'glav* narrow h-ed
'gnjāt— shin	. . .	. . .	*(gnjāt-'onja)* big l-ed man	*gol-O-'gnjat* bare legged
'grb—a hump	*(grb-'at)* h-backed	. . .	*gr̄b-'onja* hunchback	*dv-O-'grb* two humped
'griv—a mane	*griv-'(n)at* maned	*bez-'griv* maneless	*grīv-'onja* maned man	*bel-O-'griv* white maned
'grl—O throat	*grl-'at* loud	*bez-'grl-ī* t-less	*(gr̄l-'onja)* loud-mouth	*bel-O-'grl* white t-ed
grūd—i chest	*grud-'at* big c-ed	. . .	*grūd-'onja* big c-ed man	*usk-O-'grud* narrow c-ed
'guš—a goiter	*(guš-'at)* goitered	. . .	*(gūš-'onja)* g-ed man	. . .
'gūz— buttock	*guz-'at* fat b-ed	. . .	*gūz-'onja* fat b-ed man	*bel-O-'guz* white b-ed

Stem	HAdj	Neg HAdj	HAdj & Ag	Compound
jāj-e(T) testicle	well t-ed	*jaj-'at* (vulg.)	...	...
kljūn— beak	*'kljun-'at* (big) beaked	...	...	*dug-O-'kljun* long beaked
kos—a hair	*kos-'(m)at* hairy/long h-ed	...	*(kōs-'onja)* long h-ed man	*crn-O-'kos* black h-ed
kōst-(i) bone	*košč-'at* bony	*bes-'kost* boneless	*(kōst-'onja)* bony man	*sitn-O-'kost* small boned
krāk— long leg	*krak-'at* long-legged	...	*krāk-'onja* l.-l. man	*gol-O-'krak* bare legged
krīl—'O wing	*kril-'(j)at* winged	*bes-'kril* wingless	*krīl-'onja* spotted ox	*lak-O-'kril* light winged
krzn—'O fur	*krzn-'at* fur-bearing	...	*[krzn-āš']* f.-b. animal	...
lēđ—'a back	*leđ-'at* broad backed	...	*lēđ-'onja* b.-b. man	...
mūd—'O testicle	*mud-'at* well t-ed	...	*mūd-'onja* potent, brave man	*jedn-O-'mud* single t-ed
nog—a leg	*nog-'at* legged, -y	*bez-'nog* less leg(s)	*nōg-'onja* leggy man	*brz-O-'nog* quick footed
nōs— nose	*nos-'at* (big) n-ed	*bez-'nos* noseless	*nōs-'onja* b.-n. man	*kriv-O-'nos* bent nosed
'obrv—a eye-brow	*obrv-'at* bushy e-ed	...	*[(obrv-āš')]* bushy e-ed man	...
'ok—O eye	*ok-'at* (big) eyed	*bez-'ok* less eye(s)	*(ōk-'onja)* b.-e. man	*jedn-O-'ok* one eyed
per—'O feather	*per-'(n)at* feathered	*bes-'per* f-less	*pēr-'onja* spotted ox	*šar-O-'per* brightly f-ed
pleć—'O shoulder	*pleć-'at* broad s-ed	...	*plēć-'onja* b.-s. man	*gol-O-'pleć* bare s-ed
'prs—a chest	*prs-'at* broad c-ed	...	*(pŗs-'onja)* b.-c. man	*[bel-O- 'prs-An]* white chested

Stem	HAdj	Neg HAdj	HAdj & Ag	Compound
prst— finger	*prst-'at* (big) f-ed	. . .	. . .	*dug-O-'prst* long- f-ed
rebr—O rib	*rebr-'at* (big) r-ed	. . .	*(rēbr-'onja)* ox w/big ribs *(rebr- ās')* man or animal w/ big ribs	. . . . . .
'rēp— tail	*rep-'at* (big) t-ed	*bez-'rep* tailless	*rēp-'onja* tailed one	*gol-O-'rep* bare tailed
rōg— horn	*rog-'at* (big) h-ed	*bez-'rog* hornless	*rōg-'onja* horned one	*vit-O-'rog* curly h-ed
rūk—a arm	*ruk-'at* (big) armed	*bez-'ruk* less arm(s)	. . .	*dug-O-'ruk* long-armed
rūn—'O fleece	*run-'at* fleecy	. . .	. . .	*zlat-O-'run* golden f-ed
'runj—a hair	*'runj-'at* hairy, shaggy	. . .	*[rūnj—'a]* hairy man	. . .
'sis—a breast	*sis-'at* big b-ed	. . .	*[sis-'ara]* big b-ed woman	*[velik-O-'sis-a]* big b-ed woman
'šak—a fist	*šak-'at* big-fisted	. . .	*[šāp-'onja]* big f-ed man	. . .
trb-'uh— belly	*trb('uš)'at* big-bellied	. . .	*tr̄b-'onja* b.-b. man	*bel-O-'trb* white-bellied
'uv—O ear	*uv-'at* (big) eared	*bez-'uv* less ear(s)	*ūv-'onja* b.-e. man	*bel-O-'uv* white eared
'usAn—a lips	*usn-'at* (big) l-ed	*(bez-'usAn)* lipless	. . .	. . .
ūst—'a mouth	*ust-'at* big m-ed	*bez-'ust* mouthless	*(ūst-'onja)* b.-m. man	*zlat-O-'ust* golden m-ed
vim-eN— udder	*vim-'at* big-uddered	. . .	*vim-'ača* b.-u. animal	. . .
'vlās— a hair	*vlas-'(n)at* hairy	*[bez-'vlas-An]* hairless	*(vlās-'onja)* hairy man	*dug-O-'vlas* long-haired

Stem	HAdj	Neg HAdj	HAdj & Ag	Compound
vrāt— neck	*vrat-'at* (big) necked	. . .	*vrāt-'onja* b.-n. man	*bel-O-'vrat* white-necked
'vun—a wool	*vun-'at* wooly	. . .	. . .	*mek-O-'vun* soft-wooled
zūb— tooth	*zub-'at* toothy	*be()-'zub* toothless	*zūb-'onja* toothy man	*bel-O-'zub* white-t-ed

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